

**SUMMARY OF ROUND TABLE ON
“PRAGMATIC ENVIRONMENTAL
ECONOMICS FOR VIKSIT BHARAT”**

6th June 2025



PREAMBLE

As India advances toward its goal of becoming a developed nation (Viksit Bharat), environmental sustainability must become a cornerstone of economic development. Traditional growth models, focused on GDP and intensive resource extraction, are no longer compatible with the pressing challenges of climate change, biodiversity loss, and resource degradation.

This roundtable brought together leading thinkers, practitioners, and policymakers to deliberate on integrating environmental economics into India's policy and planning ecosystem. The objective: to make environmental costs visible, value natural assets properly, and guide sustainable development using data driven, economically viable solutions.

LIST OF PARTICIPANTS

- S B Dangayach – Founder Trustee, Innovative Thought Forum (Convener)
- Abhay Upadhye- Industrialist and Chairman, Indian Plastic Institute
- Amal Dhru - Former Faculty, IIMA, Expert on Finance and Corporate Affairs
- Anil Sharma - Resource Person, SJM; Expert on International Trade
- Arun Goyal - Director, Academy of Business Studies, New Delhi; International Expert on WTO and HSN
- Arunachal Mudgerikar - International expert in WASH & former CSO, Tata Power
- Atul Sharma - Expert on marine environment and V P IRClass (of IRS)
- Dinesh Yadav - Former Chairman of environment committee, CII and Director, Arvind Envisol Ltd
- Dr. Arvind Kumar - Founder, India Water Foundation and member of several U N organisations
- Dr. Bharat Jain - CEO, Gujarat centre for cleaner production

- Dr. Bhavin Pandya - Dean, Faculty of Mgmt, Kadi Sarva Vishvidyalay and Founder, Gau Vishwa Vidyapeetham
- Dr. Mukesh B. Joshi - Former Chief Engineer, SSNL and Consultant, Gujarat Institute of Disaster Management
- Dr. Shivang Swaminayaran - Expert in Homeopathy, Integrative health and wellness
- Dr. Sunil Parekh - Economist; Strategic Advisor, Zydus Cadila & Jubilant Group
- Dr. U.K. Srivastava - Former Professor, IIMA; Expert on Agriculture and Integrated Value Chains
- Dr. V. Prakash - Eminent Scientist; Former Director General, CSIR; Former Director, CFTRI
- Gaurav Kedia - President, Indian Biogas Association
- Kumaresh C. Misra - IAS(Retd), Former DDG, UN Habitat, Former Technical Advisor, UNIDO and Sustainability expert
- Madhav Patel - CMD, Gujarat Credo group and expert on mining industry
- Nainesh A. Pandya - CA, CS and Financial consultant
- Paresh M. Shah - Former Chief Engineer, SSNL
- Prof R Parthasarathy - Former Director, GIDR and Former Professor, Environmental Economics, CEPT University
- Shailesh Patwari - Industrialist; Former President, Gujarat Chamber of Commerce & Industry (GCCCI)
- Tulsi Tawari - Mentor, Entrepreneur and eminent author of many books on economics
- Tushar Prabhune - Assistant Resident Editor, The Times of India
- Testing, evaluation and standardisation of building products
Dr. B Singh, Chief Scientist (Retd) CBRI
- Way forward
Mr. S B Dangayach
Founder Trustee, Innovative Thought Forum and Chairman, Plastindia Environment Committee

Key discussion points

Evolution of Environmental Awareness and Legal Frameworks

- Following the Industrial Revolution, focus was solely on maximisation of production, extraction of minerals, and profits without care and concern for the environment.
- The Environment Protection Agency (EPA) was formed in 1970 in the US, leading to the bringing of environmental damage, externalities, and related aspects to the centre stage, and the evolution of many regulations for different domains.
- In India, action followed with **The Water (Prevention & Control of Pollution) Act** in the year 1974, followed by a plethora of rules, regulations, and acts relating to the environment, as well as the creation of a separate Ministry of Environment and the Central Pollution Control Board.
- Mainstream economics and business management schools continued to focus largely on GDP as the sole measure of economic growth, treating the environment as an extraneous element.
- In select circles, however, Environmental Economics (EE) started to gain traction with global recognition of externalities.
- Recognition of and need for balancing economic growth with environmental protection manifested in various forms like global warming, greenhouse gas (GHG) emissions, climate change, circular economy, decarbonisation, net zero, etc.

India must adopt pragmatic environmental economics by valuing ecological damage, enforcing “polluter pays principle” and streamlining EIAs with time-bound approvals. Coordination between CPCB and State Boards is vital. Tailored Net Zero targets and sector-specific strategies, especially for cement and steel, can balance sustainability with livelihoods and industrial growth.

Status of Implementation of Environmental Laws and Policies in India

- Following the formation of the EPA, India started with the first Act for water in 1974 and created rules, laws, acts, and an institutional framework.
- A plethora of environmental laws exist; implementation, however, is poor for most due to a variety of factors.
- Isolated successful models have not been spread or adopted in other areas. For example:
 - The Indore model of managing municipal solid waste (MSW) has not been adopted even in other parts of the state.
 - The Surat model of reusing treated sewage by industries, successfully used for many years, has not been spread or adopted in other parts of Gujarat or India.
- Many laws are framed without due consideration to social, behavioural, economic, technical, and structural realities, resulting in new problems. For example, a legal push to biodegradable plastics has indirectly encouraged littering and increased the generation of microplastics.

Development of Environmental Economics (EE)

- Environmental awareness was a part of cultural and traditional practice but not a part of economics until the 1970s.
- Following the Stockholm Conference in 1972, India committed to addressing environmental challenges and brought the 42nd Amendment to the Indian Constitution to mandate environmental protection by the state and citizens.
- Environmental economics began being introduced in a few Indian universities for studies on pollution, deforestation, and natural resources.
- Environmental economics became a part of policymaking, with ministries consulting economists for natural resource management, water pricing, and pollution regulation.
- Enhanced interest in climate change economics followed India's commitments to the UNFCCC and NAPCC, with select institutions like CEPT University, TERI, JNU, IIMA, etc., focusing on climate economics—especially adaptation and mitigation costs, low-carbon development strategies, pollution costing, waste management, carbon trading, etc.
- Dedicated studies and courses in carbon pricing, green finance, energy transitions, ESG economics, and sustainable agriculture have emerged.
- EE, in a nutshell, is not yet mainstreamed in schools of business and economics.

Valuation of Natural Resources

- Valuation of natural resources like water, land, forests, etc., is still not in place.
- Costing of delivery of water and other resources of required specifications is possible but not done by most governments, treating natural assets as “zero cost,” leading to many disastrous distortions.
- Agriculture accounts for around 80% of water consumption. Allowing it as a free resource, along with unregulated groundwater extraction and cultivation of water intensive crops like rice and sugarcane for exports, is detrimental to the nation.
- Huge anomalies in the valuation of land resources are a major factor behind exorbitant land prices in India compared to developed and developing nations.
- Costing of several benefits provided by forests and trees has not yet evolved.
- Cost-benefit analysis of biodiversity in quantitative and qualitative terms is also still evolving.

Economic Valuation of Environmental Services

- Whole lot of environmental services like sewage treatment, effluent treatment, air purification etc available
- Though “polluter pays principle” taken as overarching paradigm, proper costing and pricing of these services not in place

- Even costing of simple thing like municipal waste segregation, collection, transfer and treatment not done by local governments and designated agencies leading to littered streets and public areas
- Sewage treatment as a service by local governments not costed for recovery of charges leading to poor upkeep of sewage treatments plants and opportunity cost of foregoing possible revenue.

Energy Pricing and Policy Frameworks

- Ambitious targets and widespread work in renewables across India, with solar and wind being dominant.
- Energy economics, in perspective, has not yet been done to reflect all the costs and subsidies for fossil and renewable energy. Even externalities relating to fossil energy are not built into the costing.
- Biogas or biomass-based energy is yet to take off in a big way, though efforts are afoot.
- Huge potential exists for energy recovery from biomethanable wastes like gobar, kitchen waste, food waste, biomass, sludge, etc.
- If research is done for organic fertiliser from biogas plant slurry, the economic benefits from biogas + electricity + fertiliser could make this renewable route very favourable.
- Intermittent sources of power, combined with continuous sources like biogas/biomass along with Battery Energy Storage Systems (BESS), can be pivotal and profitable for decentralising the energy transition.
- The water, energy, and agriculture nexus must be made central to sustainability.

Circular Economy and Demand-Side Management

- A lot of buzz and some activities around the circular economy.
- Resource use efficiency and demand-side management are part of the policy framework but are practised in limited ways.
- Huge scope exists to reduce the material footprint and promote resource-efficient technologies and recycling to leapfrog the West's wasteful model.
- Buildings (the built environment) are responsible for over 50% of power consumption.
- Authentic demand-side management technologies are badly needed.

Innovation and Business Models in Waste Management

- Waste is now recognised as a resource in the wrong place.
- There is a need to study international conventions on the movement of wastes and recycling,

especially the Basel Convention (1989), Rotterdam Convention (1998), and Stockholm Convention (2001).

- There is much to learn from countries like China, which leverages scraps and wastes from Western nations to build many industries, or Sweden, which has built waste-to-energy plants using imported waste.
- Scraps of metals, paper, etc., have spawned huge industries—just like many other wastes such as hides, hair, or bones.
- Many successful and sustainable business models are operational and can be emulated for large or decentralised businesses, such as:
 - Tirupur effluent treatment plant for industrial water
 - Nagpur model for treated sewage for thermal plants
 - Several PET waste plants for fibres and fabrics
 - Fly ash plants for cement and building elements
 - Biogas and organic fertiliser plants under several schemes to use organic wastes of different types
 - Burari (Delhi) plant for recycling of construction & demolition waste
- Waste business models need to be made viable without subsidy in the medium to long term by capturing costs from polluters for externalities, revenue from outputs, and credits under different schemes or programmes.

India must unlock its trade potential by embracing circular economy principles. Treating waste as a resource can boost green exports, cut raw material use, and drive innovation. Expanding digital waste inventories, reforming scrap trade rules, and incentivizing circular industries will spur sustainable growth, attract investment, and create green jobs.

Productive Use of Waste and Unutilised Land

- India has a total land mass of over 3 million sq. km.
- According to the Department of Land Resources, Government of India, and the National Remote Sensing Agency, around 16% is classified as wastelands.
- Additionally, huge tracts of unutilised and surplus lands are available with the government, enterprises, trusts, churches, temples, Waqf boards, institutions, etc.
- Land is central to sustainable and holistic development; hence, with proper and just land policies and actions, many environmental problems can be tackled.

A FEW PRAGMATIC IDEAS

- Dormitories and homes for workers in or near industrial areas on surplus lands through a simple change in land use
- Land footprinting and use of surplus lands for decentralised sewage treatment, water

- harvesting, schools, health centres, etc., in suitable modes
- Contract farming and processing
- Decentralised renewable energy microgrids for local enterprises.

Holistic EE Strategies for Viksit Bharat

- Critical review and revamp of present economic models of **Shuddh Labh** (pure profit) or **Shunya Labh** (zero profit) into our holistic model of **Shubh Labh** (ethical profits).
- Critical review and revision of using GDP as the sole measure of development.
- Inclusion of Agri and food economics as an integral part of environmental economics, with a focus on the following for **Viksit Bharat**: -
 - ✓ Adopt the 4R Mantra of Reduce, Recycle, Reuse, and Recover everywhere for sustainable development.
 - ✓ Inclusion of health and wellness as a vital part of EE, as it is the foundation of development.
 - ✓ Integration of penalties, incentives, and market-based instruments (e.g., carbon trading).
 - ✓ Designing outcome-oriented regulatory mechanisms to prevent misuse.

India must pursue a sustainable economic model rooted in Shubh Labh—ethical profit that prioritizes long-term environmental and social well-being. With low material consumption, it can champion resource-efficient, regenerative growth. Empowering MSMEs through collaborative capitalism and ensuring transparent, visionary policymaking will drive inclusive innovation and truly sustainable prosperity.

To build Viksit Bharat, agriculture must embrace a circular, value-driven model—utilizing by-products, promoting low-water, climate-resilient crops and reviving traditional practices. Enable farm-level processing, modern logistics and efficient tech. Prioritize nutritious diets and collaborative value chains to double farmer profits, create local jobs, and ensure sustainable, resilient growth.

Financing Environmental Goods and Services

Proper costing of all externalities for recovery from polluters, along with revenue from buyers of outputs, to evolve genuine business models.

- Learning from best practices in India and abroad to evolve financial models that include a mix of incentives, credits, penalties, and business incomes in environmental businesses.
- Moving away from subsidies in the medium and long term to prevent abuses or misuses like greenwashing.
- Waste and scrap import reforms to boost raw material availability, especially for green enterprises in MSMEs.

- Acceleration of research and content creation for EE in academics.
- Capturing all the benefits, especially healthcare, in EE businesses.

Way Forward

- **Environmental Footprinting:** Comprehensive footprinting of land, water, and natural resources is essential for assessing environmental impact, enabling efficient planning, and ensuring sustainable resource utilization.
- **True Costing of Resources:** Vital resources such as water, land, and renewable energy must be priced to reflect actual consumption and scarcity, driving responsible use, equitable access, and informed conservation strategies.
- **Valuation of Environmental Services:** Assigning costs to environmental services like sewage treatment supports the polluter pays principle, ensures fair cost recovery, and strengthens long-term environmental governance.
- **Collaborative Policy Dialogues:** A structured series of roundtables focused on water, land, renewable energy, waste management and the circular economy should be conducted to generate actionable insights and build collaborative ecosystems.
- **Capacity Building in Environmental Economics:** Developing specialized academic courses will help nurture expertise in sustainability valuation, support evidence-based policymaking, and cultivate a new generation of green economy professionals.
- **Entrepreneurial Ecosystem Linkages:** Stronger integration with startups and green enterprises can be achieved by curating a pipeline of viable environmental projects, offering funding support, and enabling incubation through focused programs.
- **Mission Mode Treated Sewage Reuse:** Treated sewage reuse must be prioritized for non-potable applications such as landscaping, industry, agriculture and construction, thereby conserving freshwater reserves.
- **Source Level Waste Segregation:** Mandatory waste segregation at the household and institutional levels is critical for enabling effective recycling, composting, and reducing landfill dependency.
- **Zero Littering Enforcement:** Cleanliness in public spaces must be driven through a mix of civic engagement, awareness campaigns, stringent penalties, and adequate waste management infrastructure.
- **Bio-resource Valorization:** Conversion of gohar and other methanogenic waste into biogas and organic fertilizer is a time-tested concept that provides clean energy, mitigates emissions and promotes organic farming.
- **Fly Ash Utilization in Agriculture:** Regulated and scientific use of fly ash in farming can improve productivity, minimize chemical inputs and aid in the productive disposal of thermal power waste.
- **Recycling Construction & Demolition Waste:** A robust policy framework is needed to support systematic collection, processing and reuse of C&D waste as aggregates or raw materials in the

construction sector.

- **Decentralized Renewable Energy Systems:** Microgrids powered by renewable energy offer clean, affordable and dependable electricity solutions for rural and remote areas, while reducing pressure on centralized natural resources.

IMMEDIATE ACTIONABLE STEPS: -

- *Launch a Treated Sewage Reuse Mission on Open Defecation Free (ODF) line.*
- *Vigorously promote biomethanation of all animal and food waste in mission mode.*
- *Utilize surplus and idle land parcels effectively and efficiently.*
- *To do costing of municipal services to determine fair pricing.*
- *Promote renewable energy microgrids for decentralisation of power*

CONCLUSION

India's environmental economic model must be adaptive, data-driven, and equity-oriented. With targeted investments, smart pricing, and institutional reforms, India can achieve its climate goals without compromising its development priorities. The key lies in integrating sustainability into mainstream economic thinking, backed by robust policy and financial innovation.

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