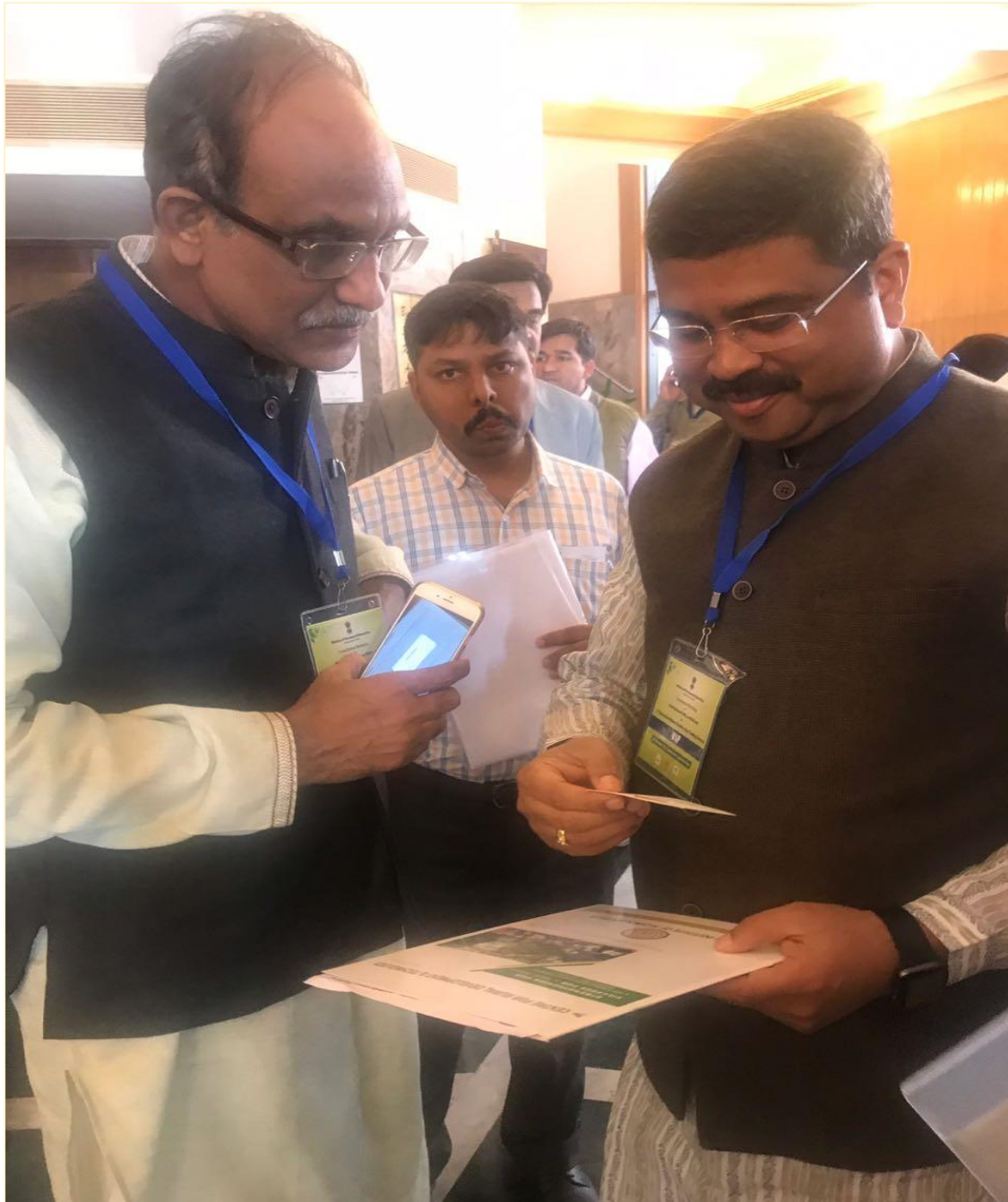




BIOGAS FORUM INDIA
(BigFIN)
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From The Editor's Desk...



Biogas Forum India's (BigFIN) journey entered into 9th year with a lot of new beginnings and exchange of ideas with promotion of biogas in the country. The motto of publication of this newsletter is to keep the BigFIN members updated with latest news about different segments of biogas research and development sectors and new initiative taken in the country.

The importance of the biogas sector has been increased to manifold because of its renewable characteristics. India is blessed with numerous potential of biodegradable materials of around 234 MT from agricultural residues only. Due to the unawareness and lack of people participations, the utilization of such resources remains unutilized. Efficient utilization of these biodegradable wastes through biogas plant can be seen as energy opportunities for the rural India. Presently, around 4.94 million family size biogas plants have been installed in rural and semi-urban areas of the country. Meanwhile, most of the biogas plants are based on cattle waste only. The Ministry of New and Renewable Energy, GoI is also emphasizing on promoting the biogas plants based on other feed materials like, biodegradable waste from dairy clusters, poultry houses, and locally available organic residues, so that, sustainability of biogas plants can be ensured. Therefore, the experimentation of the alternative materials for digester sustainability is also in recent trend. Similar to that, IIT Delhi has recently developed a complete integrated system to produce energy from paddy straw by means of anaerobic digestion. This technology employs to rid off the open burning of paddy straw in Punjab.

An initiative may be taken up by the young entrepreneurs to develop a model, through which biogas can be generated and distributed through pipeline network in the villages to the each household like PNG, as in urban areas. The establishment of such role model may play an important role to generate employment in villages via engaging people in collections of raw materials from each house for biogas production and by providing technical supports to operate the plant.

On the other hand, wherever large quantity of biogas is available, it is possible to drive two wheelers, tractors and four wheeler vehicles by upgraded biogas (Bio-CNG). In the country, most of the **GAUSALA** are willing to set up a complete system of biogas to Bio-CNG plant also. This has a vast potential in the country which is still untapped.

There is a need of awareness and public participation in such programme to boost up the cleanliness of the society and to make a start-up on an entrepreneurship model in the biogas sector. I will appreciate your feedback and responses.

Virendra Kumar Vijay

General Secretary, Biogas Forum-India (BigFIN)

President's Column

Biogas-Fertilizer technology is a potent tool for 'Swachh Bharat Mission' and 'NamamiGange- National Mission for Clean Ganga' of the govt. Serious attempts are required to handle liquid and solid wastes from cities and industries through installation of STPs/ ETPS. Biogas plants capable of treating loose and leafy biomass waste, is the best amongst all other technology solutions, as there is no other best and suitable technology for handling wet biomass waste other than bio-methanation technology, as of date. It provides four in one solution of i) waste treatment ii) energy generation iii) bio/ organic fertilizer production and reducing Green-House Gas (GHG) emission.

BIS Standard for biogas composition: IS 16087: 2013 is in place. It provides for minimum 90% methane and suitability of compressed biogas for filling in cylinders like CNG and injection in gas grid in addition to power generation and thermal and cooling applications. Ministry of Road Transport issued Gazette Notification on 16.06.2015 permitting use of Bio-CNG following the said BIS standard to be used as vehicular fuel. Ministry of Agriculture has considered organic fertilizer in its 'Fertilizer Order' and Ministry of Chemicals and Fertilizer has advised fertilizer companies to supply certain percentage of organic fertilizers along with chemical fertilizers.

Ministry of Petroleum and Natural Gas organized a National Seminar on 'Bio-Fuel Programme in India- The way forward' in VigyanBhawan on 13th July 2015 which included organic waste to fuel-biomethanation. The Ministry has also constituted a working Group on Bio-fuels, which looking into biogas sector as well. The Ministry of Road Transport is also organizing a conference on 'Green Fuel Vehicles for Transportation' in New Delhi 9-10 September 2015 in which bio-CNG is getting addressed as one of the alternate/ supplementary vehicular fuel.

In order to generate resources and finances to the Biogas-Fertilizer technology sector I wrote a letter, on 23rd September 2016, to the Secretary, Ministry of Petroleum and Natural Gas to impress upon the PSUs of the MoPNG to take up 10 nos. of an integrated biogas/ Bio-CNG, bio-liquid and solid fuels and organic fertilizer projects during 2016-17 to begin with. The PSUs can also prioritize and allocate necessary funds out of the mandated CSR to be spent for such clean energy and environment projects. The initiative will also address directly 'Swachh Bharat Mission', the noble initiative of Govt. of India and shall also bridge energy, employment and gender gaps in rural communities.

As per the Gadget of India Notification dated 4th August 2017 for Business Allocation Rules the subject of Bio-fuels has been transferred from Ministry of New and Renewable Energy to Ministry of Petroleum and Natural Gas. According to a newspaper report "The oil ministry plans to set up Bio-CNG through setting aside around Rs. 7000 crore to set up infrastructure for bio-CNG. The funding would be channeled through the oil and gas marketing companies. This is said to be a part of the government's plan to make India a gas-based economy"

All the stake holders of biogas-fertilizer sector are requested to continuously work to make the Biogas-Fertilizer sector to play its due role.

Dr. Atma Ram Shukla

President, Biogas Forum-India (BigFIN)

SOME INITIATIVES/ACTIVITIES HELD AT IIT DELHI DURING LAST

SIX MONTHS

1. Field visit of Ph.D. research scholar of CRDT, IIT Delhi to the villages in Maharashtra

The Centre for Rural development & Technology offers their research scholar to visit villages of the country. Under this opportunity in the month of July, 2017, six research scholars from CRDT were visited to many villages in six districts of Maharashtra. The main objective of the visit was to identify the opportunities of research. During this visit, they got an opportunity to discuss with “Shri. Anna Hazare Ji” at Ralegan Sidhhi, Ahmed Nagar district. The meet explored the depth of knowledge of the scholars in the area of model village development, which implies how sustainability as well as self reliance can be ensured to the people living in rural setup. Another major opportunity they found was to visit Hiware Bazar, one of the famous villages in development and government policies implementation, worldwide. Other than this, they spent 4-5 days in remote villages. This is how; the centre is connecting to the rural parts of the India to sort out their problems via research scholar.





Fig. 1 Research scholars from CRDT, IIT Delhi visited to remote and model villages of Maharashtra to find their scope of research in rural livelihood.

2. Conference on Closed Loop Green Technologies for Rural Communities

Indian Institute of Technology (IIT) Delhi and University College London (UCL), UK were organized a three-day international workshop on the research theme titled, “Closed Loop Green Technologies for Rural Communities”. The workshop was hosted at IIT Delhi from 11–13 September 2017. Dr. Priti Parikh, Associate Professor (UCL) and Dr. Ram Chandra, Energy Bioscience Overseas Fellow (IIT Delhi) were the lead coordinators for this event. This workshop is supported by a Researcher Links grant under the Newton Bhabha Fund. The grant is funded by the UK Department of Business, Energy and Industrial Strategy (BEIS) and the Royal Society of Chemistry and delivered by the British Council Researchers Links.

The theme “closed loop green technologies for rural communities” was focused on environmental friendly solutions such as the reuse of solid and food waste for energy generation, improved water resources management, sanitation and energy provision. The workshop supports the Unnat Bharat Abhiyan with the vision of transformational change by leveraging knowledge of academic institutions. Unnat Bharat Abhiyan connects academic institutions with local communities to address development challenges through participatory processes and appropriate technologies.

The workshop brought together early career researchers from India and UK (15 participants from each country) to identify gaps in research, foster new collaborations across UK and India, facilitate knowledge exchange, develop ideas for future grant applications and develop recommendations to support the implementation of the Unnat Bharat Abhiyan.



Fig 2 A workshop on Closed Loop Green Technologies for Rural Communities was organized by CRDT, IIT Delhi with the collaboration of British Council, Newton-Bhabha fund, and Royal Society of Chemistry.

3. DBT mission innovation biofuel program

Mission Innovation (MI) is a global initiative of 22 countries and the European Union to dramatically accelerate global clean energy innovation. As part of the initiative, participating countries have committed to seek to double their governments' clean energy research and development (R&D) investments over five years, while encouraging greater levels of private sector investment in transformative clean energy

technologies. These additional resources will dramatically accelerate the availability of the advanced technologies that will define a future global energy mix that is clean, affordable, and reliable.

Mission innovation aims to escalate the pace of clean energy innovation to achieve performance breakthroughs and cost reductions to provide widely affordable and reliable clean energy solutions that will revolutionize energy systems throughout the world over the next two decades and beyond.

"Mission Innovation (MI) Smart Grid Team colead by China, Italy and India, organised the 'Second MI Smart Grid Innovation Workshop' at Indian Institute of Technology (IIT) -Delhi, New Delhi on 16th -19th November, 2017. The event included a Technical meeting on 16th and 17th November 2017, a public workshop on 18th November, 2017 and a Technical tour to R&D labs and industries. The workshop was inaugurated by Hon'ble Minister of Science and Technology, Government of India, Shri. Y. S. Chowdary and Minister of Power, Government of India, Shri. R.K. Singh. Along with the workshop, an exhibition to showcase the products and research outcomes related to the field of Smart Grid was organised during the workshop."

4. Rural & Swadeshi Startup meet

A national competition on Rural and Swadeshi Startup Meet, I2S@2017 was organised by Unnat Bharat Abhiyan, on December, 2, 2017 in the seminar hall of IIT Delhi. The event was organised for encouraging the people to come up with promising start-ups focused on rural and societal issues.

Start-up Categories

1. Information & Technology
2. Health
3. Agriculture
4. Any new Scientific idea that benefits society
5. Energy
6. Livelihood at the grassroots
7. Education

Registrations completed with an overwhelming response from across the country. A total of 15 start-ups were screened from nearly 200 applicants for presentations before the jury members in the seminar hall. Most of the start-ups that had registered were innovative and were targeting some societal problem/issues. Prizes were given to first, second and third, in total six. These are as follows-

1st Prize

1. Eckovation: A Social Learning platform: Making quality education available to all- Eckovation Solutions Private Limited, New Delhi

2nd Prize

1. Biodegradable Straw Made from Coconut Leaf-Christ University, Bangalore

2. Divyang- EkUmmeed: Inclusiveness of physically challenged persons in the main stream of the society-a start up of IIT Roorkee

3rd Prize

1. Improvised Crutch for rehabilitation of joint injured patients- Flexmotiv Technologies Pvt. Ltd, a start-up at IIT Delhi
2. Parking Pass - Invax Global Pvt. Ltd., New Delhi
3. Path finder for visually impaired- Sri Eshwar Engineering College, Coimbatore



Fig. 3 Rural & Swadeshi Startup meet to encourage the entrepreneurs to be engaged in rural livelihood improvements held at IIT Delhi under the co-ordination of Prof. VK Vijay.

5. National training programme on Biogas Production, Enrichment and Power Generation

The lack of awareness and know how about the biogas technology is still a major hurdle for the successful implementation of biogas scheme's in India. There is a need for creating awareness, information dissemination and technical assistance for setting up and there after successful operation of biogas plants.

Biogas Development and Training Centres (BDTC) are the core drivers and boosters for the development, deployment and successful implementation of biogas schemes at field level.

In context to the National training programme on “Biogas Production, Enrichment and Power Generation” was organized on the behalf of Biogas Development and Training Centre, Indian Institute of Technology Delhi during 7–9 December 2017 at IIT Delhi. The aim of this programme was mainly to impart training to budding entrepreneurs, supervisors, government functionaries, and consultants who are working on various

aspects of biogas technology to familiarize them with the importance of biogas as a fuel and present status of biogas programme, inter-alia details about the biogas technology and its aspects. The programme was also intended for field supervisory functionaries involved in the implementation of biogas programmes in the states of Uttar Pradesh, Haryana, Uttarakhand and Delhi.



Fig. 4 National training programme on “Biogas Production, Enrichment and Power Generation” organized by Biogas Development & Training Centre, CRDT, IIT Delhi.

BIOGAS RELATED ARTICLES

1. Sustainable bio-energy production models for eradicating open field burning of paddy straw in Punjab, India

The mechanized harvesting of paddy crop has led into open field burning of paddy straw. Burning of million tonnes of paddy straw, releases huge amount of greenhouse gases which creates perturbations to regional atmospheric chemistry. This research presents a case study on utilization of paddy straw for power generation through biomethane and bioethanol production on commercial scale and improved biomass cookstove on domestic scale. Three scenarios (biomethane, bioethanol and pellet for improved biomass cookstove) have been compared for their energy economics and emission. It has been revealed that if paddy straw is not being burned, it can be effectively utilized for biomethanation and bioethanol production which can yield energy equivalent of 8.0 GJ/tonne and 5.6 GJ/tonne, respectively, while pelletized paddy straw can be used in improved biomass cookstoves to meet out thermal cooking energy requirement with reduced indoor air pollution. The analysis further revealed that biomethanation of paddy straw reduces net global warming potential by 2750 CO_{2e} kg emissions/tonne. However, bioethanol production showed net global warming potential reduction of 2549 CO_{2e} kg emissions/tonne. The pelletization of paddy straw for improved cookstove showed net global warming potential reduction of 2459 CO_{2e} kg emissions/tonne.

[\[Read More\]](#)

(Trivedi et al., 2017, Energy)

2. Feasibility Study on Implementing Kitchen Waste-Based Biogas Plant at Tezpur University, Assam

In India, small-sized biogas plants have been prevalent in domestic sectors with mixed degree of success. However, the application of community-sized biogas plants is very limited. In case of residential institute like Tezpur University, Assam, India, considering the huge amount of food waste generated, conversion of kitchen waste into useful cooking gas (biogas) through anaerobic digestion can be a better option to supplement the elevated requirement of LPG. In this work, feasibility study of renewable energy-based cooking system (biogas plant, size 50 m³), implemented in one of the hostels of Tezpur University, is

thoroughly examined from commissioning to operational stage, in order to assess the barriers and carriers of such renewable energy technology. A study investigated the performance of the installed plant, feedstock characteristics, composition and economic assessment of biogas-fuelled cooking at Tezpur University campus. Performance analysis and economic assessment of the 50 m³ biomethanation plant showed that it can be a viable option for utilization of the food waste generated in educational institutions through production of clean cooking fuel. However, proper monitoring of feeding rate and quality is critical for smooth performance of the biogas system. [\[Read More\]](#)

(Buragohain et al., 2017, Utilization and Management of Bioresources)

3. Characterization of leaf waste based biochar for cost effective hydrogen sulphide removal from biogas

Installation of decentralized units for biogas production along with indigenous upgradation systems can be an effective approach to meet growing energy demands of the rural population. Therefore, readily available leaf waste was used to prepare biochar at different temperatures and employed for H₂S removal from biogas produced via anaerobic digestion plant. It is found that biochar prepared via carbonization of leaf waste at 400 °C effectively removes 84.2% H₂S (from 1254 ppm to 201 ppm) from raw biogas for 25 minutes in a continuous adsorption tower. Subsequently, leaf waste biochar compositional, textural and morphological properties before and after H₂S adsorption have been analyzed using proximate analysis, CHNS, BET surface area, FTIR, XRD, and SEM-EDX. It is found that BET surface area, pore size, and textural properties of leaf waste biochar plays a crucial role in H₂S removal from the biogas. [\[Read More\]](#)

(Shivali et al., 2017, Bioresource Technology)

4. Factors affecting methane loss from water scrubbing based biogas upgrading system

Biogas upgrading is a vital step to produce high quality fuel called biomethane with above 90% methane. Among the various technologies available for biomethane production, water scrubbing is the most extensively implemented technology around the world. However, during the process of biogas upgrading,

some amount of CH₄ is separated as CH₄ loss through the water flowing out of the water scrubbing column. In this research various factors affecting CH₄ loss from water scrubbing method are analysed. Some factors such as pressure, water flow rate and CH₄ concentration in input gas are dependent upon the solubility and partial pressures of the gases are generally known. Apart from these factors CH₄ losses due to bubble entrainment due to high pressure difference between water scrubbing column and desorption tank and gas short circuiting of the gas through the bottom section of the column due to no water sealing and water level maintenance also contribute to CH₄ losses. Therefore, CH₄ losses during the water scrubbing process due to these factors have been experimentally studied in this paper. A pilot scale water scrubbing system for biogas upgradation was used for the study. It was observed that CH₄ % (v/v) in the upgraded biogas and CH₄ loss % from the desorbed gas increased with the increase in pressure and increase in the concentration of CH₄ in the input gas. Increase in water flow rates caused removal of larger quantities of water containing more absorbed CH₄ and CO₂ from the scrubbing column, thereby increasing CH₄ loss of the system. Highest CH₄ loss % of 9.9% ($\pm 0.1\%$), was obtained with raw biogas sample when water was desorbed at atmospheric pressures in the desorption tank, i.e. when pressure difference between the water scrubbing column and desorption tank was highest. A pressure vessel was installed in between scrubbing column and desorption tank to reduce the pressure difference for water leaving the column by varying the pressure in the pressure vessel from 1 to 9 bar. With the increase in pressure in the pressure vessel, the pressure difference for water decreased which led to a saving in overall CH₄ loss of the system. Water sealing and water level maintenance in the bottom section of the column also affected CH₄ losses of the system. All the factors discussed in the article contribute to the CH₄ losses from the scrubbing column and cannot be solely credited to a single factor. [\[Read More\]](#)

(Kapoor et al., 2017, Applied Energy)

5. A hybrid approach for selection of most sustainable cooking fuel in the Indian context

The literature on cooking fuel strongly supports that indoor air pollution and environmental emissions affect the user health and global environment sharply. This paper identifies seven cooking fuels viz. wood, coal, kerosene, biogas, liquefied petroleum gas (LPG), piped natural gas (PNG), and electrical induction in an

Indian context. The analysis of the alternative fuels on the basis of six criteria would provide opportunities to the users for shifting to most sustainable cooking fuel (MSCF). In this paper, an attempt has been made to assess the MSCF using entropy approach, MOORA method, and VIKOR analysis. This study concludes that electrical induction is MSCF followed by PNG and LPG respectively. The study provides the scientific evidence for the MSCF alternative in Indian context which will directly benefit the society. [\[Read More\]](#)

(Sindhvani et al., 2017, *International Journal of Knowledge Management in Tourism and Hospitality*)

NEWS HIGHLIGHTS – NATIONAL

1. Government of India - No Tax on Biogas: A campaign to remove the GST charged on Biogas and its products

Goods and Services Tax (GST), the indirect tax reform initiative of Government of India, proposed to be started from July 1, 2017, have released rates for most of the identified basket of goods. The main disbelief for the biogas sector is the announcement of 12% tax rate for biogas. In the present tax regime, incentives and support measures are available to promote the sector in form of Excise Duty exemption for biogas production, and its usage through upgradation to bio-methane, piped gas, compressed biogas, electricity and heat generation, and so on. The states also provide complete exemption or concessional VAT rates to the maximum tune of 5% for biogas. Unequivocally, all current tax exemptions provided to the biogas sector should be subsumed under the GST regime. Additionally, as mentioned above, despite the VAT rate varying from concession to complete exemption from state to state, a rational approach should be adopted to consider complete exemption of this component upon subsuming into GST. This would ensure that the sector, which is presently lagging way too behind is provided the much needed impetus, to unlock its true potential. [[Read More](#)]

(July, 2017, Indian Biogas Association)

2. Make in India conclave in Sweden: Maharashtra CM bats for biogas, biofuel

The Maharashtra government is working towards installing sewage treatment plants (STP) across the state, CM Devendra Fadnavis, told officials from Scania Group, which is working on a biogas plant in Nagpur, in Sweden on Wednesday. The honourable CM of Maharashtra, who was on two-day visit to the country to participate in Make in India conclave, met Mathias Carlbaum, senior vice-president, Scania Group at Stockholm. Scania is a leading Swedish automotive industry manufacturer of commercial vehicles. The Group expressed their desire to provide biogas solutions to more cities in Maharashtra. Emphasising on the need to bring down the cost of biofuel for vehicles, Fadnavis said, “We will ensure the STPs in Mumbai, Pune and Nagpur produce 97% methane, which can be used as a bio-fuel for municipal transport system.”

The CM also met executives of Svenska Aeroplan AB (SAAB), a Swedish aerospace and defence company, and invited them to invest in Maharashtra. [\[Read More\]](#)

(October 12, 2017, Hindutan Times)

3. Biogas plant set up at DC residence Jalasannidhi

The National Institute of Engineering-Centre for Renewable Energy and Sustainable Technologies (NIE-CREST) has set up biogas plant at the deputy commissioner's residence Jalasannidhi. The plant has been installed on the direction of DC D Randeep.

Explaining about the kitchen biogas plant, S Shamsundar, head of NIE-CREST said: "Technical expertise is not required for its operation. Around 1 kg to 5 kg of kitchen waste can be put into the tank fitted with a tight lid. The waste undergoes multi-stage digestion with the cascade digester. The plant runs on biomethanation technology and generates biogas which is being utilized for cooking."

Every month, at least two LPG cylinders are used at the DC's residence, but the biogas plant will save at least 40% LPG. NIE-CREST so far has successfully installed more than 60 units across Karnataka and is implementing 15 projects at present. [\[Read More\]](#)

(25 October, 2017, The Times of India)

4. Sampurn Agri sets up biogas plant using paddy straw

Punjab-based Sampurn Agri Ventures set up a Rs 17 crore biogas-based power plant using paddy straw that can help curb air pollution caused by stubble burning by farmers. The company plans to establish 42 such plants across Punjab to produce bio-CNG, the company's MD Sanjeev Nagpal told reporters here. It has signed a MoU with Indian Oil Corporation (IOC) for supply of CNG produced from these plants

Paddy straw is an asset not a liability and need to prevent its burning. There is an immediate need to manage paddy straw in a way that not only prevents burning but creates an environment that sustains our agriculture.

The company had commissioned Indian Institute of Technology, Delhi to find a solution to the open field burning of paddy straw. [\[Read More\]](#)

(November 21, 2017, The Times of India)

5. Second meeting of project “Feasibility studies on biogas and compost production from mule dung in hilly regions in India”

Dr Anjan K. Kalia Vice, President Biogas Forum chaired 2nd Project Review and Management Committee PRMC meeting on “Feasibility studies on biogas and compost production from mule dung in hilly regions in India” held at ICAR –National Research Centre on Equines Bikaner 30th Oct. 2017. The first such meeting was held at National Environmental Engineering Research Institute (NEERI) on 21st Oct 2016.

This project is formulated to tackle the problem faced by Shri Mata Vaishnudevi Shrine, Katra, J & K as arise from the unscientific disposal of dung of the Mules used for transport of the pilgrims to the temple. It is financed by the Government of India, Office of the Principal Scientific Adviser to the Government of India (Mrs) Dr Lila Bapat, with centres at ICAR –National Research Centre on Equines and National Environmental Engineering Research Institute (NEERI)

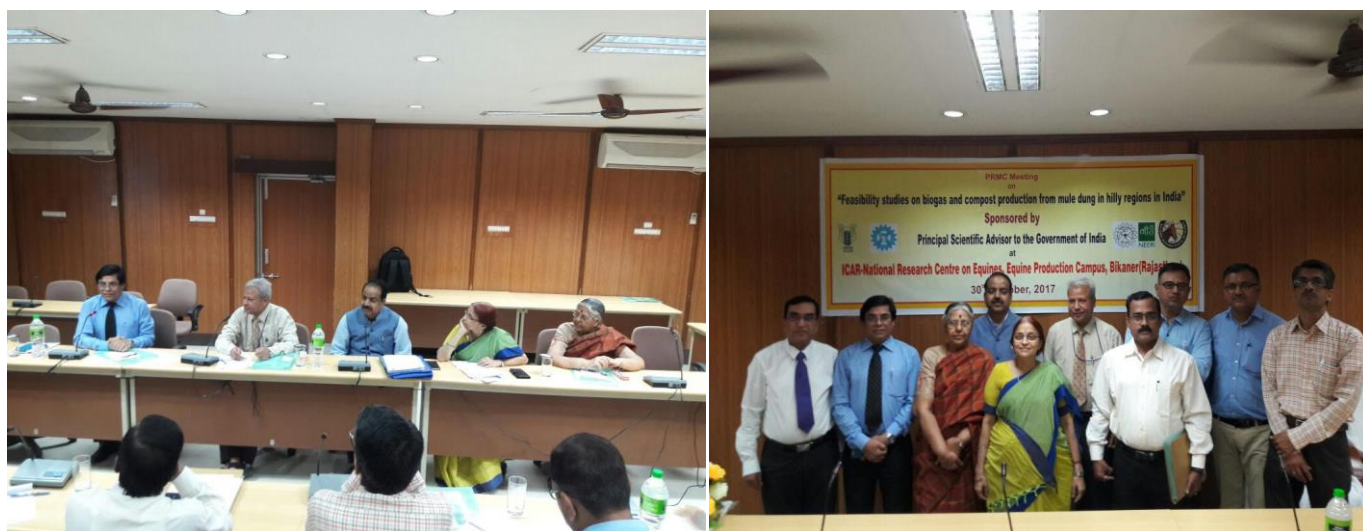


Fig. 5 Project Review meeting held at ICAR –National Research Centre on Equines Bikaner.

(Article received in BigFIN mail)

6. 4-fold rise in green solution to burning of paddy stubble

For the past two years, Manoj Kumar Munjial hasn't set fire to a single straw of paddy residue in his fields sprawled over 45 acres at Taraori in Haryana's Karnal district. Instead, the young farmer uses the straw as an

input for future crops. Even as the new wheat crop grows, the old residue sits in the field enriching the soil, conserving water, nourishing the new plants and creating conditions for decreased use of fertilisers. Munjial is among a growing tribe of farmers in Haryana and Punjab who are using paddy residue for greener agriculture. The technology has existed for years. But recent improvements, say experts, have made it a more viable and scalable solution to the vexed problem of stubble-burning. It registered an estimated four-fold increase this season, which is still less than 2% of the area under rice cultivation in northwest India. The technology in question is a combination of Happy Seeder and straw spreader (straw management system or SMS) for rice-wheat farming. Developed by Ludhiana's Punjab Agricultural University, the Happy Seeder is a machine that sows seeds without the need to till the field or remove paddy straw. It works best when the straw is spread evenly on the field through the SMS device attached to a combine harvester.

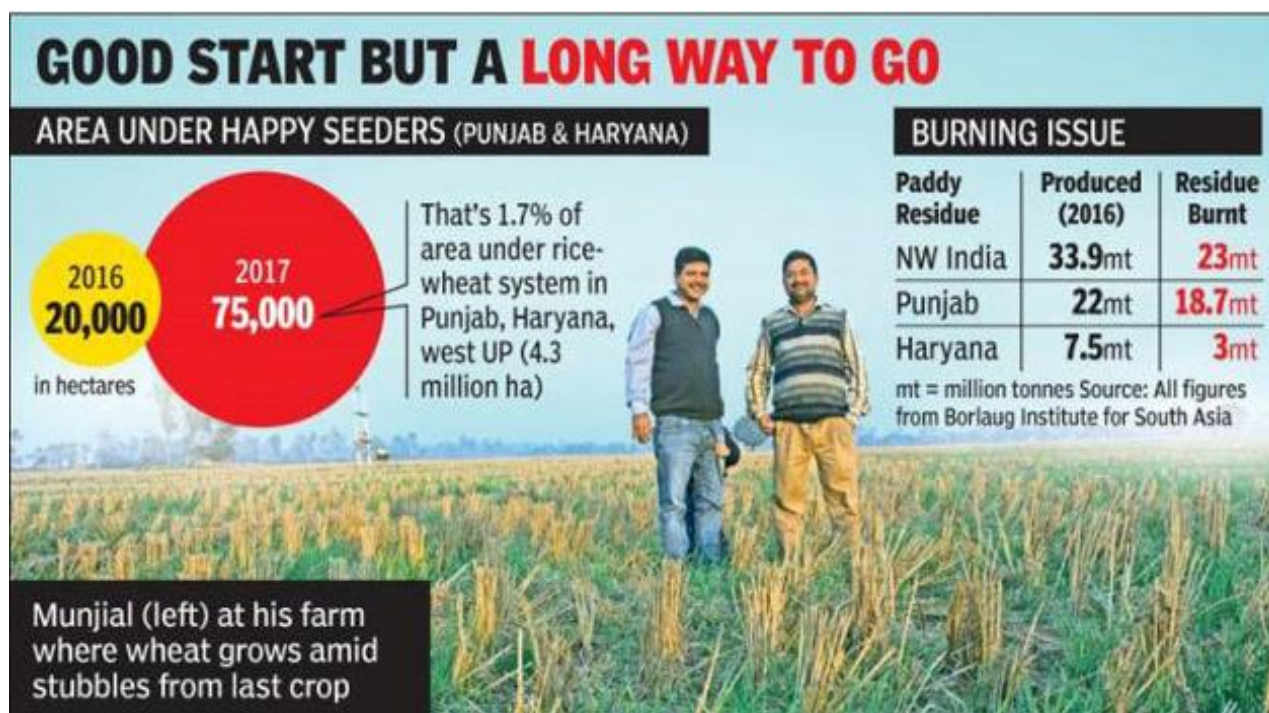


Fig.6 The resource to generate green energy corridor.

[\[Read More\]](#)

(December 18, 2017, The Times of India)

7. Biogas projects losing their sheen as LPG making inroads

The New & Renewable Energy Development Corporation of Andhra Pradesh (NREDCAP) is planning to close the biogas project in the State as the State government itself is encouraging LPG usage. Earlier, a large number of people - both urban and rural - had opted for biogas to cater to their energy needs. In fact, the State ranked number one in the country in the production of biogas and its usage. But for the past few months, as the State government is more focused towards the usage of LPG, the biogas projects are literally on the verge of closure.

The State government even tried its luck to generate electricity from gas, an effective way to end the woes of inflated power bills. The Ministry of New and Renewable Energy (MNRE), Government of India, New Delhi, is providing financial assistance since 1982.83 to the family type biogas plants under the National Biogas & Manure Management Programme (NBMMP). The NREDCAP is the nodal agency for Andhra Pradesh and had started implementing the construction of 'family-sized' biogas plants to farmers who have cattle since 1982.

Nowadays, the biogas project is completely on the back foot. Even the State government is not much interested in it. The decision might be taken in one or two months. But still, the project yielded good results and transformed the rural and urban areas. Now, as the LPG is being given at `30, none of them are interested to go with biogas. In urban areas, it is almost zero, whereas in rural areas only a very few people are taking it. As the construction cost has also increased from the past few years, the subsidy is not attracting the public.”[\[Read More\]](#)

(December 26, 2017, The New Indian Express)

8. Punjab inks MoU with IOC to set up biogas, bio-CNG plants

The Punjab government signed a Memorandum of Understanding (MoU) with the Indian Oil Corporation to set up bio-gas and bio-CNG plants in the state. The pact is part of the state's concerted efforts to find sustainable solutions to paddy straw burning, which has emerged as a major environmental concern.

The MoU with IOC was signed by Punjab Bureau of Industrial Promotion (PBIP) and Punjab Energy Development Agency (PEDA) in the presence of Chief Minister Amarinder Singh.

The plants, to be based on a new concept and technology, will be set up at a total investment of Rs 5,000 crore, and will generate employment for around 4,000 people. The project will be initiated with 42 plants becoming operational in 2018. It will be scaled up to 400 plants over the next 3-4 years, making it the one of the biggest such projects in the country.

It is estimated that 400 units will consume biomass of about 10 million tonne per annum and will produce about 1,400 million kg per annum CNG and 6,000 million kg per annum manure. By converting bio-mass to compressed bio-gas and bio-CNG, the plants will take help curb the menace of stubble burning and create additional income to farmers. The project will also create rural employment and entrepreneurial opportunities, besides providing a green organic source of compost for soil enrichment.

The chief minister suggested setting up of societies of unemployed youth and encourage them to set up the proposed units with the support of the state government, and the IOC taking up the end product sales.

The government will facilitate identification of land parcels in various locations of the state for setting up the plants, and also ensure incentives and benefits as applicable for such plants under the State Industrial and Business Development Policy-2017 and the State New and Renewable Sources of Energy Policy-2012.

Through PEDDA, it will also facilitate Indian Oil to obtain permission for the marketing of compost/fermented manure and slurry, subject to the completion of all formalities by the IOC.

The parties will explore possibilities for further reduction on the taxes currently applicable on compressed bio-gas, bio-CNG, compost, fermented manure, bio pesticide, CO₂ and slurry.

While PEDDA will be the coordinating agency for the government, Finance Minister Manpreet Badal suggested providing a nodal officer to IOC to ensure seamless coordination. [[Read More](#)]

(January 15, 2018, [The IndianEXPRESS](#))

[NEWS HIGHLIGHTS – INTERNATIONAL](#)

1. 8.5 MW biogas plant in Germany now operational

An expanded, 8.5 megawatt biogas plant in Brandenburg, Germany, is now operational. Built in 2014, the originally 800 kW biogas site has been expanded significantly, now processing approximately 70,000 tonnes of slurry, 50,000 tonnes of maize silage, and 7,000 tonnes of solid manure. The raw biogas is converted into bio-natural gas using *physio-organic washing processes* and then fed into the regional natural gas network of the Brandenburg utility company. Around 75 million kWh of gas and heat are generated from these materials, supplying over 16,000 households.

Three fermenters and two secondary fermenters with a fermenting volume of around 23,000 m³ have been installed at the biogas plant, as well as six digestate storage tanks with a holding capacity of around 42,000 m³. A pump line measuring approximately two kilometres in length ensures the efficient and ecological transportation of substrates; the slurry is delivered by a dairy farm directly to the biogas plant. [[Read More](#)]

(July 4, 2017, Bioenergy insight)

2. East London AD facility will generate 14 million m³ of biogas a year

A ‘state-of-the-art’ anaerobic digestion (AD) facility has been opened in East London, which will convert inedible food waste into renewable energy and bio-fertiliser. The new facility is capable of processing more than 160,000 tonnes of food waste every year, generating 14 million m³ of biogas, enough to power 12,600 homes per annum.

73,600 tonnes of CO₂ will be displaced by the new facility, equivalent to taking 14,431 cars off the road. The Dagenham facility will support Transport for London’s Clean Air Action Plan, created by London’s Mayor Sadiq Khan to clamp down on polluting vehicle emissions in the city, by generating biomethane for gas powered vehicles. [[Read More](#)]

(August 15, 2017, Bioenergy insight)

3. DuPont launches biogas enzyme Optimash AD-300

DuPont Industrial Biosciences recently announced a new enzyme product designed to improve biogas production during anaerobic digestion in the waste water industry: DuPont Optimash AD-300. The announcement comes at the [Aquatech Amsterdam](#) conference, where DuPont will be launching the enzyme offering to the industry. The enzyme is immediately available to producers in markets around the world.

Optimash AD-300, a protease-only product, is effective at breaking down organic materials that contain protein, such as wastewater sludge, food waste, animal and farm wastes. It functions by breaking down the protein polymers, resulting in soluble amino acids that are more suitable for biogas-producing organisms.

[\[Read More\]](#)

(November 6, 2017, Biomass magazine)

4. Project to explore biogas fuel launched

The Ministry of Municipality and Environment in collaboration with Qatar University represented by the College of Engineering has launched a project to produce biogas from wastes that could be used as a clean energy to power the motor vehicles.

The project aims at studying and providing consultancy on the techniques for producing biogas from waste to use it in the vehicles powered by biofuel, said a report posted on the social site of the Ministry of Municipality and Environment. Phase one project will include a feasibility study for the project. The study will look into various aspects such as storing quantity of biogas from waste and compressing and purifying it. [\[Read More\]](#)

(22 December, 2017, The Peninsula)

5. Global Biogas Power Plants Market Analysis, Size, Share, Growth and Forecast Report to 2022

Biogas Power Plants Market Report, Focus on the various factors and trends impacting market growth over the forecast period (2017–2021). Biogas Power Plants showcase size to keep up the normal yearly development rate of 9.18% from 63000 million \$ in 2013 to 82000 million \$ in 2016. Market analysts believe that in the next few years, Biogas Power Plants market size will be further expanded. They expect that by 2021, the market size of the Biogas Power Plants will reach 113000 million \$. [\[Read More\]](#)

(22 December, 2017, Australian Tribune)

UP-COMING EVENT

Sr. No.	National	International
1	Renewable India 2018 14-15 February, 2018 Pragati Maidan, New Delhi	5th international conference on renewable energy gas technology, REGATEC 2018 3-4, May, 2018 Blagnac (Toulouse), France
2	ICEMBB 2018: 20 th International Conference on Energy Management, Biofuels and Biorefining 22-23, February, 2018 Mumbai, India	Conference of the European Biogas Association 24, January, 2018 Antwerp, Belgium
3	20 th International Conference on Renewable Energy Technologies and Energy Efficiency February 22 - 23, 2018 Four Seasons Hotel Mumbai, 1/136, Dr. E. Moses Road, Worli, Mumbai-400018, India	Quebec 15th Biogas and Bioenergy Conference 8, May, 2018 Time – 8.00AM to 6.00PM Event language – Francais Saint-Hyacinthe, Canada
4	4 th Smart Cities India 2018 Expo 23-25 May, 2018 Pragati Maidan, New Delhi, India	4th Biogas Science Conference 17-19, September, 2018 Torino, Italy
5	Renewable Energy India 2018 20-22 September, 2018 India Expo Centre, Greater Noida	UK AD & Biogas and World Biogas Expo 5-6, July, 2018 Birmingham, United Kingdom
6		Biogas – Expo & Congress 31, January, 2018 Offenburg, Germany
7		UK AD & Biogas and World Biogas Expo 2018 11-12, July, 2018 Birmingham, United Kingdom
		Expobiogaz 6-7, June, 2018 Strasbourg, France



BIOGAS FORUM - INDIA (BiGFIN)

(A Registered Society for Promotion of Biogas Technology in India)

Corresponding Address:

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MEMBERSHIP FORM

All prospective members of BiGFIN are required to duly fill up this registration form and return by post to **Dr. Virendra Kumar Vijay, General Secretary – BiGFIN, Centre for Rural Development and Technology, Indian Institute of Technology Delhi, IIT Campus, Hauz Khas, New Delhi – 110016** alongwith the Demand Draft in favour of “**Biogas Forum – India**” payable at New Delhi or online transfer the amount in account number 0346101060870, Canara Bank, SDA, branch New Delhi.

Affix your recent
passport size
photograph here

PERSONAL DETAILS

Name (Full):	
Title:	
Member Sex:	
Mailing Address with Pin Code:	
Email:	
Telephone/Mob. No.:	
Date of Birth:	
Nationality:	
Permanent Address:	
Email:	
Telephone/Mob. No.:	
Brief about Research/Field Activities related to Biogas:	

PROFESSIONAL DETAILS

Organization Name:

Nature of the Organization: (Please tick in appropriate box)

- | | | |
|--|---|---------------------------------------|
| <input type="checkbox"/> Public Limited | <input type="checkbox"/> Government | <input type="checkbox"/> Students |
| <input type="checkbox"/> Private Limited | <input type="checkbox"/> Semi Government | <input type="checkbox"/> Field Worker |
| <input type="checkbox"/> Consultancy | <input type="checkbox"/> Training/Educational | <input type="checkbox"/> Any Other |
| <input type="checkbox"/> Autonomous | <input type="checkbox"/> NGOs | |

Designation:

Organization
Address:Telephone/Mob.
No.:

Fax Number:

Email Address:

Specialization:

Brief Activities of the Organization related to Biogas:

PAYMENT DETAILS

Membership Type: (Please tick in appropriate box)

- Corporate Membership (Annual or Life)
 Life Membership (Academic/Scientific/Others or Field Worker)
 Annual Membership
 Student Membership

Tick (✓) whichever is applicable and also mention DD/Bank Transfer Number

- | | | | |
|---|---------|-------|---------|
| <input type="checkbox"/> DD | Number: | Date: | Amount: |
| <input type="checkbox"/> Cash | | | |
| <input type="checkbox"/> Bank Transfer: | | | |

Amount in Words:

Drawing Bank:

UNDERTAKING TO BE SIGNED BY THE APPLICANT

I hereby certify that all Information supplied in this application for membership is true and correct and abide by the rules and regulations of the Biogas Forum – India (BiGFIN).

Date: _____ Applicant's Signature: _____

Place: _____

IMPORTANT: The Governing Body of the BIOGAS FORUM – INDIA has a right to accept or reject the membership proposal.

FEE STRUCTURE

1.	Corporate Membership (Institutional/Company)	Rs. 10,000/- (Annual) (Rs. 50,000/- For 10 years)
2.	Life Membership (Individual)	Rs. 2,000/- (For Academic/Scientific Person/Others) Rs. 1,000/- (Turnkey/Field Workers)
3.	Members from other countries	USD 300