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The Parameters of Policy Development for Effective Solid Waste Management in Pondicherry

Introduction

Policy development finds itself somewhere between the real-world practicalities of program implementation and the abstractions of general, aspirational ideals. To be successful, policy development must be informed by both ends of this continuum. Accordingly, in creating a model solid waste management (SWM) policy for the Union Territories of Puducherry – equally applicable to any state, for that matter – we have drawn on our experience in developing a neighborhood program for solid waste collection and recycling within Pondicherry, as well as more general principles concerning best-practices and the social dynamics of our society.

In wrestling with SWM policy issues, we must recognize that India not only faces the same enormous problem as other industrialized societies – how to deal systematically with huge volumes of collected mixed waste – but the additional, and equally crucial, issue of litter. We not only have dysfunctional landfills and incineration facilities, but our streets, beaches, rivers, and open-spaces are strewn with garbage. Attitudes of good public hygiene are ironically non-existent in this society in which personal hygiene is a national fetish. People think nothing of throwing their trash wherever they happen to be standing. Worse still, people seem inured to the omnipresence of garbage in India's public spaces. One of the most important pieces of the policy equation, therefore, will be the fostering of public awareness and a shift of public attitudes toward all aspects of the SWM challenges.

While India faces unique obstacles to the development of effective SWM strategies, it also has a number of significant advantages. Through the informal system of rag-picking and existence of a sophisticated network of commercial distribution networks, India already recycles a large percentage of its non-hazardous waste. This is in stark contrast to most industrialized societies, who had to build their recycling infrastructures from scratch when they made the jump toward more sustainable SWM practices. India also finds itself largely at the beginning of its anticipated industrial growth expansion, which gives it the opportunity to exercise leadership in designing consumer products which, unlike those manufactured with Twentieth Century mindsets, give as much thought to how the materials will ultimately be disposed of as to how they will be used.

For the purposes of this paper, we address our comments only to household and small business waste, and not to industrial waste, medical waste, or the handling of other large-scale hazardous materials. We acknowledge, however, that any comprehensive waste management strategy must also deal effectively with these waste streams.

General Principles and Practical Exigencies to Guide Policy Development

A. REDUCE, REUSE, RECYCLE

The three Rs – REDUCE, REUSE, RECYCLE – are essential to any discussion concerning SWM. The starting-point for any SWM program should be an effort to reduce the total volume of waste generated within the community; and the second step is to see that the waste generated yields as little end-of-the-road, material as possible. Thus, for a truly successful SWM strategy to work, the basic ideas of REDUCE, REUSE, RECYCLE must be thoroughly ingrained in the population. The three Rs must become a mantra that not only guides people in their personal waste disposal practices, but also informs their decisions concerning which products to purchase in the first place and how to make the best use of them.

i. REDUCE

If prevention is the best cure, then reduction of material consumption is the best waste management strategy. For the average consumer or small business-person, reduction means buying smarter. It entails making choices based not only on the usefulness of a particular product, but also its environmental impact once its useful life is over.

For government policy-makers, the goal of reducing waste at the source must focus on the twin objectives of fostering public awareness and influencing the course of commerce in a positive direction via taxation and other incentive schemes.

If this sounds impossible, it is not. Several states have recently banned the use of single-use plastic carry-bags, for example. These ubiquitous items are the scourge of India, despoiling nearly every landscape in the country, urban and rural. Plastic carry bags have a short useful life, limited use as recycled material, but an extremely long and environmentally harmful existence as trash. Uttarakhand, for example, which recently passed legislation prohibiting the distribution of plastic carry bags, understood that the garbage problem created by this fundamentally inessential item posed a major threat to its tourism industry.

Activist citizen groups are also beginning to make inroads on this issue. In the early 1990s, the Ladakh Women's Alliance led a successful campaign to ban plastic carry-bags in that region. Closer to home, the Small Steps project of Auroville's Upasana Design Studio is endeavoring to make cloth carry-bags both environmentally beneficial and stylish.

Not all products are created equally from the standpoint of a community looking to create an effective approach to SWM. In general, durable products are less impactful than single-use products. In general, monolithic products are easier to recycle than products composed of multi-material constituents. The actual degree to which reduction in consumption will affect the overall volume of garbage, however, will vary from product-to-product. The important thing, from a policy standpoint, is to foster a new culture in which individuals and businesses consider the waste impact of the things they consume. Without this public awareness, people will not have the fullest opportunity to act on their better instincts.

Half a trillion tons of raw materials are mined, logged, harvested, and otherwise extracted from the earth each year. Six months later more than 99% of it is waste. Only alterations in patterns of consumption will fundamentally redress this unsustainable process.

ii. REUSE

Consider this: If every single-use plastic carry-bag were reused one time, the amount of bags littering the countryside, taking up space in landfills, and turning into toxic smoke in incinerators and village trash-fires would be cut in half. That is the power of reuse.

Like reduction, the mentality to reuse resources is a matter of public awareness. For policymakers, this means education and advocacy.

iii. RECYCLE

Recycling is the more-famous sibling of reduction and reuse; and, in a way, it is the fraternal twin of reuse. Whereas reuse of materials contemplates giving them further use, without altering their fundamental character and in the hands of the original consumer, recycling generally involves manipulation or reclaiming the valuable aspects of a product that has already entered the waste stream.

Recycling grabs most of the media attention, and it enjoys a correspondingly higher profile in public awareness, than reduction or reuse. But it is really the last resort, not the best strategy, to keep potential waste from creating negative social and economic value.

Recycling takes many forms, depending principally upon the type of waste. Organic waste like kitchen scraps is composted into extremely rich, valuable soil. Waste paper can be re-pulped and

used in lower-quality, but quite useful new paper products. High-value polypropylenes, like bottles, can be shredded into fibers, carded, and spun into synthetic fleece. Lower-quality plastics are being used as components of bituminous roadway paving. Lumber and fixtures are being reclaimed from old buildings for reuse in new ones. These are just examples.

Here in Pondicherry, Shuddham is experimenting with a number of recycling alternatives in order to find the highest-and-best locally implemented recycling uses of waste materials. Kitchen scraps and garden waste collected daily from households within the Rajbhavan ward are vermicomposted to produce nutrient-rich soil. Waste paper and plastic undergo secondary sorting after household collection, and are sold to recyclers, defraying a large portion of the cost of materials-handling.

No matter the specific type of recycling, the key is to begin with well-segregated waste. A dustbin which collects all discarded materials together turns potentially valuable food-waste, plastics, and paper into valueless mixed waste. In the United States and Europe, most urban areas require residents to pre-segregate their waste into compostables and dry recyclables.

B. Governmental Considerations

While NGOs like Shuddham and private entrepreneurs (as well as rag-pickers and other used-materials scavengers) play a significant role in moving Pondicherry's SWM problems toward more progressive, sustainable ends, ultimately SWM is a public service, provided by the government on behalf of its citizens. Accordingly, the development of a successful SWM policy requires the full attention and commitment of government at all levels.

i. Public Priorities

Perhaps the most important factor in the development and subsequent implementation of a SWM policy is the genuine commitment of the government to creating a clean environment, in which waste is well managed. This would seem like a given. A garbage-strewn environment is unattractive, pestilent, and diminishes the quality of life for all citizens. It would seem that any government official would make effective solid waste management a high priority. But they do not.

Indeed, as one Pondicherry official told us recently, "My only concern is that no one complains [about the services performed by waste disposal contractors], nothing else." Given the levels of public filth to which people have become sadly accustomed, this is an appallingly low standard by which to judge the success of a SWM program or by which to set policy.

For better or worse, our government officials are the custodians of the public trust. If they do not care, they must be made to care – with the same process of education and advocacy that must be applied to the larger citizenry.

ii. Union Territory – Local Government Partnership

Just as a SWM policy based on best practices and highest aspirations is best formulated at the Union Territory level, implementation of those policies can only occur at the level of local government. The inter-governmental relationship is therefore crucial. The localities must receive adequate, timely funding for SWM implementation programs. By the same token, the localities must fully comply with Union Territory mandates and performance standards, and they must be subject to rigorous Union Territory oversight to ensure that policy objectives are being achieved within the local implementation scheme.

iii. Carrots and Sticks

No SWM program can be successful without active public cooperation. And few institutions are able to mobilize public cooperation as effectively as government. Officials should not hesitate to use their taxation and penal authority to foster the correct public participation in the SWM program. For example, fines could be levied against individuals caught littering the streets, against businesses illicitly dumping trash, or against households who fail to properly segregate organic, compostable waste from their dry, solid waste. Taxes could be imposed on the importation of single-use plastic carry bags into the Union Territories. Household garbage collection might be a free service for those

who segregate, and a service-for-fee to those who deliver mixed waste. The licensing of street vendors and food-service establishments which open to the footpaths could carry a list of conditions concerning garbage handling, including the providing of mandatory dustbins for their customers. Promoters of public events could be made to post "sanitation bonds," recoverable only once the event venue is restored to its pristine, pre-event condition.

Government officials generally have little problem in devising creative ways to ensure public compliance with regulatory dictates when the spirit moves them.

iv. Vigilance

A properly funded SWM program may include any number of valuable contracts for local contractors, particular if the locality looks to outsource the labor-intensive functions of the system rather than to establish departments within the governmental structure. Where there are contracts to let, there is corruption. Ordinarily, vigilance would fall outside the purview of a substantive discussion of SWM policy issues. We have repeatedly seen, however, the way in which corruption sabotages effective waste collection contracts by diverting limited financial resources away from program implementation and creating undue complications in the government – contractor relationships. The public health issues associated with SWM should be a high enough a community priority to immunize it from the pernicious grip of corruption.

v. Citizen Oversight

Because community participation is such an essential aspect of any successful SWM Program, it is valuable for the community to see itself as an active stakeholder in the ongoing process of managing and evolving SWM practices, and not merely as government-service recipients. As the ultimate beneficiaries, the community has an important point-of-view on the operations of the SWM program, and can offer valuable input. For these reasons, governmental oversight should also include a mechanism for program critique from a citizen's advisory committee.

C. Sustainability, Efficiency, and Evolution

Ultimately, sustainability in SWM will come only once industry takes full responsibility for the products it creates once the useful life is over. This, however, must be part of a broader pattern of national legislation and international treaty obligations. Until then, there is plenty that can be accomplished at the state level to shoulder the current burden effectively and sustainably.

i. Local Solutions to Local Problems

Transporting waste is neither cost-effective, nor environmentally sound. It also contravenes the important public policy of making communities take responsibility for their consumption decisions and household/business waste handling practices. Waste should be managed as close as possible to the point of generation.

ii. Keeping Pace with Evolving Best-Practices

The science and technology of waste management solutions is evolving rapidly; and government policy must keep pace. This entails enacting policies and enabling legislation that either mandate biennial review or are written to ensure that the programs implemented in the localities adapt and take advantage of appropriate innovations in the discipline.

iii. Innovation and Experimentation

Just as any sustainable SWM program must include the flexibility to adapt innovation from the outside, it should also foster innovation from within. This commitment to growth must be supported by funding from the government. For example, Shuddham is presently conducting research to develop cooking fuel briquettes made from waste paper, cardboard, and saw dust. The point is: local people, working at the local level, will understand best how to improve the nature and quality of program performance to meet local needs. And those innovations may have applicability throughout the Union Territory.

iv. Community-to-Community Differences

The most valuable use of any particular waste material may vary from locality-to-locality, and therefore should not be established by the Union Territory. Moreover, the best recycling use for a particular material may involve social-drivers other than the price fetched from selling bulk segregated waste to a recycler (or recycling middleman). For example, at Shuddham, we are researching the viability of replicating the innovative *Not Just a Piece of Cloth* program of Goonj, a Delhi-based NGO, which turns waste cotton into sanitary napkins. While this will generate no income, it will turn waste into an invaluable, life-altering product for poor women whose personal hygiene needs are otherwise not met in a clean and healthy way.

D. Social Factors

Without full participation of the community, no program of SWM can be effective and sustainable. Without active measures to generate public awareness and behavioral change, the community will remain emotionally aloof from the very garbage they are physically unable to escape.

i. Fundamental Ignorance and Baffling Indifference

Community education, support, and participation is essential to the success of any SWM program. In Pondicherry, we are starting completely from zero. Attitudes and behavior with respect to public hygiene display alarming indifference, across social classes and normal indicators such as educational attainment and income.

Few citizens pay any mind to crucial waste handling practices, like the segregation of household waste; and those who are told often fail to act on the knowledge. Shuddham's supervisors and trash collectors go door-to-door in the Rajbhavan ward, teaching homeowners and their maid-servants the importance of segregating their trash. Moreover, the residents are given the tools to accomplish perfect segregation with no additional effort: a green plastic bucket for kitchen waste and a sturdy red bag for dry recyclables. Even after repeated trips to the households that routinely give mixed waste for collection, the overall rate of segregation is appallingly low. Ignorance is half the problem; indifference is the other half.

People in the community are also woefully ignorant of how their individual consumption decisions affect the overall volume of trash, when their behavior is replicated by their neighbors.

ii. My Garbage, My Problem

The tendency in our society is to psychologically disassociate oneself from garbage, and the impurities it signifies. This is antithetical to a citizenry that is aware, committed, and actively engaged in managing the waste stream within its community. We need to foster an ethos of personal responsibility and communitarian, non-selfish behavior. "My garbage is *my problem*, and *I will take responsibility*."

ii. Class and Caste

If anything, issues of class and caste perniciously complicate matters by placing the vast portion of the burden of trash remediation on the shoulders of the poor and low-born. We must teach that the responsible handling of one's own waste stream is a moral obligation that transcends social status.

iii. The Cost of Change

One might reasonably expect government expenditures for education and advocacy programs to equal the costs of the actual waste collection and recycling for the first ten years of the new SWM regime. These expenses could be substantially offset, and the message of the education and advocacy programs reinforced, through the aggressive enforcement of anti-litter laws and the other regulatory tools, described above.

A Model Policy Statement re Solid Waste Management

In accordance with the foregoing conceptual and practical parameters, Shuddham believes that any comprehensive policy on SWM must include the following principles:

- The Union Territory and local governments shall engaging in, sponsor, promote, and financially underwrite a sustained, multi-faceted campaign of education and advocacy designed to (a) create public awareness of the environmental, health, and economic issues related to waste creation, waste management, and the consequences of poor public hygiene (b) teach responsible personal practices to mitigate waste creation, facilitate systems of waste management, and keep Pondicherry clean, (c) foster strong public attitudes of environmental cleanliness and public hygiene, (d) counsel businesses on best practices for waste reduction and effective participation in the local SWM system, (e) ingrain the REDUCE, REUSE, RECYCLE mantra in the public culture, and (f) admonish tourists and visitors to abide by Pondicherry's progressive SWM practices.
- Because there are no higher duties of government than (a) the protection and enhancement of the health, safety, quality of life of its citizens, and (b) environmental stewardship, the Union Territory and local governments shall provide full and timely funding for SWM programs to be implemented by the local governments.
- The Union Territory shall establish an oversight body, which includes the participation of a citizen's advisory committee, to ensure that the localities are fully complying with dictates of its SWM policies and that public funds earmarked for SWM program implementation are properly spent.
- The Union Territory shall aspire to be a garbage-free zone, where one-hundred percent of waste is segregated, recycled, and returned to valuable use.
- Except in the case of medical waste and other bio-hazardous materials, waste shall not be incinerated within the Union Territory, either as part of formal SWM systems or by individual citizens. Mixed waste that cannot be recycled shall be deposited in sanitary landfills, properly situated and constructed according to the best current designs.
- SWM solutions shall occur as close as possible to the point of waste creation, both as a matter of efficiency and to foster responsibility among the waste-generating community.
- The Union Territory and local governments shall use their police and regulatory powers to enforce and promote compliance with laws supporting these SWM policies and local SWM programs by levying fines, taxes, penalties, and conditions on business licenses.
- Because tourism constitutes a vital part of the Pondicherry economy, and because poor public hygiene and inefficient SWM practices directly damage the tourist experience and the tourism industry, it shall be the policy of The Union Territory to consider SWM an economic priority as well as an environmental imperative.
- Because Pondicherry aspires to lead India as an exponent of the new "green economy", the Union Territory shall support and underwrite research and development in SWM strategies, so that Pondicherry's systems continue to remain at the forefront of best-practices and are well-adapted to local conditions.
- All locally implemented SWM programs shall include the following systems:
 - Mandatory segregation of waste in the household, commercial, and industrial sectors
 - Ubiquitous facilities for segregated waste disposal on public streets and in public spaces
 - Door-to-door collection of waste from households and commercial establishments
 - Prohibition of littering and dumping of garbage
 - Mandatory composting of all organic waste
 - Mandatory recycling of collected dry waste

Conclusion

There are essentially three parts to any thoughtful approach to SWM policy development: the mechanics of the waste handling system, the structure of inter-governmental responsibilities, and public participation. Of these, the first two are the easy parts, which can be addressed by collection

and recycling experts, technocrats, and policy wonks.

The hardest part is educating and motivating the citizens to be active stakeholders in the process. Old attitudes and patterns of behavior are difficult to alter. And yet, in the world of garbage, people are either part of the solution or you are part of the problem. Unless the community is drawn into supporting the process in an informed, passionate way, any SWM program will be swimming against the strong tide of public hindrance. In the latter case, all the smart policy-making in the world won't deliver satisfactory SWM to Pondicherry.

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