MINISTÈRE
DE L'ÉCONOMIE,
DES FINANCES
ET DE LA RELANCE
Liberté
Égalité
Fraternité

Direction générale du Trésor

REVUE DE PRESSE SECTORIELLE
ENERGIE ET DEVELOPPEMENT DURABLE

UNE PUBLICATION DU SERVICE ÉCONOMIQUE REGIONAL
DE NEW DELHI

N° 18 – 15 janvier 2022 au 28 février 2022

En bref

Infrastructures

- L'Inde doit augmenter ses investissements dans les infrastructures pour réaliser son objectif d'atteindre un PIB de 5 000 Mds USD avant 2025, selon une étude.
- La Ministre des Finances annonce, lors du discours de présentation du budget, un objectif d'expansion du réseau autoroutier indien de 25 000 km sur l'exercice fiscal 2022-23.

Ferroviaire

- Lors du discours de présentation du budget, la Ministre des Finances a annoncé la construction dans les trois ans de 400 trains semi-grande vitesse Vande Bharat de nouvelle génération.

Développement et transports urbains

- La Ministre des Finances annonce la création d'un comité d'experts sur le développement urbain en charge de produire des recommandations sur les politiques publiques d'urbanisme et d'aménagement en Inde.

Energies fossiles et biocarburants

- Dans un effort de promotion des biocarburants, la Ministre des Finances annonce une taxe de 2 INR/L pour les carburants diesel n'incorporant pas de biocarburant.

- Le think tank iForest publie une étude sur les enjeux socio-économiques de la fermeture des mines de charbon en Inde, et la nécessité de travailler sur une transition juste pour ces territoires.
- Le Ministre des Energies Renouvelables annonce l'objectif d'abandon des carburants fossiles dans le secteur agricole d'ici 2024.

Electricité et énergies renouvelables

- La Ministre des Finances a annoncé, lors du discours de présentation du budget, un montant additionnel de 195 Mds INR (2,5 Mds EUR) pour le programme Production Linked Incentives visant la production domestique de panneaux solaires.
- Le groupe Adani signe un MoU avec le fabricant de piles à combustible canadien Ballard pour la commercialisation de piles à hydrogène en Inde.
- Le conglomérat Reliance annonce la reconversion d'une centrale de raffinage pour produire de l'hydrogène bleu, et réaffirme son ambition de devenir le premier producteur d'hydrogène bleu au monde.
- Le *Ministry of Power* publie les premières mesures de la politique sur l'hydrogène et l'ammoniaque verts, annoncée par le Premier Ministre en août dernier.

Mobilités électriques

- Le think tank public NITI Aayog annonce la parution d'une politique sur le *battery swapping* sous quatre mois.

Environnement et qualité de l'air

- La France et l'Inde signent une feuille de route commune pour accroitre leurs échanges dans le domaine de l'économie bleue et de la gouvernance maritime.
- Le dernier rapport du GIEC analyse les conséquences du changement climatique sur l'Inde, classée parmi les pays les plus vulnérables à ses conséquences.

- Le budget indien pour l'exercice fiscal 2022-23 prévoit une hausse des dépenses en faveur de la transition énergétique et de la neutralité carbone.
- Le Ministre de l'Environnement publie la réglementation sur la production et l'utilisation de plastiques à usage unique.

Revue de presse

1. Infrastructure

To achieve $5 trillion GDP by FY25, India needs to spend about $1.4 trillion on infra: Eco Survey

The Economic Times, 31/01/2022

In order to achieve USD 5 trillion GDP by FY'25, India needs to spend about USD 1.4 trillion over this period on infrastructure, according to the Economic Survey.

During financial years 2008-17, India pumped in about USD 1.1 trillion on infrastructure. However, the challenge is to step up infrastructure investment substantially, the Economic Survey 2021-22 said.

"Keeping this objective in view, National Infrastructure Pipeline (NIP) was launched with projected infrastructure investment of around Rs 111 lakh crore (USD 1.5 trillions) during FY2020-2025 to provide world-class infrastructure across the country, and improve the quality of life for all citizens," it said.

It also envisages to improve project preparation and attract investment, both domestic and foreign in infrastructure.

IP was launched with 6,835 projects, which has expanded to over 9,000 projects covering 34 infrastructure sub-sectors. During the fiscals 2020-2025, sectors such as energy (24 per cent), roads (19 per cent), urban (16 per cent), and railways (13 per cent) amount to around 70 per cent of the projected capital expenditure in infrastructure in India. NIP has involved all the stakeholders for a coordinated approach to infrastructure creation in India to boost short-term as well as the potential GDP growth. "Infrastructure is the backbone for any economy. The extent and quality of infrastructure determines the ability of the country to utilise its comparative advantage and enables cost competitiveness. Given the strong backward and forward linkages and the positive externalities that infrastructure generates, it can be a vehicle for social and economic transformation," it added.

Public private partnership in infrastructure has been an important source of investment in the sector. As per the database of the World Bank on private participation in infrastructure, India is ranked second among developing countries both by the number of PPP Projects as well as the associated investments.

Much of the Indian success in PPPs is attributed to development of robust institutional structure, financial support, and use of standardised documents, both process documents like model request for qualification and model request for proposal as well as substantive documents like the model concession agreements across infrastructure sectors.

The Public Private Partnership Appraisal Committee (PPPAC) which is responsible for the appraisal of PPP projects has cleared 66 projects with a total project cost of Rs 1,37,218 crore from 2014-15 to 2020-21.

The government launched the Viability Gap Funding (VGF) scheme for providing financial assistance to financially unviable but socially/ economically desirable PPP

projects. Up to 20 per cent of the project cost is funded under this scheme as a grant.

"...the total VGF amount disbursed between 2014-15 to 2020-21 by DEA is Rs 2,943 crore. Further, the government in November 2020 approved continuation of and revamping of the Scheme for Financial Support to Public Private Partnerships (PPPs) in Infrastructure Viability Gap Funding (VGF) Scheme till 2024-25," the survey said.

The revamped VGF scheme is expected to attract more PPP projects and facilitate private investment in social sectors such as health, education, waste water, solid waste management and water supply, among others, it added.

PM Gati Shakti plan: National Highway network will be expanded by 25,000 kms

Zeenews, 01/02/2022

Presenting the Budget 2022, Finance Minister Nirmala Sitharaman has announced that under the PM Gati Shakti master plan, the government will expand the National Highway network by 25,000 kms in 2022-23.

Finance Minister also announced that the PM Gati Shakti masterplan for the road transport will be finalised in 2022-23. The Economic Survey on January 31 said the extent and quality of infrastructure determine the ability of a country to utilize its comparative advantage and enable cost competitiveness. Having said that, the survey reveals a consistent increase in the construction of National Highways/roads since 2013-14, with 13,327 kms constructed in 2020-21 as compared to 10,237 kms in 2019-20.

"Infrastructure is the backbone for any economy," the Economic Survey tabled in Parliament said. It said in 2021-22 (till September), 3,824 kms of the road network was constructed.

"There has been a consistent increase in the construction of National Highways/roads since 2013-14 with 13,327 kms of roads constructed in 2020-21 as compared to 10,237 kms in 2019-20, indicating an increase of 30.2 percent over the previous year," it further said. According to the Survey, the significant upturn in road construction in 2020-21 was due to the increase in public expenditure by 29.5 percent as compared to the previous year.

A reflection of the was impetus given by the government to a critical sector that generates employment and supports infrastructure during a pandemic year. The survey also noted that road infrastructure is widely recognized as a potent means of socio-economic integration and is vital for the economic development of the country.

2. Ferroviaire

Railway Budget 2022-23: 400 Vande Bharat trains in three years; Production to start from this date

The Financial Express, 02/02/2022

Union Budget 2022-23: Recently, Railway Minister Ashwini Vaishnaw thanked Prime Minister Narendra Modi for the record investment allocation for the Indian Railways network in this year's budget. Yesterday, Finance Minister Nirmala Sitharaman, presented the paperless Union Budget in the Parliament for the financial

year 2022-23. In this fiscal's Budget, capital investment of Rs 1,37,000 crore has been given to the Ministry of Railways. According to the Railway Minister, this will help in completing the railway projects which have been stalled due to lack of investment in the national transporter for a long period of time.

In the Union Budget, the Finance Minister announced that during the next three years, as many as 400 new generation semi-high speed Vande Bharat Express Trains with better energy efficiency as well as better passenger riding experience will be developed and manufactured. According to Vaishnaw, the design of version 2 of the indigenously developed Vande Bharat Express train has been completed. The testing of the new Vande Bharat version will start from the month of April and the production of this train will start from next August-September, the Railway Minister further stated.

Vaishnaw also said Indian Railways have a very important role in the PM Gatishakti Framework. In this Union Budget, the PM Gati Shakti Master Plan would include higher spending for road, railways, ports and mass transport. In order to help local businesses and supply chains, concept of 'One Station One Product' will be popularized, the FM said. Also, as a part of the Atmanirbhar Bharat initiative of the Modi government, 2,000 kilometres of the Indian Railways network will be brought under Kavach in the financial year 2022-23. The indigenously-developed Kavach is a world-class technology for safety and capacity augmentation. This anti-collision tech is SIL4 certified, which means there is single error probability in 10,000 years.

3. Développement et transports urbains

Budget 2022: Major Push for urban planning

Mint, 01/02/2022

Focussing on urban planning and development, finance minister Nirmala Sitharaman on Tuesday announced setting up a high-level committee of urban planners, economists and institutions to recommend policies for urban development, capacity building, planning, implementation, and governance.

Presenting the Union Budget for FY23, Sitharaman noted that by the year 2047, when India celebrates 100 years of independence, around half of its population is likely to reside in urban areas, which would require orderly development.

"This will help realise the country's economic potential, including livelihood opportunities for the demographic dividend. For this, on the one hand we need to nurture the megacities and their hinterlands to become current centres of economic growth. On the other hand, we need to facilitate tier 2 and 3 cities to take on the mantle in the future," she said.

The minister noted that it would require a reimagination of cities into centres of sustainable living with opportunities for all, including women and youth. "For this to happen, urban planning cannot continue with a business-as-usual approach. We plan to steer a paradigm change," she added.

Experts are of the view that the move is likely to bring about global best practices for urban development.

Debashish Biswas, Partner, Deloitte Touche Tohmatsu India LLP, said, "The high-level committee for urban planning is a significant step undertaken in FY22-23 budget for defining our future cities considering future of mobility, work, heath, education and living."

He added that the committee will be instrumental in defining new age urban planning concepts for Indian cities including evidence-based urban planning, building resilient and sustainable urban areas, digital and technology solutions for urban development, new-age transportation system including electric vehicles, urban area-led economic growth & employment generation, innovative financing, among others.

Adarsh Sharma, Managing Director, Primus Partners, said, "We welcome the move for a high-level committee for urban planners and economists to be formed for recommendations on urban capacity building, planning implementation, and governance. Bringing onboard institutional experts would help in calibrating recommendation on global best practices contextualised in the country context."

The finance minister also said that the government will provide support to states for urban capacity building. Modernization of building by-laws, town planning schemes (TPS), and transit-oriented development (TOD) will be implemented, she said, adding that it will facilitate reforms for people to live and work closer to mass transit systems.

The central government's financial support for mass transit projects and AMRUT scheme will be leveraged for formulation of action plans and their implementation for facilitating TOD and TPS by the states.

Further, for developing India specific knowledge in urban planning and design, and to deliver certified training in these areas, up to five existing academic institutions in different regions will be designated as centres of excellence. These centres will be provided endowment funds of ₹250 crore each.

4. Energies fossiles et biocarburants

Budget 2022: Diesel To Cost ₹ 2 More From October 1

NDTV, 02/02/2022

Diesel in most parts of the country may cost ₹ 2 per litre more from October 1 while petrol in a few places such as North East may see a price hike after Finance Minister Nirmala Sitharaman levied additional excise duty on fuel sold without blending it with ethanol or biodiesel.

Presently, 10 per cent ethanol, extracted from sugarcane or surplus foodgrain, is blended or mixed in petrol (meaning 10 per cent of ethanol mixed with 90 per cent of petrol) with a view to cutting oil import dependence and provide farmers with an additional source of income.

Ethanol-blended petrol is supplied in 75-80 per cent of the country as availability of ethanol and logistics hamper supply in remaining areas.

On the other hand, there is only an experimental blending of biodiesel, extracted from non-edible oilseeds, in diesel - the most used fuel in the country.

"Blending of fuel is a priority of this government. To encourage the efforts for blending of fuel, unblended fuel shall attract an additional differential excise duty of ₹ 2 per litre from the 1st day of October 2022," Sitharaman said in her Budget speech in the Lok Sabha.

While the additional duty will push oil companies to procure more ethanol for mixing in petrol and arrange for logistics for transporting to deficient areas, it is unlikely that the country will be able to build infrastructure to manufacture biodiesel to the scale needed for blending in diesel in next 8 months, industry officials said.

At a post-Budget press conference, Revenue Secretary Tarun Bajaj said the blended fuel has been discussed with the petroleum ministry.

"We have also collected data on what is not being blended and this is something to push the petroleum companies to ensure that they do the blending. Our desire is not to collect the tax because it would be very minimal. The desire is the blending happens and to an extent, it benefits the country," he said.

The budget proposal would mean that areas that do not have a supply of blended fuel will see higher rates than the areas where the blended fuel is sold. Presently, parts of North East and Jammu & Kashmir and some far-flung areas in the South as well as in Rajasthan do not have a supply of ethanol-blended petrol.

Industry officials said it was possible to raise the supply of ethanol-blended petrol in Rajasthan and unserviced parts of the South but the supply to North East will be constrained.

Diesel on the other hand is largely sold without any blending in the country.

"In order to promote the blending of Motor Spirit (commonly known as Petrol) with ethanol/methanol and blending of High-Speed Diesel with biodiesel, an additional basic excise duty of ₹ 2 per litre on petrol and diesel, intended to be sold to retail consumers without blending, would be levied with effect from the 1st day of October 2022," the memorandum explaining the provisions of the Finance Bill said.

Last year, the government brought forward the target to achieve 20 per cent ethanol-blending with petrol to 2025, five years ahead of its previous target, to help reduce its dependence on costly oil imports. 10 per cent ethanol blending is to be achieved in 2022.

India is the world's third-biggest oil importer, relying on foreign suppliers to meet more than 85 per cent of its oil demand.

Officials said currently the average ethanol blending is 8.5 per cent. A 10 per cent blend would require 4 billion litres of ethanol by 2021-2022 sugar year (November 2021 to October 2022).

To achieve 20 per cent blending by 2025, and to meet the requirement of the chemical and other sectors, about 12 billion litres of alcohol/ethanol would be required. The sugar industry will divert 6 million tonne of surplus sugar to produce 7 billion litres of the ethanol needed while the other 5 billion litres of ethanol will be produced from excess grain.

Last year, the government had also allowed the mixing of ethanol extracted from surplus grains.

Elsewhere in the Budget, a provision of ₹ 4,000 crore has been made for subsidy on cooking gas. This may be inadequate in case international prices of crude oil continue to rise and there is resistance from consumers to further price hikes.

New study pitches for effective energy transition moves to save livelihoods in India's biggest coal and power district

The Times of India, 17/02/2022

India's biggest coal and power district will face energy transition challenges much earlier than anticipated, shows a ground study done by the International Forum for Environment, Sustainability & Technology (iFOREST), Delhi-based environmental think tank.

Its findings flag the importance of initiating the 'just transition' approach so that people in the coal producing states do not lose their livelihoods while the country is fast moving towards renewable sources of energy under its commitment of climate actions under the Paris Agreement. The study on India's biggest coal-producing district Korba in Chhattisgarh, released on Wednesday, shows that the energy transition, propelled by the fast-growing and cost-competitive renewable energy sector, coupled with declining coal reserves and unprofitable coal mines, necessitates just transition planning to start urgently. Over 60% of Korba's GDP and one in five jobs are from coal mining and coal-related industries. The iFOREST's study finds that the Korba's coal mines are getting exhausted, and half of the thermal power capacity is older than 30 years. "Under current policy scenario, which aligns with India's net-zero target of 2070, all the coal mines in Korba can be closed by 2050 and power plants by 2040 in a phased manner," the study said while noting the necessity of urgently taking up 'just transition' planning to save livelihoods of people in the district.

"Just transition has emerged as a concept to ensure that the local communities in coal and power regions do not face the repercussions of untimely mine and thermal power closure. For India, development intervention will be a key aspect of just transition. We also need to invest in human capital in states like Chhattisgarh, Jharkhand, Odisha. These states have the opportunity to build the new economy, and for that cooperative federalism will be necessary," said Amitabh Kant, CEO, Niti Aayog, on the occasion of the release of the study.

The study on Korba district will help in understanding what a just energy transition will mean and entail for India's top coal and power districts in the coming years. Korba produces over 16% of the country's coal and is also an electricity hub, with 6,428 MW of thermal power capacity. "Our study of Ramgarh district of Jharkhand in 2020, and now of Korba in Chhattisgarh essentially shows just transition in India is about re-

development of the coal regions. Major policy and legal reforms in land, labour, and finance will be required to enable a smooth just transition. We need to develop a strategic roadmap for this and secure necessary finances to support it, both domestically and through international cooperation", said Chandra Bhushan, President and CEO, iFOREST.

India to make farm sector diesel-free by 2024: RK Singh

BusinessLine, 11/02/2022

India has set an ambitious target of replacing diesel with renewable energy (RE) in the agriculture sector so as to make it diesel free by 2024, as part of the government's commitment to increase the share of non-fossil fuels by 2030 and becoming net zero emitter by 2070, the Power Ministry said on Friday.

On Thursday, Power and New & Renewable Energy Minister R K Singh chaired a virtual meeting with the officers of Ministry of Power and MNRE, Additional Chief Secretaries and Principal Secretaries of Power/Energy Departments of States & Union territories to discuss their role in India's energy transition goals.

"Singh stressed that India will replace diesel with renewables to achieve the target of zero diesel use in the agricultural sector by 2024," Power Ministry said in a statement.

COP26 commitment

The meeting was organised in line with the Prime Minister's commitment at COP26, towards reducing the carbon intensity of India. The objective of this meeting was to ensure the State's participation in fulfilling India's climate commitments and each State and UT can be assigned energy saving targets, it added.

Singh stressed on collaborative efforts between the Central and State governments towards the large-scale deployment of energy efficiency measures in potential sectors of the economy. He emphasised on the need to have a State specific agency dedicated for energy efficiency and conservation. He also urged that the States should develop an action plan to achieve the assigned targets. "We are working for a new and modern India, which cannot happen without modern power systems, and we look forward to working with all States and UTs to achieve this," the Minister said. Power Secretary Alok Kumar stressed on the support and cooperation from States and UTs to facilitate the development of the State Energy Efficiency Action Plan and its adoption and implementation to achieve the States/UTs specific goals.

The meeting concluded with an interactive session with the State/UT officials who also highlighted the state-level activities accomplished during the recent years. The Bureau of Energy Efficiency (BEE) will hand hold States in preparing action plans for achieving targeted goals.

The Ministry of New and Renewable Energy (MNRE) has provided financial support for electrification of various public service institutions including anganwadis, health centres, schools, panchayat offices, railways and bus stations in rural areas of the country under Off-grid and Decentralized Solar PV Applications programme and Rooftop Solar programme. As of December 31, 2021, under the off-grid and decentralised solar PV applications programme 216.88 MW has

been installed, while under the grid-connected rooftop solar programme 2504.07 MW has been installed.

The objective of Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan (PM-KUSUM) include de-dieselisation of the farm sector, providing water and energy security to farmers, increasing the income of farmers and curbing environmental pollution. Solar power plants of total 4,909 MW capacity under Component-A of the scheme have been sanctioned so far. Under Component-B, 3.59 lakh standalone solar pumps and solarisation of over 10 lakh existing agriculture pumps under Component-C, have been sanctioned till date. The scheme is demand driven, based on demand received from the States and Union Territories.

Under the Pradhan Mantri Sahaj Bijli Har Ghar Yojana (Saubhagya), 2.817 crore households were electrified up to March 31, 2021, including 4.16 lakh through solar based standalone systems. Based on the requests from the states, electrification of an additional 11.83 lakh households, including 1.35 lakh households through solar based standalone systems, have been additionally sanctioned by the government under the Deen Dayal Upadhya Gram Jyoti Yojana.

5. Electricité et énergies renouvelables

Union Budget 2022: PLI scheme extended to solar equipment; allocates Rs 19500 cr boost for modules

The Financial Express, 02/02/2022

In the Union Budget 2022 speech, Finance Minister Nirmala Sitharaman announced to allocate Rs 19,500 crore to boost manufacturing of solar modules under the government's flagship Production Linked Incentive scheme. She further mentioned that the scheme has potential to create 60 lakh new jobs and additional production of 30 lakh crore jobs during next five years. "To facilitate domestic manufacturing for ambitious goal of 280 GW of installed solar capacity by 2030, additional allocation of Rs 19,500 cr for PLI for manufacturing of high-efficiency modules with priority to fully integrate manufacturing units to solar PV modules will be made," said FM in her speech.

"In a major push towards Solar Power and Energy Efficiency, allocation of additional boost of 19500 cr in Manufacturing of solar modules shall provide significant growth to the module manufacturing industry," said Amit Agarwal, Partner, Nangia Anderson LLP.

"Solar energy capacity addition in India has been slower than expected. One of the challenges in capacity augmentation in India has been the import dependence on solar modules. The announcement of a PLI scheme of Rs 19,500 cr for indigenous manufacture of solar PV modules will not only ease supply constraints but also promote private sector investments," said Suman Chowdhury, Chief Analytical Officer, Suman Chowdhury, Chief Analytical Officer.

Earlier, the Finance Minister already announced an outlay of Rs 1.97 Lakh Crores for the Production Linked Incentive (PLI) Schemes across 13 key sectors, to create national manufacturing champions and generate employment opportunities for the country's youth. The government first

announced three schemes in March 2020, while 10 new PLI schemes were introduced in November 2020. Sectors that have been covered include electronics manufacturing, Automobiles & Auto Components, Speciality steel, Textile, Drone and drone components, Pharmaceuticals drug, Telecom and Networking, among others.

"We welcome the additional PLI allocation of INR 19,500 crore for manufacturing high-efficiency solar modules for the existing wait-listed PLI bidders. This will strengthen the domestic solar manufacturing ecosystem, thereby reduce our import dependence, create jobs, attract investments and enable the Make in India vision. Additionally, the sovereign green bonds will boost green infrastructure development which will help in meeting India's carbon emission reduction targets. Green bonds will also enable international yield curve for Indian corporates leading to better pricing for bonds. The battery-swapping policy with interoperability standards will boost the Electric Vehicle (EV) ecosystem," said Gyanesh Chaudhary, Vice Chairman & Managing Director, Vikram Solar Ltd.

Adani Group ties us with Canada's Ballard for hydrogen fuel cells in India

Mint, 21/02/2022

Gautam Adani-led Adani Group has signed a non-binding Memorandum of Understanding (MoU) with Ballard Power Systems to explore the possibility for commercialisation of hydrogen fuel cells in various mobility and industrial applications in India.

Under the MoU, both the parties will examine various options to cooperate, including potential collaboration for fuel cell manufacturing in India, said a statement from Adani Group.

Hydrogen is increasingly viewed as a critical medium for the decarbonization of energy, industry, and mobility. Adani aims to be one of the largest green hydrogen producers in the world through accelerated investment in renewable energy.

Adani New Industries Limited (ANIL), the newly formed subsidiary of Adani Enterprises will anchor the efforts under the agreement.

"Our ability to build a world-class green hydrogen value chain will be critical in facilitating the energy transition and we are excited to partner with Ballard, a global leader in fuel cell technology, to create a shared fuel cell ecosystem in India. We will be deploying innovative use cases across our businesses with fuel cell trucks, mining equipment, marine vessels, off-road vehicles, and critical industrial power. We will shape the industry through this strategic collaboration," said Vneet S. Jaain, Director, Adani New Industries Ltd.

Randy MacEwen, Ballard's President & CEO said: "India represents a new growth opportunity for Ballard, and we look forward to working with the Adani group to support and accelerate their energy transition and decarbonization goals."

After announcing in November 2021 to invest $70 billion in the new energy space of the next decade, the Gautam Adani's logistics-to-energy conglomerate last month announced the setting up of a new

subsidiary, ANIL to undertake green hydrogen projects, generation of low carbon electricity and manufacture of wind turbines, solar modules and batteries.

The company aims to become the world's largest renewable energy company and produce the cheapest hydrogen.

The announcement of the partnership comes just days after the Centre rolled out the first part of the much-anticipated Green Hydrogen Policy.

On February 17, the Union Ministry of Power unveiled India's new green hydrogen policy, promising cheaper renewable power, fee waiver for inter-state power transmission, land in renewable energy parks, and mega manufacturing zones to help local industries wean themselves off fossil fuels.

India's total hydrogen demand is expected to touch 11.7 million tonne (mt) by 2029-30 from the current 6.7 mt. Around 54% or 3.6 mt of India's annual hydrogen consumption of 6.7 mt is utilized in petroleum refining and the rest in fertilizer production. This is, however, 'grey' hydrogen, produced from fossil fuels such as natural gas or naphtha. The government now plans to promote the usage of green hydrogen through the new policy.

Adani also faces competition from Mukesh Ambani-led Reliance Industries which too has announced mega green hydrogen projects to decarbonise their businesses.

The major emphasis among bid corporate for developing green hydrogen comes amid the government massive push towards carbon neutrality. According to Prime Minister Narendra Modi's commitment at the COP26 summit at Glasgow made in November 2021 India aims to achieve net zero carbon emission by the year 2070.

Reliance Industries targets to become world's top blue hydrogen maker

Business Today, 12/02/2022

Billionaire Mukesh Ambani's Reliance Industries Ltd is targeting to become one of the largest producers of blue hydrogen globally, producing the zero-emission fuel at costs that will be half of the global average.

The operator of the world's largest oil refining complex will re-purpose a Rs 30,000 crore plant that currently converts petroleum coke into synthesis gas to produce blue hydrogen for $1.2-1.5 a kilogram, Reliance said in a presentation detailing the separation plan.

Hydrogen is the cleanest form of known fuel. Depending on production methods, hydrogen can be grey, blue or green. Grey hydrogen is the most common form and is generated from natural gas, or methane, through a process called 'steam reforming'. Hydrogen is labelled blue whenever the carbon generated from steam reforming is captured and stored. Blue hydrogen is, therefore, sometimes referred to as carbon neutral as the emissions are not dispersed in the atmosphere. Green hydrogen - also referred to as 'clean hydrogen' - is produced by using clean energy from renewable energy sources, such as solar or wind power, to split water into two hydrogen atoms and one oxygen atom through a process called electrolysis.

Reliance, which has set a net-zero carbon emission target for its businesses by 2035, is

looking at blue hydrogen in the interim period to reduction in cost of green hydrogen.

"In the interim, till cost of green hydrogen comes down, RIL can be the first mover to establish a hydrogen ecosystem, with minimal incremental investment, in India," Reliance Industries Ltd (RIL) said in the presentation.

Syngas has potential to produce hydrogen at a competitive cost of $1.2-1.5 per kg, it said. Green hydrogen produced with renewable resources costs between $3-6.55 per kg, according to the European Commission's July 2020 hydrogen strategy.

Fossil-based hydrogen costs about $1.80, and the commission estimated the cost of blue hydrogen at about $2.40-3 per kg.

Ambani had previously stated that his group is aiming to produce green hydrogen at $1 per kilogram by the turn of this decade. Last month, he announced plans to invest about $75 billion in renewables infrastructure.

Reliance said RIL's framework for reducing carbon footprint includes migration from fossil energy to renewables, maximizing sustainable materials and chemicals as part of portfolio, and carbon fixation, capture and utilisation.

"Transition to Net Carbon Zero provides a unique opportunity to unlock value through repurposing of assets and upgradation of configuration," it said.

At its mega oil refining complex at Jamnagar in Gujarat, the low value fuel streams (off-gases) are taken out from the fuel pool and used as feedstock to convert to high value petrochemicals.

This syngas project will now be transferred to a subsidiary it owns fully with a view to unlocking value. "Jamnagar energy demand is currently met through fossil fuels including syngas from the gasifiers," it said.

"Fossil fuel can be replaced by renewables, including solar, biomass-based fuel, hydrogen and changing steam drives to electric drives." Jamnagar will progressively transition to renewables with battery energy storage system (BESS) to meet its electricity and steam demand.

Over a period of time, hydrogen demand will be met by green hydrogen produced through water electrolysis. Repurposing the gasification assets will involve using syngas to produce hydrogen.

"Subsequently, as hydrogen from syngas is replaced by green hydrogen, the entire syngas will be converted to chemicals," the firm said, adding it will explore biomass feed in gasification to produce green hydrogen.

"Hydrogen production from gasification provides highly concentrated carbon di-oxide (CO2) stream which provides unique opportunity to capture 15 million tonnes per annum of CO2 at 30 per cent of typical cost of carbon capture," Reliance said adding this CO2 can be monetised by sale to urea producers and other users.

The gasification unit is proposed to be transferred, as a going concern on slump sale basis, by way of the proposed scheme, it said adding the scheme of Arrangement has been presented to National Company Law Tribunal for approval.

Green hydrogen policy and way ahead

The New Indian Express, 27/02/2022

Prime Minister Narendra Modi, in his Independence Day speech last year, aggressively pitched for green energy and announced the National Hydrogen Mission. The aim of the mission is to help the country achieve its target of producing 5 million tonnes of "green hydrogen" by 2030 and the related development of renewable energy capacity. This led to hectic efforts to achieve the target. Subsequently, the Union power ministry introduced the green hydrogen and ammonia policy on February 17, 2022.

Hydrogen and ammonia are considered future fuels and ideal substances to replace fossil fuels. Since the production of these fuels is highly energy consuming, using power from renewable energy to produce green hydrogen and green ammonia is one of the major requirements towards environmentally sustainable energy security of the nation. The government, therefore, is taking various measures to facilitate the transition from fossil fuel to green hydrogen / green ammonia.

What does the policy say?

The green hydrogen and ammonia policy notified by the government has a lot to do with promoting renewable energy in the country. As per the policy, the green hydrogen/ammonia manufacturers may purchase renewable power from the power exchange or set up renewable energy capacity themselves or through any other developer, anywhere.

Also, the policy grants open access to procure electricity within 15 days of application. The manufacturer can bank his renewable power for 30 days with distribution companies and take it back when required. "The policy promotes renewable energy (RE) generation as RE will be the basic ingredient in making green hydrogen. This, in turn, will help in meeting the international commitments for clean energy," said the power ministry.

Distribution licences can procure and supply renewable energy to the manufacturers of green hydrogen / green ammonia in their states at concessional prices, which will only include the cost of procurement, wheeling charges and a small margin as determined by the state commission.

The government, in its policy, also mentioned that the manufacturers of green hydrogen/ammonia and the renewable energy plant shall be given connectivity to the grid on a priority basis to avoid any procedural delays. It will waive inter-state transmission charges for 25 years to manufacturers of green hydrogen and green ammonia for the projects commissioned before June 30, 2025.

The benefit of Renewable Purchase Obligation (RPO) will be granted incentive to the hydrogen/ammonia manufacturer and the distribution licencee for consumption of renewable power. The government has set up a single portal for carrying out all the activities. Connectivity, at the generation end and the green hydrogen / green ammonia manufacturing end, to the ISTS for renewable energy capacity set up for the

purpose of manufacturing green hydrogen / green ammonia shall be granted on priority.

Last but not least, the manufacturers of green hydrogen / green ammonia shall be allowed to set up bunkers near ports for storage of green ammonia for export/use by shipping. The land for the storage for this purpose shall be provided by the respective port authorities at a fee.

Views from experts

According to energy experts, the National Hydrogen Mission is a clear commitment from the government of India towards a greener future for our generations to come. They are hopeful that India will achieve its target of 500 GW of renewable energy by 2030.

"Specific policy push through it to bring generation cost down to viable levels will make hydrogen competitive and scalable. This will make it attractive for use not just in commercial and industrial areas, but potentially also in the critical transportation sector across the country within the next few years as fuel cell technology matures further, especially for trucks, which account for more than 40% of total transportation fuels consumed today," said Gaurav Moda, India Energy Leader, EY.

Hemant Mallaya, Senior Programme Lead, Council on Energy, Environment and Water (CEEW), said the policy will benefit all states, where renewable energy has to be wheeled in from other states."CEEW analysis indicates that the cost of green hydrogen production could drop by 17% in a state such as Uttar Pradesh (UP) due to the waiving of the central transmission charges when the power is wheeled in from outside the state. This policy will benefit all states where renewable energy has to be wheeled in from other states," said Mallya.

Manoj K Upadhyay, Founder and Chairman of ACME Group, opined that the policy is the first concrete step in the direction of creating a favourable regulatory and enabling environment for the green hydrogen and ammonia sector in India. He believes that with this policy, the government has tried to address some of the key demands of the industry in terms of open access, grid banking and faster approvals for green hydrogen and ammonia projects. "We specifically welcome the provisions to set up bunkers near ports for the export of green ammonia," said Upadhyay.

Despite the initial euphoria, some experts remain wary."The policy on waiver of inter-state transmission charges was only an enabling policy, not the main Hydrogen Mission Policy that is expected to be released in the coming weeks, says Hemant Mallya of CEEW. India has publicly stated that there will be two key aspects to the mission document — a production linked incentive (PLI) scheme for electrolyser manufacturing and blending norms for green hydrogen — both of which, Mallya says, is missing from the current policy.

Policy in a nutshell

Green hydrogen/ammonia manufacturers will be allowed to purchase renewable power from the power exchange or set up renewable energy capacity themselves or through any other developer

The policy grants open access to procure electricity within 15 days of application. The

manufacturer can bank renewable power for 30 days with distribution companies and take it back when required. The distribution licensees can procure and supply renewable energy to the manufacturers of green hydrogen/ green ammonia in their states at concessional prices

Renewable energy plants will be given connectivity to the grid on a priority basis to avoid any procedural delays

6. Mobilités électriques

7. Environnement et qualité de l'air

India, France sign roadmap to enhance bilateral exchanges on blue economy and ocean governance

The Hindu, 21/02/2022

India and France have inked a roadmap to enhance their bilateral exchanges on the blue economy and forge a common vision of ocean governance based on the rule of law and cooperate on sustainable and resilient coastal and waterways infrastructure.

The agreement was signed during External Affairs Minister S. Jaishankar's three-day visit to France which began on February 20 with bilateral talks with his French counterpart Jean-Yves Le Drian.

The roadmap scope will encompass maritime trade, the naval industry, fisheries, marine technology and scientific research, ocean observation, marine biodiversity, marine ecosystem-based management and integrated coastal management, marine eco-tourism, inland waterways, cooperation between competent administrations on civil maritime issues, marine spatial planning as well as international law of the sea and related multilateral negotiations.

"India and France intend to make the blue economy a driver of progress of their respective societies while respecting the environment and coastal and marine biodiversity. Both countries aim to contribute to scientific knowledge and ocean conservation and ensure that the ocean remains a global common, a space of freedom and trade, based on the rule of law," the Ministry of External Affairs said in a statement on Feb. 20.

It said the two countries wish to contribute to the Sustainable Development Goal of the United Nations Sustainable Development Agenda, which aims to conserve and sustainably use the oceans, seas and marine resources.

The two sides called for a sustainable approach to fishing that would ensure decent living conditions to professionals of the sector, while conserving the resource in the medium and long terms.

"India and France nurture a high quality dialogue on maritime security, which enables them to raise strategic issues in the Indo-Pacific. This partnership marks a significant step-forward in India-France cooperation for maritime security," the Ministry said.

It said that India and France are also committed to promoting cooperation between the European Union and India on the blue economy and ocean governance, in the framework of the common roadmap

"EU-India Strategic Partnership: A Roadmap to 2025" and the EU strategy for cooperation in the Indo-Pacific.

The two sides plan to organise an annual bilateral dialogue on the blue economy and ocean governance to exchange views on their priorities, share their best practices and support ongoing and future cooperation.

According to the roadmap, India and France will coordinate their positions in multilateral bodies and negotiations to strengthen international law of the sea and adapt to new challenges. They will also enhance their coordination in view of the fifth session of the United Nations Environment Assembly in 2022 so as to support the initiation of negotiations for a global agreement on marine plastic waste and microplastic.

"India and France will make the blue economy a priority in the development of their economic exchanges. They will facilitate contacts between economic actors, business heads organisations, technopoles and maritime clusters of the two countries, cross investments, as well as visa issuance to entrepreneurs active in the blue economy," it said.

Given French expertise in aquaculture, France and India will work on commercial development of new farming technologies, joint development in the farming of marine organisms for food, and other products such as pharmaceuticals and jewellery, in a way that does not harm the environment, the Ministry said.

This can include joint development of brood banks, nucleus breeding centres, hatcheries and nurseries, feed supply, and joint studies for prevention of aquatic diseases, it added.

Both sides will encourage sharing of knowledge and methodologies for upgrading current infrastructure, increasing their resilience to climate change, increasing port capacity, developing storage facilities, plug and play infrastructure in the ports.

This cooperation can extend to equipment development as well for instance on dredging equipment, fishing ships/boats, trawler, spare parts and repair services, undersea cabling and its servicing, ice-making, rope, net gear and marine equipment.

In addition, they will cooperate on developing domestic waterways, which is one of India's priorities in the field of infrastructure development. This can include Infrastructure enhancement, fairway development, navigational aids, river information systems.

India and France will also enhance their scientific cooperation as well as exchanges of students and researchers. The two sides will remain fully committed to the Knowledge Summit, organised periodically by France and India to foster bilateral scientific cooperation.

The two countries will seek private funding to establish an R&D Centre to support joint projects and will endeavour to spur and support projects on blue economy and knowledge about the ocean under the Indo-French Centre for the Promotion of Advanced Research (CEFIPRA/IFCPAR).

They will also encourage scientific cooperation between their research

institutions and facilitate administrative procedures, such as visa issuance and authorisations neceessary for those involved in research.

IPCC report: Heat, humidity, sea rise to make India uninhabitable if emissions not cut

The Indian Express, 28/02/2022

* Mumbai at high risk of severe flooding and sea-level rise;
* Ahmedabad a serious case of urban heat island;
* Several cities, including Chennai, Bhubaneshwar, Patna and Lucknow, approaching dangerous levels of heat and humidity.

These are some of the warnings the Intergovernmental Panel on Climate Change (IPCC) has for India in its latest report.

The IPCC released the second part of its sixth assessment report on Monday. It deals with climate change impacts, risks and vulnerabilities, and adaptation measures. For the first time, the panel has come out with regional assessments, even focussing on mega-cities, in its report. India is one of the most vulnerable countries globally in terms of the population that will be affected by sea-level rise, IPCC reports.

"Hot extremes including heatwaves have intensified in cities, where they have also aggravated air pollution events and limited functioning of key infrastructure," the report notes. "Observed impacts are concentrated amongst the economically and socially marginalised urban residents... Infrastructure, including transportation, water, sanitation and energy systems have been compromised by extreme and slow-onset events, with resulting economic losses, disruptions of services and impacts to well-being."

"Globally, heat and humidity will create conditions beyond human tolerance if emissions are not rapidly eliminated; India is among the places that will experience these intolerable conditions," it says.

Prof Anjal Prakash, one of the lead authors on the chapter on cities, settlements and key infrastructure in the report, said: "Urban India is at greater risk than other areas with a projected population of 877 million by 2050, nearly double of 480 million in 2020. Currently, urbanisation in the country is at 35 per cent, which is likely to increase to 40 per cent in the next 15 years. Mega-cities are growing faster, and even smaller centres are growing rapidly.

"Simply the concentration of population in these cities make these settlements extremely vulnerable to climate change."

The report refers to wet-bulb temperatures, a measure that combines heat and humidity. A wet-bulb temperature of 31 degrees Celsius is extremely dangerous for humans, while a value of 35 degrees is unsurvivable for more than about six hours, even for fit and healthy adults.

At present, wet-bulb temperatures in India rarely exceed 31 degrees C, with most of the country experiencing maximum wet-bulb temperatures of 25-30 degrees C, according to IPCC. It notes that if emissions are cut, but only by the levels currently promised, many parts of northern and coastal India would reach extremely dangerous wet-bulb

temperatures of over 31 degrees C towards the end of the century. If emissions continue to rise, wet-bulb temperatures will approach or exceed the unsurvivable limit of 35 degrees C over much of India, with the majority of the country reaching wet-bulb temperatures of 31 degrees C or more.

Budget takes a green turn towards net zero target

The Economic Times, 05/02/2022

The finance minister used the words 'green', 'clean', 'sustainable' and 'carbon-neutral' economy multiple times in her 90-minute budget speech on Tuesday, underlining the importance the government is according to sustainability and decarbonisation goals. As per the International Energy Agency, India was the third-largest polluter-nation with nearly 2.35 giga tonnes of carbon emissions in 2021, though one of the lowest on per capita basis. Further, considering India's strong developmental agenda and growth aspirations, big policy initiatives and investments are crucial to achieve 'net-zero' target. To begin with, of the nine key ministries in the infrastructure sector that account for close to 55% of the government's capital expenditure of ₹6.5 lakh crore, allocations to the Ministry of New and Renewable Energy (MNRE) have doubled from 2% of total allocations to the nine ministries last fiscal to a targeted 5% next fiscal.

The budget has reiterated the government's stance of going beyond targeting investments in green infrastructure and building a viable ecosystem with scalability to contain emissions. Accordingly, allocation to the production-linked incentive (PLI) scheme for high-efficiency solar modules has been raised to ₹24,000 crore from ₹4,500 crore with a dual objective of both building in-house capability and grabbing a pie of international opportunity pie. While increase in customs duty on windmill parts and a number of capital equipment linked to green power and firming basic customs duty implementation in solar with an eye on boosting the domestic value chain may be a short-term negative, over the long-term, ecosystem development clearly remains the agenda.

The push for a circular economy (the manufacturing to recycling chain) and expanded producer responsibility for 10 sectors, including auto, e-waste, infrastructure, and logistics, and facilitating 'sustainability-as-service', will provide opportunities for sustainability startups and ultimately help reduce India's carbon footprint. Another area of focus is transportation, second only to power with a share of over 13% in emissions, of which nearly 80% is via road transportation. Most modellers believe this segment will see a sharp rise in emissions over the next 20 years as the Indian middle class buys under-penetrated products such as cars and utility vehicles, and experiences enhanced travel needs amid rising per capita income.

That re-emphasises the importance of zero-fossil-fuel policies. For electric vehicles, enabling the evolution of a better ecosystem, mitigating range-anxiety, and setting battery swapping standards will promote battery-as-a-service business models. Policies linked to ethanol blending are yet another way of reiterating the importance of efficient usage of fossil fuels. Though the percentage of volumes attracting higher excise under unblended fuel will be less than 5%, the move does

underline the government is keen on transition to a net-zero economy by 2070. That being said, improving efficiency is as much a part of the decarbonisation agenda. The government has tried to build capacity focusing on efficiency under PM Gati Shakti and has spoken of specific commitments to develop milestones to improve logistical efficiency, where India ranks at 45, below competitors such as China at 26 or Vietnam at 39.

Awarding four multimodal logistic parks, 100 cargo terminals in three years, and building metros and mass-commute infrastructure between railways and metros also underline the focus on cost efficiency and fuel savings alike. The first steps towards sovereign green bonds for funding green infrastructure capex also bear watching. With this India will join the ranks of 19 nations that have so far issued similar bonds. Additionally, under Parivesh, the government has touched upon the need for quick environmental clearances and land availability to spur capacity additions in the green world. Overall, much has been addressed, and a lot remains to be done. The hydrogen policy to be released in a week will be crucial to initiate an ecosystem to reduce emissions in the five largest polluting sectors of India on the industrial side - refining, chemicals, steel, cement and fertilisers. Given the vast reserves of coal, and the environmental benefits and wider applications for energy usages associated with coal gasification, setting up pilot projects for coal gasification and demonstrating its technical and financial feasibility will boost private sector confidence in the segment.

Incentives to drive viability will also be needed. We have to navigate swiftly between optimisation, transition and deep decarbonisation. Given the green agenda, the investment cycle triggered by PLI could extend to an investment supercycle. The fact that nearly 40% of PLI investments are linked to green ecosystem sets a good augury.

Centre notifies guidelines on plastic packaging

Hindustan Times, 19/02/2022

The Union ministry of environment, forest and climate change (MoEFCC) has notified guidelines on Extended Producer Responsibility (EPR) for plastic packaging, with an aim to eliminate single-use plastics and promote alternatives. The ministry has also laid down roles and responsibilities of producers, importers, brands generating plastic packaging waste, central and state pollution control boards, recyclers and waste processors in minimising plastic waste.

Union environment minister Bhupender Yadav took to social media to announce the notification of the new Plastic Waste Management (Amendment) Rules, 2022, late on Thursday night. "Taking forward the clarion call given by PM Shri @narendramodi ji to eliminate single-use plastics, @moefcc has notified comprehensive Guidelines on Extended Producers Responsibility on plastic packaging," Yadav tweeted.

The latest guidelines will come into force with immediate effect, the notification said.

"The guidelines not only provide a framework to strengthen the circular economy of plastic packaging waste, but also promote development of new alternatives to plastics. They provide a

roadmap for businesses to move towards sustainable plastic packaging," Yadav said.

Circular economy is a model of production and consumption, which involves sharing, leasing, reusing, repairing, refurbishing and recycling existing materials and products as long as possible, according to European Parliament.

According to the new rules, plastics have been classified into four categories — category one will include rigid plastic packaging; category two will include flexible plastic packaging of single layer or multilayer (more than one layer with different types of plastic), plastic sheets and covers made of plastic sheet, carry bags, plastic sachet or pouches.

Category three will include multi-layered plastic packaging (at least one layer of plastic and at least one layer of material other than plastic) while plastic sheet or like used for packaging as well as carry bags made of compostable plastics will fall under category four.

Specifications for reuse, recycling, use of recycled plastic content, and end-of-life disposal of non-recyclable plastic packaging also featured in the EPR.

The ministry has also called for setting up a centralised online portal by Central Pollution Control Board (CPCB) for the registration as well as filing of annual returns by producers, importers and brand-owners, plastic waste processors of plastic packaging waste by March 31.

Producers, importers, brand-owners and plastic waste processors have to provide the details of recycling certificates only from registered recyclers along with the details of quantity sent for end-of-life disposal, by June 30 of next financial year while filing annual returns on the online portal.

Producers of plastic packaging, the notification said, will have to manage 35% of the 'Q1' waste in metric tonnes in 2021-22.

Q1 is calculated by adding the last two years' average weights of plastic packaging material sold and pre-consumer plastic packaging waste, and subtracting the annual quantity of plastic packaging supplied to brand owners.

The EPR target will be increased to 70% in 2022-23 and 100% from 2023-24 onwards. "Similar EPR targets apply for importers and brand owners but the quantity will be different depending upon the quantity of packaging waste they are responsible for," the notification added.

The recycling obligation for producers will be 50% for rigid plastics in 2024-25, 60% in 2025-26, 70% in 2026-27, and 80% from 2027-28 onwards. "Similar timelines also apply to brands and importers," it said.

MoEFCC notified the Plastic Waste Management Rules on March 18, 2016, and the Solid Waste Management Rules on April 8 the same year. "As plastic waste is part of solid waste, therefore, both the rules apply to managing plastic waste in the country," the notification said.

The Plastic Waste Management Rules mandate minimising the generation of plastic waste, avoiding littering, ensuring segregated storage of the waste at source,

and handing it over. "The rules also mandate the responsibilities of local bodies, gram panchayats, waste generators, retailers, and street vendors to manage plastic waste," it added.

The rules cast EPR on producers, importers, and brand-owners. "Extended Producer Responsibility shall be applicable to both pre-consumer and post-consumer plastic packaging waste," the notification said.

The government is trying to reduce the manufacture and use of virgin plastics as much as possible, a senior official from the environment ministry said, requesting anonymity.

"For example, if an e-commerce firm is mandated to recycle 200 tonnes of flexible plastic packaging sheets under the notification, then it can just get the same amount of plastic packaging collected from anywhere and get it recycled and get a certificate for it. This will create a market in plastic collection and recycling. The certificates of recycling can also be traded. We had the draft notification in public domain for 60 days and we also consulted several industry bodies and industries who gave their suggestions during the past few months," the official added.

According to the new rules, environmental compensation shall be levied based upon polluter pays principle, with respect to non-fulfilment of EPR targets by producers, importers and brand owners, for the purpose of protecting and improving the quality of the environment and preventing, controlling and abating environment pollution.

"Payment of environmental compensation shall not absolve the producers, importers and brand owners of the obligations set out in these guidelines. The unfulfilled EPR obligations for a particular year will be carried forward to the next year for a period of three years," it said.

Plastic manufacturers said there could be some disruption in meeting the timelines specified in the notification.

"Much awaited EPR notification is now a reality. The draft notification has sensitised the industry on the expectation and has been in preparation mode. The value chain facilitating EPR needs to be synchronised to improve timelines and capacities. There are ground-level challenges and bottlenecks that need to be addressed," said Hiten Bheda, chairman, environment committee, All India Plastics Manufacturers Association.

"Trading certificates is an innovative approach towards EPR and we feel technology and Digital India can be enabler for its successful implementation in complete transparency," said Kishore Sampat, the president of the association.

Swati Singh Sambyal, a Delhi-based independent waste management expert, said, "From a perspective of circular economy, where we focus on upstream resource utilisation and innovation, I feel the guidelines are looking at downstream utilisation of sources, which means on collection and recycling, about time we focus on innovation in material design and packaging as well. Additionally, we need standards for recycled polymers/products so that the huge variability in material/market is omitted and usage of recycled plastic is strengthened."

"The guidelines are a good first move, considering we have no formal guidelines for PIBOs, processors, other stakeholders in place, however, we also must be open to amend it based on experiences from the ground in coming times and need to look into a bottom-up approach," she added.

The ministry notified the Plastic Waste Management Amendment Rules 2021 in August last year to make it mandatory for the thickness of plastic carry bags to be increased to 120 microns by the end of next year. The rules prohibit the manufacture, import, stocking, distribution, sale, and use of products with low utility but high littering potential.

The permitted thickness of the plastic bags will be increased to 120 microns from December 31, 2022. The ban on ear-buds with plastic sticks, plastic sticks for balloons, plastic flags, candy sticks, ice-cream sticks, polystyrene (thermocol) for decoration, plates, cups, glasses, cutlery, trays, wrapping, or packing films around sweet boxes, invitation cards, cigarette packets, plastic or PVC banners of less than 100-micron thickness will come into force from July 1.