Managing and Planning Water Services

LT. COL. ISLAM-UL-HAQ TI (M) R[1], SHAHID DUREZ [2]

1Managing Director, Water and Sanitation Agency, Liaquat Bagh Murree Road, Rawalpindi, Pakistan
islamhaq3@yahoo.com,

2 Social Organizer/Technical Staff Officer, Water and sanitation agency, Liaquat Bagh Murree Road, Rawalpindi, Pakistan
shahid_durez@yahoo.com

Astract: Water is source of life creation and survival of mankind on the earth, if managed effeciently in stipulated time and space dimentions. Ideal water utality must transform into a sustainable, efficient, vibrant, consumer's and environmental friendly entity with clear social and commercial objectives capable of delviring effective provisioning of water and sewerage services. Efficient and equitable water, wastewater and storm water management for the mega cities is becoming an increasingly complex task. When accelerating water scarcities and pollution in and around urban centers are superimposed on issues like continuing urbanization, lack of investment funds for constructing and maintaining water infrastructures, high public debts, inefficient resources allocation processes, inadequate management capacities, poor governance, inappropriate institutional frameworks and inadequate legal and regulatory regimes, water management in the mega cities poses a daunting task in the future. This paper will focus on water resources management in its totality in the mega city of Rawalpindi – Pakistan which includes situational analysis of each component of existing infrasturctures and then stratgizing its manageemnt, resources / assets , revenue generation, database upgradation and capacity building with the view to enhance its technical, social, economic, legal, institutional and environmental dimensions / out look.

Key words: Approaches, environment, financial sustainable, strategies, vibrant

INTRODUCTION

1. The success of any water business management hinges around the efficient delivery of the services quantatively and qualitatively with the highest level of consumer's satisfaction. The key elements which contributes towards the efficiency of the water and sanitation service deliveries are Shared vision, values and mission, Strategic planning, Human Resource Development, Program Development Management System, Organizational Culture, Governance, Legal/fiscal, compliance, monitoring and Evaluation/learning/Accountability

2. Water and Sanitation Agency (WASA) Rawalpindi -Pakistan was established under the Government of Punjab (Pakistan) Act in 1998. The main aim of the agency is to provide safe drinking water and sanitation services to 1.5million inhabitants of Rawalpindi city. Rawalpindi is the Pakistan's fourth largest city having population of 2.1Million. WASA Rawalpindi served population is 1.5million and its service covered area is 35 Sq km. Surface and ground water are the major water sources with approximate yield of 18 MGD and 22 MGD (Million gallon/day) respectively. Surface water is being treated at the source and further pumped to consumers through main, secondary and complex distribution net work. Ground water is being pumped out through tube wells

with installed chlorinators. On the average 40 gallons per capita per day water supply provisioning was being made to the consumers at the rate of $ 0.083 per cu meter.

3. The management comprises of 1100 individuals, both with technical and managerial skills having lowest levels of efficiency. The water contamination was about 46% and 56% at source and at consumer's end respectively. This high level of bacterial contamination was due to old rusty pipe lines which were laid in 1926. Moreover, distribution lines criss-cross the sewerage drains which is the main source of contamination. Over extraction of ground water lowered the water table from 70 to 450 feet which has increase the groundwater extraction cost exponentially. The revenue recovery was around 50% with huge arrears due to in-efficient financial management. Human resource development component was altogether missing which very badly affected the capacity building traits. Therefore, keeping in mind this in-efficient out look of the utility, an ambitious transformation process of water and sanitation agency of Rawalpindi was embarked in Febuarary, 2007 with new vision and strategies, purely based on ground realities/situational analysis,. Implementation of new vision and strategies has yielded at par excellence results.

METHODOLOGY:

4. SWOT analysis of major components namely institutional / management, water supply, sewerage and revenue generation was carried out. Therefore, a modus operandi was evolved which could steer transformation of water and sanitation agency Rawalpindi towards a vibrant, efficient, financially sustainable and consumers friendly entity.

Planning parameters and resources

5. The description of the service area showing water resources and distribution network is depicted in figure 1, below:

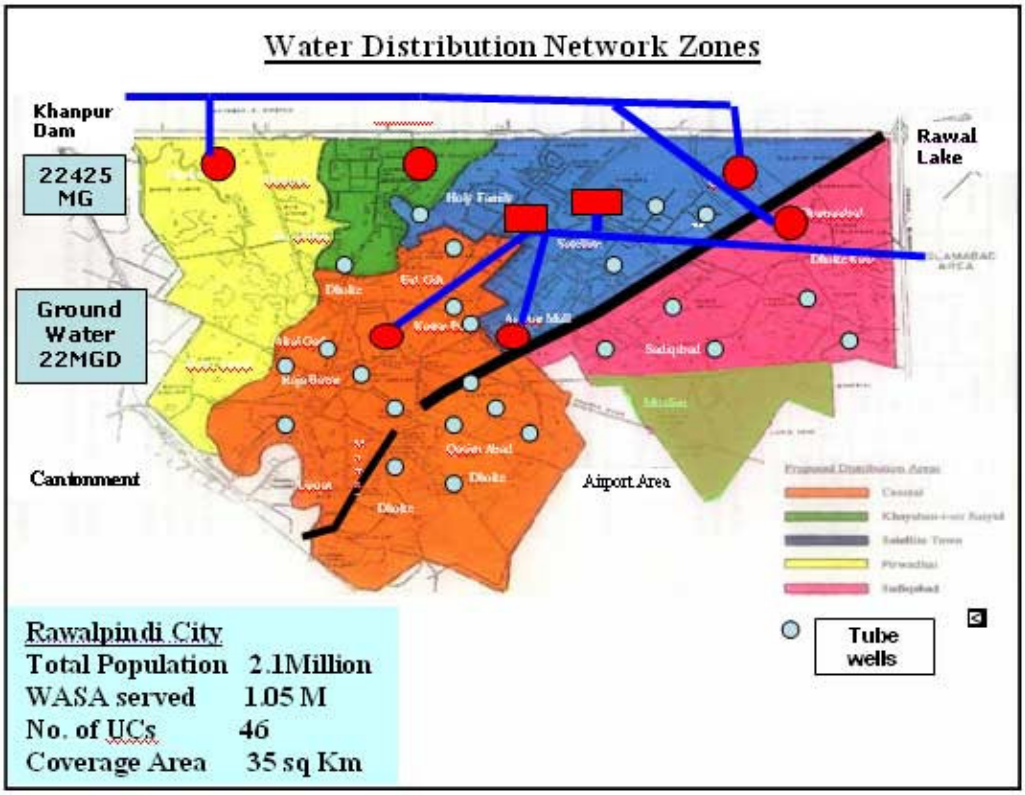


Figure 1: Water distribution network zone in the service area

Important Planning parameters guidelines:

5.1 Following guidelines and approaches were kept in mind while planning water services of Water and Sanitation Agency Rawalpindi.

1) Zoning of the service area for better water regulations
2) Creation of water districts for better service delivery and O&M
3) Establishment of district offices and complaint centers.
4) Bulk water metering at source and at nodal points to cater for un-acounted for water.
5) Commercial and domestic water metering for judicial use of water.
6) Water efficiency with emphases on re-use of wastewater.

Consumers Statistics

5.2 There are approximately 85,000 consumers which are mixed of domestic and commercial with various categories for revenue generation purposes. The details of consumers statistics

Table 5.2: Consumers statistics

Total Billed Consumers	
Domestic	77489
Commercial	7019
Total	84508
Total Paid Consumers	
Domestic	50112
Commercial	2813
Total	52925
Un-Paid Consumers	
Domestic	27377
Commercial	4206
Total	31583

Management of water services

6. More reliance is on ground water, which is not only costly, but also has lowered water table beyond acceptable limits with no planned aquifer recharge mechanism. This practice has exposed the upper aquifer, thus tremendous intrusion of surface bacterial contaminated water during deep aquifer extraction. Therefore to address such issues a new vision and strategies have been worked out to make water and sanitation agency Rawalpindi a viable water service entity both technically and financially.

7. The out line structure/approaches of an efficient water utility, as envisaged, is shown in figure-2,

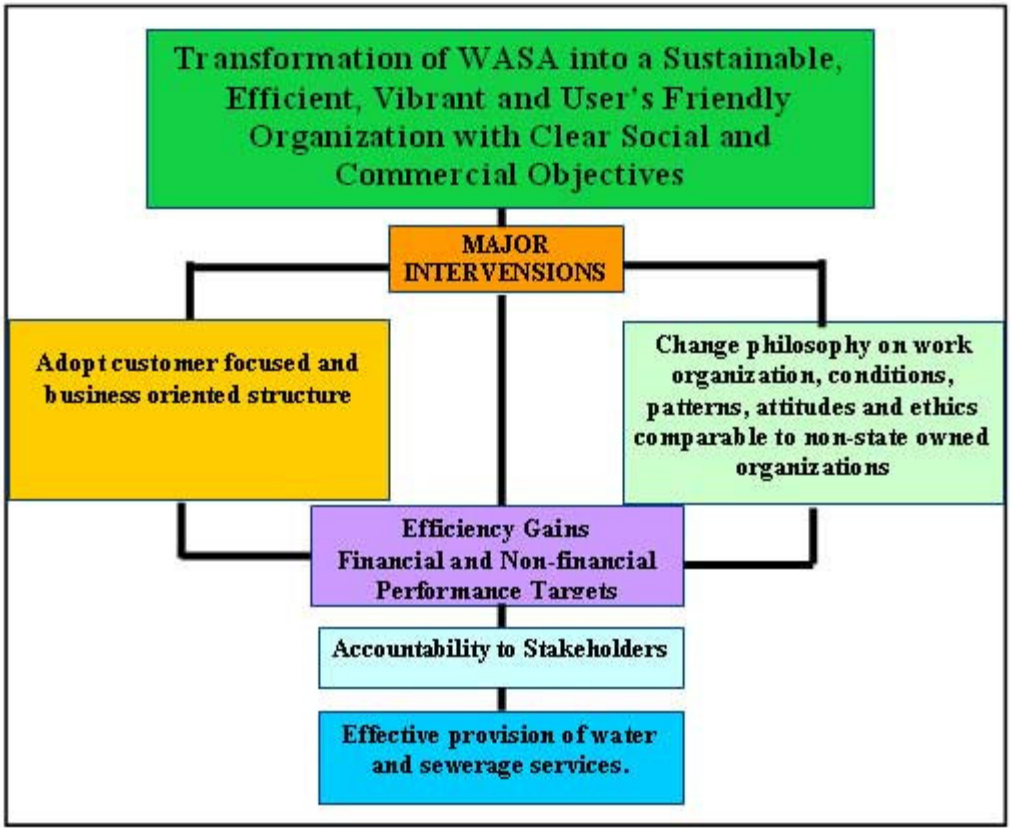


Figure-2: Outline Organogram of approaches for transformation

8. The following guiding parameters in chorological order were kept in mind while evolving new vision and strategies to improve the performance of the utility. See figure-3 below:

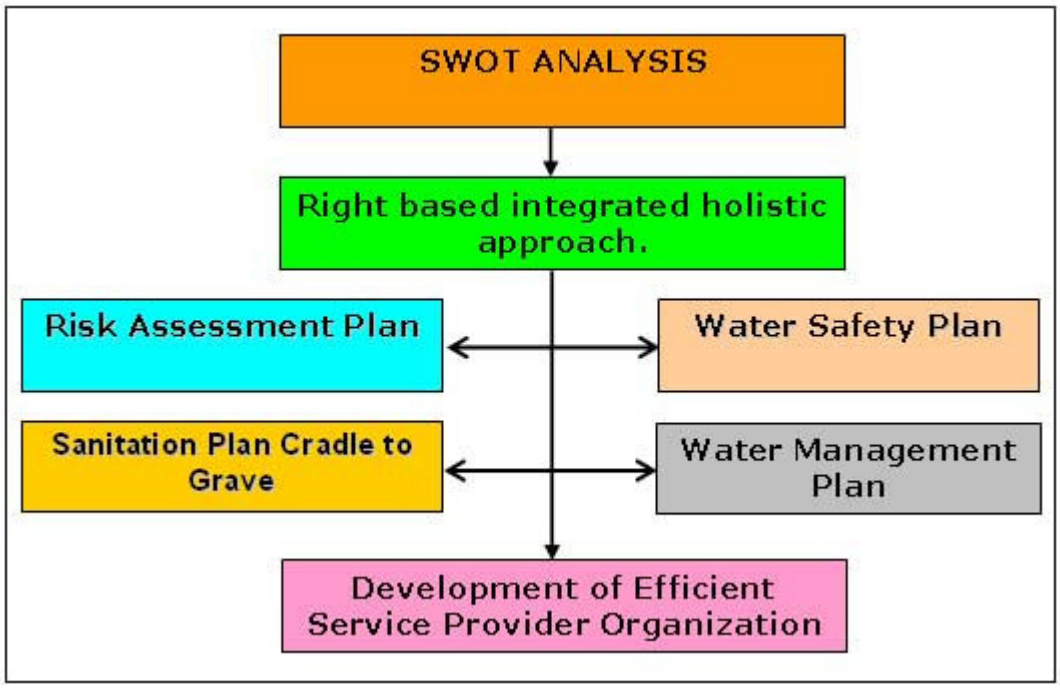


Figure-3: Guiding Parameters for efficiency enhancement

9. After SWOT/Situational analysis, following strategies have been evolved and implemented which has resulted substantial improvement in the creation of vibrant, efficient, financially self sustainable, consumers and environment friendly water business entity.

10. Prior to formulation of new strategies to address the inefficient components of the utility, it was noticed through the course of SWOT analysis that community participation is indispensable for making a business utility more viable. The figure-4 shown below explains the right based integrated approach:

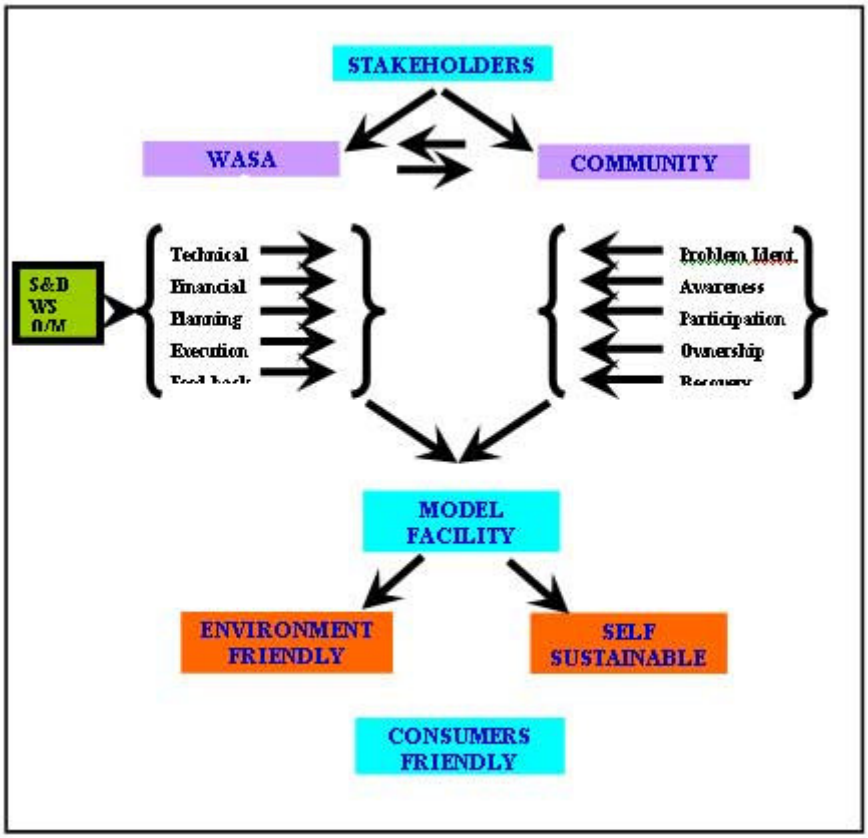


Figure-4: Right Based Integrated Approach

Strategies Description:

Management Strategy:

11. Basing on the outcomes of SWOT analysis, a major Management shake-up strategy was evolved to identify "happy go lucky go type" work force at all level. As it is evident that dedicated and professionally committed work force in any water business/service industry contributes directly towards efficiency gain. Therefore on this analogy comprehensive management strategy was evolved based on managerial principle the flow diagram is shown in figure 5:

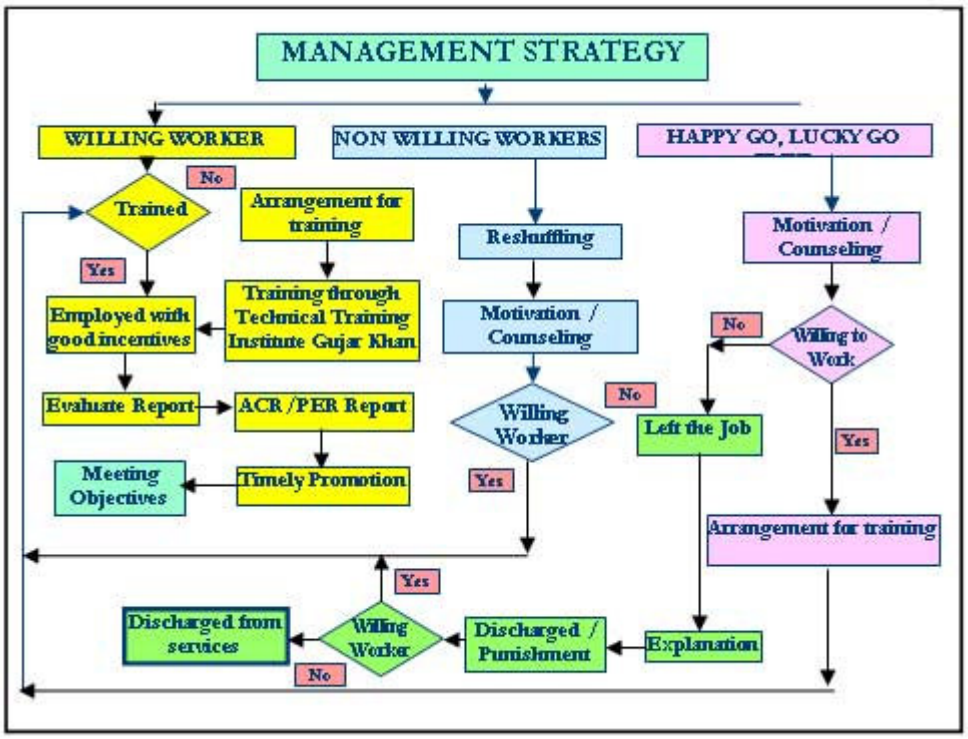
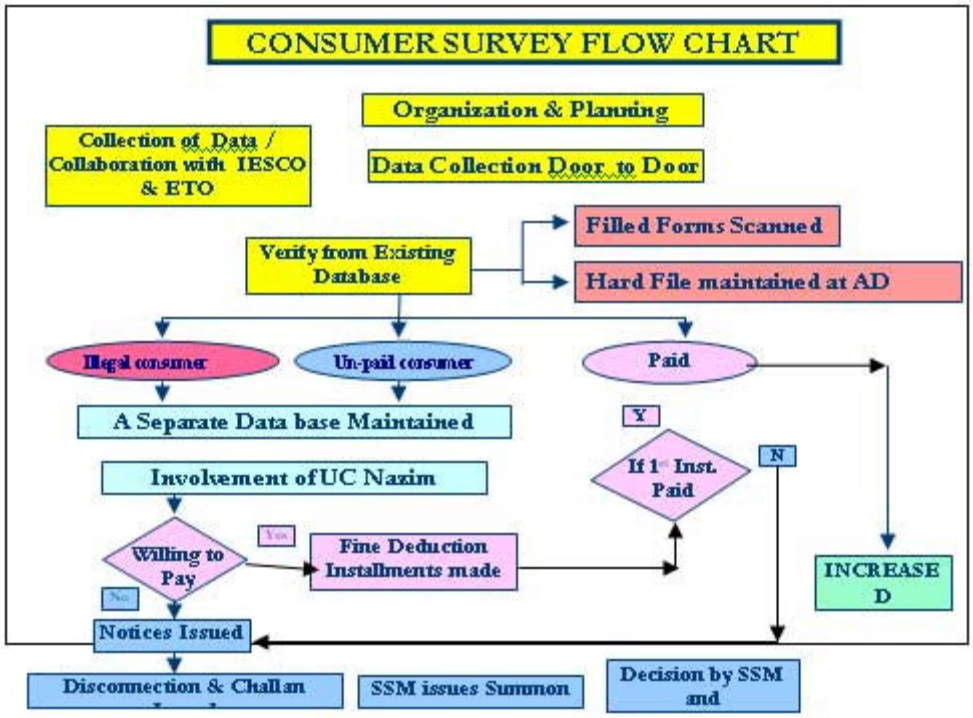


Figure-5: Management Strategy-Flow Diagram

Database up Gradation strategy:

12. The entire efficiency of water business entity relies on its revenue generation in real time and space dimensions. Consequently an efficient and prudent revenue generation/recovery mechanism cannot be designed without latest updated database concerning to consumers. Flow diagram is shown in figure 6 below:



Revenue Recovery Strategy:

13. Effective revenue recovery mechanism makes the water business financial management more versatile and flexible which in return improves better service delivery to its consumers. In water and sanitation agency Rawalpindi there were huge arrears both in commercial and domestic consumer's categories. Therefore keeping in mind the importance of revenue generation, a workable and effective revenue recovery strategy was planned on the following multi-pronged approaches:

13.1**- Multi pronged revenue recovery approaches:**

1) Consultative
2) Motivation through electronic and print media
3) Incentive based – waving off mark up etc.
4) Proactive – Raiding the suspected chronic defaulters with integral police force.
5) Legal action through court of law.

13.2**- Recovery Strategy Flow Diagram:**

The recovery strategy shown in figure 7 below was planned and implemented in the light of multi pronged approaches which has substantially increased quarterly revenue recovery from the chronic defaulters. The revenue recovery efficiency has increased from 52% to 64% in one quarter (Jan-March, 2007)

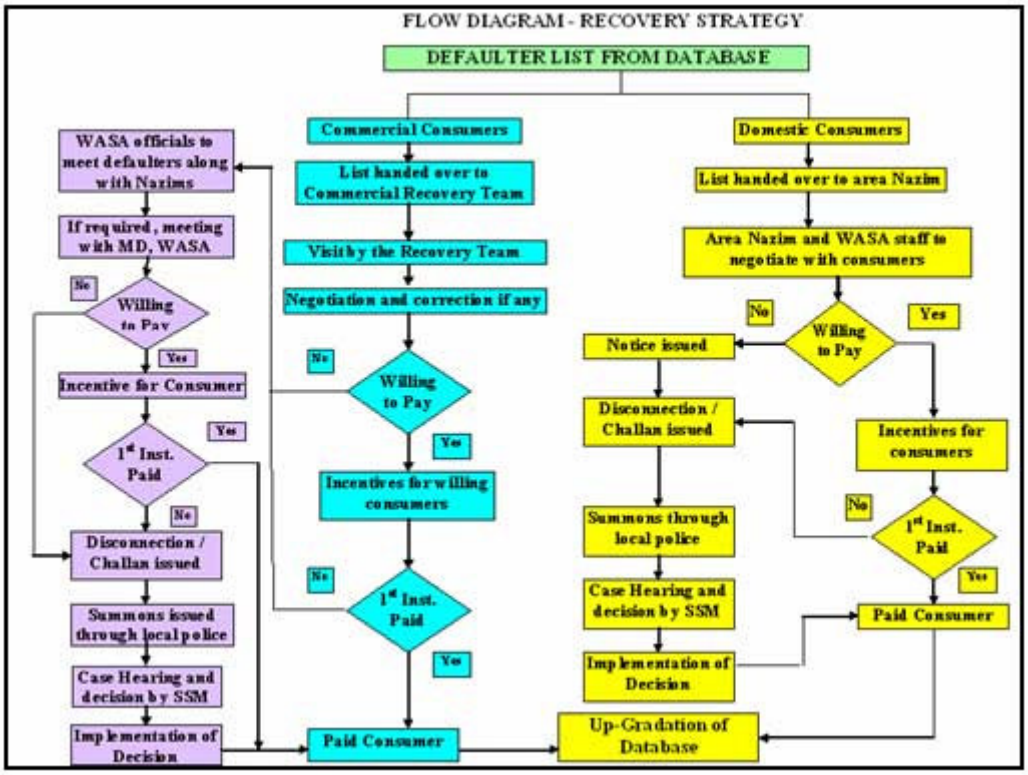


Figure 7: Revenue Recovery Strategy- Flow Diagram

Miscellaneous Strategies

14. There are other numerous hardcore issues identified during SWOT analysis which requires immediate redressal strategies, by doing so, the performance gains and efficiency of any water business entity can be improved manifolds. The details of such strategies are summarized under Environmental audit as described below:

Environmental Audit:

15. Since water and sanitation business directly relates to Environmental considerations/impacts, therefore strict internal and external controls can be exercised over the functioning of the water business entity in the form of environmental audit. Following are the major components of Environmental audit:

a- Management efficiency Audit
b. Financial viability Audit
c. Energy Audit
d. Drinking water Quality Audit
e. Waste water management audit
f. Hazardous waste disposal audit
g. Contingencies planning audit
h. Contracting audit etc

The above mentioned audit methodologies have helped the top and middle management in controlling the affair of water and sanitation agency Rawalpindi very effectively.

Results and Discussions:

16. Following useful gains were achieved by implementing state of the art strategies

a. The management shake-up strategy identified three group of work force namely "Happy go lucky go type" – who doesn't require any job or finances they just come for some other objectives. Rather these types of people in any organization are financial burden. Approximately 27 such type of employee were identified and they services were terminated. 102 employees who were needy but not willing worker were counseled and put on other work after redesigning their jobs. 24 individuals who were identified as willing worker sent to various training institutions for capacity building and trade training.
b. Revenue generation was increased from 0.5million $ per quarter to 0.62million$ due to inclusion of illegal connections and defaulters in the database by virtue of database up gradation strategy.
c. Water contamination at consumer's end was reduced from 35% to 18% due to water quality monitoring which was a requirement of environmental audit.
d. Water supply service coverage has been increased from 65% to 85% due to new vision and innovative strategies.

Conclusion:

17. Water business services and management demands an efficient, dedicated and professionally committed hierarchy of management. The responsibility and the accountability of the management increases manifolds as any slackness in water service delivery can be observed in the shortest span of time. The sound institutional structure coupled with legal framework arrangements, community mobilization and reliance on state of art technology will make water business services vibrant, efficient, financially self sustainable, consumers and environmentally friendly. There should a process for any

activity which should never ends as an event whereby always aiming at improvement at each and every step.

Reference:

No references have been sighted, as this paper has been written purely basing on own experiences and judgments during the course of operation and maintenance of Rawalpindi Water and Sanitation Agency.