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# India

## Business & Market

### Chempolis signs agreement for bamboo ethanol project in India

Finland-based Chempolis Ltd. has signed a partnership agreement with Numaligarh Refinery Ltd., an enterprise of the Indian Government, to build a cellulosic ethanol and chemical production facility in Assam, India. The agreement follows a MOU that was signed by the two companies in September.

According to information released by Chempolis, the proposed facility will convert bamboo feedstock into cellulosic ethanol, and biobased furfural and acetic acid. The facility will utilize Chempolis' formicobio technology, a biorefining technology based on selective fractionation of biomass and coproduction of multiple products. The facility is currently expected to take 2.5 years to develop.

[www.biomassmagazine.com/articles/11065/chempolis-signs-agreement-for-bamboo-ethanol-project-in-india](http://www.biomassmagazine.com/articles/11065/chempolis-signs-agreement-for-bamboo-ethanol-project-in-india)

### Bio-fuels should be cost-effective for Railways: DV Sadananda Gowda, Minister of Railways

Mr. Gowda at an event organized by Bio-Diesel Association of India said that bio-fuels should be genuinely sustainable and cost-effective for the Indian Railways to use such fuels. He added "Indian Railways is the single largest bulk consumer of diesel in the country and as mentioned in the Railway Budget 2014-15, it will start using bio-diesel up to 5% of its total fuel consumption for diesel locomotives,"

[www.thehindubusinessline.com/news/biofuels-should-be-costeffective-for-railways-says-gowda/article6571095.ece](http://www.thehindubusinessline.com/news/biofuels-should-be-costeffective-for-railways-says-gowda/article6571095.ece)

## Policy Initiatives

### Meghalaya Government to start micro grid systems in select villages

The Meghalaya Government will provide micro grid systems in some villages in the state where power will be generated using renewable resources and energy thus saved will be routed to industries, Chief Minister Mukul Sangma said today.

"We have identified certain villages in the state where there is a possibility of them being delinked from the main grid after they are provided with renewable power," Sangma said while addressing

a national seminar on how power sector impacts on economic growth and industrial development.  
[www.zeenews.india.com/news/north-east/meghalaya-govt-to-start-micro-grid-systems-in-select-villages\\_1491771.html](http://www.zeenews.india.com/news/north-east/meghalaya-govt-to-start-micro-grid-systems-in-select-villages_1491771.html)

## Major Indo-U.S. Advanced Bioenergy Consortium launches

The Government of India's Department of Biotechnology, Indian corporate leaders and Washington University in St. Louis have invested \$2.5mn to launch the Indo-U.S. Advanced Bioenergy Consortium for Second Generation Biofuels (IUABC).

The IUABC is a joint binational center led by Jawaharlal Nehru University (JNU), the Indian Institute of Technology in Bombay (IITB), and Washington University. The goal of the center is to increase biomass yield in plants and algae, enabling downstream commercial development for cost-effective, efficient and environmentally sustainable production of advanced biofuels.

[www.news.wustl.edu/news/Pages/27538.aspx](http://www.news.wustl.edu/news/Pages/27538.aspx)

## India can learn waste management from Norway, Finland: President Pranab Mukherjee

President Pranab Mukherjee, expressing satisfaction at the outcome of his visit to Norway and Finland, said India can gain from the two countries' expertise in areas such as clean technology and waste management.

[www.ndtv.com/article/india/india-can-learn-waste-management-from-norway-finland-president-pranab-mukherjee-608463](http://www.ndtv.com/article/india/india-can-learn-waste-management-from-norway-finland-president-pranab-mukherjee-608463)

## We plan to make use of India's experience in Renewable Energy: Osama Kamal, Egypt's former Petroleum & Mineral Resources Minister

[www.thehindubusinessline.com/news/we-plan-to-make-use-of-indias-experience-in-renewable-energy/article6520309.ece](http://www.thehindubusinessline.com/news/we-plan-to-make-use-of-indias-experience-in-renewable-energy/article6520309.ece)

## India RE sector needs \$30bn debt and equity financing

India can solve its energy problem within 18 months by putting in place thermal capacity of about one lakh mega watt (MW), which is lying incomplete and blending it along with about 250,000MW capacity available as of today, said Mr Suresh Prabhu, Chairman, Advisory Group for Integrated Development of Power, Coal and Renewable Energy at an ASSOCHAM event held in New Delhi today.

[www.orissadiary.com/CurrentNews.asp?id=54182](http://www.orissadiary.com/CurrentNews.asp?id=54182)

## Cabinet nod to up authorized share capital of IREDA to Rs 6000 crore

Government gave its nod to raise the authorized share capital of Indian Renewable Energy Development Agency (IREDA) to Rs 6,000 crore from Rs 1,000 crore.

[www.articles.economicstimes.indiatimes.com/2014-11-05/news/55798407\\_1\\_ireda-share-capital-renewable-energy-development-agency](http://www.articles.economicstimes.indiatimes.com/2014-11-05/news/55798407_1_ireda-share-capital-renewable-energy-development-agency)

## Roadmap for bio-energy sector in India critical: Experts

India having one the largest reserves of biomass in the world is a key stakeholder and a roadmap for the development of this sector in the country is critical. There is a need for industry and academia to work together to address the issues in this sector, said Dr Renu Swaroop, Managing Director, BIRAC and Adviser, Department of Biotechnology Ministry of Science and Technology Government of India.

[www.commodityonline.com/news/roadmap-for-bio-energy-sector-in-india-critical-experts-60201-1-60202.html](http://www.commodityonline.com/news/roadmap-for-bio-energy-sector-in-india-critical-experts-60201-1-60202.html)

### Finance & Investment

## IL&FS mulling \$1bn clean technologies fund for India

One of India's leading infrastructure and finance companies, IL&FS today is mulling a USD 1 billion fund to bring in clean technologies from Nordic nations to the country to support the new government's huge infrastructure building efforts.

The fund is being set up primarily to help small and medium businesses in the Nordic countries with technological capabilities, who are interested in setting up a range of environmentally sustainable projects in India.

The Sustainable Innovation Platform will focus on connecting Nordic companies and institutions working on themes such as Energy, water, waste, climate change and related environment sectors with their Indian counterparts.

[www.articles.economicstimes.indiatimes.com/2014-10-13/news/54971011\\_1\\_clean-india-leasing-financial-services-limited-indian-government](http://www.articles.economicstimes.indiatimes.com/2014-10-13/news/54971011_1_clean-india-leasing-financial-services-limited-indian-government)

### Climate & Environment Change

## Bangalore wakes up to polluted air

As per new research paper published in the international journal Environmental Science and Pollution Research, Bangalore's air is most polluted early in the morning and not during the peak traffic hours as one would assume. Between 5 a.m. and 7 a.m., carbon dioxide (CO<sub>2</sub>) levels shoot up to 490 part per million (ppm), well over levels found in non-polluted atmosphere — approximately 280 ppm. It is considerably lower in the evenings — 395 ppm.

The study indicates that rising traffic, biomass burning and polluting industries — primarily cement factories around the city are responsible for an increase in temperature in the city.

[www.thehindu.com/news/cities/bangalore/bangalore-wakes-up-to-polluted-air/article6541860.ece](http://www.thehindu.com/news/cities/bangalore/bangalore-wakes-up-to-polluted-air/article6541860.ece)

## Air pollution affects yield of wheat in India: Researchers

In a recent study, researchers have analyzed that air pollution reduced the wheat yields in densely populated states in India.

For the study, the team of researchers analyzed data for almost last 30 years. Findings of the study showed that smog and other pollutants have highly affected the yield of wheat in densely populated states in India. Scientists also examined historical data on crop yield, emissions, and precipitation to draw their conclusions.

**[www.newstonight.co.za/content/air-pollution-affects-yield-wheat-says-researchers](http://www.newstonight.co.za/content/air-pollution-affects-yield-wheat-says-researchers)**

## VIASPACE and Tibbar Energy USVI report progress for 7MW biopower plant on St. Croix

VIASPACE Inc. issued an update regarding the progress of the Tibbar Energy USVI, Giant King Grass fueled, 7MW biopower plant on the island of St. Croix in the US Virgin Islands. The power plant will provide the only base load renewable electricity in the USVI. The majority feedstock is from VIASPACE Giant King Grass (GKG).

Tibbar will sell power for 25 years, with a 5 year option, to the Water and Power Authority (WAPA).

[www.money.cnn.com/news/newsfeeds/articles/prnewswire/LA33674.htm](http://www.money.cnn.com/news/newsfeeds/articles/prnewswire/LA33674.htm)

## DTE Biomass dedicates 9.6MW RE facility in North Carolina

DTE Biomass Energy started operating the facility at the landfill, which is owned and operated by Republic Services of North Carolina. Landfill gas at the site is used to generate RE, which is subsequently sold to Duke Energy Progress.

Representatives from DTE Biomass Energy, Republic Services and Duke Energy Progress gathered to recognize their partnership that has resulted in enough RE to power more than 6,000 North Carolina homes. The plant includes six Caterpillar engine generators and a staff of three.

[www.rewmag.com/dte-biomass-republic-dedicate-north-carolinia-landfill-power-plant.aspx](http://www.rewmag.com/dte-biomass-republic-dedicate-north-carolinia-landfill-power-plant.aspx)

## Abengoa to develop world's largest biomass plant in Belgium

Abengoa has been selected by electricity and gas company Belgian Eco Energy, to develop the largest commercial plant in the world of new construction in Ghent (Belgium).

Once built, the €315mn plant will produce 215MW of electricity -- all of it wood chips and agro-residue. Through the technology of "Circulated Fluidized Bed" the biomass is transformed into high pressure steam, which subsequently passes through a steam turbine to produce electricity. Abengoa will be responsible for the engineering, design and construction of the plant.

[www.renewableenergymagazine.com/article/abengoa-to-develop-world-s-largest-biomass-20141105](http://www.renewableenergymagazine.com/article/abengoa-to-develop-world-s-largest-biomass-20141105)

## Global bioenergy market to exceed 165GW by 2025: GlobalData report

The global cumulative installed capacity of bioenergy is expected to reach 165.1GW by 2025 — up from 87.6GW in 2013. That's according to a newly released report from research and consulting firm GlobalData.

The company's latest report\* states that the world's major bioenergy markets — namely the US, UK, Germany, Brazil, India and China — all witnessed growth over the last decade, except for the US, which saw a falling trend in annual capacity additions during 2007 to 2014.

[www.renewableenergyfocus.com/view/40499/global-bioenergy-capacity-on-the-rise/](http://www.renewableenergyfocus.com/view/40499/global-bioenergy-capacity-on-the-rise/)

## Herty launches Consortium for advanced wood-to-energy solutions

The Georgia Southern University Herty Advanced Materials Development Center in Savannah, Georgia, US Endowment for Forestry and Communities, and the USDA Forest Service Forest Products Laboratory in Madison, Wisconsin, announced the launch of the Consortium for Advanced Wood-to-Energy Solutions. The consortium's goal is to spearhead development of commercially-viable, advanced wood-to-energy products that can be produced from low-value trees and forest residues that can compromise forest health and increase the frequency of wildfires.

The US Endowment and the Forest Service, via its state and private Forestry division, have "jump started" the consortium with a \$4mn investment designed to identify and fill critical research, development, and deployment needs in launching successful commercial biomass to energy products operations.

[www.biomassmagazine.com/articles/11127/herty-launches-consortium-for-advanced-wood-to-energy-solutions](http://www.biomassmagazine.com/articles/11127/herty-launches-consortium-for-advanced-wood-to-energy-solutions)

## AREVA to build Brazil's biggest biomass plant

AREVA gas signed a contract with Brazilian utility BOLT Energias, under which it will provide the engineering, procurement and construction services to build 150MW of biopower plant.

[www.energylivenews.com/2014/10/15/areva-to-build-brazils-biggest-biomass-plant/](http://www.energylivenews.com/2014/10/15/areva-to-build-brazils-biggest-biomass-plant/)

## Appalachian Biofuels LLC. to establish biodiesel facility in Russell

Appalachian Biofuels will process multiple waste feedstock material and refine it to produce biodiesel by investing \$3.5mn. Gov. Terry McAuliffe approved a \$200,000 grant from the Governor's Opportunity Fund for the project. The Virginia Tobacco Indemnification and Community Revitalization Commission approved \$210,000 in funding for the project.

[www.timesdispatch.com/news/virginia/ap/appalachian-biofuels-to-establish-facility-in-va/article\\_4492d1b1-cbe5-5dec-a659-d7ca877d130d.html](http://www.timesdispatch.com/news/virginia/ap/appalachian-biofuels-to-establish-facility-in-va/article_4492d1b1-cbe5-5dec-a659-d7ca877d130d.html)

## Canada's Enerkem announces new biofuel project partnership in China

Enerkem Inc., a waste-to-biofuels and chemicals producer, has signed an agreement with Qingdao City Construction Investment Group Co. Ltd., to develop a project partnership to jointly build a

municipal solid waste-to-biofuels facility in Qingdao, China.

In this new project partnership, Enerkem will license its exclusive technology to convert local urban waste from China into biofuels and chemicals.

[www.renewableenergyfocus.com/view/40500/canada-s-enerkem-announces-new-biofuel-project-partnership-in-china/](http://www.renewableenergyfocus.com/view/40500/canada-s-enerkem-announces-new-biofuel-project-partnership-in-china/)

## Italy pushes ahead with 'next generation' biofuels from waste

Italy will become the first country in Europe to legally require "advanced biofuels" in cars and trucks, the BBC has learned. Made from waste, the new fuels are said to reduce the amount of land taken out of food production.

From 2018, all fuel suppliers in the country will have to include 0.6% advanced biofuel in petrol and diesel.

[www.bbc.com/news/science-environment-29618889](http://www.bbc.com/news/science-environment-29618889)

## Quebec's Enerkem lands two deals to build biofuel plants in China

Montreal-based Enerkem Inc., the company that built Edmonton's state-of-the-art plant that turns non-recyclable municipal garbage into biofuel, has signed two deals with Shanghai's organizations to build similar plants in China.

One of the deals, with waste management firm Shanghai Environmental Group Co. Ltd., will see Enerkem license its technology to be used to build waste-to-biofuels plants in China. The other agreement is with Shanghai Marine Diesel Engine Research Institute, an organization with expertise in equipment manufacturing and ethanol distribution. It could also result in the construction of similar facility.

[www.theglobeandmail.com/report-on-business/international-business/quebecs-enerkem-lands-two-deals-to-build-biofuel-plants-in-china/article21329525/](http://www.theglobeandmail.com/report-on-business/international-business/quebecs-enerkem-lands-two-deals-to-build-biofuel-plants-in-china/article21329525/)

## Canadian & Italian firms partner on WTE & recycling projects

Hong Kong based waste to energy developer, China Everbright International has signed a JV agreement with Sichuan Energy Industry Investment Group to establish the Sichuan Everbright Energy Conservation and Environmental Protection in Chengdu City of Sichuan Province. The two parties will leverage the joint venture to expand and develop waste to energy and other projects in the low-carbon industry in Sichuan Province and surrounding areas.

Everbright said that the collaboration will help optimise resource allocation and boost the development of the local economy, society and environmental protection industry in Sichuan Province.

[www.waste-management-world.com/articles/2014/10/canadian-italian-firms-partner-on-waste-to-energy-recycling-projects.html](http://www.waste-management-world.com/articles/2014/10/canadian-italian-firms-partner-on-waste-to-energy-recycling-projects.html)

## Lockheed Ockheed Martin signs WTE gasification technology agreement

Lockheed Martin has signed a manufacturing agreement with waste gasification technology

developer, Concord Blue, to provide all manufacturing support for the Concord Blue Reformer® waste to energy technology.

[www.waste-management-world.com/articles/2014/10/lockheed-martin-signs-waste-to-energy-gasification-technology-agreement.html](http://www.waste-management-world.com/articles/2014/10/lockheed-martin-signs-waste-to-energy-gasification-technology-agreement.html)

## Finance & Investment

### Spanish firm under federal investigation wins \$230mn in DoE Subsidies

[www.freebeacon.com/issues/spanish-firm-under-federal-investigation-wins-230-million-in-doe-subsidies/](http://www.freebeacon.com/issues/spanish-firm-under-federal-investigation-wins-230-million-in-doe-subsidies/)

## Research & Technology

### SMUD seeks developer to test viability of biomass, thermal plant

The Sacramento Municipal Utility District is looking for a developer to test the economic viability of building a biomass gasification plant next to a food processing company.

Mr. Marco Lemes – Project manager of SMUD said, “the utility is seeking at least a 3MW biomass gasification project. Such projects heat dried wood to high temperatures to harvest synthetic natural gas, which is a renewable gas that can be used to generate electricity. In the process of heating wood to more than 800 degrees, a lot of waste heat is generated, and that is the energy SMUD is trying to harvest. A neighboring business, HP Hood LLC, is a food packaging business. HP Hood needs hot air and hot water, and it could use the excess heat from the biomass plant.

This test is to see whether the proposed plant and the existing business can efficiently work together to make efficient use of local resources and at the same time generate electricity for the local electrical grid.”

[www.bizjournals.com/sacramento/news/2014/11/05/smud-seeks-developer-to-test-viability-of-biomass.html](http://www.bizjournals.com/sacramento/news/2014/11/05/smud-seeks-developer-to-test-viability-of-biomass.html)

### Researchers finding biofuel fits for Florida

Florida is one of the nation’s leaders in agriculture crop production and innovation. While efforts to start a biofuel industry have been exploratory, a research professor has a good idea what the best candidate crops are to fuel the new industry - and how to produce them sustainably. They found that there are only a few crops that are suitable for biofuel feedstocks in Florida and also economical to grow; readily convertible to fuel using existing technology; tolerant to heat, drought, and excessive rain; and available as feedstocks year round.

According to University of Florida professor of agricultural and biological engineering, Dr. Brian Boman, the most promising crops for biofuel production are the eTuber (industrial sweet potato), sweet sorghum, and energybeets (non-edible sugar beets).

“These crops can be grown throughout South Florida and use biofuel processing technology that is ready now,” Boman says. “A crop rotation using the three crops can provide feedstocks for biofuels eleven months of the year.”

[www.growingproduce.com/vegetables/researchers-finding-biofuel-fits-for-florida/](http://www.growingproduce.com/vegetables/researchers-finding-biofuel-fits-for-florida/)

## The new frontier in ethanol is nonfood biofuel

After a decade of research and development, ethanol maker Poet Inc. and its Dutch partner Royal DSM recently produced the first cellulosic ethanol at a \$275mn plant next to a cornfield in this Northern Iowa town. Two other companies are completing new cellulosic ethanol plants in Iowa and Kansas. By next year, they expect to be producing millions of gallons of the advanced biofuel. [www.greenbaypressgazette.com/story/money/2014/10/18/new-frontier-ethanol-nonfood-biofuel/17450965/](http://www.greenbaypressgazette.com/story/money/2014/10/18/new-frontier-ethanol-nonfood-biofuel/17450965/)

## Researchers studying Miscanthus, sorghum as bioenergy crops

Two University of Illinois crop sciences researchers interested in improving plant feedstocks for bioenergy production were selected to receive funding by USDA and DoE as part of a larger Obama administration effort to diversify the nation's energy portfolio and accelerate development of new clean energy.

[www.agprofessional.com/news/Researchers-studying-Miscanthus-sorghum-as-bioenergy-crops-280685422.html](http://www.agprofessional.com/news/Researchers-studying-Miscanthus-sorghum-as-bioenergy-crops-280685422.html)

## World Bank charts zero-carbon electricity pathways for climate stabilization

The World Bank has published a policy research working paper, titled 'Pathways toward Zero-carbon Electricity Required for Climate Stabilization,' which calculates the carbon content of electricity in a set of existing prospective stabilization scenarios, and shows that near-zero carbon electricity: is required for staying within a global temperature rise range of 2-3°C; can be achieved even if some key technologies are not available; and should occur in every major country or region in the world.

The paper underscores the role of electricity generation in global warming given that it accounts for 26% of global greenhouse gas (GHG) emissions and because of its potential use as a substitute for carbon-intensive fossil fuels, including in electric vehicles, heat pumps, electric furnaces and industrial motors. The study examines 55 socio-economic and energy system pathways, generated with ten integrated assessment models (IAMs), which factor in parameters ranging from long-term demographic evolution to the availability of natural resources, and to countries' participation in GHG emission reduction efforts.

[www.energy-l.iisd.org/news/world-bank-charts-zero-carbon-electricity-pathways-for-climate-stabilization/267219/](http://www.energy-l.iisd.org/news/world-bank-charts-zero-carbon-electricity-pathways-for-climate-stabilization/267219/)