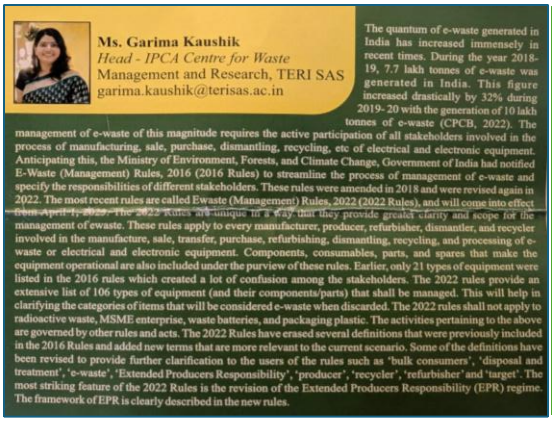
General Publications

Blogs & Articles

- An article on "Unique features of E-waste Management Rules 2022 in contrast to 2016 Rules" has been written for a quarterly newsletter 'EcoTech Talks'.

- An article on 'Unplastic- King' the Future, published in Clean India Journal, 2023 featured the thoughts and expertise of Ms Garima Kaushik on the impact of plastic waste on our environment.


Ms. Garima Kaushik
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The quantum of e-waste generated in India has increased immensely in recent times. During the year 2018-19, 7.7 lakh tonnes of e-waste was generated in India. This figure increased drastically by 32% during 2019-20 with the generation of 10 lakh tonnes of e-waste (CPCB, 2022). The management of e-waste of this magnitude requires the active participation of all stakeholders involved in the process of manufacturing, sale, purchase, dismantling, recycling, etc of electrical and electronic equipment. Anticipating this, the Ministry of Environment, Forests, and Climate Change, Government of India had notified E-Waste (Management) Rules, 2016 (2016 Rules) to streamline the process of management of e-waste and specify the responsibilities of different stakeholders. These rules were amended in 2018 and were revised again in 2022. The most recent rules are called Ewaste (Management) Rules, 2022 (2022 Rules), and will come into effect from April 1, 2023. The 2022 Rules are unique in a way that they provide greater clarity and scope for the management of ewaste. These rules apply to every manufacturer, producer, refurbisher, dismantler, and recycler involved in the manufacture, sale, transfer, purchase, refurbishing, dismantling, recycling, and processing of e-waste or electrical and electronic equipment. Components, consumables, parts, and spares that make the equipment operational are also included under the purview of these rules. Earlier, only 21 types of equipment were listed in the 2016 rules which created a lot of confusion among the stakeholders. The 2022 rules provide an extensive list of 106 types of equipment (and their components/parts) that shall be managed. This will help in clarifying the categories of items that will be considered e-waste when discarded. The 2022 rules shall not apply to radioactive waste, MSME enterprise, waste batteries, and packaging plastic. The activities pertaining to the above are governed by other rules and acts. The 2022 Rules have erased several definitions that were previously included in the 2016 Rules and added new terms that are more relevant to the current scenario. Some of the definitions have been revised to provide further clarification to the users of the rules such as 'bulk consumers', 'disposal and treatment', 'e-waste', 'Extended Producers Responsibility', 'producer', 'recycler', 'refurbisher' and 'target'. The most striking feature of the 2022 Rules is the revision of the Extended Producers Responsibility (EPR) regime. The framework of EPR is clearly described in the new rules.

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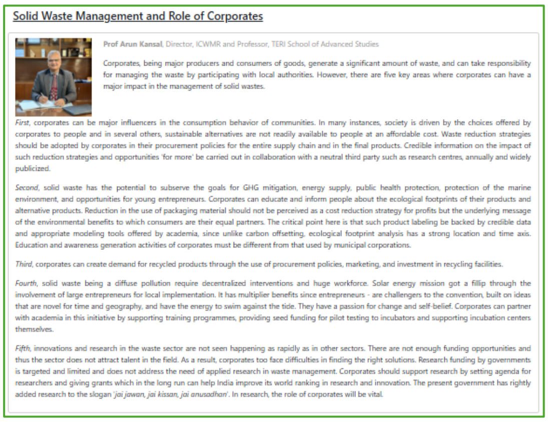
- A blog on 'Rights of Nature: A missing link in India's Climate commitments' was written by Dr Divya Soman in the Central Mirror.
- A blog on 'Solid Waste Management and Role of Corporates' written by Prof Arun Kansal in the Central Mirror.


RIGHTS OF NATURE: A MISSING LINK IN INDIA'S CLIMATE COMMITMENTS


Solid Waste Management and Role of Corporates

Prof Arun Kansal, Director, ICWMR and Professor, TERI School of Advanced Studies

Corporates, being major producers and consumers of goods, generate a significant amount of waste, and can take responsibility for managing the waste by participating with local authorities. However, there are five key areas where corporates can have a major impact in the management of solid wastes.

First, corporates can be major influencers in the consumption behavior of communities. In many instances, society is driven by the choices offered by corporates to people and in several others, sustainable alternatives are not readily available to people at an affordable cost. Waste reduction strategies should be adopted by corporates in their procurement policies for the entire supply chain and in the final products. Credible information on the impact of such reduction strategies and opportunities 'for more' be carried out in collaboration with a neutral third party such as research centres, annually and widely publicized.

Second, solid waste has the potential to subserve the goals for GHG mitigation, energy supply, public health protection, protection of the marine environment, and opportunities for young entrepreneurs. Corporates can educate and inform people about the ecological footprints of their products and alternative products. Reduction in the use of packaging material should not be perceived as a cost reduction strategy for profits but the underlying message of the environmental benefits to which consumers are their equal partners. The critical point here is that such product labeling be backed by credible data and appropriate modeling tools offered by academia, since unlike carbon offsetting, ecological footprint analysis has a strong location and time axis. Education and awareness generation activities of corporates must be different from that used by municipal corporations.

Third, corporates can create demand for recycled products through the use of procurement policies, marketing, and investment in recycling facilities.

Fourth, solid waste being a diffuse pollution require decentralized interventions and huge workforce. Solar energy mission got a fillip through the involvement of large entrepreneurs for local implementation. It has multiplier benefits since entrepreneurs - are challengers to the convention, built on ideas that are novel for time and geography, and have the energy to swim against the tide. They have a passion for change and self-belief. Corporates can partner with academia in this initiative by supporting training programmes, providing seed funding for pilot testing to incubators and supporting incubation centers themselves.

Fifth, innovations and research in the waste sector are not seen happening as rapidly as in other sectors. There are not enough funding opportunities and thus the sector does not attract talent in the field. As a result, corporates too face difficulties in finding the right solutions. Research funding by governments is targeted and limited and does not address the need of applied research in waste management. Corporates should support research by setting agenda for researchers and giving grants which in the long run can help India improve its world ranking in research and innovation. The present government has rightly added research to the slogan *'jai jawan, jai kissan, jai anusadhan'*. In research, the role of corporates will be vital.

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- A blog on 'Environment Protection (End-of-Life Vehicles) Rules, 2025: Another step by India for circular economy' was written by Ms. Garima Kaushik in the Central Mirror.

- A blog on 'Paradigms of Water Sustainability through Market-Based Instruments' in the Central Mirror written by Prof Arun Kansal.

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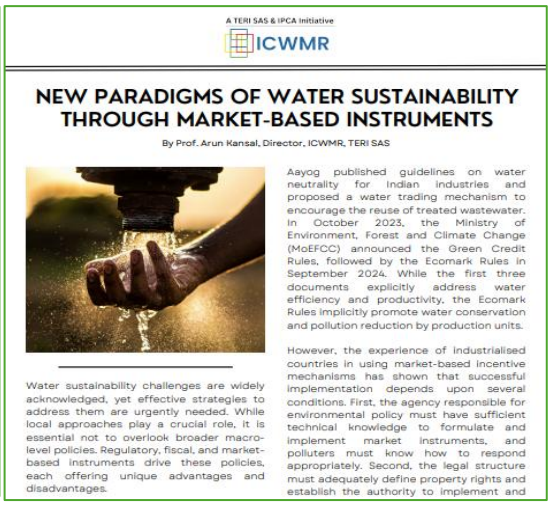
ENVIRONMENT PROTECTION (END-OF-LIFE VEHICLES) RULES, 2025
Another step by India for circular economy

By Ms. Garima Kaushik, Head, ICWMR, TERI SAS

January 6, 2025. The primary aim of these rules is to enable and encourage the formal recycling of waste generated by end-of-life vehicles (ELVs). They also outline the responsibilities of various stakeholders involved in vehicle production, usage, and end-of-life management.

A key aspect of this rules is to promote the establishment of 'Vehicle Scrapping Facilities' and ensure their formal operations. These facilities will receive unfit ELVs (both transport and non-transport vehicles) and carry out essential activities such as treatment, de-pollution, dismantling, segregation, and scrapping. The segregated waste components can then be sent to other facilities for recycling, processing, or

India has been making dedicated efforts to introduce policies and schemes that promote achievement of sustainable development goals. However, at times, conflicts and trade-offs arise when



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NEW PARADIGMS OF WATER SUSTAINABILITY THROUGH MARKET-BASED INSTRUMENTS

By Prof. Arun Kansal, Director, ICWMR, TERI SAS

Aayog published guidelines on water neutrality for Indian industries and proposed a water trading mechanism to encourage the reuse of treated wastewater. In October 2023, the Ministry of Environment, Forest and Climate Change (MoEFCC) announced the Green Credit Rules, followed by the Ecomark Rules in September 2024. While the first three documents explicitly address water efficiency and productivity, the Ecomark Rules implicitly promote water conservation and pollution reduction by production units.

Water sustainability challenges are widely acknowledged, yet effective strategies to address them are urgently needed. While local approaches play a crucial role, it is essential not to overlook broader macro-level policies. Regulatory, fiscal, and market-based instruments drive these policies, each offering unique advantages and disadvantages.

However, the experience of industrialised countries in using market-based incentive mechanisms has shown that successful implementation depends upon several conditions. First, the agency responsible for environmental policy must have sufficient technical knowledge to formulate and implement market instruments, and polluters must know how to respond appropriately. Second, the legal structure must adequately define property rights and establish the authority to implement and

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- A blog on the 'Changing Perspectives on Waste Management Approach: Moving from Health to Wealth and back to Health' was written by Prof. Arun Kansal in the Central Mirror.

- A blog on 'Diffusion of plastic waste management policy key to far-reaching transformation' was written by Prof Arun Kansal, Mr Ashish Jain and Ms Garima Kaushik.

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CHANGING PERSPECTIVES ON WASTE MANAGEMENT APPROACH
Moving from Health to Wealth and back to Health

By Prof. Arun Kansal, Director, ICWMR, TERI SAS

Plague Commission highlighted the importance of health and sanitation, requiring Medical Officers of Health to hold a diploma in public health. The School of Tropical Medicine was founded in 1920, followed by the All-India Institute of Hygiene and Public Health in 1932.

Rapid urbanization has increased the roles of engineers and architects in managing housing, infrastructure, and urban planning. Government funding has largely emphasized infrastructure, resulting in more engineers in municipalities and a reduced role for public health officers. Engineering departments now oversee water supply, sanitation, and drainage, while medical officers manage solid waste. In the 1950s, Roorkee Engineering College (now IIT Roorkee) launched its first Master's program in Public Health Engineering, marking a shift towards a reliance on cement, steel, and energy in public health.

A thriving civilization produces waste as a byproduct of its activities. If this waste is not adequately managed, it can lead to accumulation problems. History has shown that this accumulation of waste can devastate human lives, often resulting in

Diffusion of plastic waste management policy key to far-reaching transformation

Prof. Arun Kansal, Ashish Jain, Garima Kaushik

Given the socio-ecological, environmental, and economic imperatives of plastic waste management, the Indian government introduced the policy of extended producer responsibility (EPR) through Plastic Waste Management Rules, 2016. The policy extends the responsibility of collection and recycling or co-processing of plastic waste from local bodies to large producers, importers, and brand owners (PIBOs) who use plastic packaging to sell products. This is a transformative policy change, which expands the canvas of waste management and brings multiple stakeholders into its fold.

The rules are envisioned to promote the development of a supply chain for plastic waste. It mandates PIBOs to collect and recycle plastic packaging quantitatively equivalent to what was introduced in the domestic markets, as co-flows of sold products. Policy shifts are characterized by challenges to implementation. The Indian government by taking recourse to proactive amendments in the rules and procedures, has been navigating the transformative route, effectively. Less than 80% of the 3.4 million tonnes of plastic waste generated annually, can be addressed by the policy. What about the residual 800,000 tonnes and the legacy waste? While the supply chain of polyethylene terephthalate (PET, to most readers) is entrenched, there are other types of lightweight, environmentally detrimental plastics, diffused in the anthroposphere, that need urgent attention.

While the EPR policy is iteratively maturing, some more thoughtful inclusions will take it even further. First and foremost, the responsibility-sharing stakeholder base must be expanded. Micro- small- and medium enterprises (MSME), in their capacities as brand owners and importers consuming less than 1 tonne of plastic packaging annually, are exempted. The MSME sector's entities, while being key nodes in the supply chains of the larger manufacturers, contribute close to 50% of the manufacturing sector's output. The allocation of responsibility for the plastic waste generated from a product is complex, given the vastly diversified supply chains. This is where life cycle thinking becomes indispensable – to trace the flows of plastics in the technosphere. Seamless inclusion of the MSMEs and the smaller importers within the ambit of the EPR can be accomplished by recognizing shared responsibility agreements with proportionate financial contributions among the participating stakeholders, which will facilitate the entrenchment of robust and relatively costlier plastic-recycling pathways, and help EPR credit trading.

Another challenge is the end-of-life management of plastic waste in India's villages. The rural populace, courtesy of economic development, is inching closer to the consumption footprints of their urban counterparts. Training the lens on rural India reveals that a paucity of a waste-recycling supply chain, and high reverse-logistics expenses, are obstacles to be surmounted if the government wishes to give a fillip to rural tourism for sustainable development and empower local communities. EPR policy can generate among producers, an interest in waste management in villages, by offering differential EPR credits between urban and rural regions. The latter, while being slightly unattractive from an economic feasibility point-of-view, will uncover higher socio-environmental benefits, and thereby justify the higher EPR credits. Collection and management of plastic waste in villages can be an important indicator to monitor the performance and assess the success of the policy.

Different options for plastic recycling/re-processing incur different expenditures and offer varying environmental benefits. Incinerating plastic in cement kilns is a low-cost option with low environmental benefits, vis-à-vis grade-wise segregation of plastic waste, followed by repurposing to plastic boards or other value-added products. It follows that the EPR credits cannot be decided by adopting a 'one-size-fits-all' approach. They must factor in the life-cycle socio-environmental impacts of plastic recycling pathways adopted by the PIBOs.

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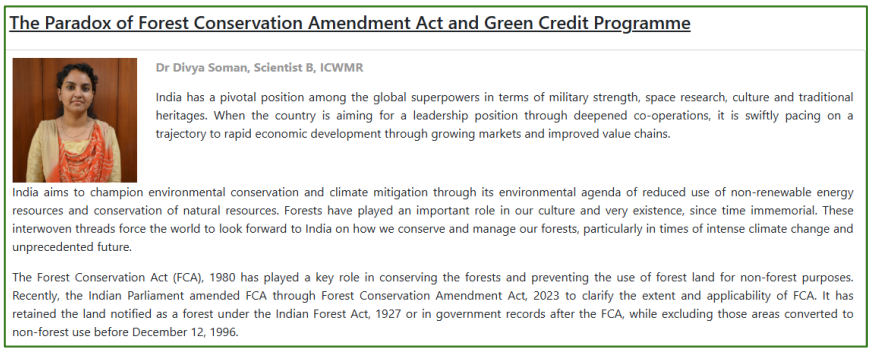

The Paradox of Forest Conservation Amendment Act and Green Credit Programme

Dr Divya Soman, Scientist B, ICWMR

India has a pivotal position among the global superpowers in terms of military strength, space research, culture and traditional heritages. When the country is aiming for a leadership position through deepened co-operations, it is swiftly pacing on a trajectory to rapid economic development through growing markets and improved value chains.

India aims to champion environmental conservation and climate mitigation through its environmental agenda of reduced use of non-renewable energy resources and conservation of natural resources. Forests have played an important role in our culture and very existence, since time immemorial. These interwoven threads force the world to look forward to India on how we conserve and manage our forests, particularly in times of intense climate change and unprecedented future.

The Forest Conservation Act (FCA), 1980 has played a key role in conserving the forests and preventing the use of forest land for non-forest purposes. Recently, the Indian Parliament amended FCA through Forest Conservation Amendment Act, 2023 to clarify the extent and applicability of FCA. It has retained the land notified as a forest under the Indian Forest Act, 1927 or in government records after the FCA, while excluding those areas converted to non-forest use before December 12, 1996.

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Others

- A policy brief on Advancing and Integrating Waste Management and Health.

- A compendium on Changemakers' Stories: A collection of entrepreneurial journeys of participants of Course on Entrepreneurship in Solid Waste Management (Volume I).

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