# Opinion

# 'Solid waste no more waste but like gold' says Sri Lankan-born scientist C. Visvanathan

HOW would we react to a nauseatingly stinking dump of garbage in the vicin-ity? Stinking of all kinds of foul odours because it is in various stages of natural decomposition? Many of us would wrindecomposition? Many of us would wrin-kle up our noses and try to walk away from it as fast as possible. That is because for many of us, garbage is a waste, a pol-luter of environment and a violator of our aesthetic feelings. Hence, in our judg-ment, garbage is something that should not be there in a decent environment.

When you see a heap of dirt, you must see a beautiful rose We hold this view, because our vision does not extend beyond our eyesight. However, if we are able to see the whole process of a natural phenomenon, our view on garbage would be differprocess of a natural phenomenon, our view on garbage would be different. This was beautifully explained by the Vietnam born Zen Master Thich Nhat Hanh, in a commentary he wrote on the Prajnaparamita Hrdaya Sutra, also known as Heart Sutra and said to have been preached by Bodhisattva Avalokitesvara, (Sutra available at: http://www.buddhanet.net/-elearning/heartst.htm/ under the title The Heart of Understanding: Commentaries on Prajnaparamita Heart Sutra (available at: http://terebess.hu/zen/mesterek/Thich%200khat%20Hanh%20%20The%20 Heart%200%20Thes/20 Heart%200%20The pure. These are concepts we form in our mind. A beautiful rose we have just cut and placed in our vase we have just cut and placed in our vase

late. Dirty or pure. These are concepts we have just cut and placed in our vase is immaculate. It smells so good, so pure, so fresh. It supports the idea of immaculateness. The opposite is a garbage can. It smells horrible, and it is filled with rotten things. But that is only when you look on the surface. If you look more deeply you will see that in just five or six days, the rose will become part of the garbage. You do not need to wait five days to see it. If you just look at the rose, and you look deeply, you can see it now. And if you look into the garbage can, you see that in just from the garbage. We cannot have a rose. The same in the same

Professor C. Visvanatinan: waste is no more waste but a resource A Sri Lankan-born scientist, Professor C. Visvanathan, Dean of the School of Environment, Resources and Development at the Asian Institute of Technology or AIT in Bangkok (Refer to: http://www.faculty.ait.ac.th/visu/main.page.htm for his profile) expresses the same view as the Zen Master Nhat Hanh. In an interview with this writer at Hanh. In an interview with this writer at AIT, Visvanathan boldly declares: "Solid waste is no more waste to be condemned; it is like gold which we could put back to human benefits."

human benefits."
His academic credentials are from
three prestigious institutions of higher learning: A bachelor's degree in
technology from the Indian Institute
of Technology, Madras, a Master of
Engineering from AIT and a doctorate
in chemical/environmental engineering from France's Institut National
Polytechnique in Toulouse.

# **Environmental economists:**

Environmental economists:
Waste management a must
Visvanathan, the scientist, speaks
Ilke an environmental economist here.
To an environmental economist, wastematter is an undesired by-product that
is unavoidably generated in the natural processes of all economic activities.
Since it is undesired, it is called a 'bad'
as against its desired counterpart which
is called a 'good'. However, goods eannot
be produced without producing bads. For
instance, at a very elementary level, one
cannot inhale oxygen, a good, without
having to exhale carbon dioxide, the bad.
If one is prohibited from exhaling carbon
dioxide, one cannot live because he camone cannot live because he can not take in the good, oxygen. Hence, both the good and the bad come as a package

the good and the bad come as a package together.
What has been done so far has been to use the environment as a dumping ground for bads. However, the unplanned dumping of bads into environment has caused, first at the local level, and then at the heat tonal level and finally at the global level now, irreversible environment-seconomists have recommended the proper management of waste-matter so that it could be converted to a beneficial-matter for mankind's use.



**Economics** 

**Matters** 

AIT Prof. C. Visvanathan

AH Prof. C. Visvanethan

This issue was brought to public focus by this writer in a previous article in this series relating to the proper management of polythene under the title 'Banning polythene to green the globe: alternatives are not that green either (available at http://www.ft.lk/2011/06/06/banning-polythene-to-green-the-globe-alternatives-are-not-that-green-either/). Visvanathan, through research, has come up with the engineering possibilities for producing beneficial matter out of waste-matter so that such possibilities are practical, economical and sustainable.

## The ugly side urbanisation

The globe is being increasingly urbanised day by day. But the increased urbanisation also produces increased urbanisation also produces increased urbanisation also produces a solid waste creating gigantic issues for solid waste management by municipal authorities, Says Visvanathan: "Worldwide, about 5.2 million tonnes of municipal waste is being produced a day and out of this, 3.8 million tonnes of solid waste is produced in developing countries.

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It has now been projected that by 2025, the global annual solid waste production would be around 2.2 billion tonnes, up from 1.3 billion tonnes in 2012. Of this, urban Asia will account for about 657 million tonnes of solid waste, about a third of solid waste in the whole globe by 2023. Hence, solid waste growth in Asia is inevitable and proper waste management solutions should be put in place right from now if Asia is to avoid a waste catastrophe"

### option for waste disposal

Land-filling is a primitive option for waste disposal
Developing countries use land-filling as the main method of disposing solid wastetions. With the limitation of the available land for this purpose, it has become necessary for identifying other methods of solid waste disposal. Visvanathan notes that solid waste disposal. Visvanathan notes that solid waste disposal options should necessarily change and these options are in fact fast changing worldwide. They have principally changed from land-filling to recycling, energy production and composting. But, these are hampered by four types of constraints: lack of money, technology, proper policy and capacity.
However, the proper policy should be directed from the present concern for waste management to resource management where waste is considered as a valuable asset, like gold. It is an evolutionary estages and the same of the constraints and the control of the control of

## Public health concerns

Public health concerns of solid waste management
At the initial point, the driver for waste management was the concern for public health. This was the main reason for designing public policy on waste management during 1900-1970. Accordingly, governmental regulations were imposed setting out guidelines as to how wastematter should be disposed by individu-

als as well as businesses without causing harm to public health. The main method was to collect waste-mater regularly and dispose of it by burning or dumping into waterways or using for land-filling.

However, all these methods were just a postponement of a major environmental issue to the future by solving the problem in one place and creating a problem elsewhere.

# Management of solid waste to avert environmental

problems

The second evolutionary process commenced after 1970s when the whole globe became concerned about the growing environmental problems due to the accumulation of solid waste in the environment. However, waste was still a waste and not a resource. Hence, public policy on waste management waste matter should be disposed without causing harm to environment. Sri Lanka is still in this stage of the evolution of waste management process. became concerned about

### Waste as a resource

In the third stage, waste-matter is In the third stage, waste-matter is considered as a resource and policies are being formulated to harness their resource value to society. The concern for this has emerged due to two reasons. First, the fast economic growth throughout the world in the last few decades has demanded a higher utilisation of non-renewable natural resources. Second, the finite supply of these non-renewable natural resources has led to their fast depletion.

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This issue was first raised by the Club of Rome, an independent think-tank of scientists concerned with emerging global resource issues, in mid 1960s. In a publication in 1972 titled 'The Limits to Growth' which soon became an international bestseller attracting millions of fans worldwide, the Club of Rome called for limiting economic growth in order to sustain future economic prosperity. This call has been answered only in after the onset of the second millennium where waste-matter is now considered as a resource that could be used for enhancing the global prosperity.

Waste management

### Waste management and climate change issues

with global concerns for climate change as principally pronounced by the UN's

Intergovernmental Panel for Climate Change or IPCC (available at: http://ipcc. ch/). Thus, the waste management issue which was hitherto a national issue has which was hitherto a national issue has now become a global issue. The political force which has sprung up with concerns about global climate change issues is now emerging as a powerful global lobbying group. As a result, no country today can be oblivious to the need for proper solid waste management.

waste management, a must for sustainability
The fifth stage is the future evolutionary process involving the soild waste management, according to Visvanathan. The world is now concerned about the sustainability of its prosperity and sustainability has been defined by the UN Commission on Environment and Development, also known as the Brundtland Commission going by its Chairperson Gro Harem Brundtland, as 'meeting the requirements of the present generation without compromising the ability of the future generations to meet theirs'.

Visvanathan says that use land-filling as the

Visvanathan says that it is a circular economy from resources to production, from production to consumption, from consumption, from consumption to waste-matter to resources once again. When waste-matter was considered a mere waste in the past, this last loop had been broken. It is now time to close the loop and have a holistic solid waste management in which waste-matter will be converted to resources once again and Visvanathan says that matter will be converted to resources once again and allow the world to go by the circular process. This last thread of the evolution-ary process into which the world is now moving has been facilitated by envi-ronmental expinees like ronmental engineers like Visvanathan.

# Segregation

of solid waste
A holistic waste management does not permit
waste to be dumped or
used for land-filling with-

waste to be dumped or used for land-filling without extracting its resource value first. The process starts by segregating it into recyclables, garbage and 
solid waste. Recyclables, after the primary 
treatment, will end up as new resources 
for use in the production of new outputs. For instance, plastic bottles, can be 
recycled to produce rayon, according to 
Visvanathan, which is the basic fibre for 
producing synthetic clothing materials. 
The garbage will be used for producing 
anaerobic compositing which can be used 
as fertiliser in agriculture and cover soil 
in land-filling of the remaining waste 
after incineration. The solid waste can 
the recyclable parts of recyclables 
and other inner tremains can be used for 
land-filling ofts. So, Visvanathan says that no 
waste should be permitted to end up in a 
land-fill whould first using it for the benefit of mankind. efit of mankind.

# Sri Lanka's infantile strategy

at waste management
Sri Lanka's Colombo Municipality produces about 1000 tonnes of solid waste a day. The satellite towns around Colombo produce about a further 1500 tonnes of solid waste a day. It has become a gigantic challenge for municipal authorities to safely dispose of these solid wastes. The strategy they currently use is simply to dump them in waste dumps and use for landfilling. Hence, Sri Lanka's largest waste producers are still in the first and second stages of the evolutionary process of waste management identified by Viswanathan. As such, they are still infants in a holistic waste management strategy. With proper policy focus, they should grow from infanthood to adulthood in waste management in which waste is no longer a stinking waste, but a resource which

management in which waste is no longer a stinking waste, but a resource which can be used for the betterment of the citizens. The team of researchers at ATI, led by Visvanathan, has developed easy to use and cost-effective technology for holistic urban solid waste management. In many parts of Thalland and other East Asian countries, this technology is now being used.

An important breakthrough in this

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main method of disposing solid waste produced by their growing urban populations. With the limitation of the available

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technology, proper policy

connection has been the development of technology to recover natural gas available abundantly in the places where solid waste has been used for land-filling. The use of such land for any commercial purpose should be done, according to Visuaganta only affect. to Visvanathan, only after extracting the natural gas remaining trapped beneath such land.

AIT's offer of a collaborative hand A c c o r d in g t o Visvanathan, AIT has been very liberal in sharing its new discoveries and knowledge with anyone who wishes to use them for the furtherance of mankind. It can provide training, give technology support and even develop new technologies to have better solid waste management systems. It is also willing to develop linkages with other research institutions and universities to have collaborative technology development projects.

Don't solve your

# Don't solve your problem by creating problems elsewhere

Attempts have been made in the recent past to make Colombo a clean city, a development about which the Colombo elite has been openly happy. But little have they realised that they have cleaned themselves by dirtying elsewhere and that elsewhere is also within this island. Thus, Colombo has solved its problem by creating environmental issues for others. But Colombo and its satellite urbanites have a better option today in the form of holistic waste management where waste is used as a resource. Attempts have been made

resource.

This is a public policy which Sri Lanka should adopt as a matter of priority. It is not a difficult task since the required is not a difficult task since the required technology is now available in the neigh-bouring countries. This public policy could be facilitated by private participa-tion by going for a green lending policy by Sri Lankan banks, Visvanathan says he is willing to train Sri Lankan bankers in the art and science of assessing green banking projects.

banking projects.

It is up to Sri Lanka to tap this kind gesture by a world renowned Sri Lanka born scientist.

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