Garbage disposal, a global dilemma

by Md. Asadullah Khan

A few developing countries have regulations to control the output of hazardous waste and even fewer have the technology or trained personnel to dispose of it. Many African and Asian countries, including India, Pakistan, Bangladesh, Sri Lanka and Burma continue to build plants without including costly waste disposal system. In many cases, plants have disposal systems that remain inoperative due to inappropriate technology. Reports have it that in Lagos of Nigeria, five incinerators built remain idle because they can treat garbage containing less than 20 per cent water.

IN 1986, *Pelicano* set off from Philadelphia with 14,000 tonnes of toxic ashes. The ship sailed around the world for more than two years seeking a port that would accept its cargo. In 1989, it dumped 4,000 tonnes of the unwanted cargo offshore Haiti and then slipped back to the deep sea. A month later, the ship's captain said that he had unloaded the ash in a country he chose not to name.

A poignant example of environmental exploitation of the poor countries by the rich ones, indeed.

Indiscriminate dumping of toxic ashes in places far away from the manufacturing country underscores a global dilemma and pinpoints the necessity of reducing by-products of civilisation without endangering human health or damaging the environment. Not a single country, which has not thought of proper and safe disposal of its industrial wastes, has been spared of the scourge. Say for example, Hong Kong with its 5.7 million people and about 50,000 factories within 400 square miles dumps 1000 tonnes of plastic a day – triple the amount thrown in London.

In Dhaka and Chittagong, the situation will assume equally hazardous. In the capital city alone much of the 10,000 tonnes of garbage including solid wastes and toxic and substances like used injection syringes, hazardous plastics, metals and batteries is not picked up from dustbins, streets and household corners, and find their way into landfills and open sewers. The river Buriganga in Dhaka and the Karnaphuli in Chittagong have almost turned reddish as stinking soup of chemical waste and excreta continue to contaminate its waters. On the other hand, when garbage is burned, it spews dangerous gases into the air. Dumped garbage and industrial waste can turn lethal when corrosive acids, long-lived organic materials and discarded metals leach out of landfills into ground water supplies, contaminating drinking water and polluting farmlands.

Topping the list of offenders is the United States with its affluence and industrial might. Reports have it that 276 million Americans in the US throw away 16 billion disposable diapers, 1.6 billion razors and blades, and 220 million tires other than glasses and bottles every year. They discard enough aluminium to rebuild the entire US commercial airline fleet every three months. Reports have it that they produced about 195 billion kilograms of garbage of all varieties in 1997. Other than this, each year American industries belch, pump and dump more than 1.1 billion kilograms of really nasty stuff like lead compounds, chromium, ammonia, organic solvents into the air, water and ground.

Awfully, the country is struggling to clean up the mess created by such indiscriminate dumping of toxic waste. The problem of handling these wastes has posed a serious problem for many countries. In many countries acres of landfills of liquid waste have been created. But a few nations have been able to formulate adequate strategies to control the volume of waste produced. Moreover, effective waste disposal efforts prove to be quite expensive and each method has its own drawbacks. Incinerators also prove to be burdensome investments for many countries, entailing serious limitations. Contaminant laden ash residue itself requires a dumpsite. On the other hand, growing consumer demands for more throwaway packaging add to the volume.

Besides a few developing countries have regulations to control the output of hazardous waste and even fewer have the technology or trained personnel to dispose of it. Many African and Asian countries, including India, Pakistan, Bangladesh, Sri Lanka and Burma continue to build plants without including costly waste disposal system. In many cases, plants have disposal systems that remain inoperative due to inappropriate technology. Reports it that in Lagos of Nigeria, five incinerators built remain idle because they can treat garbage containing less than 20 per cent water. But most of the city's garbage in these countries is 30 per cent to 40 per cent liquids. Even in the highly industrialised countries, there are formidable social obstacles to waste management. Nobody wants incineration or disposal system in his localities now. In the US, 80 per cent of the solid waste that are now dumped in about 6000 land fills are going to be filled up and have to be shut. "We have a real capacity crunch", said a senior official of the Environmental Protection Agency (EPA). Even in West Germany, about 50,000 landfills have been declared potentially dangerous because they may threaten vital ground water supplies.

The other most common enemy of human being and its environment is the chemical chlorine, especially in our country where environmental protection against it is hardly available. Chlorine is used in the production of the paper we use, the slippers we wear and the DDT we spray on mosquitoes. So said a chemist, "God created 91 elements, man a little more than a dozen and the devil one – chlorine." It is produced by man and reacts with carbon to create a new range of stable and highly toxic compounds called organochlorines. Ominously, industries using chlorine are spreading through the length and breadth of the country with little protection to ward off its harmful effects. Chlorine is also used to bleach wood pulp to make paper and viscose rayon. Chlorine as the main ingredient of plastic and PVC is used to make everything from petrochemicals to pipes to slippers. Organochlorines are damaging because they travel through the food chains gradually increasing in concentration. Some affect the liver and kidney, cause cancer and could interfere with processes like brain chemistry, spleen and bone structure and even hormonal system. The pulp and paper industry has failed to come up with chlorine reducing technologies. The PVC (polyvinyl chloride) industry deals with the crisis by recycling. But that only converts plastic into other plastics. The country's future looks grim in such a situation, fraught with dangerous consequences as well as diseases that we ourselves are producing.

The question that looms up in public mind is how to prevent our environment wallowing in waste and poisonous materials that we ourselves are producing. Higher fines, taxes and strict enforcement might force the manufacturing industries to curb waste and toxic materials. Some manufacturing companies in the West has cut waste generation in half by using fewer toxic chemicals, separating out wastes that can be reused and substituting alternative raw materials for hazardous substances. To cite an instance, in the Netherlands, Duphar, a large chemical concern, adopted a new manufacturing process that decreased by 95 per cent the amount of waste created in making a pesticide.

Recycling is, of course, the best way to reduce waste. Japan now recycles more than 50 per cent of its trash and Western Europe around 30 per cent. Shockingly, the US, the largest producer of waste and toxic materials till now recycles about 10 per cent of its garbage or 16 million tonnes a year and as reports are available, only 10 states have mandatory recycling laws. But as experts point out, even with most efficient recycling, there will still be refuse. Landfills and incinerators, even if these are spewing harmful emissions, will be needed for a well-managed waste disposal systems for the foreseeable future. But where possible, landfills should be fitted with impermeable clay or synthetic liners to contain toxic materials and with pumps to drain liquid waste for treatment elsewhere. Arsenic pollution in tube well water in the length and breadth of Bangladesh that recently posed a threat to the people here could only be contained by this means. Landfill waste could also be burned to generate electricity. The US uses only six per cent of its rubbish to produce energy till now and Germany figures about 30 per cent to energy facilities.

There should be an international ban on the export of environmentally dangerous waste to countries without proven technology to dispose it safely. Reports have it that in the last few years, some million tonnes of hazardous waste have been transported from the US and Western Europe on ships like *Pelicano* to countries of Africa, Asia and Eastern Europe. It must be brought home to the industrialised affluent countries that dumping of one country's waste to another country amounts to declaring war on the people of the country these waste are dumped. And if such wastes continue to proliferate, men will have all but declared war on the earth's environment and thus in the end, on his own richest heritage. Encouragingly, Gary Liss of Loomis, California, a Veteran of recycling and solid waste programmes says that in nature there is no such thing as waste. What dies or is discarded from one part of the ecosystem nourishes another part. Liss points out that we can get a glimpse of the less profligate future in Kalundborg, Denmark. There, an unusual place called an "eco-industrial park" shows how much can be gained by recycling and resource sharing. Within the park, a power company, a pharmaceuticals firm, a wall board producer and an oil refinery share in the production and use of steam, gas and cooling water. Excess heat warms nearby homes and agricultural green houses

One company's waste becomes another's resource. The power plant, for example, sells the sulphur dioxide it scrubs from its smokestacks to the wall board company, which uses the compound as a raw material. Dozens of these eco-industrial parts are being developed all over the world.

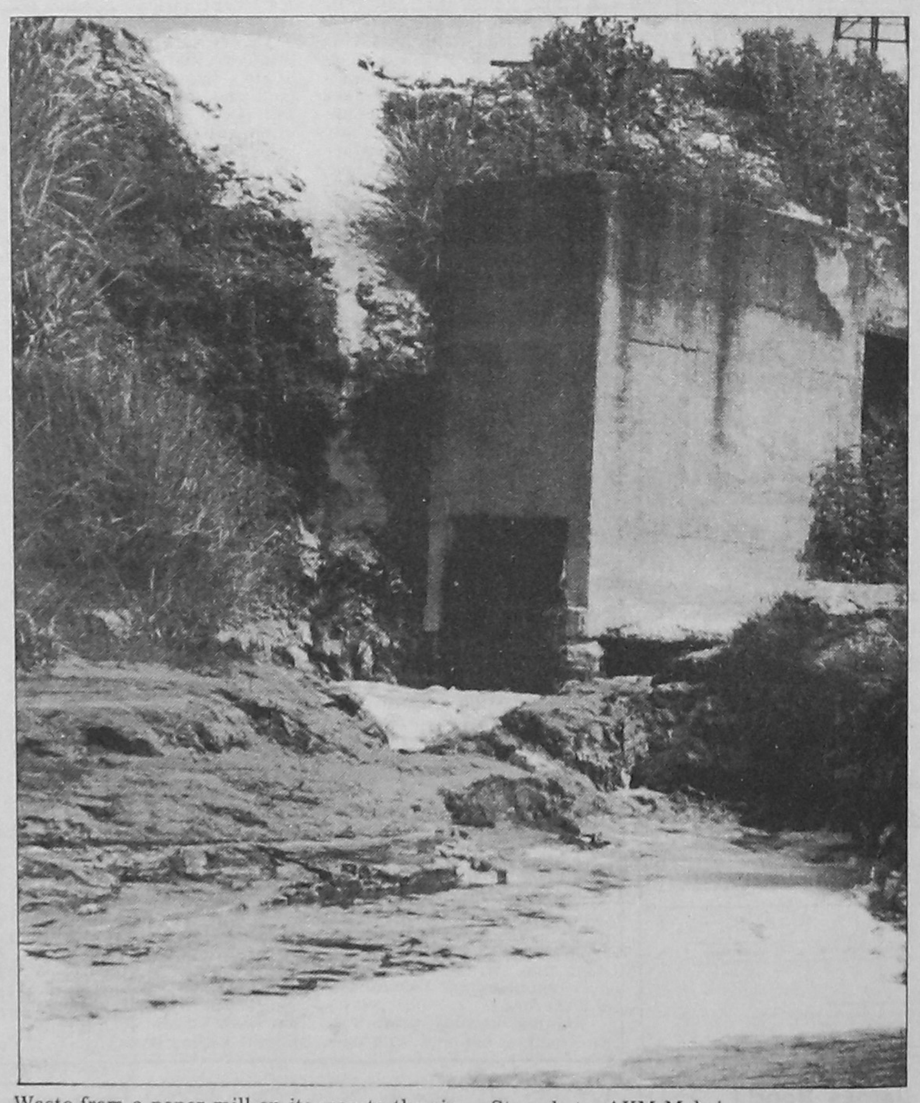
Biotechnology is giving us additional tools to cope with waste and turn it to our advantage. We now have microbes that can take toxic substances in contaminated soil or sludge including organic solvents and industrial oils and convert them into harmless by-products genetic engineering will pave the way for such a possibility. Scientists at Monsanto and Heartland Fiber are working toward engineering corn plants with the kind of fibre content that paper companies would find attractive. So long as the genetic tinkering poses no ecological threat, that approach could tap into a huge stream of agricultural waste, turning some of it into an industrial ingredient. In the consumer market, recycling has already spawned an army of alchemists. Jackets are being made from discarded plastic bottles, briefcase from worn-out tires and belts from beer bottle caps. The US has lately got serious about recycling: about 25 per cent of its 195 billion kilograms of municipal garbage are now salvaged, at least temporarily, for some sort of second life.

Recycling will gain momentum as new materials are developed that are easier to use. For examples, Jesse Ansubel, director of the programme or the Human Environment at the Rockfeller University, predicts that architects will increasingly rely on new types of foamed glass that can be made unusually strong but still light weight. Glass is a very recyclable material made from sand and it can be crushed back essentially into sand. Ansubel thinks we could see foamed glass replace much of the concrete in today's buildings. There are limits of course, to how many lives you can give a pile of debris. In the long run, we have to reduce the amount of material we use in the first place. Some progress has already been made. Aluminium cans and plastic soda bottles have become thinner over the years. But more sweeping reductions will require a whole new kind of manufacturing process. That, says Reid Lifset, editor of the *Journal of Industrial Ecology*, is where nanotechnology plays a role. In this emerging field that employs about every kind of scientific and engineering discipline, by building them from scratch, atom by atom, molecule by molecule. This bottom-up nanotechnological way of making things differ from the traditional drilling, sawing, etching, milling and other fabrication methods that create so much waste along the way.

Researchers have made headway toward molecule size transistors and wires and even batteries that are thousand times smaller than the smallest one we are now using. These laboratory feats have made sugar-cube size computer possible now. So says Lifset: "A lot of consumer goods and industrial equipment could become dramatically smaller when nanotechnology comes online. That plus more efficient recovery of the discarded goods, ought to translate into huge reductions in waste".

But excellence in technology is not enough. Just as critical are changes in attitudes and lifestyles. Especially in our country steeped as we are in traditional values, lifestyles, attitudes, cultural pattern and taboo's we could hardly make any breakthrough till now. Brad Allenby, AT& T's vice-president for environment, safety and health, believes our move from the industrial age to the information age could help us enormously. Allenby further revealed that in 1999, 29 per cent of AT&T's management force telecommuted, meaning less reliance on cars. This entails a bigger achievement, involving enhancement in the quality of life. Significantly, this will put less value on things that use lots of materials – like three cars in the family driveway – and more on things that don't swallow up resources – like telecommuting and surfing the Internet. This might give us one particular benefit in a sense while it is true that visions of a "paperless office" have gone wildly wrong so far.

Hopefully, we still have a chance to cut consumption of paper and the trees it comes from and most notably the devil substance chlorine used to make paper. That means the world is moving towards a trend of dematerialisation. The deeper dematerialisation goes in society, the less stuff there will be to discard. Indications are there all around with notable exception of Bangladesh, that through the magic of recycling and modern alchemy, the affluent world will move swiftly toward a world without waste. Shockingly, while the rest of the world has become cleaner, we would still be drowning in trash because of the lack of vision, political infighting and clear policy direction and lack of consensus among the political parties on vital state matters.



Waste from a paper mill on its way to the river. Star photo: AKM Mohsin

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Still a lot needs to be done

Syed Marghub Murshed tells **Quamrul Islam Chowdhury**

DURING his tenure as Secretary, Ministry of Environment and Forest, Syed Marghub Murshed has communicated to the nation in the most eloquent manner the need to conserve our nature and bring about an end to widespread environmental degradation. On the eve of taking up his new assignment as Secretary, Ministry of Fisheries and Livestock, Murshed talked at length on various issues related to environment in a candid conversation.

Q: *Your association with the environment ministry began back in 1993 when it was just a fledgling. Then, in 1998, you went back to the ministry for a second stint. Now, 23 months later, as you are moving on to your next assignment, what is your evaluation of the ministry's progress?*

A: Environment is an emerging science. Everybody has a stake in it. Environmental issues are crosscutting and do have national, regional and global dimensions. One has to keep him/herself updated with latest developments, information and knowledge. In a sense it is really a very technical and development ministry. Given its small manpower, the ministry has to rely on the technical know-how of different institutions of repute. Because no single ministry or agency can solve complex environmental problems alone, we have tried to bring together the civil society bodies and various stakeholders groups as allies in a progressive cleanup effort.

We have not only helped bring to the forefront the green and brown issues at the highest decision-making level but also institutionalised public participation in environmental decision-taking process. The results of our efforts have been wide-ranging, not only in terms of public participation, increased awareness and Save the Buriganga Campaign, and Clean Dhaka's Air, but also in helping to bring about long-term improvement of our ecologically critical areas.

It has clearly been demonstrated that ordinary people – men, women and young people alike – have it in them to contribute substantially to a better quality of life for themselves and their communities.

Q: *How far have you been successful in your clean-up mission?*

A: I never gave up in the conservation cause. I have tried my best. We have stewarded the country's globally acclaimed National Environment Management Action Plan (NEMAP) at it's people's consultative unique formulation phase. We also piloted the execution of it's follow-up Sustainable Environment Management Programme (SEMP).

We have got the Sunderbans declared a World Heritage Site by UNESCO. We processed the proposal to declare the Tanguar Hoar a Ramsar site (to the Ramsar Secretariat). Our civil society bodies have been successful in getting declared six areas of the country Ecologically Sensitive Areas – St Martin's Island, the beach between Teknaf and Himachari in Cox's Bazar, the Kaptai Lake, the Madhabkundu Waterfall, the Kuakata beach and the outer perimeter of the Sunderbans.

Some of our friends in ADAB, CEN, FEJB, BELA and IUCN give us credit to prevent oil and gas prospecting in the Sunderbans (Blocks 5 and 7) by foreign oil companies. But people like Khushi Kabir, Dr Kazi Faruq Ahmed, Dr Atiq A Rahman and Rizwana Hasan have done the major groundwork.

Q: *During your second tenure as the environment secretary you have been moving very fast to amend some of our old laws, rules and regulations to improve the legal instruments. But what is the state of enforcement?*

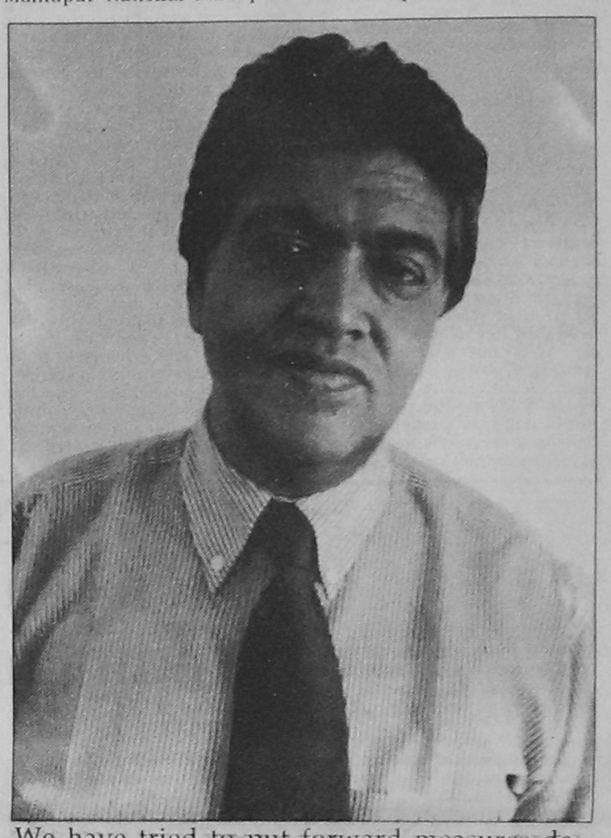
A: We have got the Amendments to Forest Act of 1927 and the Environment Act of 1995 passed in April this year. We piloted from this ministry the law to set up Environment Courts passed (April 2000). We placed the proposal for amending the ordinance to control Brick Manufacturing industries before the Cabinet (obtained approval in principle). We put forward the idea to introduce licence procedure for sawmills all over Bangladesh. We put all our efforts to improve enforcement to avert environmental degradation.

Q: *Do you think you were successful in cleaning up the Forest Department?*

A: We not only tried to clean up the Forest Department but were also successful in increasing the manpower of the Forest Department (from 6780 to 8603) for the first time after 1982. We also have increased the manpower of the Department of Environment from 193 to 250 for the first time after the creation of the department. We set up offices of the Department of Environment in two new divisional Headquarters (Barisal and Sylhet). We began fresh recruitment at the Class I (ACF) and Class III (Forester) levels in the Forest Department after a period of 16 years (after 1984). We upgraded the post of Forest Ranger to (Class II) gazette status.

We have finalised the National Conservation Strategy document. We gave go-ahead signal to the UNDP-funded project to control use of CFCs in Aerosol products and saved Bangladesh delegation led by Environment Minister Syeda Sajeda Chowdhury from embarrassment. In no time we launched project to conserve the ecologically critical areas of Bangladesh funded by the Global Environment Facility. We initiated the Marine Park Project in St Martin's Island. The Bay Park projects at Kuakata and Cox's Bazar has also started.

The Madhab Kundu, the Madhutilia, the Ghozni and Mithapakur Eco Park projects, the Hakluki and Marjat Boar Bird Sanctuary projects, the Kaptai National Park and the Mafflupur National Park projects have also entered into implementation phase.



We have tried to put forward measures designed to integrate environmental policies and rules within economic, planning, budgetary and development strategies. People need some of these steps turned into action to make a difference, bring a change and propel the nation to the highway of sustainable development.

We have been successful in launching the Sitakundu and Barabkundu Botameal Garden project and extended the Cox's Bazar Cassuarina (JHOW) Plantation project. We launched the Ramgar Bald Hill afforestation project and the Maheshkhali Bald Hill Afforestation Project.

We helped expansion of the Forest Resources Management project to the Hill Districts assisted by The World Bank. The Hill District Forest Rehabilitation project saw the daylight.

Q: *What is the position of the Sustainable Environment Management Programme (SEMP)?*

A: Our Ministry has not only launched the Sustainable Environment Management Programme (SEMP), the biggest UNDP activity in Bangladesh with 21 different government and civil society and professional bodies as it's co-executing agencies but also guided all these institutions in shaping their environmental policies.

It is now entering in the middle year of the five-year programme-period.

We have also kicked off the Bangladesh Environment Management (BEMP) project funded by CIDA to strengthen Department of Environment. The Sunderbans Bio-diversity Conservation Project was launched with ADB assistance. We revived the Coastal Green Belt and Social Forestry Sector Projects assisted by ADB. We also initiated the Waste to Energy (through Plasma Technology) project to convert municipal solid waste into power.

Q: *But your ministry could not curb air pollution nor could it arrest depletion of our forest cover.*

A: We have also initiated the programme to convert auto-rickshaws to use CNG (Compressed Natural Gas) use, the AQMP (Air Quality Management Project) with the World Bank is entering implementation phase.

We have decided to go ahead with the phase out of polythene Programme of the Dept of Environment and obtained the ban on black and coloured polythene production approved by the Prime Minister.

Initiatives have been taken by Environment Ministry to phase out of two-stroke engines and get the ban on the import of these engines approved as well as get the ban on the import of leaded petrol and high sulphur diesel approved.

We proposed the ban on the import of low-grade (high sulphur) coal (the proposal is under consideration). Also proposed tile compulsory use of Catalytic Converters in petrol driven vehicles and particulate betters in diesel driven vehicles (the proposal is under consideration). We proposed the sale of lubricants in sealed containers at all petrol pumps and proposed Zero Tariffs for the import of CNG-driven vehicles (the proposal has been accepted in part.)

We prepared project document for the cane and reed land as well as the project to re-excavate the waterway separating the Sunderbans from human settlements in the Khulna and Bagerhat districts (the project may be approved soon). We also prepared a proposal to set up a separate Wildlife Circle in the Forest Department (this is also likely to be approved soon).

We have been successful in getting the ban on felling of trees in natural forests extended for five years (2000 to 2005) by the Cabinet and got the ban on export of snake and lizard skins extended.

We negotiated with the US State Department about an agreement for support to afforestation in Bangladesh under the Tropical Forest's Conservation Act passed by the US Congress in 1998. An agreement between Bangladesh and the US may be signed this month. Bangladesh will be the first country in Asia to sign an agreement of this kind with the US.

In my last week at the Ministry of Environment and Forest I have tried to arrange payment of arrears to workers in the rubber estates of the BFIDC (they had not been receiving salaries regularly for several year). This project to set up a Sports Goods Complex under BFIDC also received approval and work to set up such a complex will begin in the beginning of the 2000-2001 financial year.

Q: *We have heard a lot of talks about the Save the Buriganga Campaign. But, we are yet to see any bold step to bring back the Buriganga. The rate of encroachment is climbing up along the riverbanks.*

A: Yes, we are yet to save the Buriganga. But we have been committed to save the river from dying. We cannot save Dhaka if we cannot get back this lifeline river. A proposal to clear the Buriganga was also submitted to CIDA last week. The circular waterway project connecting the Buriganga, the Sitalakhya, the Turag and the Balu to ease surface traffic congestion in the city of Dhaka has also been conceived.

Q: *Do you think these steps are enough?*

A: Definitely not. We have to take some more steps and programmes to curb air pollution. But at least we tried to do sensitise the people about these problems. We have tried in putting forward measures designed to integrate environmental policies and rules within economic, planning, budgetary and development strategies. People need some of these steps turned into action to make a difference, bring a change and propel the nation to the highway of sustainable development.