



Role of 'Safe' in Smart City – Jalandhar's Perspective

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(Received 25 December, 2016 Accepted 22 January, 2017)

(Published by Research Trend, Website: www.researchtrend.net)

ABSTRACT: Today, 54 per cent of the world's population lives in urban areas, a proportion that is expected to increase to 66 per cent by 2050. These projections indicate the importance of building cities which are resilient and safe for the people to reside. The world is already facing a crisis due to sudden rise in population, because this brings the problems relating to health, crime, infrastructure, etc. A safe city must provide Digital Security, Health Security, Infrastructure and Personal Safety to all its urban residents.

In India, as a result of continuous increase in population and Gross Domestic Product (GDP), fighting crime has become more complex. Thus, India is in dire need of comprehensive and holistic development. The concept of smart cities was thus brought up by the Government of India in 2015 in order to promote smart solutions to these problems. The purpose of smart cities is not only to provide food-shelter, but to provide a safe residence, a city that is resilient and secure.

This paper reflects the development of strategic framework required to resolve the present complications in context to the Jalandhar city (situated in Punjab, India) as it has been selected as one under the smart city development program by Ministry of Urban Development India. Jalandhar cannot be termed as smart, unless it is not safe for the masses that live and trade in the city.

I. INTRODUCTION

Why choose the safe way? Why not all ways are safe? Why can't we be prepared to every coming emergency in our cities?

Over the years, we have learnt that it's better to be prepared than to expose ourselves to danger. Planning can contribute greatly to make our cities immune to crime and disasters. Planning intervention can lead our cities towards a safer world. Natural surveillance and access control strategies can limit the scope of crime. Social support maintenance and activity support provide the community with reassurance and the ability to stop crime themselves. Pre disaster assessment and planning can enable our cities to recoil or spring back into shape after any tragedy.

With the same concept in mind, this paper is based on how to make **disaster resilient and crime free cities**. The cities are to be made **Smart** as well as **compact**, but there can be no smart city if it is not a **Safe City**.

Globally, 80 per cent of the largest cities are vulnerable to severe impacts from earthquakes, 60 per cent are at risk from storm surges and tsunamis, and all face new impacts caused by climate change. With 50% of the world's population already in cities, and substantial urban population growth projected over the coming decades, there is an urgent need for new tools and approaches that strengthen local administrations and citizens to better

protect human, economic, and natural assets of our towns and cities.

UN-Habitat's City Resilience Profiling Programme:

The local governments and the international community have been using a common methodology to build resilience. Ten essentials were introduced in the UN-Habitat's City Resilience Profiling Programme to upgrade the framework for the quantitative assessment and profiling for city resilience. These essentials have been amplified to be more rigorous and objective.

Essential 1: Build Social Cohesion: Formulate a cohesive society that is organized and coordinates to understand and reduce disaster risk. Local alliances should be built by the citizen groups and civil society to ensure the role of all the departments in disaster risk reduction and preparedness.

Budget for Disaster Management: A separate budget should be assigned for disaster risk reduction and incentives should be provided to the low-income families to invest in the schemes to reduce the risks the city faces.

Risk Assessments: A local database should be maintained up-to-date on hazards, vulnerabilities and risk assessments. This information can be used for urban development plans as well as the plans for the city's resilience. The Public should be fully aware of all this information.

Safe Infrastructure: The city should invest in building and maintaining critical infrastructure that reduces risk. Flood drainage can be an example of this as it can be adjusted where there is a need to cope with the climatic change.

Schools & Hospitals: The safety of all the schools and health facilities should be assessed and upgraded as necessary.

Improve Living Conditions: Risk Compliant building regulations and land use planning principles should be applied and enforced for the safety of the city. Safe land for the low-income citizens should be identified and used to upgrade informal settlements.

Create Awareness: Education programmes and training on disaster risk reduction should be organized in the schools and local communities to promote awareness among the people.

Risk Reduction Practices: The natural ecosystem of a place should be protected to mitigate floods, storm surges and other hazards. The city adapts with the changing climate by implementing good risk reduction practices.

Warning Systems: Early warning systems and emergency management capacities should be installed in the city and regular public preparedness drills must be held.

Rebuilding After Disaster: The needs of the survivors after any disaster must be placed at the centre of reconstruction. Rebuilding homes and livelihoods should be done while supporting them and their community organizations to design and help implement responses.

The success of a safe city programme depends vastly on the partnership of local governments and other stakeholders and hence a systematic approach should be developed and implemented by the local authorities to make a city safe. Some of the steps to a systematic approach are discussed below:

- Potential local partners who can help minimize insecurity should be identified and mobilized.
- Public leaders should create safety coalition/partnerships in order to make the citizens aware.
- The safety and security issues on the neighborhood and city level must be assessed, measured and understood properly.
- Local crime prevention, urban safety strategy as well as a detailed plan of action must be developed.
- The strategy and action must be implemented such that it improves social cohesions and community engagement in disaster and crime prevention.
- The various departments and institutions of the local government, criminal justice system and civil society must incorporate safety as a cross-cutting dimension.

As per the census 2011, there are 7936 towns, besides 640 districts and 6,41,000 villages out of which only 1233 cities and towns have approved development plans and preparation of plans for another 700 is in progress. Besides large projects like SEZ, industrial zones, IT parks, high tech cities, sports cities, health cities, knowledge cities and integrated townships are being implemented under PPP mode.

II. SAFETY AS A FULCRUM OF CITY GROWTH

Unlike flora and fauna, man came up with cities and towns according to its need or political factors. With the course of time, these towns or cities became more intelligent with their augmenting ability to connect and develop, by installing street lights, traffic signals, sensory devices and growing communication facilities. In one way or the other, this emerging urban environment got itself synced with government policies.

The increasing urban population and rapid urbanization is leading to various challenges relating to safety of people and ease of doing business. This overcrowding in urban areas will create problems of crime, health, more risk during any disaster and infrastructure.

Most of today's local municipalities are becoming smarter and advance, where they exploit structural and technological capabilities for works relating from need of parking to water treatment facilities. So, with these changing times a concept of smart cities was introduced considering numerous sectors in a town which will come together through operational technological system and thus achieving sustainable goals.

Dealing with these problems a "safe city" initiative can deliver many purposes of smart city investments. For example, say with a smart city system we can connect with the public transportation system within a city and during any road accident or a mishap, the immediate message could be delivered to the local bodies and could reach the place, where mishap took place, in short time. Also these smart city solutions will identify the prime-crime locations in a city with connectivity to street lights and CCTV cameras so that if in any case a mishap takes place, police can reach the location as early as possible or if in case LED bulbs or the camera gets damaged, the concerned authority can immediately get a message and can send a team for the repair. Smart solutions like these for a safe city will deliver good results and people will have more confidence in local administration and thus, will go hand in hand with the administration by contributing more in the safety of the city. So the information workflow can be directly linked to increased safety. By these smart solutions data can be shared across departments such as police or local administrations.

All the public utility facilities should come together into one such easy and **Smart Intelligent Framework** which will be compiled up with appropriate privacy regulations. Using this intelligent framework, people can participate in these safe city initiatives by giving as much useful information to government from their nearby surroundings. Local administration can also use this framework for the awareness of various initiatives they take for public safety and health. Also in this intelligent framework, the data collected from smart-phones locations and movement that can help local bodies in managing the traffic problems at various junctions in a city. Through smartphones, people can send images, data and even sensory readings to authorities during police emergencies. Efficiencies can be gained through these smart solutions of central monitoring and management systems in a city and could help identify the potential issues at a glance making it easier to give solution faster to the problems faced, which reduces expense and reducing the risk of re-occurrence.

But will this newfound control be used to its fullest potential? Yes, it's expensive to initiate this multi-connected system and immediate technological responses, so government and the local bodies should take the advantage of the investments made and make cities not only smarter, but safer as well.

Now, as Jalandhar being selected as one of the smart city under Developing Smart Cities Initiative by The Government Of India, we will look forward to an approach of Safer Jalandhar with considering major factors such as prevention of crime, the building of urban safety with both structural and environmental factors and thus developing social cohesion for sustainable urban planning and management.

III. JALANDHAR

21st Century urbanization enables digital platforms that support the creation of information and knowledge networks. These networks make aggregation of information and data possible, not only for the purpose of data analysis but also to enhance understanding of how cities function (e.g., resource consumption, service delivery, mobility patterns, etc.) as well as help inform policy and decision-making processes. Safe City approach requires a combination of smart efforts to improve inhabitants' quality of life, promote economic growth, and protect the environment from degradation. Key systems of safe and sustainable cities include: smart energy, smart buildings, smart transportation, smart water, smart waste, smart physical safety and security, smart health care, and smart education.

As Jalandhar being in center of Punjab, is also known for its sports goods throughout the world, sports materials manufactured in Jalandhar are exported to the countries throughout the world. It is also known as educational hub of northern India as three main universities are in its vicinity (Punjab Technical University, DAV University and Lovely Professional University) and number of renowned colleges and schools. Jalandhar also has the distinction of having highest number of hospitals and maternity home in Punjab. Jalandhar is also famous for its book publication market in Northern India (MBD Publications, Evergreen Publications and many more).

As large industries and big educational institutes are present in its vicinity, large number of people move from one place to another, timing of their movement cannot be judged as late office hours often make the people leave for homes at odd hours

According to a recent McKinsey report, India's Urban Awakening, India needs to build 20 - 30 smart cities in the next 10 years. Currently the plans for the smart cities have been divided into three rounds, the first round with 20 cities, second with 13 and third round with 29 cities. An article in the Financial Express unveils the plans of the new incoming government in India on 'smart cities'.

With rapid urbanization and huge crowds moving to the city, Jalandhar has been facing numerous problems relating to the safety of the city. These threats pose great threat to the safety of the residents of the city. Some of these threats have been shown in the figure below. We will be discussing the counter measures to all these threats in this paper.

The Smart Intelligent Framework is important in what makes a city smart. As already explained it is a system with which the city unifies separate departments, facilities and processes to achieve greater efficiency and increased effectiveness through active participation of the citizens and the officials.

This smart intelligent framework in action would integrate police response and reporting of the problems faced by the public in various departments such as transportation, urban planning, public safety and more. Using this intelligent approach, city officials, first responders and citizens will benefit from increased information sharing and proactive situation awareness.

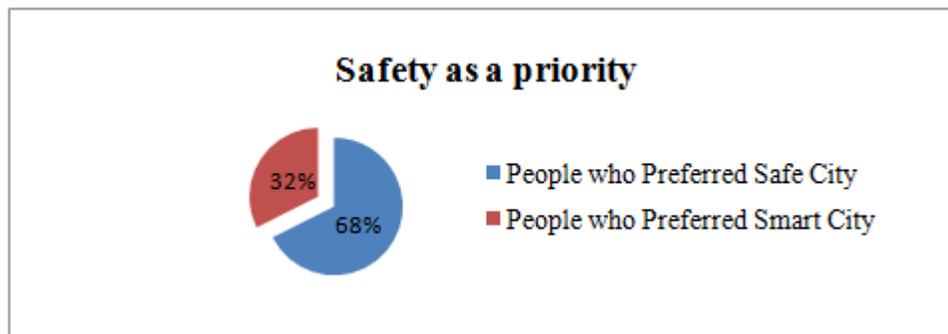
Effective security networks exist in many cities, but operate independently. During emergency situations, this staggered information provides very little help to the first responders, officials and others to assess and react appropriately. That's why today's sprawling, bustling cities call for a relatively new concept in surveillance:



IV. RESIDENT’S PERSPECTIVE

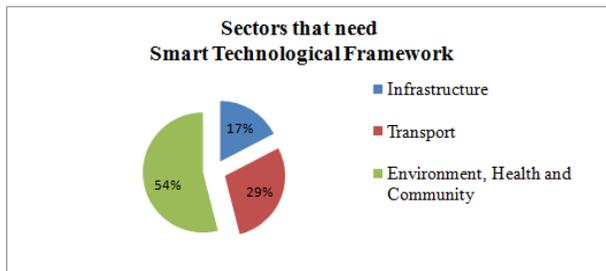
A questionnaire survey was done in DAV University where 1000 students and faculty members, who reside in Jalandhar, participated by filling up a questionnaire which gave us a relevant data that shows the following

Safety as a priority: 68% audience primarily marked making Jalandhar safe over being actually smart. They gave priority to their health, lives, property and assets being getting safe first and focused on real time quick service operations to be carried by local authorities.



Problems faced and the Solutions that can help the Cause: In the questionnaire 3 basic problematic parameters were given as Infrastructure, Transport and Environment, Health & Community were given in which people didn’t feel safe in Jalandhar. Out of these major

concerns why people didn’t feel safe was Environment, health and Community which affected their lives followed by Transport issues that lead to accidents and lastly Infrastructure of residential building or industrial or public buildings.



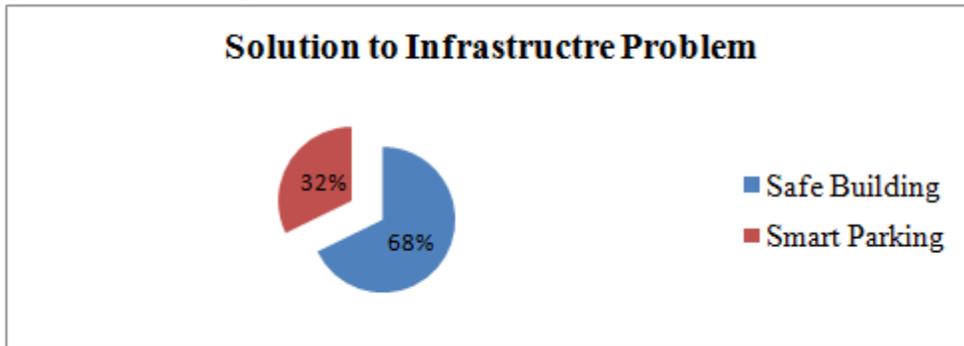
Infrastructure: A safe infrastructure integrates the different physical and structural systems present in a building in such a way to ensure that all the different systems in a building are constructed according to the defined codes and for a suitable period of time added in an optimized and efficient manner. This integration should be typically done in a reliable, cost effective, and sustainable manner with a goal to provide safety to the people residing in it or working in it. Also the

infrastructure of the public buildings, monuments and places like parking adds a lot to the safety in a city. About 17 % of the people feel unsafe because of this factor. Some buildings in Jalandhar have been constructed along while ago and needs maintenance. Parking facilities at various major junctions is required.

Solution to these Infrastructure Problems:

Safe Buildings: The structure design should be safe and should be able to carry the load according to public or private building as per design code. Monuments or architectural building which are attractions for tourists should be maintained properly

Smart Parking: Chaos of public vehicles at prime location creates a lot of nuisance and sometimes leads to accidents. So, smart multi-level parking facilities will help manage vehicles in crowded place thus leading to proper management of the area.



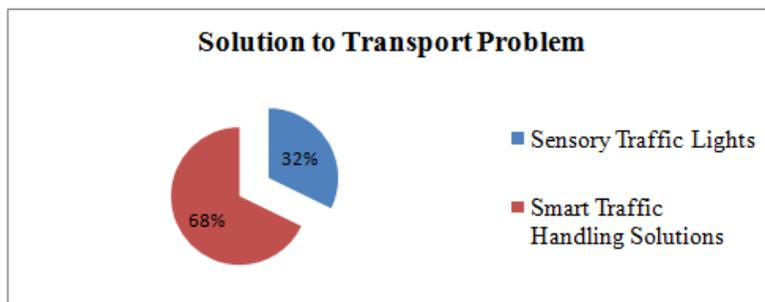
Transport: About 29% of people think that transportation plays a crucial role in make a city safe as well as smart. This problem is due to slow infrastructure growth of our roads and the highways as compared to growth in number of vehicles in the city. Also, traffic complications and accidents also occur because at some chownks such as lambha-pind chownk, which is a junction of city connecting to district Hosiarpur, traffic lights haven't been installed. At other places sign boards and highway lights haven't been maintained.

manage the traffic at major junctions such as PAP chownk, Pathankot Bypass, Kapurthala chownk etc. With the help of sensory traffic lights system, the system will respond to the density of traffic moving from one side to other.

Solutions to these Transport Issues

Sensory Traffic Lights: 32% people think that introducing sensory traffic light system would help

Smart Traffic Handling Solutions: 68% marked that local bodies need to develop smart traffic handling solutions to reduce traffic and accidental issues. Giving more importance to public transportation would help a dual cause, i.e. one it would decrease the pollution problem and another is would reduce the traffic on roads. Also, if introduced Bus Rapid Transit System (BRTS) will help a greater cause.



Environment, Health and Community:

54% people think that health, environment and community are the factors that need maximum attention as they are worried about their lives, belongings. Social Cohesion plays an important factor here.

Solution to these Environment, Health and Community

Introducing Health Safety Codes: With the increase in urban population people are migrating from near-by village to towns and as the problem of housing comes they have to reside either on foot-paths or public places which creates more health hazards in the cities. During various festivals crackers are burnt which in thus causes environmental pollution. Manufacturing and selling of crackers should be banned. The areas where problem of sewage water is there should be fixed as soon as it creates water-borne disease. Fumes which kill dengue and malaria should be done at a proper time. People would love to live at a place which is cleaner, so an interface must be developed where people could send images to the local bodies where garbage dumps are in open places.

Tackling Crime by Technology: 72% people voted for this as they want their belongings to be safe. The safe city project can't be complete without tackling crime and this can be done by use of advance technology which will help both in improving traffic management and monitoring hot spot areas of crime in city also for disaster management support and it will also help police in maintaining law and order situation in city. Technological solutions will help make public spaces accessible to women. CCTV cameras, 24*7 control room with a short dial number and digital street lights which can change brightness as per the area. Aerial surveillance through UAV's and helicopters should be promoted.

V. CONCLUSION

Jalandhar, situated at the heart of Punjab has much to gain from the current scenario in view of the recent schemes launched by the government to build smart cities in India. In our paper, we have established that a city cannot be

smart if it is not safe. So, to build a city which is smart as well as safe, the Smart Intelligent Frameworks need to be developed and installed in the cities so as to make the various departments, officials and the public work hand in hand to cope up with the emergency scenarios and be aware of any future threats.

The advantage of living in the world's largest democracy is that the government understands and values the public opinion. As seen in the Smart City Initiative, for the first time in the world, investments in urban development have been made based on competition-based selection of cities. Hence, it is understood that to solve the public's problem, all the departments and facilities have to work with the public to identify the problems and its counter-measures.

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