CHAPTER-III

PERFORMANCE REVIEWS

FOREST DEPARTMENT

3.1 PUBLIC PRIVATE PARTNERSHIP PROJECT: UTTARANCHAL BAMBOO FOUNDATION

Uttaranchal Bamboo Foundation (UBF) was constituted (August 2004) for creation of employment opportunities for marginal rural community of the State through Bamboo plantation under Public Private Partnership (PPP) model. Performance audit revealed that the project was neither clearly scoped through a cost benefit analysis nor the optimal allocation of risks were ascertained before deciding the model and PPP partner. Working of UBF further revealed poor financial management, non adherence to the guidelines of the tripartite agreement, procurement of sub-standard seeds and deficiencies in the implementation of the plans/schemes.

The project was to be funded by the service provider; however, in the course of implementation, the Government stepped in to provide 80 *per cent* of the project costs and thus appropriated key operational risks to itself. But on its actual commitments - whether it be identifying land for plantation or expediting the approvals necessary for the service provider to acquire land and install the processing unit, the Government's slackness ultimately provided to the service provider a safety net to renege on its own commitments. As a result, not only were the advantages of a PPP lost, but also the project could not move beyond March 2006. Since September 2006, the UBF is being manned by only eight employees against the initial availability of 62 employees.

Some significant audit findings are as under:

Highlights

- ***The decision for a PPP was not backed by any detailed justification or a cost benefit analysis and the process of selection of the service provider lacked transparency and indicates a bias in selection.***

[Paragraph 3.1.6]

- ***80 per cent of the project cost of the first phase was released upfront by the Government, which transferred the entire project risks to the Government.***

[Paragraph 3.1.7.2]

- ***Vague and open-ended micro-plans prepared after the completion of the plantation and without involvement of the main stakeholders i.e., the VPs, rendered the preparation of micro-plans a mere formality.***

[Paragraph 3.1.8]

- ***Public funds remained the mainstay and the project has lost steam after the 1st phase. 74 per cent of the total expenditure was found objectionable in Audit. Of this, transactions worth Rs. 1.02 crore were suspected to be fraudulent.***

[Paragraph 3.1.9.1]

- ***Unviable bamboo seeds worth Rs. 2.50 crore were imported from Thailand, which could not be utilised for plantation because of poor germination rate and high mortality rate.***

[Paragraph 3.1.10.1]

- ***Undue benefit was provided to the firms on procurement of sub-standard bamboo saplings by deviating from the prescribed specifications.***

[Paragraph 3.1.10.2]

Summary of Recommendations

The State Government should lay down the broad guidelines that will govern the projects in which PPP may be the preferred mode as well as initiate steps to catalogue the best practices that ensure optimum risk allocation and value for money (VFM). The Government may also design the framework under which the projects may be conceptualised in order to fetch the most innovative solutions and best VFM. Capacity building to formulate such projects and manage such contracts is required. The Government may also seek legal opinion to review the tripartite agreement, by which the roles and responsibilities of each entity can be clearly delineated.

Institutional checks need to be strengthened to watch procurements and distribution of various inputs required for bamboo plantation along with independent physical verification to adjudge the exact status of all the plantations and other activities carried out by UBF during 2004-06. Further, special focus should be given to rejuvenate monitoring and supervision at each level.

3.1.1 Introduction

The State Government invited (January 2004) Expression of Interest (EOI) for a Public Private Partnership (PPP) for promotion of bamboo plantation by Van Panchayats[1] (VPs). The objective of the PPP was to create employment opportunities through social forestry and augment the income of marginalized rural communities, particularly the disadvantaged sections, through bamboo plantations in degraded land belonging to the VPs.

A tripartite agreement was signed (June 2004) between the Government of Uttarakhand (through Forest Department), Uttaranchal Van Vikas Nigam (Public Sector Undertaking) and M/s Eland International Private Limited (Service provider, referred to as SP in the report). The main features of the PPP were:

[1] Van Panchayats (VPs) in Uttarakhand are in existence since pre-independence, constituted with the aim to enable people to manage a portion of revenue forests lying in the vicinity of their villages.

- The three parties jointly promoted a non-profit society -Uttaranchal Bamboo Foundation (UBF), which was to channelise the funds, plan, implement and supervise the plantation.

- Forest Department would leverage its existing relationship[2] with the VPs to identify 1.5 lakh hectares out of the land assigned to the latter and encourage them to take to bamboo plantation through Memoranda of Understanding (MOU).

- SP would buy back the entire produce of bamboo and establish a processing plant at its own cost for manufacturing pulp and other allied products from bamboo[3]. The SP would provide the bamboo species to the nurseries identified by the Government along with other planting material; a tissue culture facility would be established by the SP, if the need arose, at its own cost. It also undertook to bear the cost of crop insurance to farmers.

- In turn, the SP would receive an assured supply of 30 lakh MT high grade bamboo[4] for 45 years. For the first 10 years, the price was fixed at Rs. 1500 per metric tone. In the subsequent years, the sale price was to be benchmarked against the average prevalent procurement price of bamboo in the top three bamboo producing States.

- Although not provided in the agreement, VPs were to receive subsidy from UBF towards labour[5] costs. The MOUs with the VPs provided that the VPs will earn Rs. 1274 per MT of bamboo produce.

UBF was formed[6] in August 2004 with its role being to:

- Prepare financial proposals and mobilise funds from diverse sources including public funding and institutional support to the project.

- Motivate VPs and enter into MOUs with them for plantation of bamboo.

- Raise saplings of bamboo species in the nurseries and provide them to the VPs at the plantation site.

- Ensure fund flow to the VPs in accordance with the micro plans prepared by the later.

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[2] Under the Uttaranchal Van Panchayat Rules 2001, the terms and conditions of engagement of the Forest Department with the VPs as well as that on the functioning of VPs were laid down.

[3] The produce would be collected by the Van Nigam and transported to its collection depots from where the SP would transport the bamboo at its own cost to the processing plant.

[4] Air dried bamboo with a moisture content not exceeding 12 % without lops and branches. The bamboo would be ready for production by the 7th year of plantation.

[5] Labour cost for pit digging and plantation was to be subsidized by the UBF at the rate of Rs. 2 per sapling.

[6] Registered under Societies Registration Act, 1860 and Societies Registration Rules, 1976

3.1.2 Organizational set-up

UBF functions under the administrative control of the Principal Secretary, Forest & Rural Development Department and its management is vested in a Board headed by the Chief Conservator of Forests. The Vice President of the Society is the General Manager of Van Vikas Nigam, Government of Uttarakhand. All other positions including the post of General Secretary in the UBF are manned by the representatives of the SP.

3.1.3 Audit Objectives

The audit objectives were to ascertain whether,

- Project was clearly scoped, the project requirements were identified and the overall Value For Money (VFM) was estimated after a cost-benefit analysis. A fair and transparent competitive bidding process for selection of the private partner secured for the Government optimal VFM.
- The optimal allocation of risks was decided before selecting the PPP partner and the model was geared to achieving the project deliverables within the agreed time frame.
- Appropriate arrangements with the VPs were put in place in the pre-implementation stage.
- PPP found innovative and robust solutions for mobilization of funds and the project received appropriate funding.
- The project was implemented within the agreed timeframe and delivered the specified services to the VPs.
- The procurement of supplies and services was prudent and procedures obtained the best VFM on public funds.
- Appropriate arrangements for project management and monitoring were put in place to ensure continuous delivery of services to the specified quality standards.

3.1.4 Audit Criteria

The project was assessed with reference to:

- Provisions of tripartite agreement
- Project report
- Sanctions of the State Government and other regulations made there under
- Financial Hand Book (Volume-V) and General Financial Rules.

The recommendations of the Report of the Planning Commission on the PPP Sub-Group on Social Sector (November 2004) were used by Audit to lay down the parameters for assessment of the project on risk allocation and value for money.

3.1.5 Scope of audit and methodology

Performance audit of the UBF was conducted from July to September 2008 covering the period 2004-06. Records relating to implementation of the project were checked in UBF while those on the service provider and on monitoring were test-checked in the Office of the Secretary (Forest), Government of Uttarakhand, Dehradun and Uttaranchal Van Vikas Nigam, Dehradun. Information was also collected from Secretary, Centre for Forest Development, Haldwani in respect of sowing of imported bamboo seeds. Audit team conducted physical verification of 14 VPs in 3 out of 4 Forest Divisions[7] in which the plantation was carried out. Audit findings were discussed with the Additional Secretary (Forest) and President, UBF in an exit conference on 7 October 2008 and their replies were incorporated in the Report at appropriate places.

Limitations

Value addition to the activities of an entity by performance audit is possible when requisite information and records are furnished by the auditee to Audit. Some of the key records and replies to audit memoranda were not provided to the audit team despite repeated requests even at the level of Principal Secretary (Forest & Rural Development). The list of such records is at ***Appendix- 3.1***

Further Divisional Forest Officer (DFO), Soil Conservation Division, Lansdowne refused to co-operate with the Audit team during the course of physical verification in September 2008. The Division even refused to receive the audit note, which was an issue of concern.

Audit findings

3.1.6 Value for Money: Scoping of Project and selection of service provider

Audit Objective 1: Whether the project was clearly scoped, project requirements were identified and the overall Value For Money (VFM) was estimated after a cost-benefit analysis. Whether a fair and transparent competitive bidding process for selection of the private partner secured optimal VFM for the Government?

In order to secure Value for Money (VFM) in a PPP project, the following decisions are essential:

- The Government is clear on its requirements and after weighing all alternative options, has found PPP to be the best option
- The procurement route ensured selection of a service provider best suited for the work

3.1.6.1 Best option decision

The decision for opting PPP was the result of a last minute twist to another project for promotion of bio-fuel in the State. While deliberating (January

[7] DFO, Soil Conservation Forest Division, Kalsi & Lansdowne (Kotdwar) and DFO Chakrata.

2004) on the management structure for promotion of bio-fuel on degraded land, the Government felt that a Board akin to the Uttaranchal Bamboo & Fibre Development Board (UBFDB), could be created. The project took a turn when the file was put up to the Minister, who decided (January 2004) that two PPPs-one for bio-fuel and another for bamboo should be taken up and Expression of Interest be invited for both the ventures. The rationale for the PPP was that the Government did not have the capacity to mobilize adequate funds to support such projects. Bamboo was added to the "platter" on the ground that it is a fast-growing species which has a high economic value and can raise the economic well being of rural communities.

Thus, the decision for a PPP was not backed by any detailed justification or a cost benefit analysis. The estimated cost of the project or the scope of the work was not assessed. There was no clarity on the service that the Government sought from the SP. For instance, the targeted number of families to be benefited, the extent of raise in the average income of these families through bamboo plantation, innovation to provide stable means for marketing their produce are some of the illustrative deliverables of the project, which were left unstated. The lacunae, if any, in the other schemes conceived and coordinated by UBFDB, in promotion of bamboo in the State, were not considered; as to how a PPP would overcome such lacunae or bring additional benefits, other than funding the project, were also not deliberated upon. The role of the SP was unclear at the inception stage itself which had a dominoe effect on the project. The only stated reason for selecting the PPP route was that the Government did not have funds; ironically, the Government ended up footing the entire bill for the project.

Notwithstanding the above flaws in planning, the project did have elements of innovation as it provided an assured market for the produce, provided by the SP. Absence of infrastructure for collection and processing/ marketing of the produce were important causative factors for failure of similar employment generation schemes. In addition, private entrepreneurship would bring in efficiencies in the service delivery. However, these did not form the basis for the decision for PPP route, when it was taken.

3.1.6.2 Selection process

Competition is central to selection of a private partner in order to secure value for money and to ensure transparency in the selection process. A pre-requisite was that the criteria for bid evaluation should be laid down unambiguously to ensure transparency in the selection and also fetch the best VFM. Some of the criteria[8] which would be relevant to this project were the lowest present value of payment from the Government; or the lowest capital cost of the project; or the lowest maintenance and operation costs; or highest contribution from the SP. Since it was a joint venture, the net present value of the returns that SP sought from the project would be an essential factor to set the public sector contribution at a realistic level.

[8] Source: Report of the Planning Commission on the PPP (November 2004).

In the initial proposal mooted (December 2003) by the Government for inviting private collaboration, it was envisaged that the entire investment would be borne by the private party. Expression of Interest (January 2004) was invited from private entrepreneurs interested in investing in "bamboo plantation and its products."

The Government did not identify the benchmarks for evaluating the proposals prior to their receipt. 20 proposals were received by the Government in response to the EOI. A Delhi-based company with its headquarters at Thailand, M/s Eland International Private Limited was finally selected by the Government as the SP. The selection process showed a bias and lack of transparency, as a result of which competent proposals were rejected:

- The last date of submission of proposals was 11th February 2004. However, the proposal of M/s Eland was received on 5th March 2004 i.e., after the closing date and yet, it was considered. All other proposals were received within the due date.
- The Technical Committee headed by the Chief Conservator of Forests (CCF), Garhwal Region, apparently used two parameters viz., financial status and experience in plantation activities for evaluating the proposals. However, the table below would show that M/s Eland could not have scored high or above the competing proposals, on either of the parameters. Two companies with sound financial background and prior experience in bamboo were overlooked in favour of M/s Eland whose work experience was only "import of timber".

Table-3.1.1

Name	Financial Status/ turnover per annum (Rs. in crore)	Core Experience
M/s Desert to Green	5.00	Development of wasteland/orchards
M/s R.K. Jetropha Development Corporation Ltd	>100.00	Batch extraction plants & batch refineries, herbal and pharma lines. Established 10,000 nurseries spread over 22 States
M/s J.K. Papers	650.00	Two integrated pulp and paper manufacturing units based on wood and bamboo in Gujarat and Orissa
M/s Om Logistics Ltd	120.00	Logistic Support and solution and total supply chain Management
M/s SPML	192.00	Infrastructure Engineering, turnkey contracts
M/s Eland International Ltd	10.53	Import of Timber

- Only two bidders, M/s RKS Jatropha Development and M/s Eland were shortlisted by the Technical Committee. In the absence of clear deliverables, the two widely different proposals did not lend themselves to a rational comparison. The proposal of M/s Eland was recommended (April 2004) on the grounds that it was ready to work with VPs and that the plantation cost quoted by the company was the lowest. Other factors that would have made its proposal less attractive, were overlooked such as, (a) only the proposal of M/s Eland envisaged funding from Government thus deviating from the intent in the EOI; and (b) the company demanded

buyback of bamboo at a heavily subsidized rate (Rs. 60 per kauri[9] as against the prevalent price of Rs. 170 per kauri) with a lock-in-period of 60 years.

Conclusion

The decision to opt for a PPP route was not preceded by deliberations on the project deliverables or a cost-benefit analysis which made it the best option available to the Government. In the absence of clarity on the deliverables or the criteria for evaluation of proposals, the Government failed to generate fair competition in selection of the private partner. The chosen party did not have experience in the field, its financial standing was less robust compared to the other bidders and submitted its bid 22 days after the closing date; a bias in its selection was thus, apparent.

Recommendations

- *The State Government should lay down the broad guidelines that will govern the projects in which PPP may be the preferred mode as well as initiate steps to catalogue the best practices that ensure optimum risk allocation and value for money.*
- *The framework under which the projects may be conceptualised in order to fetch the most innovative solutions and best VFM, need to be laid down.*
- *Case studies may be developed in order to provide illustrative examples for structuring the project and the contract, evaluation of the bids and monitor performance.*
- *Capacity building to formulate such projects and manage such contracts needs to be built through intensive training.*

3.1.7 Allocation of Risks

Audit Objective 2: Whether the optimal allocation of risks was decided before selecting the PPP partner and the model was geared to achieving the project deliverables within the agreed time frame?

PPP secures better value for money to the Government when there is clarity in the responsibilities between the partners and risk transfer is optimum, whereby the risk is not only shared between the Government and SP, but is borne by the partner best able to bear it. Transfer of risk to the SP, in excess of what it can bear, will encourage the SP to charge more to cover the risks or increase to that extent, public funding to the project. On the other hand, transfer of unnecessary implementation risks to the SP will cause the SP to suffer a loss if it underperforms and thus provide an incentive to renege on its commitments. It is essential that all the generic risks be identified before finalising the agreement.

[9] A bunch of 20 bamboo sticks.

3.1.7.1 *Risk assessment*

The Department evaluated the proposals of the entrepreneurs and further signed the tripartite agreement with an inadequate assessment of the risks to the project. A risk transfer matrix was prepared in Audit, suggesting what could have been an optimal risk transfer as shown below:

Table-3.1.2

Risks	Elements	Party best able to bear the risk
Operational and maintenance risks	VPs do not show interest*	Shared between Government and SP
	Land for plantation is unavailable*	Government
	VPs abandon the plantation*	Shared between VPs and Government
	Plantation becomes a failure due to technology failure or poor maintenance	SP
Implementation risks	Delays in clearances after the agreement date	Government
	Contractor default	SP
	Failure in tie-ups for timely supply of saplings and other planting material or collection of produce	
Financial risks	Resources are not mobilized	SP
	Funds are not distributed to VPs on time	
	Imprudent financial management	
Market risks	Insufficient demand for bamboo products	SP
	Sale prices crash and the unit cannot break even	
	Production costs high because of poor technology or high input costs	
Legal risks	Regulatory changes	Small changes to be borne by SP; for those with significant impact, provision for re-negotiation

Source: ***Report of Planning Commission on PPP***

**: It is the Government that has a relationship with the VPs and these are operational risks best transferred to the Government or shared with the SP since the latter has little expertise in working with the locals or of the local conditions.*

3.1.7.2 Risk allocation: contractual clauses

Payment structures should reflect the risk transfer and should also, as far as possible, provide the SP with an incentive to perform well. Monitoring mechanisms and remedial measures in the event of failure to perform on identified deliverables provide 'teeth' to the risk allocation.

The agreement did not lay down the time frame (even if ballpark) in which milestones for different stages of the project would be achieved. The period by which the Government will make available the land, the period by which different phases of the service will come into stream or the SP will establish the unit and bring in its investment - all factors imperative to effective risk

transfer, were left unclear. In fact, the quantum of investment to be brought in by the SP on the basis of which the extent of public funding could be assessed realistically, also did not find mention in the agreement.

Instead of indexing payments to achievement of milestones, the Government released Rs. 5 crore in March 2005 against the estimated cost of Rs. 11.75 crore for the project in the 1st phase; within two years Rs. 9.35 crore i.e., 80 *per cent* of the estimated cost was released by the Government. The releases in effect, transferred the entire risk of the project to the Government, since the contract was open-ended on the commitment relating to investment by the SP to the project. The project report (December 2004) spoke of a proposed investment of Rs. 89 crore by the SP, against which, the balance sheet (March 2006) of UBF shows an investment of Rs. 79.98 lakh by the SP as of September 2008. UBF could not supply any details on the investment or documents/ vouchers in support of the expenditure borne by the SP out of these funds. The loss to the SP if it were to terminate the agreement or chose to underperform, were minimal in view of the negligible investment it committed to the project, thus defeating the advantages of choosing the PPP route.

The agreement was flawed on other counts as well, which are discussed below:

- There was no clause that ensured that the SP would deploy technically trained personnel for the project and ensure continuity among the core members of the project team.
- Verifiable and objective key performance indicators (KPIs), to which the payments could be benchmarked, were not identified. Parameters such as percentage germination of seeds, growth of saplings to a certain height, percentage of VPs brought on board (against the target), progress on establishment of the processing unit or tissue culture facility etc., could have been used to monitor the performance of the SP. An innovative PPP could have used the KPIs to provide incentives for greater achievements as well.
- Mutually agreed monitoring mechanism was not clearly laid down. It could have been possible for the Government to scrutinize the data that the SP was mandated to provide. This data could have been subjected to validation by Divisional Forest Officers, preferably attested by SP's representatives to avoid disputes.
- Regular monitoring needed to be backed by a workable disputes resolution procedure, written into the agreement. The agreement did not provide for remedies if the project "goes wrong" or it fails to deliver the specified services by way of financial compensation through reduced releases, penalties or liquidated damages recoverable against bank guarantees or indemnities collected from the SP, the right of the Government to step in and remedy the situation at the expense of the SP and ultimately the right to terminate the agreement because of SP's default. There are other conditions which could lead to termination of agreement such as contractor insolvency or unforeseen

circumstances (force majeure), neither of which were provided for in the agreement.

- The rationale for agreement length of 45 years was not found discussed in the project papers. A longer contract length gives the SP more time to recover the cost of the investment and gives a greater depth of experience in running the business which could bring in greater efficiencies. On the other hand, it reduces the competitive pressure- for example: the VPs would be tied to the same SP even if other alternatives that would provide greater returns on the bamboo produce might be available in the future.

The consequences of the inappropriate risk transfer were many. The project did not take off beyond the 1st phase and only 6431 hectares i.e., 4.3 *per cent* of the targeted coverage of 1.5 lakh hectares was taken up as of August 2008. The poor germination rate of the seedlings and the failure of the plantation in the 1st phase (as discussed in para 3.1.10.1 and 3.1.10.2) are outcomes of the poor risk allocation.

During the exit conference, the President, UBF stated (October 2008) that there was a sense of urgency to implement the project that was perceived as an innovation. Careful planning to safeguard the project interests was a casualty in the process. He also stated that two PPP projects- one on jatropha and the other on bamboo, were taken up simultaneously; the two plants differed substantially in their biological characteristics, the risks to the projects were different which required different solutions, but one formula was adopted for both, which was a mistake.

Conclusion

The agreement was flawed and did not secure the interests of the Government or help it derive the benefits of a PPP. The release of 80 *per cent* of the project costs by the Government, with no correlation to achievement of milestones, transferred the entire project risks to the Government. The agreement that binds the Government to the project for 45 years did not provide for any clause for remedial measures against under-performance. SP had little to lose if the project failed since the investment came mainly from Government alone, thus defeating the very objective of opting for the PPP route.

Recommendations

- *The Government may seek legal opinion to review the tripartite agreement, by which the roles and responsibilities of each entity can be clearly delineated.*
- *Subsequently, a comprehensive plan should be prepared, identifying the achievable milestones, to ensure that the interests of the VPs who have already committed to the project, are not jeopardized.*

3.1.8 Project planning

Audit Objective 3: Whether appropriate arrangements with the VPs were put in place in the pre-implementation stage?

The tripartite agreement stipulated that the VPs would prepare the micro plans for bamboo plantation and submit them to the concerned DFO for further submission to the UBF for approval, on the basis of which, the UBF would release to beneficiaries the subsidy for plantation. Further, the DFO and the officials of UBF were to monitor the implementation of each micro-plan.

UBF could not provide to Audit information on the number of micro-plans received by them, but provided copies of 60 micro-plans. 25 micro-plans were prepared by the DFO, Chakrata Forest Division and were submitted to the UBF during September - October 2005. DFO Soil Conservation, Kalsi sent 43 micro plans without his recommendation. Analysis of the micro-plans revealed the following:

- Micro- plans were not specific to bamboo plantation and covered in them jatropha plantation as well. The objective of the micro-plan was to identify the beneficiaries, segregating the disadvantaged groups- the BPL/SC/ST families. The results and lessons learnt of the past plantations, if any, would also provide a reference to the VPs to develop area-specific plans for plantation. The micro-plans submitted to UBF lacked any such specific details.
- During physical verification conducted by the Audit team, the VPs stated that they did not prepare the micro-plans and that they were not consulted in the process either. These plans were in fact prepared by the Forest Department Officials.
- 28 MOUs, representing 47 *per cent* of the MOUs made available to Audit, were signed after September 2005 while the plantation work was done during the period July to September 2005. Thus, the objective of preparing the micro-plans was defeated.
- Although the VPs were funded towards the labour costs for planting the saplings, there was no provision of funds for maintenance of the saplings or the plantation site. This was a deviation from the plantation norms prescribed by the Forest Department by which, funds are provided for maintenance of the plantation for three years from the year of the plantation.



Picture reflecting grazing by cattles at Van Panchayat Toli

During physical verification, Audit team found that most of the plantation sites were covered with shrubs and bushes and were not protected from grazing.

The beneficiaries complained that the major cause for poor survival of the plantation was lack of

proper fencing of the plantation sites and non-provision of maintenance grants. This was a serious lacuna in planning.

The payments to the beneficiaries towards labour cost were made through cheques, which was a landmark and a step towards plugging leakages in distribution of subsidies.

- The MOUs did not specify the period of engagement between UBF and VPs on this project and were flawed to that extent. The rate for the bamboo produce to be paid to the VPs was fixed at Rs. 1274 per MT, but the period for which this rate would prevail was not mentioned in the MOU. The VP's returns from the produce were also limited by self-limiting clauses in the MOUs. Further, it was laid down that 70 *per cent* of this amount should be used for felling and transportation of the produce, thus reducing the VP's returns to a mere Rs. 382 per MT. The rationale for this clause was not found discussed in the project papers.

Conclusion:

Vague and open-ended micro-plans prepared without the involvement of the main stakeholders i.e., the VPs, could not have provided a foundation for an effective and workable relationship or a work plan of plantation. Maintenance of the sites was a key element in planning which was overlooked. Several micro-plans were prepared after the completion of the plantation, rendering the preparation of micro-plans a mere formality.

Recommendations

Further phases of the project should be preceded by preparation of detailed micro-plans in consultation with the stakeholders. Adequate technical support to identify viable species of bamboo is essential. The Government will have to launch a massive awareness drive to regain the trust and confidence of the VPs.

3.1.9 Financial Management

Audit Objective 4: Whether PPP found innovative and robust solutions for mobilizing funds and the project received appropriate funding?

3.1.9.1 *Allocation and utilisation of funds*

Under the tripartite agreement, UBF was required to mobilize funds from various sources for the project. In order to access public funds, UBF would prepare financial proposals for approval by the State Government.

The sole initiative in this regard was the preparation (December 2004) of project report for the first phase of the project, in which the cost of Rs. 11.75 crore was projected. The project report prepared (December 2004) by UBF for the years 2004-05 and 2005-06 targeted 6500 hectares (covering 172 VPs and 1901 beneficiaries) in the first phase in three districts of Dehradun, Tehri-

Garhwal and Pauri-Garhwal at an estimated cost of Rs. 11.75 crore as shown in the table below:

Table-3.1.3

Activity	Unit cost per hectare (In Rs.)	Total cost (Rs. in crore)
Survey & Demarcation	830	0.54
Pit digging	650	0.42
Site leveling	123	0.08
Nursery Development[10]	10197	6.56
Planting	1000	0.65
Logistics including labour expenses	4000	2.60
Monitoring & Supervision	1000	0.65
Contingency @ 6.5%	390	0.25
Total	**18190**	**11.75**

Source: Project report of UBF

At a unit cost of Rs. 18,190 per hectare, the total cost of the project covering 1.5 lakh hectares, was Rs. 272.85 crore. The sources of funding were not identified in this Report. The State Government did not convey its approval to the proposal but released Rs. 9.35 crore as plan grant[11], of which Rs. 8.69 crore were utilised during the period 2004-07.

Table-3.1.4

(Rs. in lakh)

Year	Releases	Expenditure
2004-05	500.00	203.68
2005-06	435.57	663.18
2006-07	Nil	2.30
Total	**935.57**	**869.16**

Source: Government Orders

A sum of Rs. 66.41 lakh was lying un-utilised in the bank accounts of UBF as of September 2008. The Government did not release funds beyond February 2006 and UBF did not submit proposals for the subsequent stages of the project. The SP did not infuse funds into the project either and the project was as good as having lost steam in implementation. The expenditure was booked by the UBF under the following heads:

Table-3.1.5

(Rs. in lakh)

Activity	Expenditure
Identification of sites	52.50
Plantation costs	96.32
Purchase of seeds	250.30
Nursery Development	30.00
Purchase of saplings	115.61

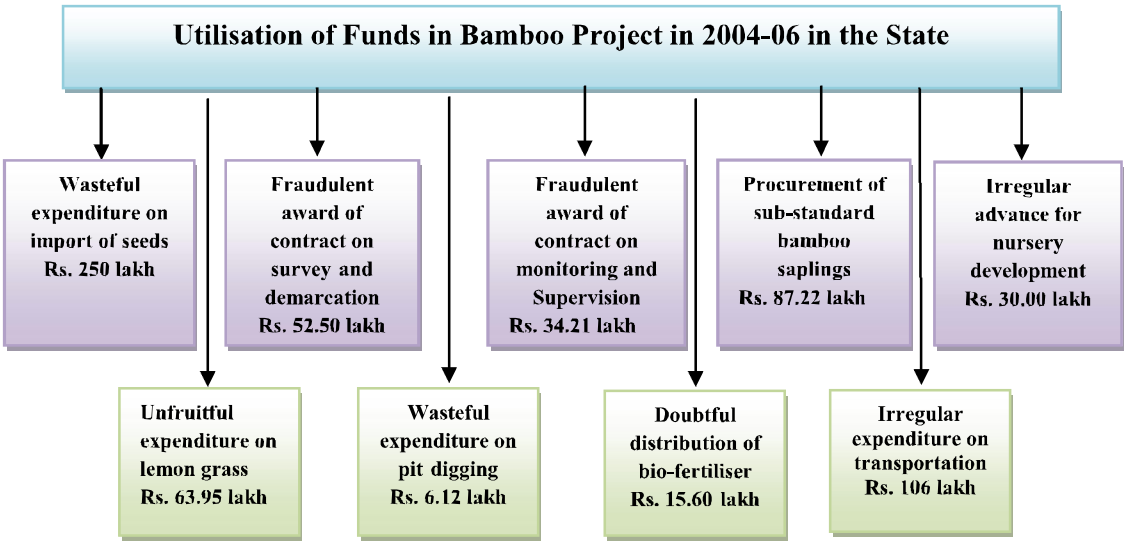
[10] It included cost of bamboo seeds, raising of bamboo saplings, raising of aromatic plant slips and fertilizer.

[11] Funds were released under grant no. 27: 2406-Forestry & Wildlife, 102-Social & Farm Forestry, 04-Plantation of bamboo species.

Purchase of lemon grass slips	65.95
Purchase of fertilizer	15.60
Logistics*	197.53
Monitoring & Supervision	35.57
Contingency	9.79
Total	**869.17**

** including transportation costs and cost of subsidies to VPs@ Rs. 2 per sapling.*

Audit findings show that out of the above, expenditure of Rs. 6.45 crore was objectionable, as shown in the inverse tree below:



Conclusion:

The PPP did not bring in robust or innovative mobilisation of funds based on sound financial proposals. Public funds remained the mainstay and the project has lost steam after the 1st phase. 74 *per cent* of the total expenditure was found to be imprudent or fraudulent.

Recommendations

Institutional checks need to be strengthened to watch procurements and distribution of various inputs required for bamboo plantation.

3.1.10 Project Implementation

Audit Objective 5: Whether the project was implemented within the agreed timeframe and delivered the specified services to the VPs?

During the course of implementation, the roles and responsibilities committed by and allocated to the SP underwent a dilution thus impinging adversely on the success and the viability of the project. The decisions that allowed such a change were taken by the UBF Board, of which, both the representatives of the SP, and the Government were a party, but these decisions did not have the express approval of the Government. The Government also failed to deliver on those areas on which it clearly had a responsibility as summarized in the table below:

Table-3.1.6

Project commitments	Actual implementation	Consequence	Comments
Government in consultation with the SP will identify 1.5 lakh hectares of land for the plantation	Only 6431 hectares of land was identified	The project did not proceed beyond the 1st phase	No project plan has been prepared for the subsequent stages
The SP would provide the bamboo species to the nurseries identified by the Government along with other planting material	Three species were imported by UBF using Government funds	Rs. 2.50 crore was spent on the procurement	Further discussed in para 3.1.10.1
Project report stated that three local species and two foreign species will be planted	UBF signed a MOU with Centre for Forest Development (CFD), Haldwani for tissue culture facility	The seeds suffered low germination rate and high mortality. Against a target of 2.00 crore saplings, only 1.47 lakh saplings were raised.	
As per the contract a tissue culture facility would also be established by the SP, if the need arose, at its own cost		The tissue culture facility at the cost of SP was not established	
Bamboo saplings of local species would be raised in nurseries identified by the Government	The Government did not identify the nurseries. UBF procured bamboo saplings from various private vendors during July 2005-January 2006	Rs. 87.22 lakh was spent on the procurement.	Further discussed in para 3.1.10.2
Project Report stated that willing farmers would raise nurseries on their own, for which they would be provided technical knowhow and basic support. The technical expertise would come from the SP. In its proposal, the SP pledged deployment of more than 100 people to assist in the project		Grass-root dissemination of technical know-how did not take place. The SP engaged 62 employees in the project up to the period September 2006 and thereafter the UBF is being manned by only 08 employees. UBF did not provide information on the experience and educational qualifications of its employees to Audit.	

SP would establish a unit at its cost to process the bamboo produced in the project	Four years after the agreement, the SP was yet to acquire land for the unit.	The processing unit was not established. The transfer of operational risks to the SP because of risk on its investment, did not happen.	UBF stated (January 2008) that the Revenue Department was yet to grant permission for purchase of land at Haldwani
The project report pegged the investment by the SP at Rs. 89 crore.	UBF reported an investment of Rs 79.98 lakh (9% of the projected investment) but there were no records or details on the components of the expenditure or investment	The transfer of operational risks to the SP because of risk on its investment, ,did not happen	
SP would arrange for crop or other insurance at its own cost	No insurance for the plantations arranged	The beneficiaries were not provided insurance	During the exit conference, it was stated that the insurance could not be provided because ownership of the land was with the Government

3.1.10.1 Purchase of seeds

The project report envisaged promotion of three local species of bamboo that grow naturally in Uttarakhand: Lathi bans *(D. strictus),* Kanko bans *(D. somedevai/ hamiltonii)* and Chai bans *(B. nutans).* These were to be supplemented by import of two other foreign species: *T. siamensis* and *B. oldhami.* UBF procured (December 2005) 517.535 kgs of three bamboo species from Thailand from two companies[12] at a cost of Rs. 2.50 crore.

The species finally imported: *Phyllostachya pubescens* (Chinese origin), *D. membranaceus* and *T. siamensis* (both from Thailand) differed from the original choice made in the project report. When asked for the reasons for the change, UBF stated (January 2008) that it was based on a detailed analysis of the relevant literature which showed that these species were more suited to climatic conditions in Uttarakhand. These seeds were germinated in the nurseries of Centre for Forest Development (CFD), Haldwani. UBF projected (February 2006) that a safe germination percentage of 80 *per cent* could be obtained, raising nearly two crore saplings from the imported seeds. The objective was to utilize the saplings for nursery raising and plantation activities.

The imported seeds had very low germination rate ranging from 20 *per cent* to 0.07 *per cent*, as against the projected rate of 80 *per cent*. The saplings further suffered high mortality at various levels of distribution and only 25 *per cent* of

[12] Take True Company Limited: Rs.1.22 crore & Inta International Company Limited: Rs. 1.28 crore.

the saplings that germinated, were eventually distributed to the divisions for plantation. *Phyllostachya Pubescens* which was the costliest species suffered 100 *per cent* mortality. In fact, the original species (T.siamensis and B.Oldhami) identified in the project report had the highest survival rate of 68 *per cent*. In view of the high mortality rate of *Phyllostachya Pubescens*, 59 kg of the seeds of the species, costing Rs. 39.99 lakh were not germinated by CFD, Haldwani and remained unutilized as depicted in photograph as given below:



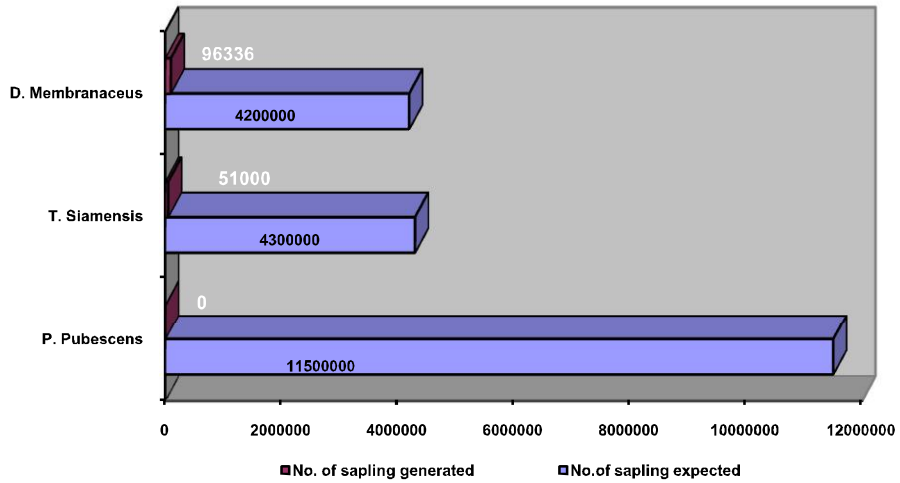
Un-utilised Phyllostachya Pubescens seeds

Table-3.1.7

	P. pubescens	*T. siamensis*	*D. membranaceus*	*Total*
Quantity of seeds imported (kg)	298.04	110.50	109.00	517.54
% of the total import	57.60	21. 40	21.00	-------
Purchase cost (Rs in lakh)	249.93	23.00	24.63	297.56
Unit cost per kg Rs in lakh	0.83	0.21	0.23	-------
Actual germination rate (%)	**0.07**	**3.10**	**20.0**	-------
Saplings raised in CFD	5003	75490	498618	579111
Saplings distributed to	00	51000	96336	147336
Mortality in the Divisions/CFD (%)	5000 (**100%**)	1800 (**4%**)	69500 (**72%**)	76300 (**52%**)
Saplings to Divisions as % of the saplings raised in CFD	**0%**	**68%**	**19%**	**25%**

Source: Centre for Forest Development, Haldwani

Chart-3.1.1



The saplings were distributed to the Divisional nurseries during the period April 2006 to June 2006 but they had not been used for propagation in the nurseries; neither were they used for plantation. The entire expenditure of Rs. 2.50 crore was thus rendered wasteful. It was the responsibility of the SP to provide seeds but public funds were utilised to purchase the seeds. The estimated germination capacity of the seeds was grossly exaggerated; the seeds were unviable due to inherent defects; and the Government could not take any penal action against the SP, as the agreement itself did not provide for such a clause.

Director, CFD, Haldwani stated (January 2008) that it was not consulted while choosing the species to be imported although the UBF had identified CFD as the nodal agency for developing saplings from imported seeds. It was also stated that the probable reasons for the poor germination rate were:

- By the time the seeds reached the CFD, it was already more than a year old. Fresh seeds of the species have only 20 *per cent* germination rate which reduces to near zero over a year.
- Fumigation at the airport quarantine may have destroyed the embryos of the seeds in the packets.
- Seeds were collected from sporadically flowering culms which have high mortality rate because of lower chances of cross-pollination.

In the exit conference, it was stated (October 2008) that these species were selected on the basis of their success in China under similar environmental conditions. However, the CFD, Haldwani had clarified that the bamboo species was sporadically flowering in China, thus showing that it was not a prudent choice. When asked as to why the import was made in lump sum and not after testing it in pilot projects, it was stated that this was required to put the project into stream. The initiative however backfired, as the seeds did not prove viable.

3.1.10.2 Procurement of sub-standard bamboo saplings

UBF procured 57.74 lakh bamboo saplings of two local species[13]. 14.75 lakh saplings were purchased from three forest divisions and the remaining 42.99 lakh saplings worth Rs. 87.22 lakh were purchased from three private nurseries during the period July 2005 to January 2006. The specifications of the saplings prescribed in the notice inviting quotations (NIQ) were that the height of saplings should be between 2 to 2.5 feet; age of saplings between 1.5 to 2 years and those should have a developed rhizome. The saplings were required to be sent to two UBF depots (at Kalsi depot in Dehradun and Aagarkhal depot in Tehri) for further distribution to the plantation areas.

Further scrutiny revealed that the three selected private nurseries did not specify the full details of saplings against the above specifications in their quotations as shown in the table below. Yet their quotations were accepted and the contracts were awarded to them.

Table-3.1.8

Name of the firm	Height	Age	Quality	Species	Unit rate
Uttaranchal Plantation	1- 1.5 feet	Not given	Not given	Not given	Rs. 2.00
Happy Valley	Not given	1 year	Not given	Not given	Rs. 2.30 *
UVSSS Ltd.	Not given	Not given	Not given	Not given	Rs. 2.00

including transportation costs



Status of the size of bamboo sapling after 3 years of plantation at Van Panchayat , Lakshyar



Status of the size of sapling after 3 years of plantation at Van Panchayat, Jhatri

Scrutiny of the documents on purchase and distribution of saplings revealed the following:

- In addition to the saplings purchased (July- August 2005) at Rs. 2 per sapling, UBF purchased 0.25 lakh *D. hamiltonii* saplings (August – September 2005) from Uttaranchal Plantation at the rate of Rs. 7 per

[13] Dendrocalamus strictus (lathi bans) and D.somdevai/hamiltonii (kanko bans)

sapling despite the fact that the sapling was offered @ Rs. 2 per sapling by the firm.

- The terms of the tripartite agreement stipulated that nurseries would be identified by mutual consent of DFOs and UBF. The nurseries selected suo moto by UBF were not centrally located and resulted in substantial outgo of public funds on transportation of saplings. In all, Rs 1.06 crore was spent on transportation[14]. The distance between the nurseries and the plantation sites should have been an important factor to be borne in mind while evaluating the quotations, which was not done. During the exit conference, President, UBF stated (October 2008) that the Government could not identify the nurseries due to shortage of time and to accelerate the project activities

- There was no UBF depot at Kalsi. There was no stock book for the supply of saplings in UBF either and hence the actual number of saplings received from the nurseries and provided to the VPs/JFMCs could not be vouched in audit.

- 64.31 lakh pits were dug through VPs, out of which, plantation was done in 54.90 lakh pits. 9.42 lakh pits dug at a cost of Rs 6.12 lakh were not utilized. In reply, UBF stated that because of drought conditions, plantation could not take place and that unutilized pits would be used in supplementary plantation. It was found that the drought conditions existed in the *rabi* season (between September-November 2005) whereas the plantation was done during July to September 2005. No supplementary plantation was carried out. Moreover, as per the forest norms the pits are usable only in the same plantation season.

- A physical verification was conducted (January 2006) by DFO, Chakrata forest division, Kalsi on 80.18 hectares representing 19 *per cent* of the total bamboo area in Chakrata division. It was found that the actual plantation area was only 8 to 40 *per cent* of the reported area and the numbers of saplings actually planted were 19 to 42 *per cent* of the reported figures implying that either the supply was less or saplings died even before plantation. The findings are tabulated below:



Site of plantation of D. hamiltonii species of bamboo sapling where survival of plants is negligible at Van Panchayat Langha



Status of bamboo plantation at Van Panchayat, Thalin

[14] Transportation of bamboo saplings and lemon grass slips

Table-3.1.9

VP	Suryau	Pingiri	Thalin
1. Reported area (in hectares)	5.00	20.00	55.18
2. Actual area (in hectares)	0.41	4.57	22.00
3. (2 as % of 1)	**8**	**23**	**40**
4. Reported no. of saplings	2000	20000	41000
5. Actual no. of saplings planted	720	3790	17200
6. (5 as % of 4)	**36**	**19**	**42**

Source: Inspection Report of DFO, Chakrata Forest Division, Kalsi

During the physical verification (September 2008) conducted by the Audit team in three out of the four divisions in which the plantation work was carried out, 93 *per cent* of VPs/ beneficiaries stated that the size of most of the saplings provided to them were less than 1 feet in height while the specified height in the NIQ was 2-2.5 feet. In 5 out of 14 sites visited by the Audit team, it was visible that the plantation could not survive at all and the beneficiaries felt that the success rate was as good as negligible. In the remaining sites, the physical verification by Audit team revealed that the success rate ranged between 10 to 45 *per cent.*

The major causes for failure of plantation were attributed by the VPs to supply of poor quality of saplings, lack of provision for fencing, late plantation and poor maintenance. During the exit conference, it was stated that grazing by wild boar and porcupine, had caused damage to the crops and social fencing proved a failure. Additional Secretary (Forests) stated (October 2008) that although social fencing[15] is in inception since 1994 and adopted in Central Government schemes for plantation under Forest Development Agency (FDA), the experience with social fencing was unsatisfactory.

3.1.10.3 Unfruitful expenditure on lemon grass

In order to protect bamboo plants from cattle grazing and to provide immediate benefit to villagers through oil production, UBF proposed (December 2004) plantation of lemon grass[16] and a provision of Rs. 2.27 crore was made in the project plan. The lemon grass slips were supposed to be sent to three UBF depots in healthy condition. 66.44 lakh slips of lemon grass at a cost of Rs. 63.95 lakh was procured from four suppliers between July to September 2005. But MOU was signed with only one supplier.

A physical inspection conducted (November-December 2005) by UBF reported that all 66.44 lakh lemon grass slips were planted covering three districts with an average success rate of 67 *per cent.* As 66.44 lakh slips could cater to the needs of 1845 hectares only, UBF was queried about the coverage of the remaining 3572 hectares. UBF replied (January 2008) that due to opposition from beneficiaries; further plans to plant lemon grass were dropped.

The lemon grass slips were required to be planted within three to five days[17] from the date of receipt. However, UBF failed to provide any information/data on the

[15] Social fencing is a protection of resources provided by a group of people, local institution, a partnership arrangement and a traditional system of stewardship

[16] Krishna species of lemon grass was found appropriate @ 3600 slips per hectare.

[17] As per proposals/MOU submitted by two firms: Ajay Krishna and Corporate Insurance Consultant Pvt. Ltd.

dates of receipt of slips and dates of plantation by VPs/JFMCs. No stock records were produced to audit in this regard.

During physical verification by the Audit team, 10 out of 14 VPs stated that they did not receive any supply of lemon grass from UBF. 4 VPs who received the supply said that the plantation success rate varied from nil to 45 *per cent* which is evident from the photograph as given below:



Scant lemon grass bio-fencing at Van Panchayat Dheroa

Conclusion

The parties, both Government and the SP failed to deliver on their commitments of the tripartite agreement as a result of which, the advantages of a PPP were lost. Import of seeds that were inherently defective and unsuitable to local conditions and use of sub-standard saplings led to the failure of the plantation, waste of Rs. 4.31 crore of public funds and dissatisfaction among VPs, which would affect the viability of any further stepping up of plantation activity under the project. Physical verification showed wide discrepancies in the claims of UBF on plantation of bamboo saplings and distribution of lemon grass.

Recommendations

Independent physical verification may be carried out to adjudge the exact status of all the plantations and other activities carried out by UBF during 2004-06.

3.1.11 Procurement of supplies and services

Audit Objective 6: Whether the procurement of supplies and services was prudent and the procedures obtained the best VFM on public funds?

UBF entered into contracts involving large payments, as listed below, without competitive bidding. It was claimed that notices inviting quotations were displayed in UBF office and in some cases, at the DFO offices. It is pertinent to mention that it was public funds that were used for payments and that the funds were released by the Government on the condition that the financial rules and regulations should be

followed. In the absence of supporting data and documents, payments against some of the contracts could not be vouched.

Table-3.1.10

Sl. No	Item of work	No. of suppliers	Amount (Rs. in lakh)	Comments
1	Procurement of seeds	2	250.00	Copies of quotations, technical & financial evaluation report, purchase orders and quality inspection report not produced in Audit.
2	Purchase of saplings	3	117.22	Of this amount, Rs 30 lakh was given (March 2005) as advance for supply to one nursery within 3 months but the supply was not received as of September 2008. However, UBF showed a statement for utilization of the advance which could not be vouched in Audit without supporting bills.
3	Purchase of lemon grass	4	63.95	Supply order issued to one supplier on 16th March 2005 before the date of opening quotations i.e. 24th March 2005. Rs. 55.68 lakh was given as advance to the firms.
4	Transportation of saplings and lemon grass	8	106.00	The payments to transporters could not be vouched because the daily stock movement data contained consolidated information only and did not have transporter-wise data. The bills did not have information on the distance covered, the VP to whom it was transported or the depot from where supply was collected.
5	Purchase of bio-fertilizer: Mycorrhiza Inoculumn	1	15.60	No tender/quotations were invited: 754.27 kg of fertilizer costing Rs.1.81 lakh was shown as utilized in a nursery which prepared bamboo sapling. The payments for the saplings included cost of fertilizer and hence this was double payment.
6	Social fencing through beneficiary awareness	1	52.50	Not tendered.
7	Beneficiary awareness	1	34.21	Not tendered.
Total			**639.48**	

Three of the above procurements indicate a suspected fraud as discussed below:

- **Purchase of fertilizer (Mycorrhiza Inoculumn): The stock register to show the receipt of supply was not produced in Audit. UBF did not incur any expenditure on transportation of the fertilizer to the VPs, which makes its distribution doubtful. Records showing the distribution were undated. In some cases, signature of the beneficiaries differed with the signatures obtained in the micro plans pointing towards doubtful distribution, which was justified**

by UBF (January 2008) on the ground that because the beneficiaries themselves were not available at the time of distribution, the signatures of family members were taken. However, during physical verification carried out by the Audit team, all the VPs affirmed that they did not receive the fertilizer and that their signatures were forged.

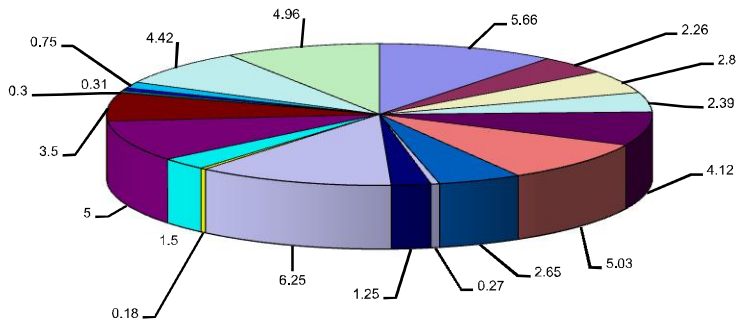
Analysis of the two contracts for beneficiary awareness show that the selection of the contractors was dubious and there was no evidence to show that the work was carried out, as tabulated below:

Table-3.1.11

Contractor	**M/s Shield Securitas & Consultants, Noida**	**M/s Asian Security Intelligence, Noida**
Date of agreement	1 February 2005	3 October 2005
Selection of firm	Although it was stated that notices were displayed inviting quotations, the date of display of notice or copies of other quotations were not produced in Audit. The offer letter dated 24th January 2005 clearly stated that the selection of the firm was based on a meeting on 12th January 2005 between the firm and UBF. The letters from the firm did not indicate any registration number, raising doubts that it was unregistered.	Quotations were not invited. The correspondence papers show that the firm approached UBF on 19th August 2005, on the basis of which the firm was asked to submit quotations on 22nd September 2005. The very next day, UBF conveyed to the firm that it was being awarded the contract as HRD consultants & manpower supplier. UBF stated (January 2008) that the firm was selected on the "basis of lowest rate offered by the firm."
Credentials of the firm	The firm was in the business of providing security services and supply of manpower to various PSUs and MNCs. It had no previous experience of working at grass root level or in agro forestry.	The firm recognized itself as a human resource developer and service contractor. It had no previous experience of working at grass root level or in agro forestry.
Terms of engagement	Beneficiary identification, creating awareness among beneficiaries and issue of photo identity cards for beneficiaries to help them to open bank accounts. Beneficiary identification and site demarcation were an integral part of the micro-plans, which was to be prepared by VPs in conjunction with DFOs. Payment of Rs 10.66 lakh for this job to the firm defied logic.	On the first page of the MOU, the firm was assigned the job of monitoring & supervision but the subsequent terms spoke of beneficiary awareness & motivation; these terms being an exact replica of that of the MOU signed with M/s Shield Securitas & Consultants, Noida.
Payments	Rs 52.50 lakh was paid as advance in March 2005. There were no documents in support of the work	Rs. 34.21 lakh was paid to the firm in March 2006. There were no supporting vouchers with the bill.

	done by the firm against which the advance was adjusted. The firm was to submit monthly progress reports which were not made available to Audit. The number of beneficiaries or the VPs benefitted or the locations of the programmes were also not available.	There was nothing on record about the work done by the agency whether relating to monitoring or beneficiary awareness. The item-wise break-up in the bill submitted by the firm is shown in chart-3.1.3. The entire expenditure was on staff salaries and other administrative expenses.
	The contract amount was based on a break-up of expenditure which tallied remarkably with the bill submitted by the firm on 08 out of 18 items. The item-wise expenditure reported by the supplier is shown in the chart-3.1.2.	During physical verification by Audit team in September 2008, at 14 VP, 93 *per cent* beneficiaries stated. that they did not get any training and that no awareness programme was organized by the UBF.
		The payments were made against the provision for "monitoring & supervision" in the project plan. The terms of MOU and the firm's understanding of its work, was that its brief was beneficiary awareness. The plantations were completed by September 2005, hence award of contract for beneficiary awareness in October 2005, was meaningless.

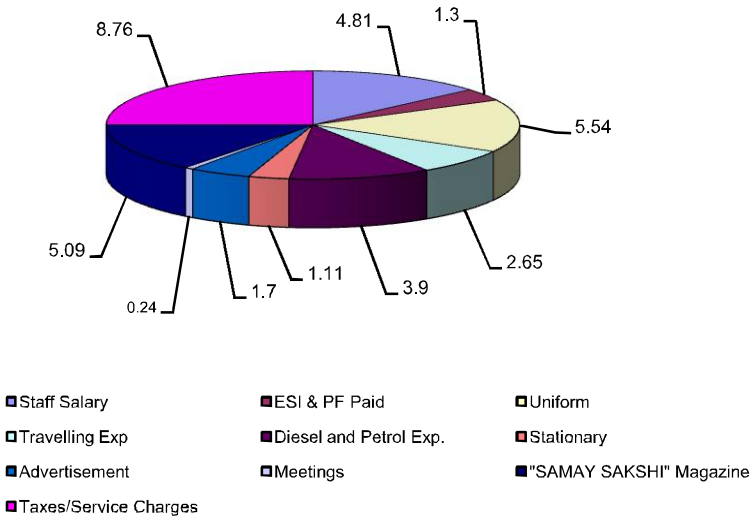
Chart- 3.1.2
Expenditure (Rs. in lakh) incurred by M/s Shield Securitas Pvt. Ltd.



Survey Demarcation | Two Wheeler | Four Wheeler | Fooding Expenses | Logging expenses
Exp on micro plan | Advertisement | Banners | Social Awareness Programme | Meetings
Workshops | Training & Development | Videography | Wall Posters & Photo Lamination | Calenders
Bochers | T-Shirts & Caps | Administrative Expenses & Processing | Service Tax

Chart-3.1.3

Expenditure (Rs. in lakh) incurred by M/s Asian Securities Pvt. Ltd.



Conclusion:

Public funds were used without following the procedures that ensured competition. The award of contracts lacked transparency and do not provide an assurance that the UBF obtained value for money. The selection process and the absence of supporting documents on the delivery of services against contracts, raise doubts of suspected frauds in procurement.

3.1.12 Monitoring and Evaluation

Audit Objective 7: Whether Government had put in place appropriate arrangements for project management and monitoring covering various stages of tripartite agreement and how it monitored the continuous delivery of services to the specified quality standards?

The micro-plans envisaged that the plantation work done by the VPs would be monitored by UBF and the payments would be released only after satisfactory evaluation. Scrutiny of Daily Visit Reports (DVR) conducted by UBF officials showed that they lacked specific details and columns pertaining to plantation activities in the visited area, pit digging and extent of plantation in the sites were left blank. In the absence of the above crucial information, the visits remained unverifiable. DVRs after March 2006 were not provided to Audit.

The Government also did not lay down a specified mechanism of evaluation through periodic meetings or for provision of information from UBF or Forest Divisions on a regular basis.

Conclusion:

Monitoring and supervision at apex level was found defunct and at the field level it was inadequate. Neither the UBF nor the Government established an effective feed back system to evaluate the project and to plug the loopholes noticed mid-stream.

Recommendations

Monitoring and supervision form an essential part for the success of any programme, hence special focus should be given to rejuvenate this at every level.

URBAN DEVELOPMENT DEPARTMENT

3.2 MANAGEMENT OF WASTE

Highlights

Performance audit of "Management of Waste" revealed that while the Government orders assigned duties and responsibilities for waste management, key agencies like the Uttarakhand Environment Protection & Pollution Control Board (UEPPCB) and State Urban Development Agency (SUDA) were ambiguous about their roles. The UEPPCB restricted its role to grant of authorization to Local Bodies and health institutions for waste disposal; its presence in overall planning and monitoring waste management in the State was negligible. Comprehensive and reliable data on Municipal Solid Waste and Bio-Medical Waste generated in the State as well as risks to environment and health were not gathered. No effective "3 Rs"- (Reduce, Reuse & Recycle) strategies were being implemented and the focus was only on disposal of the waste being generated. Some significant audit findings are as under:

- ***Fifteen to 38 per cent of municipal waste generated in the four test-checked districts remained unattended.***

[Paragraph 3.2.10.1]

- ***Advisory Committee meant for implementation of Bio-Medical Waste management Rules was defunct since its inception.***

[Paragraph 3.2.7.3]

- ***Solid waste management cell meant for monitoring compliance with MSW rules was not created.***

[Paragraph 3.2.7.2]

- ***Major portion of the State grant given for municipal solid waste management remained unutilised and was surrendered.***

[Paragraph 3.2.12.2]

- ***Of the two incinerators available in the State for disposal of bio-medical waste, one was on the verge of shutting down and the other was non-functional since 2007.***

[Paragraph 3.2.11.1]

- ***Thirty two local bodies out of 63 and 405 out of 602 hospitals were handling wastes without authorisation but were not penalised.***

[Paragraph 3.2.9.1 & 3.2.9.2]

Summary of Recommendations

The Government should formulate a comprehensive policy for management of waste with primary focus on innovative strategies for reducing and recycling of MSW. Pollution impact should be monitored regularly for periodic assessment of the effects of improper disposal of waste on public health and environment. A comprehensive database on waste generated, segregated under different categories of waste, should be prepared. Such data would form the basis for future strategies for waste management. Segregation should be given greater publicity through awareness campaigns organized in conjunction with residents' associations and NGOs, so that segregated plastic waste is sent to recycling plants, bio-degradable waste is composted and rest is dumped in sanitary landfills as per specifications. A time-bound plan should be drawn up for setting up waste processing and disposal facilities. Meanwhile, steps to improve the existing dumpsites to monitor and minimize air, water and soil contamination around the sites should be taken.

The State should have an action plan for effective bio-medical waste management covering hospitals in the private sector as well. The smaller Primary and Community Health Centres require priority attention with adequate funding and capacity building. There is an urgent need to construct and operationalise more common waste treatment and disposal facilities (CWTDF) and link as many hospitals and health facilities as possible, to these CWTDFs. Pollution Control Board (UEP&PCB) should strengthen its monitoring mechanism and take appropriate and timely action against the defaulters contravening the provisions of the Environment Act and Rules there under. The Board should work with the Medical Department to encourage public health facilities to use untied funds under National Rural Health Mission to develop viable BMW management.

3.2.1 Introduction

All our daily activities give rise to a large variety of wastes[1] arising from different sources. Increase in population due to migration from rural areas and high rate of resource consumption have led to considerable increase in the generation of waste in urban areas. Accumulation of garbage and littered public places indicate the need to sensitise people, municipal bodies in particular, towards environmental issues.

The main contributors to waste are:

- Municipal Solid waste[2] (MSW), which includes commercial and residential waste generated in a municipal area in either solid or semi-solid form excluding industrial hazardous waste.

[1] According to Basel Convention, wastes are substances or objects, intended to be disposed or are required to be disposed off by the provisions of national laws.

[2] As defined in Municipal Solid Wastes (Management and Handling) Rules, 2000.

- Bio-Medical Waste (BMW) that is generated by hospitals and other health providers during the diagnosis, treatment or immunization of human beings/animals or in research activities, consisting of discarded drugs, waste sharps, microbiology & biotechnology waste, human anatomical waste etc.

There are other sources of waste such as industrial waste, construction waste, mining waste, electronic & electrical waste and radioactive waste. According to the United Nations Environment Programme (UNEP), waste management includes both the components of prevention and disposal of waste. Waste disposal typically involves the segregation, collection, transportation and finally disposal of waste. On the other hand, the preferred option of waste prevention aims at the reduction of quantity and harmfulness of diverse waste items through the "3 Rs" – Reduce, Reuse and Recycle.

3Rs in waste prevention

- Reducing waste includes any process or activity that avoids, reduces or eliminates waste at its source.
- Reusing is using an article more than once. This includes conventional reuse, where the item is used again for the same function and new-life reuse, where it is used for a new function.
- Recycling involves reprocessing of a discarded waste material to make it suitable for subsequent reuse.

The Rules governing management of wastes in India, in particular MSW and BMW are as follows:

- Municipal Solid Wastes (Management and Handling) Rules, 2000 which make every municipal authority, within the territorial area of municipality, responsible for the implementation of the provisions of these rules, and for any infrastructure development for collection, segregation, storage, transportation, processing and disposal of MSW. Pollution Control Boards (PCBs) in the States grant authorization for setting up waste disposal facilities and monitor compliance with the criteria in disposal of waste.
- Bio-medical Waste (Management and Handling) Rules, 1998 as amended in 2003: The institutions generating BMW were given the responsibility of ensuring that all such waste is segregated, transported, processed and disposed without any adverse effect on human health and environment.

3.2.2 Organizational set up

The Secretary to the Government of Uttarakhand, Department of Urban Development is the administrative head in the Government for formulating policies relating to waste management. Director, Urban Development Directorate is responsible for implementation of policies and directions given by the Government from time to time. Uttarakhand Environment Protection

and Pollution Control Board (UEPPCB), constituted in 2002, has been entrusted with the responsibility of enforcing various Environmental Acts and Rules including the areas of Municipal Solid Waste and Bio-medical Waste management.

3.2.3 Scope of Audit

Performance audit was carried out from August to November in 2007 and from May to July in 2008 and covered the period from 2003-08. Four out of thirteen districts i.e. Dehradun, Haridwar, Nainital and Pauri were selected based on random sampling. Four municipalities[3] were selected for the purpose of reviewing management of municipal solid waste. For bio-medical waste, audit was conducted in eight district hospitals (two in each selected district) along with three community health centres (CHCs) and six primary health centres (PHCs) in each district, besides the two common waste treatment and disposal facilities (CWTDF) at BHEL Hospital, Haridwar and at Dr. Shushila Tiwari Memorial Forest Hospital, Haldwani.

3.2.4 Audit Objectives

The objectives of the performance audit were to assess whether:

- Risks posed by waste were identified and policies were framed to address issues related to waste management.
- Quantum of waste being generated in the State and the capacity to handle it has been assessed.
- Waste generators and bodies responsible for waste management comply with the relevant laws.
- The local bodies comply with laws regulating collection, processing and disposal of municipal solid waste.
- UEPPCB ensured that laws regulating collection, processing and disposal of bio-medical waste were being complied with.
- Adequate funds were provided and utilised for municipal solid waste and bio-medical waste management.

3.2.5 Audit Criteria

Audit findings were benchmarked against the following criteria.

- Municipal Solid Waste (Management & Handling) Rules, 2000.
- Bio-medical Waste (Management & Handling) Rules, 1998.
- Orders/instructions/guidelines issued by the Government of Uttarakhand relating to management of municipal solid waste and bio-medical waste.

[3] Nagar Nigam Dehradun, Nagar palika Parishad Haridwar, Nagar palika Parishad Nainital and Nagar palika Parishad Pauri.

3.2.6 Audit Methodology

The performance audit commenced with an entry conference with the Secretary, Urban Development in September 2007. Information was obtained from the Uttarakhand Environment Protection & Pollution Control Board, Urban Development Directorate and Directorate General of Medical, Health and Family Welfare relating to municipal solid waste and bio-medical waste. We also scrutinized records and physically verified the disposal of waste in all the sampled units. Audit findings were discussed in an exit conference held in October 2008 with the Principal Secretary, Urban Development and findings relating to the bio-medical waste were discussed with the Principal Secretary, Medical, Health and Family Welfare in November 2008. Explanations/replies of the Departments were suitably included against the relevant paragraphs where found appropriate.

Audit Findings

3.2.7 Comprehensive waste policy

Audit Objective 1: Whether risks posed by waste were identified and Policies were framed to address the issues related to waste management?

An overall waste management policy determines and governs the framework for activities in the waste sector. It is of crucial importance in arranging adequate funds for establishing waste management systems.

3.2.7.1 Identification of risks

Identification of risks posed by waste to environment and health is essential for formulation of appropriate policies relating to waste management so that damage to health and environment can be minimized. Such an assessment can be done only if the ambient air and water quality is checked at waste disposal sites, particularly open disposal sites and incinerators.

Impact of waste on health and environment

- Movement of leachate (the liquid that forms as water trickles through contaminated areas) from landfills, effluent treatment plants and waste disposal sites results in hazardous substances entering surface and ground water or soil
- Incinerators that burn waste, emit deadly toxins which cause cancer and damage endocrine glands
- Decomposition of organic waste in landfills release greenhouse gases, particularly methane gas that is 20 times more potent Green House Gas than carbon dioxide. Landfills could also lead to contamination of ground and surface water with metals, bio-accumulation of toxic materials etc. These risks are compounded if waste is dumped in open sites
- Those who handle MSW, BMW and hazardous waste are also vulnerable to health risks

UEPPCB has two laboratories[4] under its control. These laboratories did not test (throughout the period of review) air, water or soil from dump sites and incinerators for adjudging the risks caused by waste. The risks to waste handlers were also not assessed. In the exit conference (October 2008), it was assured that immediate measures would be taken for establishing testing facilities at the dump sites.

3.2.7.2 Municipal Solid Waste

Government of Uttarakhand issued (April 2007) an order laying down the guidelines for compliance with Municipal Solid Waste (Management & Handling) Rules, 2000 by all the municipalities. The **waste generators** were divided into **ten categories**[5]. All the generators were required to segregate bio-degradable and non-bio-degradable waste including plastics in separate bins. This was to be executed through participation of stakeholders along with officers-in-charge of local bodies. The order empowered the health authorities of local bodies (LBs) to impose penalty for non-compliance[6] **.**

The National Environment Policy (NEP) 2006 had proposed several measures towards waste minimization, which included strengthening the capacities of LBs for recycle and reuse of MSW; strengthen informal sector in this regard; promote biodegradable and recyclable substitutes for non-bio-degradable materials through promotion of relevant technologies and use of incentive based instruments, promote adoption of clean technologies by industry through regulatory and fiscal measures, standards setting; and consider use of revenue enhancing fiscal instruments to promote shifts to clean technologies in both existing and new units.

A time bound programme for the most polluting industries (17-categories) was made by the Central Pollution Control Board (March 2003) in charter on Corporate Responsibility for Environmental Protection (CREP) and full authority for compliance was given to the UEPPCB. The State policy did not incorporate the 3Rs of waste management to reduce, reuse and recycle waste. Instead, it focused only on the least favoured option in waste management i.e., waste disposal.

The aforementioned Charter on Corporate Responsibility for Environment Protection is applicable on 17 categories of industries in Uttarakhand. This has led, to some extent, introduction of cleaner technology and reduction of water pollution by adopting chemical recovery plant in agro-based paper mills and installing electrostatic precipitator and bag filters in sugar mills.

Under the Government order (April 2007), a Solid Waste Management Cell was to be set up for overall monitoring of MSW in the State. However, the Cell was not constituted in the State as of June 2008.

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[4] Dehradun and Haldwani.

[5] Hotels, Markets, Schools & Colleges, Residential colonies, Offices, Hospitals, Industries, Development authorities, Tour operators & travel agencies, Swachata samitis.

[6] Under MSW Rules, 2000, U.P. Plastic Usage & Disposal Act, 2000 and Recycled Plastic-bag Manufacture & Usage Act, 1999.

3.2.7.3 Bio-medical waste

Under the Government order (March 2006) to ensure implementation of Bio-medical Waste (Management and Handling) Rules, 1998, BMW was divided into ten categories, specifying the mode and the authority responsible for disposal. Overall responsibility for ensuring the implementation was vested with UEPPCB.

In compliance with BMW Rules, the State Government constituted (February 2003) an Advisory Committee with six members[7], with Secretary, Health Department as the Convener. Director General, Medical & Health, being one of the members when enquired about the meetings and initiatives taken by the committee, was unaware of such a Committee. There were no records to indicate that the Committee ever met. The UEPPCB could not, therefore, benefit from the Committee's advice on implementation of BMW Rules. The above facts were accepted in the exit conference (October 2008).

Conclusion

UEPPCB did not assess the risks to environment and health, posed by waste. While the roles and responsibilities of various authorities were identified, the policy did not detail the strategies for minimisation of waste, which should have been accorded higher priority. The monitoring mechanism, though laid down, had not been put into effect.

Recommendations

- *The Government should formulate a comprehensive policy for management of waste with primary focus on innovative strategies for reducing and recycling of MSW.*
- *Pollution impact should be monitored regularly for periodic assessment of the effects of improper disposal of waste on public health and environment.*
- *Mechanism to fix accountability is required, to provide "teeth" to the policies.*

3.2.8 Assessment of waste

Audit Objective 2: Whether the quantum of waste being generated in the State and the capacity to handle it were assessed?

The first step towards effective policy making on waste management is the assessment of source and quantum of waste generated in the State. The parameters used for such data would be the size of the population; amount and type of waste generated from critical sectors like industries and commercial undertakings, agriculture etc; and seasonal fluctuations due to tourist inflow. These parameters should also form the basis for future projections for waste generation and assessment of additional capacity required to manage the waste. UEPPCB provided the following data on MSW generated in the State during the period 2003-04 to 2007-08.

[7] Principal Secretary, Forest & Environment; Secretary, Medical & Health; Secretary, Urban Development, Chief Forest Conservator, Director General, Medical & Health and Chairperson, Indian Medical Association, Uttarakhand.

Table-3.2.1

Quantum*	2003-04	2004-05	2005-06	2006-07	2007-08
MSW	760	760	764	764	764
BMW	N.A	1.9	1.9	2.5	2.5

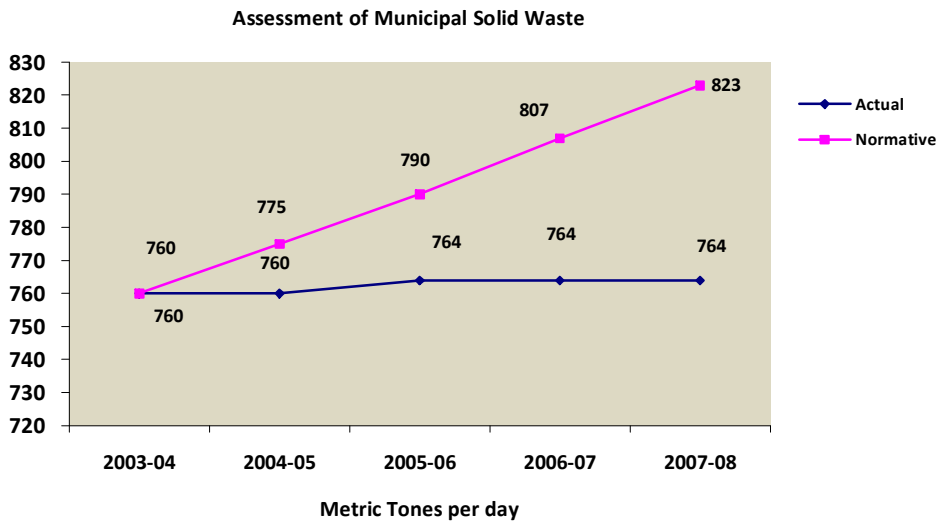
- quantum of waste is measured in metric tones per day

3.2.8.1 Municipal solid waste

The data provided by the Board was a compilation of the figures provided by local bodies and no independent assessment was ever carried out by the Board. The local bodies (in four sampled districts) assess waste generation on fixed norms, that differed across districts. It was 280 gm per capita per day in Pauri; 357 gm in Dehradun and 500 gm in Haridwar. Nagar Palika, Nainital could not provide the norms it applies in this regard. Seasonal fluctuations in the amount of waste being generated by floating population were taken into cognizance in three local bodies[8].

However, the assessment on waste generation was almost static over the years (0.5 *per cent* increase in 5 years) and did not reflect the incremental change even if only one factor i.e., the increase in population was to be considered. The graph below depicts the gap between the assessed waste (provided by the Board) and the normative assessment based on projected growth in population (Census 2001).

Chart- 3.2.1



3.2.8.2 Bio-medical waste

As in MSW, the figure provided by the Board was a compilation of data provided by various hospitals/ health care facilities at the time of applying either for authorization or for renewal of authorization. Thus 147 of the 602 hospitals in Uttarakhand in the year 2007-08, representing 24 *per cent* of the

[8] Seasonal fluctuations, with addition to the waste: Dehradun - 2.5 MT per day, Haridwar – 60 MT per day and Nainital – 0.5 MT per day.

total hospitals, which had not applied for authorization but were generating BMW, were left out of the assessment of quantum of waste generated.

3.2.8.3 Capacity to handle waste

Assessment of capacity in terms of manpower and other assets is required to judge the adequacy of current waste infrastructure and future additional needs. Nagar Nigam, Dehradun[9] prepared (May 2008) a detailed assessment of capacity while preparing the Detailed Project Report (DPR) under Jawaharlal Nehru National Urban Renewal Mission (JNNURM). The DPRs of Haridwar and Nainital (under the coverage of JNNURM) had not been finalized. The remaining 60 local bodies had not initiated work on assessment of capacity; in the exit conference (October 2008), it was stated that these 60 local bodies would be covered through aid expected to be received from Asian Development Bank**.**

Conclusion

The data on quantum of waste generated was based only on the population and the near-stagnation in figures suggests that this parameter had also not been applied comprehensively. Increase in waste due to other factors like projected economic growth or tourist inflow and increase in demand for consumer goods were not taken into account. The data on BMW was incomplete. In the absence of complete and reliable data, accurate estimation and future projections on generation of waste are rendered difficult.

Recommendation

A comprehensive database on waste generated, segregated under different categories of waste, should be prepared. Such data would form the basis for future strategies for waste management.

3.2.9 Grant of authorization

Audit Objective 3: Whether waste generators and bodies responsible for waste management comply with laws?

3.2.9.1 Municipalities for MSW

The Municipal Solid Wastes (Management & Handling) Rules, 2000 provide that the Municipal authorities or an operator of a facility should obtain authorization for setting up of waste processing and disposal facilities including landfills, from the State Pollution Control Board (SPCB).

Out of the 63 LBs in Uttarakhand, 31 were given conditional authorization[10] for the first time till May 2008. The remaining 32 LBs were handling waste without any authorization, even as the Board conceded that their applications for authorization were rejected due to non-compliance with the Rules.

[9] Two other municipalities of Haridwar and Nainital had not completed the exercise of submission of DPR.

[10] Authorization on trial basis for a period of six months, subject to terms and conditions stipulated by SPCB.

Dumping of waste was a common sight (refer para 3.2.10.1) across the districts test-checked, yet the Board had not initiated action against the concerned LBs. Nagar Nigam, Dehradun informed (August 2008) that action had been taken against 149 dairy owners in Dehradun who had thrown their waste into open drains. However, the penalty of Rs 200 from each dairy was a paltry sum and has little deterrent effect.

3.2.9.2 Hospitals for BMW

Under the provisions of Bio-Medical (Management & Handling) Rules, 1998, Hospital authorities are required to obtain authorization from SPCB for proper management of BMW generated in their hospitals with regard to collection, segregation, treatment, transportation and disposal.

Only 197 out of 602 hospitals were authorized, leaving 405, representing 67 *per cent of* the hospitals that were not authorized by the UEPPCB to handle BMW as of March 2008. The Board informed (July 2008) Audit that the authorizations were not granted in cases where the hospitals were not complying with the criteria of previous authorization or the BMW Rules. The table below details the position on authorization of hospitals:

Table- 3.2.2

Year	**No of hospitals** that		
	Applied for authorization	Received authorization	Were unauthorized
2003-04	55	4	51
2004-05	349	160	189
2005-06	431	261	170
2006-07	390	295	95
2007-08	455	197	258

Source:-Uttarakhand Environment Protection and Pollution Control Board

The above data shows that the Board could not ensure that all the hospitals were applying for authorization by invoking penal action. It was found that other than issuing show-cause notices under section 5 of Environment Protection Act, 1986, there was no follow-up to ensure penal action on the unauthorized hospitals. The slippage of previously authorized hospitals is also a matter of concern. Some important hospitals handling waste without authorization were District Hospitals (Male & Female) at Haridwar and District (Male) Hospital at Pauri. The Board did not renew the authorization of the above hospitals; specific reasons for the same were not provided to Audit.

The above findings were accepted in the exit conference (October 2008).

Conclusion

In the absence of strict enforcement of the Rules, local bodies and hospitals were handling waste without authorization, posing hazard to public health and environment.

Recommendations

- *UEPPCB should strengthen its monitoring mechanism to take appropriate and timely action against defaulters.*
- *Penalties should be revised, so that they have a salutary deterrent effect.*
- *Effective co-ordination should be developed with DG, Health for enforcement of BMW Rules. In case of private hospitals, their non-compliance with BMW Rules and its impact on health should be published in the media to increase the awareness of the communities and to serve as a strong deterrent to these institutions.*

3.2.10 Handling of waste: performance and adequacy of infrastructure

Audit Objective 4: Whether local bodies complied with laws regulating collection, processing and disposal of municipal solid waste?

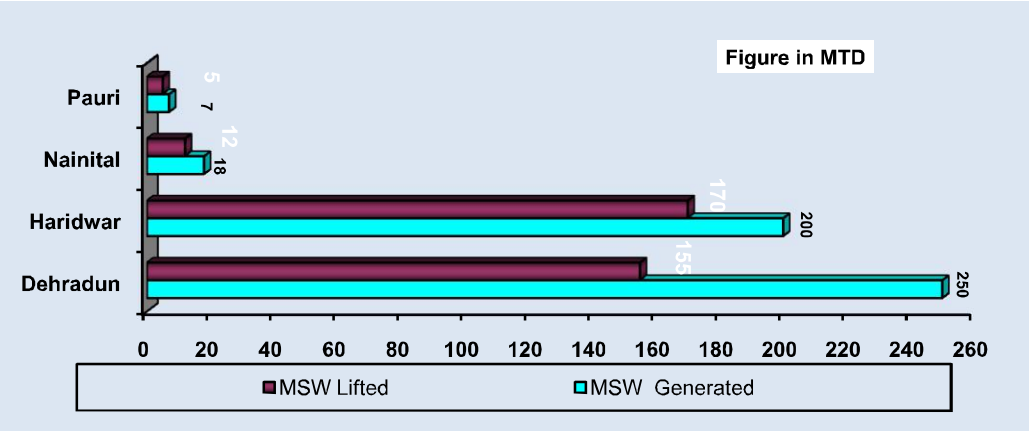
The process of waste disposal includes collection, segregation, transportation, processing and disposal of waste. The LBs are required to meet the criteria laid down in Schedule II of Municipal Solid Waste (Management and Handling) Rules, 2000. Similarly, disposal of BMW must meet the criteria in the Bio-medical Waste (Management & Handling) Rules, 1998.

3.2.10.1 Collection

Schedule II requires that the LBs must ensure that all waste generated is collected to ensure that uncollected waste would not pose risks. Storage facilities should be created by taking into account the quantities of waste generated. They should be maintained in such a manner that stored waste is not exposed to open atmosphere.

The sampled municipalities informed (June 2008) that they could collect and dispose (at open dump sites) only 62 to 85 *per cent* of the waste generated in the district as shown in the chart:

Chart- 3.2.2



Audit conducted a study[11] of the schedule of vehicles deployed for waste collection by municipalities at Dehradun and Haridwar. Only the number of rounds taken by the vehicles was being logged in the log book maintained by the Nagar Nigam, Dehradun, which could not be counter-checked in the absence of data on the distance covered and fuel consumption. Nagar Palika Parishad, Haridwar had 25 vehicles of different capacities, which on an average, could collect 163.69 MT of MSW every day. Thus, the assessed capacity of waste collection by the municipality at Haridwar was almost accurate.

However, the procedures for collection of MSW were found to be woefully inadequate as detailed below.

- Dust–bins were kept as and where requested by the local residents[12]. Municipalities had not notified the waste collection schedule and waste was being collected as and when felt necessary. The Haridwar municipality informed that the route for each vehicle was pre-determined and if any dustbin was overflowing, it is the duty of the sanitary supervisors, one for each ward, to inform the workshop/driver to collect the same whereas in Nagar Nigam, Dehradun, route for each vehicle was not pre-determined. In the absence of notified time-schedule for clearance of storage bins, they were overflowing and in unhygienic conditions – waste was found scattered all around the bins with stray animals moving around the storage facilities as can be seen from the photographs given below.



Near ISBT Dehradun: overflowing dustbin



Indira Nagar, Dehradun-stray animals around overflowing dustbin

[11] Audit got various types of waste collection vehicles weighed at a recognized weigh bridge, empty (tare weight) and with the waste collected (gross weight). The data on number of rounds taken by the vehicles during a week (August 2008) was used to assess the average quantum of MSW collected by the municipality.

[12] Mohalla Swachata Samitis have been formed (91) in Dehradun to provide a link between the residents and the municipalities.

Storage facilities should not be exposed to open atmosphere. However, the storage bins were open; visible to public and exposed to environment. Most of the waste was not being collected in dust bins and instead was being dumped in open sites near public places along main roads, bus stations etc. The DPR prepared for Nagar Nigam, Dehradun assessed that 70 *per cent* of the total waste in the District was being dumped in public places and not in dust bins. The photographs below tell the tale:



Garbage on roadside - ISBT Dehradun



Waste in drain: Laltarao Bridge Haridwar



Garbage on road side in Ajabpur Kalan Dehradun



Waste in drain: Haridwar

- There was no house-to-house collection of municipal solid waste in any of the sampled local bodies. The reasons given were shortage of staff, non-cooperation of the public and the absence of an action plan. However, scrutiny revealed that the LBs had sweepers in excess of the numbers required as per the norms laid down in the Uttar Pradesh Health Manual (adopted in Uttarakhand).

Table- 3.2.3

Name of ULB	Population as per 2001 Census	Requirement of sweepers*	No of sweepers deployed	Shortage (-)/Excess(+)
Dehradun	4,26,674	1195	1333	(+) **138**
Nainital	38,630	108	248	(+) **140**
Haridwar	1,77,509	497	760	(+) **263**
Pauri	24,742	69	46	**(-) 23**

** Norms being 28 sweepers per 10,000 of population*

- There was no schedule for waste collection from slums and squatter areas as well. It was reported that separate dust-bins have been kept for hotels, commercial complexes and office areas by Nagar Nigam, Dehradun.
- Only 53 *per cent* of the vehicles used for transportation of waste in the four test-checked districts were covered; the remaining were open, visible to public, rendering waste to risk of littering while being transported as can be seen from the photograph given below.



MSW being carried in uncovered vehicle - Haridwar

3.2.10.2 Segregation

Schedule II requires that biodegradable and non-biodegradable waste must be segregated to help adopt different processing techniques for different categories and thus reduce hazards to health and environment due to waste. Bins for storage are required to be painted in different colours – storage of bio-degradable wastes to be painted green, those for storage of recyclable wastes painted white and those for storage of other wastes painted black. Awareness programmes to ensure community participation for segregation of wastes were to be organized.

Fifty thousand pamphlets carrying the message for segregation of waste were distributed in Dehradun in 2007. A rally (May 2008) was also organized by involving school children for creating awareness and popularizing the segregation practices regarding municipal solid waste and plastic waste.

None of the municipalities test-checked in Audit had made arrangements for keeping separate bins for bio-degradable and non-bio-degradable waste. Hence the waste was not being segregated, leading to all kinds of waste being thrown in the mixed form in the dump sites in violation of the guidelines (April 2007) of the Government. This also limited the possibility of processing of recyclable waste.

Wastes from slaughter houses and fish, fruit and vegetable markets were collected in mixed form with other MSW. Since these wastes are biodegradable, they were to be collected and processed separately. The local bodies admitted that despite the directions given by Municipal Health Officer, they could not stop burning of garbage and dry leaves. Other horticultural wastes were also being collected but mixed with MSW, instead of being segregated.

Regular meetings were not being held by the municipalities with the representatives of local resident welfare associations and non-governmental organizations. Municipalities assured (June 2008) that such meetings and programmes for creating awareness would be organized in future. The Principal Secretary also assured (October 2008) of corrective measures during the exit conference.

3.2.10.3 Processing

MSW Rules require that municipal authorities adopt suitable technologies to make use of waste to minimize the burden on landfill. Biodegradable wastes are processed by composting[13], vermi-composting[14] or anaerobic digestion[15].

In Uttarakhand, three local bodies - Uttarkashi, Pithoragarh and Cantonment Board, Nainital (not in the sample selected for test-check in Audit) presently undertake composting of bio-degradable wastes. In the absence of processing facilities, waste was being dumped in open sites in all the four test-checked districts.

3.2.10.4 Disposal



MSW exposed to natural environs -Dump site, Pauri



Easy access to humans and animals at Dump site Haridwar

Given the hazards to health and environment caused by waste, it is essential that waste is processed and under unavoidable circumstances, disposed in designated landfill sites and not dumped in open. Landfill sites with compaction procedures, containment systems, appropriate site development, surface water control and access restrictions, reduce the risks associated with dumping of waste. Schedule I of the MSW Rules, 2000 requires that the

[13] A controlled process involving microbial decomposition of organic matter.
[14] A process of using earthworms for conversion of bio-degradable wastes into compost.
[15] A controlled process involving microbial decomposition of organic matter in absence of oxygen.

municipal bodies set up proper disposal facilities including landfills by 31 December 2003.

Not a single sanitary landfill was established in the State and all the local bodies resorted to dumping of waste in open dumpsites. However, Dehradun, Haridwar and Nainital have identified landfill sites and have plans as envisaged in the DPR under JNNURM to move the waste from open dumpsites to sanitary landfills. It is apparent that except the three local bodies[16] covered under JNNURM, open dumping of waste would continue in the absence of waste processing and scientific land-filling.

Further, the dumpsites need to be monitored for possible contamination and subjected to epidemiological surveillance against diseases in areas around them. Since the surface water, ground water, ambient air and leachate quality near these sites was not being tested, environmental pollution and health risks to humans could not be identified, putting the nearby habitations at a greater risk.



Easy access to humans and animals at Dump site Dehradun



MSW exposed to natural environs-Dump site, Nainital

Conclusion

The ad-hoc schedules of collection are unable to meet the need for timely clearing of dust-bins and established storage facilities were inadequate to cater to the quantity of waste being generated. Although awareness programmes were being organized for propagating the need for segregation of wastes, these do not appear to be a part of a sustained and long-term action plan. Worse, the municipalities did not deliver on their part of the deal i.e., place separate bins. In the absence of processing facilities, the waste was being dumped in open sites which had no facilities for containment and they were unmanned with free access to cattle and humans. The risks to humans, cattle and to the environment from these unhygienic conditions were not assessed by the Board.

[16] Nagar Nigam, Dehradun, Nagar Palika Parishads Haridwar and Nainital.

Recommendations

- *Segregation should be given greater publicity through awareness campaigns organized in conjunction with residents' associations and NGOs, so that segregated plastic waste is sent to recycling plants, bio-degradable waste is composted and rest is dumped in sanitary landfills as per specifications.*
- *A time-bound plan should be drawn up for setting up waste processing and disposal facilities. Meanwhile, steps to improve the existing dumpsites to monitor and minimize air, water and soil contamination around the sites should be taken.*

3.2.11 Bio-medical waste

Audit Objective 5: Whether UEPPCB ensured that laws regulating collection, processing and disposal of bio-medical waste were complied with?



Doon Hospital, Dehradun

Bio-Medical Waste (Management & Handling) Rules, 1998 provide that BMW should not be mixed with other wastes but segregated into colored containers/bags meant for a particular type of waste, at the point of generation.

Categories of Bio-medical waste

Category 1 &2 (Human anatomical waste)

(i) Cities having population more than five lakh should dispose the waste through incineration

(ii)Cities with population less than five lakh and where no incineration facility is available should use 'Deep Burial Pits'.

Category 3 (Micro-biological & Bio-technological Waste)

As these wastes are extremely harmful, they should never be transported but disposed off through autoclave/microwave at the hospital itself. In case the hospital lacks this facility, an agreement needs to be entered into with the nearest hospital which has this facility.

Category – 4 (Waste Sharps)

The waste should be mutilated and then recycled at the local level itself.

Category – 5 (Discarded Medicines & Cytotoxic drugs)

The said waste should be returned back to the 'Drug producers' for disposal at their level.

Category – 6 & 7 (Solid Waste)
The waste is to be disposed off in the manner indicated for the wastes falling under category – 3.

Category – 8 (Liquid Waste)
It is to be disposed through local drains after chemical disinfection.

Category – 9 (Incineration Ash)
It is to be disposed on landfills through urban local bodies.

Category – 10 (Chemical Waste)
It is to be disposed on landfill sites after chemical treatment.



District (Male) Hospital, Pauri

The above categories of wastes were to be segregated into four coloured containers to be processed separately as prescribed in the BMW Rules.

All the sampled district hospitals were segregating bio-medical waste in various coloured containers in accordance with the Rules. Medical Centres lower in the tier below District hospitals, however, did not have such facilities.

3.2.11.1 Waste management at District hospitals

Uttarakhand has two Common Waste Treatment & Disposal Facilities (CWTDF) - BHEL hospital, Haridwar[17] and Sushila Tiwari Memorial Hospital, Haldwani[18] since 2004 for processing BMW generated. Presently, three private transporters have been engaged for collection and transportation of waste from hospitals to CWTDFs. The transporters are being authorized by UEPPCB subject to certain terms and conditions and are allowed to collect charges[19] from the hospitals.

Rule 6 of BMW Rules lays down that if a container is transported to a treatment facility, the container should be labeled as prescribed in Schedule III and untreated BMW should be transported only in such vehicles as may be authorized for the purpose by the competent authority as specified by the Government. No untreated BMW shall be kept stored beyond a period of 48 hours. If for any reason, it becomes necessary to store the waste beyond such

[17] For 379 hospitals in seven districts coming under Garhwal region.
[18] For 174 hospitals in six districts coming under Kumaon region.
[19] Rs 3.75 & Rs. 3.50 per bed per day for government hospitals & private hospitals respectively.

period, the authorized person must, after prior permission, take measures to ensure that the waste does not adversely affect human health and environment.

Audit scrutiny revealed that:

- The facility at BHEL, Haridwar was admittedly "on the verge of closing down[20]." BHEL informed (July 2008) the Board that the incinerator had outlived its life and the base of the chimney was damaged causing environmental pollution. Besides, the CWTDF had capacity to dispose of only category 1 and 2 of BMW and does not have the facility to dispose the other eight categories. BMW generated at the BHEL hospital, adjacent to the CWTDF presented a sorry picture with waste being dumped in the open within the premises of the hospital, as shown below:



CWTDF at BHEL Hospital – Haridwar



BMW dumped in open – BHEL Hospital, Haridwar

The common waste treatment and disposal facility at Dr. Sushila Tiwari Memorial Forest Hospital, Haldwani (for Kumaon region of Uttarakhand) was closed since August 2007 due to expansion of the present hospital building. A new facility (incinerator) constructed was awaiting authorisation from UEP&PCB. Thus there was no disposal facility for the Kumaon region and the health facilities were making do with in-house arrangements for BMW disposal.

- The arrangement for transportation to CWTDFs was being availed only by the District hospitals but not all hospitals were availing this facility. For instance, the base hospital at Srinagar, Pauri was disposing its waste in the open; district hospitals in Pauri were disposing waste in deep burial pits only.

[20] An alternate but privately owned facility is proposed at Mandawar in Haridwar District.



Well- fenced and covered Deep Burial Pits – District Male Hospital, Pauri

- The receipts for the waste carried from the hospital and handed to CWTDFs were required to be submitted to the Board every month. This was to avoid any unauthorized transfer (or dumping) of BMW by the transporter. It was found that such receipts were not being submitted to the Board. The transporters were being paid at the lifting point i.e., by the hospitals. The CWTDFs had no records that provided hospital-wise break-up of waste lifted and transported, with no cross-check for the transportation of the waste to the CWTDFs. This is a serious lacuna and poses risk of dumping of BMW in unauthorized places by the transporters.

- UEPPCB carried inspection only at the time of renewal of authorization leading to loose controls over transporters. The transporting vehicles were required to have separate cabins for staff and the waste containers; cabin for waste should be designed for storing waste containers in tiers. However, BMW was being transported in ordinary Maruti vans, posing risks to the personnel involved in handling wastes, as can be seen from the photographs below:



District male Hospital, Haridwar



District female hospital, Haridwar

- District Male Hospital, Nainital has autoclave, shredder in addition to a deep burial pit in its complex. It was noticed during inspection of the hospital complex that the deep burial pit was not being used and the BMW is being dumped in the municipal dumper container. The District Female Hospital, Nainital is using its deep burial pit for disposal of the BMW. The hospital is also utilizing the autoclave and shredder installed in the District Male hospital for disinfection of BMW.



Base Hospital, Srinagar – Pauri



District Male & Female Hospital – Nainital

District hospitals in Haridwar and Pauri received material assistance like bins and needle destroyers etc. from Uttarakhand Health System Development Project (World Bank project). All the sampled district hospitals had formed bio-medical waste management committees and expenditure for managing bio-medical wastes was being met from user charges/office expenses.

3.2.11.2 Waste management in the lower tiers of public health

In Pauri and Dehradun districts, some of the PHCs and CHCs were disposing the waste in burial pits. In Nainital district, however, the CHCs and PHCs were disposing the waste in open pits after disinfection as shown below:



CHC Pabo- Pauri



PHC Kalsi – Dehradun



Additional PHC Baijro – Pauri



CHC Sahia- Dehradun

BMW management in CHCs and PHCs at Haridwar was however, appalling. The waste was not being segregated, all kinds of bio-medical waste including infectious waste, sharp wastes (needles, syringes etc) were being dumped in the open pits, scattered around near the premises of the health centers and out dated/discarded medicines were being burnt in open in gross violation of bio-medical rules, as shown in the photographs below:



CHC Laksar - Haridwar



PHC Bahadrabad - Haridwar



PHC Imlikhera - Haridwar



CHC Bhagwanpur - Haridwar



CHC Narsan - Haridwar



PHC Bahadrabad Haridwar

Conclusion

The district hospitals were segregating the wastes appropriately. The common waste treatment and disposal facility at Haridwar (to cater to Garhwal region) was working partially while the facility at Haldwani (for Kumaon region) was closed since August 2007. The hospitals had a tie-up with a transporter for collection and transportation of BMW to the disposal facility. But weak controls in this arrangement posed risks. District hospitals had burial pits but waste disposal in PHCs and CHCs at Haridwar was unhygienic with serious consequences on public health and environment.

Recommendations

- *The State should have an action plan for effective bio-medical waste management covering hospitals in the private sector as well.*
- *The smaller PHCs and CHCs require priority attention with adequate funding and capacity building. Greater awareness among Rogi Kalyan Samitis constituted under NRHM will go a long way in community participation in waste management.*
- *There is an urgent need to construct and operationalise more common waste treatment and disposal facilities (CWTDF)and link as many hospitals and health facilities as possible, to these CWTDFs.*
- *UEP&PCB should strengthen its monitoring mechanism and take appropriate and timely action against the health facilities contravening the provisions of the Act and Rules thereunder.*

3.2.12 Adequacy and utilisation of funds

Audit Objective 6: Whether adequate funds were provided and utilised for waste management?

The State Government had not provided separate allocation for waste management in its budget. However, funds were provided to the UEPPCB and the Urban Development Directorate. As can be seen from the succeeding paragraphs neither the Board, nor the Directorate could utilise the funds provided for the intended purpose.

3.2.12.1 At Board level

The UEPPCB restricted its activities only to grant of authorisations, and other key functions relating to waste management were not carried out. However, lack of funds could not have hampered its work, as the Board had surplus funds throughout the period under review. UEPPCB could not however, provide the break-up of the total expenditure incurred on activities related to waste management.

Table- 3.2.4

(Rs in lakh)

Year	Receipts from			Utilisation	
	Internal[21]	State Govt.	Ministry of Environment & Forest, GOI	Amount spent	Unspent funds
2003-04	33.06	18.94	60.13	79.17	32.96 (29%)
2004-05	104.58	-	135.15	122.41	117.32 (49%)
2005-06	254.42	-	168.53	98.42	324.53 (77%)
2006-07	602.59	-	126.47	116.60	612.46 (84%)
2007-08	754.11	-	12.00	170.25	595.86 (78%)
Total	**1748.76**	**18.94**	**502.28**	**586.85**	

Source: Uttarakhand Environment Protection and Pollution Control Board.

The Board stated that the responsibility for implementation of MSW and BMW lies with the local bodies and hospitals and that the role of Board is confined only to monitoring. The reply shows apathy to its apex role in which it is required to test pollution levels, collect data and disseminate information, conduct investigations and research, organise mass education programmes etc. in the area of environmental pollution; waste sector being a subset of it. In the exit conference (October 2008), it was stated that a proposal for reorganising the Board structure is pending with the Government and that, the unspent funds would be utilised after the clearance of this proposal.

3.2.12.2 At Urban Development Directorate

State Government released Rs. 13.33 crore during 2003-04 to 2005-06 to the Urban Development Directorate for management of municipal solid waste. These funds were kept at the disposal of the State Urban Development Agency (SUDA). Out of the released funds, only Rs. 36.07 lakh was transferred to the LBs. The SUDA could utilise only Rs. 4.18 crore and surrendered the remaining Rs. 9.14 crore to the Government. 69 *per cent* of the funds received by SUDA from the State Government could not, therefore, be utilised.

Table-3.2.5

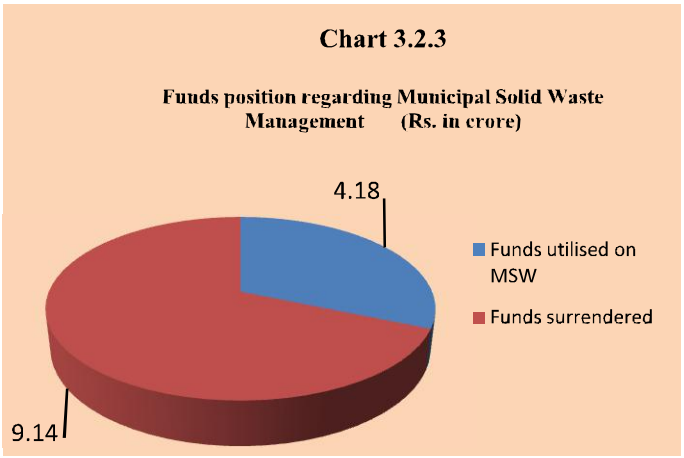
(Rs in crore)

Year	Receipt	Utilized	Surrendered
2003-04	3.00	Nil	Nil
2004-05	1.83	0.32	3.00
2005-06	8.50	Nil	Nil
2006-07	Nil	0.50	Nil
2007-08	Nil	3.36	6.14
Total	13.33	4.18*	9.14

Source: Urban Development Directorate, Government of Uttarakhand.

** Amount includes Rs. 3.32 crore spent on preparation of DPR for three districts under JNNURM*

[21] Internal receipts include Bio-Medical Waste Fee, Consent Fee, NOC Building Fee, NOC Fee.



SUDA stated (June 2008) that the funds could not be spent because the Government/ Directorate did not give clear directions/plans on their utilisation. This reveals the absence of ownership and ambiguity on the role of the Urban Development Directorate and its bodies, in waste management in the State, leading to idling of funds that could have been otherwise employed for strengthening the waste disposal infrastructure. In the exit conference (October 2008), it was agreed that diversion of funds to SUDA was irregular and further action was assured.

3.2.12.3 At Urban Local Bodies level

A sum of Rs. 15.86 crore, allocated by the 12th Finance Commission, was released by the State Government to the Urban Local Bodies during 2005-06 to 2007-08. 50 *per cent* of the sum was to be utilized on solid waste management. Urban Development Department was made responsible to monitor utilisation of these grants. Utilisation of the grants (as of March 2008) in three sampled districts averaged 61 *per cent*. The State Government kept extending the deadlines for utilisation. Absence of a time frame binding on the LBs led to laxity in utilisation of available funds.

Table-3.2.6

(Rs in lakh)

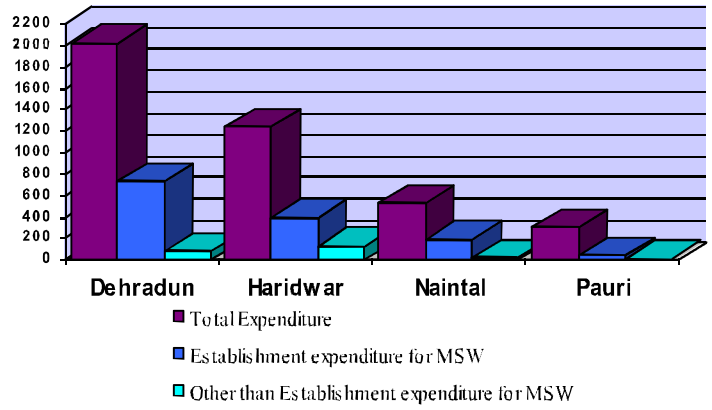
Local Body	Receipt	Expenditure	Utilisation (in percentage)
Pauri	23.15	9.23	40
Dehradun	112. 56	64. 56	57
Haridwar	61.12	51.99	85

Nainital received a total amount of Rs. 24.30 lakh for the above purpose and utilized it fully on enhancing the capacity for storage[22] and transportation[23] of waste.

The sampled municipalities utilised 14 to 42 *per cent* of their total expenditure on management of municipal solid waste, out of which, around 85 *per cent* was incurred on establishment during 2003-04 to 2007-08.

[22] 20 containers, each of 4.5 m^3
[23] Three dumper vehicles.

chart -3.2.4 Average expenditure incurred during the last five years



National Rural Health Mission provides untied funds across various tiers of public health infrastructure, which the Rogi Kalyan Samitis (with community participation) can deploy (along with user charges, donations etc) for BMW management.

Conclusion

In the absence of a detailed strategy and clearly laid down milestones, funds remained unspent with SUDA and with the local bodies. For UEP&PCB, waste management appeared to occupy very low priority in application of funds.

Recommendations

- *UEP&PCB should develop a time bound perspective plan for the next five years for utilization of funds for waste management.*
- *The Board should work with DGHS to encourage public health facilities to use untied funds under NRHM to develop viable BMW management.*
- *Distribution of funds needs to be streamlined on grounds of relative need analysis.*