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**Solid Waste Management in Katra, J&K: a Pilgrimage Destination**

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**Dr. Saurabh (Assistant Professor, Faculty of Management, Shri Mata Vaishno Devi University)**

**Divya Singh Jamwal, Corresponding Author, (Research Scholar, Faculty of Management, Shri  
Mata Vaishno Devi University)**

**ABSTRACT**

*Solid Waste Management is a worldwide challenge because of inadequacy of the resources and availability of basic services for managing waste. For Katra (J&K), the issue of Solid Waste Management is very crucial as it serves as a base camp for the pilgrims visiting the Holy Shrine of Shri Mata Vaishno Devi. According to census, 2011, the population of the city is 9,008, and according to the official website of Shri Mata Vaishno Devi Shrine Board, around 104.95 Lakh of pilgrims has visited the holy Shrine in 2012. The city accounts for huge quantities of solid waste generation from its residents as well as floating population, commercial establishments, hotels, guesthouses, restaurants, dhabas, souvenir shops etc. Hideous heaps of waste dumped along roadside, polluted water resources, drains, false odor, wandering stray animals clearly alarms the lacunae of an inefficient waste management. The paper develops a case for inefficient solid waste management in Katra municipal area. Further it also discusses the possibilities of strategic framework towards the efficient and optimized solution of solid waste management in Katra municipal area.*

**Keywords: Solid Waste Management, Strategic framework, Integrated solid waste management.**

**INTRODUCTION**

The state of Jammu & Kashmir is one among the 29 states of India which is blessed with diverse and varied geographic, agro-climate and topographic features. Tourism is considered as a growth engine for the state as it holds a great potential of creating employment opportunities for various sections of the society. More than 70% population of J&K lives in rural area and is exclusively dependent on agriculture. There is an alarming need for creating new opportunities and tourism is one of the most vibrant industry for the state as there is immense potential for rural tourism, heritage tourism, religious tourism, eco-tourism, community based tourism, in the state. The larger set of tourist inflow within the state is accorded to the pilgrims such as Mata Vaishno Devi Shrine in Katra and Baba Amarnath Shrine in Pahalgam. The town of Katra itself has witnessed the inflow of 100 million pilgrims in the year 2011. The table below represents the number of tourist arrivals during the past six years in Amarnath Shrine and Mata Vaishno Devi Shrine of the state.

**Table 1:- Number of Tourists Arrivals in J&K**

Year	Amarnath Ji	Mata Vaishno Devi
2008	498075	6576000
2009	373419	8235064
2010	458046	8749000
2011	634000	10115232
2012	621000	10394000
2013	353969	9287871

**Source: J&K Economic Survey, 2013-14**

The rapid growth in floating population has lead towards the increase in the consumption patterns in the region with a focus more upon the rented stay arrangements (through hotels, lodges/*Dharamshalas*) and the food (packaged food, restaurants etc.). The mix of both residential and floating population which is increasing has resulted into alarming rise of waste quantities both in solid and liquid form in Katra). It is estimated in a recent study that on daily basis 17.4 tons of solid waste is generated in the town out of which 15% is burnt openly, 9% is thrown in Drains and *Nallah*, 29% is thrown openly on roads and streets and for remaining 47% other waste disposal methods are used (Sharma A, Raina A.K., 2014).

Katra over the period has witnessed a rapid change in terms of the technology and infrastructure. However, it has been found that the municipal administration established in 1935, which is responsible for running the basic services of managing the solid waste is still fighting hard for the adoption of the systematic process and upgraded technology. It is worth mentioning that the municipal committee shares its responsibility with Shri Mata Vaishno Devi Shrine Board (SMVDSB) in terms of collection and disposal of solid waste in the region. The SMVDS Board is responsible for the waste management in route 14kms track of the Shrine, rest of the waste management responsibility lies under the municipal committee of Katra. However, one can easily find that the solid waste collection and disposal system has certain gaps due to lack of the strategic coordination and implementation. This paper brings out the issues of solid waste management in Katra and proposes a framework of Integrated Solid Waste Management for the safe and effective handling of solid waste.

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**LITERATURE REVIEW**

There are many studies describing the issues related to the waste management particularly in developing countries due to population explosion, socioeconomic crisis, high inflation, prolonged recession, uncontrolled generation of municipal and industrial waste, lack of inter municipal coordination for sanitary education, lack of personnel management program, lack of funds, structural and institutional weakness of municipal solid waste management, lack of planning, scavenging by rodents and vectors, lost and damaged trash can lids, residents with no proper waste storage facilities, technical problems, shortage of disposal land, crude dumping etc. (Idris, A., et al., 2004; Zurbrugg, C., 2002; Anand, P.B., 1999; Baud, J., et al. 2001; Giusti, L. 2009; Jha, A.K., et al., 2011; Rahardyan, B., et al, 2004; Upadhyay, V.P., et al. 2005). The solution of these problems lies in strategic approach that reflect the larger systems through universal, integrating methodologies for example Integrated Solid Waste Management (ISWM). The holistic concept of ISWM attempts to strike a balance between the three proportions of waste management: environmental efficiency, social tolerability, and economic feasibility (Marshall R.E. and Farahbaksh K., 2013). The concept of ISWM follows the principle of equity, provides transparent and accountable mechanism to minimize the opportunities of corruption. Integrated solid waste management provides economical service delivery through cost effective waste management systems for long term sustainability (Zhu D, et al, 2008). ISWM is featured as a holistic approach for all the types of waste that maximizes the benefits of typical solid waste management and resource recovery from all the stages ranging from waste generation to its final disposal. It helps to promote greater resource use efficiency by facilitating life cycle view of products by integrating technical, managerial, financial response functions. It also accommodates the expectations of all the stakeholders and generates a sense of local ownership through a consultative approach. ISWM approach was successfully applied by UNEP and volunteers from various streams in the major cities of the world like in California (USA), Dublin, Pune, Bangalore, Raichur Municipal Council (India), Wuxi New District (China), Cape Town, Masero (Lesotho) (United Nations Environmental Program, 2009).

As there is no universal best system, the concept of ISWM, is also not the best one (Marshall R.E. and Farahbaksh K., 2013). It leads to reduction of ill effects resulting through waste on environment, if improvised regularly but fails to reach its total quality objective. The integrated solid waste management is a theoretical concept that provides a framework by which existing systems can be improved and new more intensive and effective systems can be designed. It optimizes the functions of various streams under waste management by channelizing them properly. It is a continuous

process of improvements and innovations which is required for sustainable solid waste management.

Through the literature it has been established that there have been various studies conducted on the solid waste management with reference to various pilgrimage cities including Katra (Sharma A. and Raina A.K., 2014; Ajai A.T. et al, 2007). However, these studies have not taken into account the strategic process mechanism in order to address the problem henceforth, the authors undertook this study and tried to work out a solution based framework in order to address the problem. In order to know the real status of solid waste management in the town of Katra a survey was conducted from 25<sup>th</sup> May, 2014 to 3<sup>rd</sup> July, 2014. Thereafter based upon the content analysis the reasons were identified to explore the possible solution for the issues concerned with solid waste in Katra.

#### **SOLID WASTE MANAGEMENT -a serious concern for Katra.**

The town of Katra is situated in the foothills of Trikuta (Sub-Himalayan Shivalik range), in district Reasi of Jammu and Kashmir. The town offers abundant facilities for pilgrims in terms of hotels, restaurants, dhabas, guest houses, souvenir shops, tour and travel packages etc. In order to facilitate the public utility services, Katra Municipal Committee was established in 1935. Various services rendered by the municipal committee are registration of birth and death, management and registration of mules and pithoos that are rendering services on the Shri Mata Vaishno Devi yatra track, registration of commercial establishments, and solid waste management. As the residential and floating population is increasing day by day it has resulted in enormous increase in economic activity that is leading towards alarming and unplanned growth of solid waste in the town. Under the survey conducted from 25<sup>th</sup> May 3<sup>rd</sup> July'2014 various locations and areas of importance were covered such as Banganga Road, Katra Market, Darshan Dyodi to Reasi Road, Bustand to Katra-Reasi Road, and the yatra track to Shri Mata Vaishno Devi Bhawan. Along with the survey a photograph journal was created for all the locations in order to capture the severity of issues related to solid waste management. Some of the evidences of the photographic journal are as below.

During survey it was observed that the local residents dump the household waste mainly in drains and in the street corners whereas the shopkeepers keep on stacking the waste in front of their outlets which is collected once in a day by the municipal committee. As evident with the photographs below that how these heaps of wastage create an unpleasant view of the area, along with the unhygienic circumstances that it creates. Recyclables like cardboards, empty plastic bottles, cans etc. are collected by the rag pickers and sold out to scrap dealers in the town. On the way from

Katra bus stand to Asia Chowk, the situation went worst, one can easily witness jumble of wastage at every five meters on an average along the roadside.

**PHOTOGRAPHS OF VARIOUS LOCATIONS in KATRA**



**1. Banganga Road and Katra Market Area (1-4)****2. Katra Bus Stand- Asia Chowk (5-6)****3. Waste Disposal Site of Municipal Committee Katra. (Katra-Reasi Road)(7-8)**

According to the Municipal Solid Waste (Management and Handling) Rules 2000, it has been clearly directed to the municipal authorities that it is their duty to ensure sufficient waste storage services and cleaning of bins on regular basis, also the waste disposed should not be visible to public or exposed to the open environment to prevent scattering of waste. But according to the photographs above it is clear that majorly the waste is scattered on the road, with no storage facility, which makes it visible to all. The complete roadside is full of waste, roadside drains are filled with polythene bags and non-disposable materials. Further way down the dumping site of municipal solid waste was observed where nearly 40-50 mules and horses were feeding on it. One could witness odor coming out of decayed waste and dead animals. It was clear from the sight that the waste disposed is not segregated, there were enormous amount of polythene bags, broken glasses, footwear, clothes, bedding material, construction and demolition waste which was dumped down the slope of hill resulting in the possibility of leaching.

In order to have an account of situation the Shri Mata Vaishno Devi Track was also covered under the survey. Due to number of commercial establishments along the track which offer product and services to the pilgrims' one could often find food packages, wrappers, mule dung, emptied plastic bottles, disposables, etc. littering around. However due to the efficient deployment of the Safai Karamcharis (SKCs) (658 SKC working 8 hrs shift a day) the tracks are mostly kept clean. However one could easily find ignorance of commercial stakeholders in managing the waste themselves. There are about 300 dustbins on the track that are emptied on daily basis.

It was also observed that the SKCs were handling the garbage without proper gloves and safety measures were taken by them while handling it. The collected garbage is shifted to Reasi road where it is dumped on the slope of hill since June 2014. This dumping site of Shrine Board is almost 100 meters away from dumping site of municipal committee, Katra. The slope where the Shrine Board and Municipal committee Katra are dumping waste it leads to the holy water stream of Banganga. During rain the disposed waste get drained down in the water and pollutes it which is one of the main source of drinking water for many inhabitants in region specifically downstream.

**PHOTOGRAPHS FROM SHRI MATA VAISHNO DEVI SHRINE**

VIY,



1. *Safai-karamcharis loading waste into the vehicles for transportation (9)*
2. *Waste Disposal Site of Shri Mata Vaishno Devi Shrine (10)*
3. *Draining waste from hill slope alongside Darshan Dyodi (11)*

It was observed that the authorities have somehow not considered the disposal of waste as a priority. Both Municipal Committee and Shrine Board are responsible for polluting the Banganga and the downhill region along Darshan Dyodi with their unplanned non-strategic, dumping and landfills. According to Municipal Solid Waste (Management and Handling) Rules 2000 a landfill site is supposed to be located far away from residential area.



A special attention is drawn towards an ironic scene where the hoarding of municipal committee Katra displays a quote '*Eye on our Environment- say no to plastic bag*', and stray animals were seen feeding the garbage scattered under it. It is worth mentioning that the site is at the bus station, near Niharika Bhawan (main tourist centre) of Shri Mata Vaishno Devi Shrine and Police Station, Katra.

#### **Status of Solid Waste Management in Katra**

On the basis of the field survey and informal interviews with various stakeholders of the waste management system following facts are observed:

- **Waste Generation:** The estimated total waste generation in the area under municipal limits is 17.4 tons/day (Sharma A. and Raina A.K., 2014). Along the track approximately 60 quintals of mule dung is collected on daily basis, on an average 96 bags of plastic bottles are and 28

quintals of remaining waste is collected on daily basis that includes disposables, plastic bags, paper, used clothes, coconut peels, and even chunris devoted to Goddess.

- **Primary Storage:** The Municipal Committee has not provided any storage facilities in its area. There is an acute shortage of even dustbins in the town. Source separation of waste is neither promoted nor practiced. The waste generated is dumped openly on roads and streets. Whereas in case of Shrine Board there are about 300 dustbins along the track that are emptied 3 times a day on daily basis.
- **Primary Collection:** In Katra, house to house collection system is not available. Even this practice is not evident in the commercial establishments like hotels and restaurants etc. The waste generated is dumped majorly on street corners and roads. There are no fixed collection points even appropriate number of dustbins are not provided in the town.
- **Secondary Collection and Transportation:** The transfer stations are absolutely absent. Waste is collected in tippers and hand carts etc. and transported to the landfill site on almost daily basis. The vehicles in which waste is transported are open thus it goes on littering the waste all over the road when it is over filled. Workers transfer the waste from ground to the vehicle without gloves and other safe equipment.
- **Recycling Activity:** Recycling activities are carried out by Shrine Board in their premises as 96 bags of plastic bottles are collected and recycled on daily basis, even the 60 quintals of mule dung collected per day is processed to produce biogas which is used in *Gulshan Langer* (a free meal distribution Centre, for the devotees). The Shrine board has created a facility for but in case of the area under municipal committee all the recycling activities are run by the local scrap dealers with the services of some rag pickers and even the housekeeping staff of some hotels and restaurants. Rag pickers recover the plastic bottles, cans and cardboards while wandering all day along the road in the crowded areas, and in case of hotels the lower level staff recovers plastic bottles, cans etc. for exchange.
- **Treatment and Disposal:** In Katra, out of total waste generated on daily basis, 15% is burnt openly, 9% is thrown in Drains and *Nallah*, 29% is thrown openly on roads and streets and for remaining 47% other waste disposal methods are used (Sharma A, Raina A.K., 2014). Although Shrine Board extracts the recyclables from the total waste generated and the remaining is dumped in *Banganaga Nallah* on Katra –Reasi road just like municipal committee Katra. Both the organizations dump their waste in *Banganaga Nallah* situated

downhill on the way to Reasi road without any protection lining and soil cover. No scientific and engineering methods are practiced for the treatment of solid waste generated.

One can conclude that the solid waste management in Katra is in a dilapidated condition. There is disconnect between the municipal authorities, Shrine Board local residents, Tourist and commercial establishment owner. Due to the hill terrain the challenges for Katra region are manifold. Due to increasing pressure of the increasing residential population and the pilgrims there is an urgent requirement for strategic process approach in order to deal with the situation.

### **A Strategic Framework of Solid Waste Management for Katra**

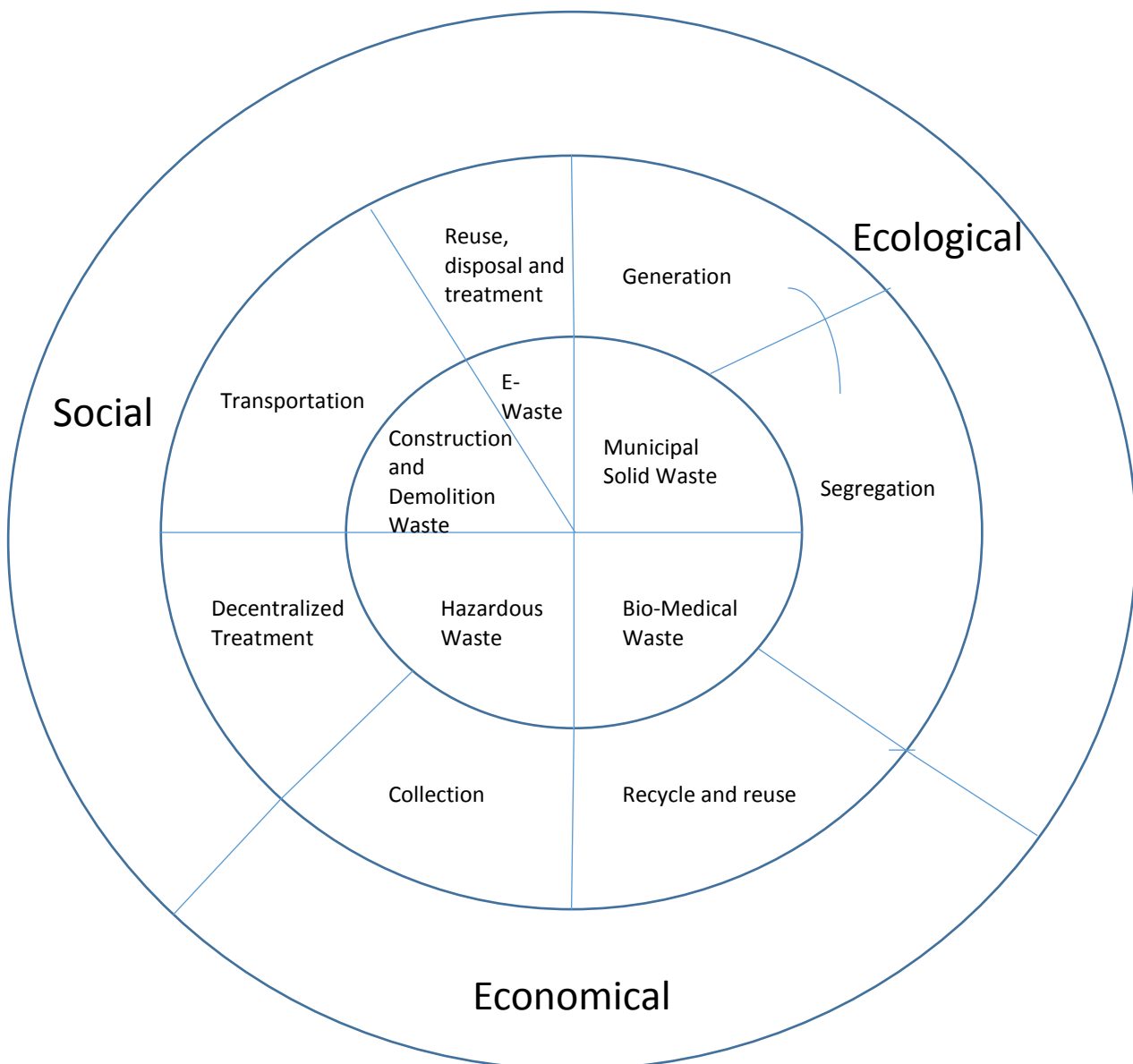
Based upon the literature review and discussions with various experts the authors would like to propose a framework for Integrated Solid Waste Management for Katra. The suggestion is based upon a thorough study of various SWM practices adopted by various cities and municipal corporations; the basic premise of suggestion is to view solid waste not as a problem but as a resource opportunity for eliminating the poverty and providing more employability opportunities to the people in Katra region. It involves strategic intervention of all the stakeholders in channelizing a problem into resource opportunity.

***According to (UNEP, 2009), "ISWM refers to a strategic initiative for the sustained management of solid waste through the use of a comprehensive integrated format generated through sustained preventive and consultative approach to the complementary use of a variety of practices to handle solid waste in safe and effective manner".***

In a general context waste means anything which is unwanted, lost its value or of no use for its user. But ISWM regards the waste as a potential source of income and in fact the only free source of income available for poor people of urban inhabitants (Klundert A. V. and Anschutz J., 2001). Because a products that fails to hold its value for the first user may have the potential to serve its second user as we all know that waste product of many factories are used as the basic raw materials for others for example waste of sugar factories (sugarcane fiber) is used as a main raw material for producing paper. In Katra there are eight scrap dealers with nearly hundreds of rag pickers under them are earning their livelihood from the waste generated in forms of plastic, cardboards, used notebooks, metal etc. But due to negative notion associated with waste it is generally mismanaged and potential source recovery is not initiated by prominent authorities. An efficient waste management is always required as it is a very sensitive service and inadequacy of such services results in degradation of environment and public health as well. Often the failure in rendering such services are credited with lack of resources (mainly financial resource) and then technology but

actually the basic management skills and expertise required are completely ignored. ISWM discusses the managerial implications in solving major problems in waste management. The main problem doesn't lie with unavailability of economic resources but the behavior, attitudes and habits of almost all the stakeholders of waste management towards waste. The concept of Integrated Solid Waste Management (ISWM) was developed to reveal the reality of failures in waste management, as it advocates that success in managing the waste cannot be achieved without integration of all the stakeholders, management of all the elements, and taking into consideration the aspects of waste management. ISWM holds the potential of executing ecologically suitable, economically feasible and socially acceptable solutions.

### ***THE CONCEPT OF INTEGRATED SOLID WASTE MANAGEMENT***



***Source: Adapted from United National Environmental Program, 2009***

The concept of ISWM (discussed in a training manual of UNEP, 2009) provides a comprehensive approach towards the various types of solid waste like e-waste, bio-medical waste, hazardous waste, construction and demolition waste and municipal solid waste. All the elements of solid waste management starting from waste generation to disposal and treatment are effectively management while taking into consideration their effect on ecology, society and economy as a whole. The desired order of approaches under solid waste management is:

1. **Reduction at source:** by incorporating effective waste management at every stage of consumption from manufacturing, purchase and consumption of materials to reduce the amount of waste generated.
2. **Ecologically suitable reuse and recycling:** with the main aim of preserving natural resources and energy through logical segregation, collection and reprocessing.

The concept of ISWM needs to be supported with the flexibilities in systems which facilitate the social, ecological and economic environment. The various features of ISWM include the following:

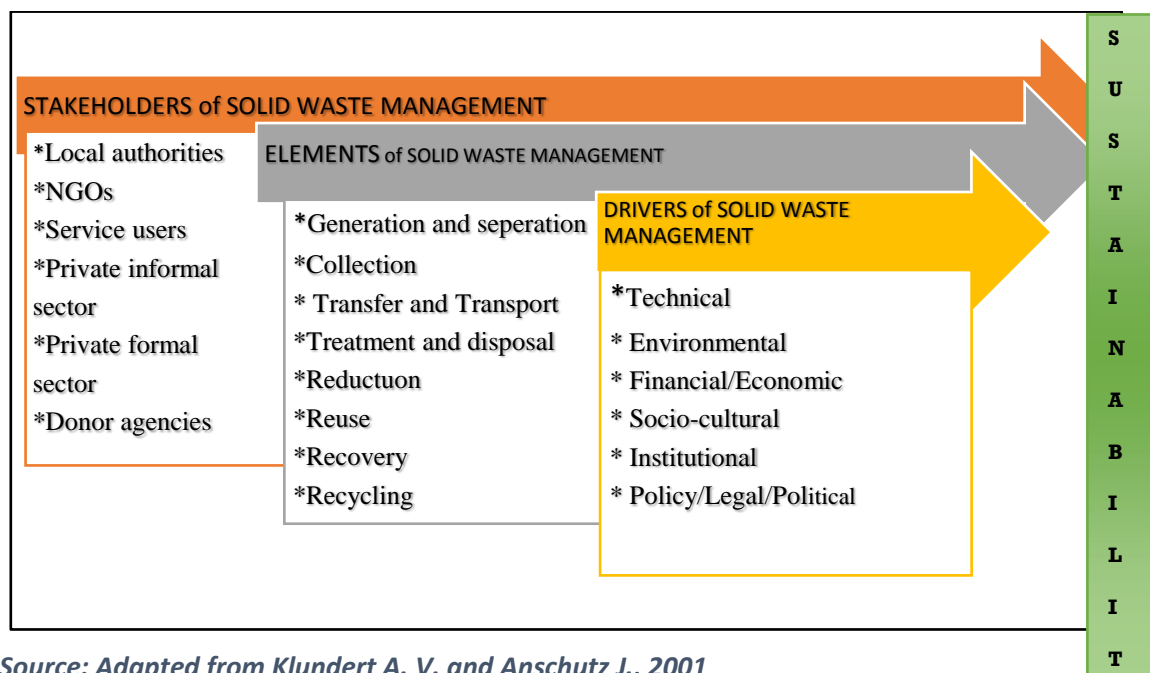
1. It provides a holistic approach for all waste streams by optimizing the synergic effects of waste collection, recycling, treatment and disposal.
2. It maximizes the resource recovery at each stage from generation to disposal.
3. It takes into consideration the interests of all stakeholders from waste generators to service providers.
4. It promotes greater resource efficiency by simplifying life cycle view of products and materials.
5. It integrates various technical and non-technical functions of waste management like, managerial, financial, technical etc.
6. It infuses a sense of responsibility and participation of stakeholders through a consultative approach.

Integrated solid waste management provides a frame of reference for crafting, running and implementing a new waste management system while optimizing the existing one. The concept of ISWM is based on the pooled analysis of all the aspects and elements of waste management system as all of them are interrelated and any change in one effects another. As it is clear from the following figure that how the paradigm of ISWM attempts to strike a balance between the three proportions

of waste management: stakeholders, waste management elements and aspects of waste management system.

The framework of ISWM provides majorly six types of stakeholders from the society, eight elements and six broad drivers of efficient solid waste management, with the contribution of which a new framework of effective solid waste management can be prepared and the former can be reviewed and optimized. For the successful designing and implementation of framework of ISWM it is necessary to take into consideration each and every stakeholder, element and drivers of solid waste management.

**Fig 2: FRAMEWORK OF INTEGRATED SOLID WASTE MANAGEMENT**



*Source: Adapted from Klundert A. V. and Anschutz J., 2001*

As it is clear from the figure above that the framework of ISWM comprises of three dimensions of waste management i.e. stakeholders, elements and aspects. Each of them is discussed in reference to Katra region in brief as under:

### **1. Stakeholders in Integrated Solid Waste Management**

Any organization or a person who has several roles, interests or stake in solid waste management is its stakeholder. The households, government officials, rag-pickers, scrap dealers, consumers of recyclable products, NGOs etc. are some of the examples of stakeholders of a locality (Marshall R.E. and Farahbaksh K., 2013). But each locality has a different set of stakeholders in it (Klundert A. V. and Anschutz J., 2001). In Katra the various stakeholders are its residents, pilgrims, rag-pickers, scrap

dealers, staff members of municipal committee Katra, hoteliers, commercial and non-commercial establishment owners, employees and management Shri Mata Vaishno Devi Shrine Board etc.

## **2. *Elements of Integrated Solid Waste Management***

Elements of solid waste management covers all the possible steps undertaken right from waste generation to its final disposal, as solid waste management is a process that comprises a logical sequence of all its elements. The traditional set of its elements consists of waste generation, collection, transportation and disposal but now a day they are accompanied with waste management strategies like 3R approach i.e. Reuse, Reduce and Recycle. In case of Katra elements of waste management are very few like waste generation, collection, transportation and disposal. The 3R approach is missing in municipal limits of Katra however; Shrine Board and scrap dealers are practicing some recycling activities in their area which need to be enhanced further.

## **3. *Aspects of Solid Waste Management***

There are majorly six aspects of ISWM to assess the existing system and to plan and develop a new one such as:

- a) Environmental aspects focus on the effects of solid waste management on land, water and air which is being overlooked in Katra.
- b) Political/legal aspects draw the limits of waste management system by setting goals, determining the roles of various stakeholders and reviewing the existing regulatory framework. The municipal manual (Municipal Solid Waste Management and Handling Rules, 2010) are not implemented. The political activism for the concerned is absent.
- c) Institutional aspects relate to the political and social structures which control and implement waste management including the distribution of functions and responsibilities, designing the organizational structures, procedures and methods. One can found that there is an informal interaction for disposal of waste amongst the stakeholders, but at large there is no evident political and social structure apart from municipal committee (which does not have an appointed head and lack manpower).
- d) Socio-cultural aspects accounts for the influence of culture on waste generation and management in the household and in commercial establishments, involvement of community in waste management and the social conditions of waste workers. In Katra, there is a requirement of institutional interaction for community waste management.

- e) Financial-economic aspects belong to budgeting and cost accounting within the waste management system in relation to the regional, national and international economy. Katra is a growing economy however the solid waste management is the most neglected area.
- f) Technical and performance aspects concern the evident practical implementation and maintenance of equipment and facilities in use or planned, their designs, compatibility and their effect on the cleanliness in the locality. The town of Katra and municipality lacks a planned approach and is in deficit of modern technology and tools.

The ISWM framework can be developed with the help of strategic planning process that is participative in nature and requires flexibility in design and execution of waste management strategies. The strategic planning process is continuous in nature initiates with analysis of internal and external environment of an organization. It is goal oriented approach, and if the results are not achieved up to the mark the whole process is repeated until desired objectives are not realized. In case of Katra, the severe problem of solid waste can be solved successfully with the implementation of framework of Integrated Solid Waste Management (ISWM).

#### **CONCLUSION:**

The town of Katra is witnessing a paradigm of change in terms of social and economic activities due to its location and increase in the pilgrimage. The residential and floating population is influencing a change in lifestyle in consumption pattern and hence the generation of waste. The lack of coordination and the negligence of then stakeholders for the long term, ecological effect of solid waste may become detrimental for the pious environment of Trikuta Hills. The lack of integrated effect at all the three levels such as elements, drivers and aspects of solid waste may lead towards potential hazards of degradation social, ecological and economic environment of the town in long run. The Solid Waste Management (SWM) is largely based upon the change in attitude and thus behavior of all the stakeholders and result in the understanding. The basic aim of this paper was to create a ground for the solid waste management suggestively Integrated Solid Waste Management (ISWM), for the Katra town. The SMVDS Board along with the residents, shopkeepers, hotels and other commercial and non-commercial establishments need to come together for managing the basic elements, drivers and aspects of solid waste management. The study can create a platform for the analysis and understanding the various other factors and further defining the role of each stakeholder in managing the solid waste management. Some gap areas such as lack of initiative, limited exposure for 3R approach, technology intervention, skills and attitudes, financial modelling for innovative reuse and disposal as well as enhanced regressive development etc. have been identified in the primary survey. Further the researchers, policy makers and social activists can take

up the relevance for ISWM in Katra. SWM has various aspects that can be further elaborated; however they were beyond the scope of this paper. The suggested framework of ISWM has been successfully tested in various cities of India and abroad. It can be a right approach to start with for a small but significant step in direction of effective solid waste management and healthy and clean environment full of divinity.

## REFERENCES

1. **Aji A.T., Sobha V., Judy Emmanuel, Baijulal B. and Achuthan Nair G.(2007), 'Quantification, Characterization and Management of solid wastes at Sabarimala Pilgrimage centre', Kerala, IJEP, Vol. 27(7), pp. 585-589.**
2. **Baud, I., Grafakos, S., Hordijk, M. and Post, J. (2001), 'Quality of Life and Alliances in Solid Waste Management: Contribution to Urban Sustainable Development', Journal of Cities, Vol. 18, No.1, pp. 3-12.**
3. **Census of India, 2011. (Online)**
4. **Economic Survey (J&K) 2013-14, Government of India, Directorate of Economics and Statistics J&K.**
5. **Giusti, L. (2009), 'A Review of Waste Management Practices and their Impact on Human Health', Journal of Waste Management, Vol.29, pp. 2227-2239.**
6. **Idris, A., Inanc, B. and Hassan, M.N. (2004), 'Overview of Waste disposal and landfills/dumps in Asian countries', Journal of Master Cycles Management, Vol. 6, pp. 104-110.**
7. **Indian Tourism Statistics 2012, Government of India, Ministry of Tourism.**
8. **Jago-on, K. A. B., Bianet, Kaneko, S., Fujikura, R., Fujiwara, A., Imai, T., Matsumoto, T., Zhang, J., Tanikawa, H., Tanaka, K., Lee, B., Taniguchi, M., (2009), 'Urbanization and subsurface environmental Nos: An attempt at DPSIR model application in Asian cities', Journal of Science of the Total environment, pp. 3089-3104.**
9. **Jha, A.K., Singh A.K., Singh, G.P. and Gupta, P.K. (2011), 'Sustainable Municipal Solid Waste Management in Low Income Group Cities: A Review', Journal of Tropical Ecology, Vol. 52, No.1, pp. 123-131.**
10. **Klundert A. V. D. and Anschutz J. (2001), 'Integrated Sustainable Waste Management - the Concept, Tools for Decision-makers, Experiences from the Urban Waste Expertise Programme (1995-2001). Available at [http://www.rainfoundation.org/tools/downloads/tools\\_ISWMconcept.pdf](http://www.rainfoundation.org/tools/downloads/tools_ISWMconcept.pdf)**

11. *Marshall R. E. and Farahbaksh K. (2013), 'Systems approaches to integrated solid waste management in developing countries', Journal of Waste Management, Vol. 33, pp 988-1003.*
12. *Position Paper on Solid Waste Management Sector in India, Public Private Partnerships in India, (2009), Report of Department of Economic Affairs, Ministry of Finance, Govt. of India.*
13. *Rahardyan, B., Matsuto, T., Kakuta, Y. and Tanaka, N. (2004), 'Resident's concerns and attitudes towards Solid Waste Management facilities', Journal of Waste Management, Vol. 24, No.5, pp. 437-451.*
14. *Sharma A. and Raina A.K. (2014), 'Environmental Impacts of Tourism in Katra Town (J&K)', International Journal of Innovative Research in Science, Engineering and Technology, Vol. 3, Issue 6, June 2014.*
15. *Status Report on Municipal Solid Waste Management 2012, available at Ministry of Environment & Forest, accessed site on 24-02-2014*
16. *Twenty Year Perspective Plan for Sustainable Development of Tourism in Jammu & Kashmir, (2002), Government of India, Ministry of Tourism*
17. *United Nations of Environment Program (2009), 'Developing Integrated Solid Waste Management Plan, Training Manual, Volume 4.*
18. *Visvanathan, C. and Trankler, J, (2003), 'Municipal Solid Waste Management in Asia-A Comparative Analysis', Workshop on Sustainable Landfill Management, pp. 3-15, available at   
<http://www.swlf.ait.ac.th/data/Anna%20University%20National%20Workshop%20on%20Sustainable%20Landfill%20Manage/Chennai%20Workshop%20pdf/Municipal%20Solid%20Waste%20Management%20in%20Asia-A%20Comparative%20Ana.pdf>, accessed on 15-02-2014.*