

[MUSIC PLAYING]

**ZAINURA** trash, rubbish, or municipal solid waste-- does not make any difference what we call it. The fact remains that  
**ZAINON NOOR:** same. We produce huge amounts of it, and it takes an enormous amount of every community's resources to deal with it.

Cities are at the nexus of a deeper threat to the environment, namely the production of increasing quantity and complexity of waste. In general, urban residents generate two to three times more solid waste than their fellow rural citizens.

Globally, the daily waste generation in urban areas is about 760,000 tons and is expected to sharply increase to 1.8 million tons per day by the year 2025. Municipal solid waste especially, generated in the cities, is the most complex solid waste stream, as opposed to more homogeneous waste streams resulting from industrial or agricultural activities.

The list of the top 10 countries that generate the largest amount of municipal solid waste includes four developing nations-- namely, Brazil, China, India, and Mexico. This is mainly due to the size of their growing urban population. Furthermore, their city dwellers are prospering and adopting high-consumption lifestyles. Urbanization and income levels also tend to determine the type of waste generated.

The share of inorganic materials in the waste stream, such as plastics, paper, and aluminum, also tends to increase as people grow wealthier and move to the cities. Cities' authorities which are responsible for urban waste management are struggling with the accelerated pace of waste production in their jurisdiction.

More than 50% of the collected waste is often disposed through unsanitary land-filling, and about 15% is processed through unsafe and informal recycling. Improper solid waste disposal in cities impairs human health and causes economy, environmental, and biological losses. In [INAUDIBLE] or unsanitary landfills, leachate, which is the fluid emerges from the waste, can seep into the ground and may contaminate both the soil and the groundwater, posing substantial health hazards to any nearby communities.

The common three R's are reduce, reuse, and recycling. In order to be sustainable in the long run, solid waste management must start with reducing consumption, followed by reuse and lastly, recycle. Reducing consumption will require a dramatic cultural shift and behavior change, which may take a long time. Therefore, in addition to presenting awareness campaigns on the importance of consuming less and re-using more, cities should also adopt strong recycling programs.

Recycling is a process of turning materials that would otherwise become waste into valuable resources of financial, environmental, and social returns. With emphasis on urban and peri-urban areas, recycling is viewed as a sustainable means of diverting maximum fractions of municipal solid waste from landfill disposal, since the waste generated in this area contains substantially less organic portion compared to rural areas.

The benefits of recycling go far beyond just saving landfill space. It provides a source of valuable raw materials. Multiple markets exist for papers, plastic, glass, metals, and other materials. Although collecting and selling these materials will not make a profit for the community, it may reduce the community's waste management cost by creating a revenue stream from waste.

Recycling undoubtedly saves resources. One ton of recycled newspaper saved the equivalent of 17 trees, two barrels of oil, and 41,000 kilowatt hours of energy. One ton of recycled plastic saved 5,774 kilowatt hours of energy and 16.3 barrels of oil. And one ton of recycled aluminum saved 14,000 kilowatt hours of energy and 40 barrels of oil.

Apart from conserving resources and creating revenues from waste stream, recycling also provides new jobs and economy development potential. A well-managed recycling program provides employment for people who have difficulty finding work in other places.

In Malaysia, 64% of the overall waste composition is dominated by municipal solid waste. Out of this, 80% are recyclables. Plastics are probably the most common recyclable material with high potential for recycling in Malaysia, since this material is widely used and part of a modern lifestyle in urbanized areas. Growth rates in Malaysia plastic industries reached an average of 15% for the past 11 years, indicating a high demand for this material in the country.

Recycling should be greatly emphasized, especially at the most basic level of community, which is the household unit. Households are the highest contributor among the municipal solid waste sources in Malaysia. Although households in Malaysia, as well as around the world, will need to significantly reduce the consumption rate, and subsequently their waste generation, in the short-term context, proper recycling can lead to a substantial reduction in terms of waste sent to landfill.

Malaysia aims to be a developing country by year 2020, and among other measures has set a target of achieving a recycling rate of 22%. However, its recycling rate was 5% in 2002 and only increased slightly to 5.5% in 2006 and 2008. Compared to neighboring countries in Southeast Asia, this is far too low. Singapore, for example, has a recycling rate of 56%, and the Philippines is at 12%. So what are some of the underlying reasons for this shortfall?

In Malaysia, municipal solid waste is managed by the National Solid Waste Management Department under the Ministry of Urban Well-Being, Housing, and Local Government. Recently, the ministry formulated the Solid Waste and Public Cleansing Management Act, SWPCM 2007, which includes the promotion of waste minimization through the three R's activities.

[SPEAKING FOREIGN LANGUAGE]

Although the enactment of SWPCM Act 2007 has provided legislative empowerment to the Malaysian government, it cannot be fully enforced and implemented due to the lack of other supporting regulation. In several major cities in which the two-plus-one system of collection has started, implementation is not smooth. Majority of households are not fully aware of the collection schedule. Furthermore, separate bin for recyclable is not provided.

Due to these reasons, many households are quite reluctant to actively participate in the recycling program. Despite the mandatory [INAUDIBLE] of household waste under the act, the implementation has been weak. Fines are yet to be imposed on households that do not separate their waste at source.

Another major challenge in promoting recycling activities in Malaysia is related to the lack of public support. Despite numerous public awareness and campaigns throughout the years, public responses to recycling activities are still at a very low stage.

I think definitely it's to do with awareness. We have done a lot of work-- I'm sure the government has done the same thing for local. But I think awareness is critical, mainly because we are a society that is so used to-- just let somebody else deal with it.

We do a lot of complaining. IE, when we see rubbish on the ground in the [INAUDIBLE] business like that, we complain. Why isn't the authority doing something about it, that kind of thing. But we never think that it is our responsibility that we should be doing ourselves. So it is a point where being aware of it and taking responsibility and going in there and digging it up and putting it in a rubbish bin [INAUDIBLE]. So awareness is critical to doing that.

Although most households understand the need for sustainable development, this level of awareness does not always translate to actions. In many cases, the households that do recycle are motivated by financial gain rather than feeling a sense of responsibility in reducing their waste in order to conserve their resources and environment.

Several approaches can be implemented towards achieving the desired goals of recycling community in Malaysia's cities. Current scenario has suggested that there are policies and facilities in place, but they are not comprehensive enough to contribute to an effective recycling program. Providing separate bins for recyclables and ensuring households are aware of the two [INAUDIBLE] schedule may prove to be among the best, yet simple, approach to encourage people to participate actively in the recycling activities.

Moreover, proper collection points, systematic collection, and processing of recyclable need to be established. For this to happen, all relevant stakeholders-- namely, the federal and municipal governments, concessionaires, traders, recycling center operators, and NGOs-- must coordinate their efforts.

Strong enforcement of SWPCM Act 2007 is another critical factor. Strategies such as imposing fees on households that are not segregating their waste should be considered. Households may find this approach to be taxing at first, but they will be encouraged to recycle. At the same time, the role of financial reward among households should not be overlooked. Rewards such as rebates and incentives should be utilized to encourage recycling until the habit can be sustained.

However, despite having financial and regulatory tools as the principal instrument for driving change in behavior, the effectiveness of the tools is strongly dependent on reflecting-- reshaping attitudes, motivations, and norms within a community.

There is still a long way towards achieving the 22% recycling rate by 2020 in Malaysia, and it remains unclear whether or not the ambitious goal can be met. However, if the proposed strategies addressing the barriers can be carried out effectively, there is a high possibility for successful implementation of sustainable solid waste management in the country.

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