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Published By

BIO ENERGY COUNCIL OF INDIA

Tel: +91 79 66309332

Fax: +91 79 66309334

W: www.bioenergyindia.org

E: info@bioenergyindia.org



Policy Initiatives

North America

Iowa provides stability for state's biodiesel producers
www.biodieselmagazine.com/articles/85948/iowa-provides-stability-for-states-biodiesel-producers

On May 21, Iowa Gov. Terry Branstad advanced support for the biodiesel industry signing into law an extension of the state's biodiesel producer incentive.

The legislation is an extension of the current biodiesel producer incentive that is structured as a 2 cent per-gallon refundable credit for the first 25 million gallons produced at any single plant in the state. The incentive was set to expire at the end of this year but the extension now moves that through 2017.

With the fate of the federal biodiesel tax incentive and the renewable fuel standard (RFS) volumes currently uncertain, strong state biodiesel policies help stabilize the industry and provide a baseline for producers.

Survey shows biodiesel producers hit hard by policy uncertainty
www.biodieselmagazine.com/articles/76415/survey-shows-biodiesel-producers-hit-hard-by-policy-uncertainty

Policy setbacks in Washington, D.C., are taking a major toll on the most successful advanced biofuel in the U.S., according to a nationwide survey of biodiesel producers released May 14.

The survey, conducted by the National Biodiesel Board, found that nearly 80 percent of U.S. biodiesel producers have scaled back production this year and more than half have idled production at a plant altogether. Additionally, two-thirds of producers said they have already reduced or anticipate reducing their workforce as a result of the downturn. The cutbacks come in the face of a weak Renewable Fuel Standard (RFS) proposal from the EPA and Congress' failure to extend the biodiesel tax incentive.

Business & Market

India

Padma Shri Dr. Sunita Narain inaugurates research center at BITS Pilani www.indiaeducationdiary.in/Shownews.asp?newsid=29106

The Birla Institute of Technology and Science (BITS), Pilani, India's premier independent university today inaugurated the Center for Research Excellence (CORE) in Waste, Water and Energy Management.

The new centre was inaugurated by the honorable Chief Guest Padma Shri Dr. Sunita Narain, Director General, Center for Science and Environment (CSE), Delhi, in the presence of Prof. B.N. Jain, the Vice Chancellor, BITS Pilani, Director, Prof G Raghurama, students, faculty, and other members of the BITS community.

The Centre for Research Excellence (CORE) will help develop technologies, processes and products aimed at providing solutions to pressing societal problems. This center will draw faculty resources across disciplines from all four campuses of the university. The faculty members will be encouraged to take up research projects cutting across functions and geographies provided at BITS Pilani.

The Center for Research Excellence in Waste, Water and Energy Management (CORE) will be BITS Pilani's major initiative in terms of sustainability and water management, which is targeted at discovering solutions to societal problems. BITS Pilani will drive the implementation of the scheme in other cities in India and abroad where water is scarce in their proposed project.

Civic body in Kerala mulls Chinese model waste management

www.timesofindia.indiatimes.com/city/thiruvananthapuram/Now-civic-body-mulls-Chinese-model-waste-management/articleshow/35629063.cms

The Vilappilsala centralized waste treatment plant, which had been shut down, is likely to have a Chinese successor. The city corporation, which is keen on establishing a centralized waste treatment facility in the city, has decided to go ahead with Chinese model of waste management, which was presented in the Partner Kerala meet held in February. The total cost of the project would be Rs 60 crore and an area of 5 acres would be required for setting up the plant.

A letter has been forwarded to the state government and Suchitwa Mission seeking formal consent and information regarding availability of land in the city for the implementation of the project. Green Apple, a franchise of a waste management firm based in Bangalore, had done a presentation of the scheme for the heads of the standing committee and senior officials a month ago. A senior delegation from the corporation is expected to visit China where the plant now functions once the government gives the final nod.

North America

USDA supports renewable biomass energy

www.bioenergy-news.com/index.php?/Industry-News?item_id=7823

The US Department of Agriculture (USDA) has announced support for agriculture producers and energy facilities working to turn renewable biomass materials into clean energy. The support comes through the Biomass Crop Assistance Program (BCAP), which was reauthorized by the 2014 Farm Bill and will resume this summer.

The Farm Bill authorises \$25 million (€18 million) annually for BCAP, requiring between 10 and 50% of the total funding to be used for harvest and transportation of biomass residues. Traditional food and feed crops are ineligible for assistance. The Bill also enacted several modifications for BCAP, including higher incentives for socially disadvantaged farmers, and narrower biomass qualifications for matching payments, among other changes.

BCAP employs three types of biomass assistance. For growing new biomass, BCAP provides financial assistance with 50% of the cost of establishing a perennial crop. To maintain the crop as it matures until harvest, BCAP provides an annual payment for up to five years for herbaceous crops, or up to 15 years for woody crops. To collect existing agriculture or forest residues that are not economically retrievable, BCAP provides matching payments for mitigating the cost of harvesting and transporting the materials to the end-use facility.

The USDA Farm Service Agency (FSA), which administers BCAP, will coordinate BCAP enrollments. Information on funding availability will be published in an upcoming Federal Register notice.

European demand sees US wood pellet exports double

www.bioenergy-news.com/index.php?/Industry-News?item_id=7821

Wood pellet exports from the US almost doubled last year, from 1.6 million tonnes (approximately 22 trillion Btu) in 2012 to 3.2 million tonnes in 2013. This is according to the US Energy Information Administration.

Over 98% of these exports were shipped to Europe, and 99% originated from ports in the south eastern and lower Mid-Atlantic regions of the country. In 2008 it was predicted that around 80% of US wood pellet production was consumed domestically. However, Europe's strong demand growth for wood pellets has resulted in a rise in domestic wood pellet production for consumption internationally.

The majority of this growth has been in states located in the southeast of the US, which are advantageous in terms of abundant material supply and cheaper shipping costs to Europe. Last year, the top five importing countries of US wood pellets were: the UK, Belgium, Denmark, the Netherlands and Italy. The UK accounted for approximately 59% of these exports, more than tripling its imports from the US between 2012 and 2013.

Biomass growth capacity drops in US

www.bioenergy-news.com/index.php?/Industry-News?item_id=7825

Five new biomass plants with a total generation capacity of 10MW came online in the US last month, according to the Energy Infrastructure Update for April, published by the Federal Energy Regulatory Commission (FERC).

Since the start of 2014, 12 biomass-fired facilities producing a total 20MW of renewable energy have commenced operations. During the first four months of 2013, 35 biomass units generating 112MW opened.

As of the end of April, the US was producing 15.88GW of renewable energy from biomass. This is

approximately 1.37% of total US capacity.

Mercer looks to enter pellet trade

www.bioenergy-news.com/index.php?/Industry-News?item_id=7788

Mercer International, a pulp manufacturer based in Canada, is considering entering the market for ENplus pellets through its German subsidiary ZPR. ZPR, it has been reported, has contacted various central European pellets manufacturers seeking quotes on a purchase quantity of around 5,000 tonnes of either ENplus or DINplus pellets for June, July, August and September.

The pellets will then be stored, either in external intermediate storage facilities or directly in the manufacturers' storage capacities, with a plan to further market the pellets throughout the 2014/2015 winter.

Bluesphere commences 5.2MW waste-to-energy project in US

www.bioenergy-news.com/index.php?/Industry-News?item_id=7791

Bluesphere, a clean energy company that develops, manages and owns renewable energy projects, has started the detailed design and engineering work for its 5.2MW waste-to-energy plant in Charlotte in the US state of North Carolina. This detailed design and engineering work, which is expected to take about two months, is the first stage of project execution. It will be followed by work onsite.

Bluesphere is the project owner, developer and manager for the anaerobic digester. It will handle organic waste such as food and farm waste that would normally go into landfills. The facility generates revenues from intake of organic waste, as well as the sale of clean, renewable electricity, and the sale of compost.

Blue Sphere is developing its second US organics-to-waste facility in Rhode Island and, by 2018, plans to have 11 facilities built with six more under construction and development. The company has signed on to provide \$13.8 million (€10 million) in debt project financing for the facility and an environmental finance fund will provide equity project financing of \$9.1 million.

One of the largest power holding companies in the US has signed a long-term contract with Bluesphere to purchase electricity generated at the Charlotte plant. Compost, which is a by-product of the organics-to-energy generation process, will be purchased under a contractual agreement, by one of the largest privately held composting companies in the world.

FortisBC seeks energy innovators to grow BC's biogas supply

www.bioenergy-news.com/index.php?/Industry-News?item_id=7753#sthash.csbXUB2T.dpuf

FortisBC, a regulated utility company based in British Columbia, Canada, is seeking expressions of interest from potential biomethane suppliers for its renewable natural gas programme.

The company is seeking interest from suppliers for an additional supply of up to one petajoule, or enough natural gas to provide heat and hot water for ~10,000 homes annually. Two projects are currently supplying biomethane to FortisBC's system, with five others under development or construction. Capturing and using biomethane, which is the purified natural gas derived from biogas, significantly reduces greenhouse gases over simply allowing it to vent directly into the atmosphere, as is traditionally done at waste sites. Upgrading this biogas to pipeline-quality biomethane provides the additional benefit of replacing traditionally sourced natural gas for FortisBC customers.

The Glenmore Landfill in Kelowna is expected to begin supplying natural gas this year following

the completion of construction. The completion of these projects will mean that FortisBC will have an annual supply of up to about 500,000 gigajoules, enough to provide heat and hot water for approximately 5,000 homes.

Europe

Active Energy Group unveils biomass fuel granule technology.

www.bioenergy-news.com/index.php?/Industry-News?item_id=7818#sthash.mFizXvEz.dpuf

AEG Pelleting (AEGP), a newly incorporated subsidiary of pellet supplier Active Energy Group, has unveiled a biomass fuel granulated solution.

Using a newly developed pilot plant in Belfast, the granulation system has successfully converted industrial/agricultural by-products, including sawdust, into high value biomass fuel granules suitable for use in micro combined heat and power (CHP) commercial and residential boilers and large-scale power plants.

AEGP's system transforms sawdust into valuable biomass for energy fuel granules for use in power plants and micro CHP boilers, a market that AEGP's parent company, Active Energy Group, currently addresses via its European woodchip operations.

BioNitrogen opens initial plant in Florida

www.bioenergy-news.com/index.php?/Industry-News?item_id=7785

Cleantech company BioNitrogen Holdings, which utilises patented technology to build plants for the conversion of biomass to urea fertiliser, held a ribbon cutting ceremony on 14 May at the site of its initial plant in Hendry County, Florida.

Energy Works selects JV to build power plant

www.bioenergy-news.com/index.php?/Industry-News?item_id=7754

Energy Works, a £150 million (€184 million) renewable power plant to be built on a 12 acre site in Hull, the UK, has selected a joint venture partnership to design, build and operate the facility. MWH Treatment, part of US-based MWH Global, and engineering firm Spencer Group have combined to win preferred bidder status.

Energy Works has named the joint venture as preferred bidder to deliver an Engineer, Procure and Construct (EPC) wrap contract to deliver the first phase of the development, with construction due to begin early in 2015 and completion scheduled by March 2017.

The first phase of the development will be an energy recovery facility that will generate 28MW of electricity via gasification. It will provide sufficient electricity to power 43,000 homes, by processing materials which would otherwise be sent to landfill, while also reducing dependency upon imported fossil fuels. Phase two of the scheme will see the addition of an anaerobic digestion process.

The announcement comes just weeks after Hull made a significant step towards being recognised as the UK's capital of green energy following confirmation that manufacturing giant Siemens will invest £310 million, together with Associated British Ports, in offshore wind manufacturing sites in the city and on its eastern boundary.

Gasrec to open biogas filling station

www.bioenergy-news.com/index.php?/Industry-News?item_id=7842

Gasrec, a supplier of liquefied gas fuel for transport, has announced it will launch an 'open access bio-LNG filling station in the UK's southwest on 1 June. The new low emission station is part of a growing national network and will initially supply around 30 heavy goods vehicles (HGVs) run by a number of existing Gasrec customers.

The facility and others in Gasrec's network will help HGV fleet operators cut fuel and pollution costs and will assist the government to meet its long-term carbon reduction targets and improve air quality, particularly through the reduction in harmful SOx, NOx and particulate matter emissions.

The Bridgewater site will be a state-of-the-art pumped LNG filling station, supplying the company's proprietary low emission bio-LNG fuel. The flexible and modular facility will have the capacity to supply up to 80 vehicles per day although it will ultimately be expanded to replicate Gasrec's Daventry International Rail Freight Terminal, which is now capable of fuelling up to 700 gas vehicles daily.

Other Countries

Kleangas Energy to deliver 3,000 tonnes of wood pellets to Korea www.bioenergy-news.com/index.php?/Industry-News?item_id=7766

Kleangas Energy Technologies, an alternative clean technology company and distributor of wood pellets, has received a purchase order for 3,000 tonnes of G-Pel pellets. The pellets will be shipped from the Port of Long Beach in California, US to Korea. This is Kleangas's second Korean buyer.

EU firms keen to invest in Malaysia's biomass sector www.bioenergy-news.com/index.php?/Industry-News?item_id=7826

A number of European companies are interested in investing in Malaysia's 'lucrative' biomass sector, reports say, which is estimated at RM9.6 billion (€2.2 billion). Malaysia Biomass Industries Confederation president Datuk Leong Kin Mun was quoted as saying that investors have expressed interest in developing wood pellet manufacturing plants, biomass-fired power plants and methane capture biogas projects in the nation. However, he said, the challenges relating to feedstock supply mean they are hesitant to invest in such projects.

New initiative driving global approval of Byogy jet fuel www.bioenergy-news.com/index.php?/Industry-News?item_id=7734

Byogy Renewables and airline partner Avianca Brasil have launched an initiative to support advanced testing to accelerate ASTM approval of Byogy's renewable jet fuel.

This alcohol-to-jet (ATJ) renewable jet fuel is a full replacement fuel that does not require blending. It is different from 'drop-in' fuel, which comprises hydrocarbon additive products with oil-based jet fuel. Byogy's jet fuel is not an additive, but instead a full replacement, standalone fuel. This means it can be used at any blend ratio up to 100%.

The initiative will also study to validate the beneficial environmental impact achieved using the company's ATJ to satisfy the proposed ICAO 2050 Neutral Carbon Growth mandate for the country of Brazil by leveraging the existing and abundant sugarcane feedstock, as opposed to waiting for years before other agriculture feedstock industries are proven cost effective.

Finance & Investment

North America

USDA to open BCAP funding

www.ethanolproducer.com/articles/11080/usda-to-open-bcap-funding

The USDA has announced support for agriculture producers and energy facilities working to turn renewable biomass materials into clean energy. The support comes through the Biomass Crop Assistance Program, which was reauthorized by the 2014 Farm Bill and will resume this summer. The Farm Bill authorizes \$25 million annually for BCAP, requiring between 10 and 50 percent of the total funding to be used for harvest and transportation of biomass residues. Traditional food and feed crops are ineligible for assistance. The 2014 Farm Bill also enacted several modifications for BCAP, including higher incentives for socially disadvantaged farmers and ranchers, and narrower biomass qualifications for matching payments, among other changes

N.Y. to open fourth round of funding initiative

[www.biomassmagazine.com/articles/10359/n-y-to-open-fourth-round-of-funding Initiative](http://www.biomassmagazine.com/articles/10359/n-y-to-open-fourth-round-of-funding-initiative)

New York Gov. Andrew Cuomo has launched Round IV of the Regional Economic Development Council initiative, kicking off the 2014 competition for up to \$750 million in state economic development resources. The initiative has supported several bioenergy projects over the past three years.

The CFA enables businesses, municipalities, nonprofits and the public to apply for assistance from dozens of state funding programs through a single application. Of the \$750 million in state funding and tax incentives available through Round IV of the REDC initiative, the REDCs will complete for up to \$150 million in capital funds and \$70 million in Excelsior Tax Credits for projects and activities identified by the council as priorities in their regions.

The governor's office noted the remaining \$530 million from state agency programs will be awarded through the CFA process. The competition this year is expected to focus on the implementation of regional strategic economic development plans, performance in encouraging economic growth through job creation and investment, and identification of global marketing and export strategies.

Research & Development

North America

Algae biofuel can help meet world energy needs

www.zeenews.india.com/news/eco-news/algae-biofuel-can-help-meet-world-energy-needs_935319.html

Microalgae-based biofuel has the potential to quench a sizable chunk of the world's energy demands, scientists say. According to Utah State University mechanical engineering graduate student Jeff Moody, microalgae produces much higher yields of fuel-producing biomass than other traditional fuel feed-stocks and it doesn't compete with food crops. The research was published in the journal PNAS.

Using meteorological data from 4,388 global locations, the team determined the current global productivity potential of microalgae. Researchers estimate untillable land in Brazil, Canada, China and the US could be used to produce enough algal biofuel to supplement more than 30 per cent of those countries' fuel consumption.

Study of sweet sorghum to benefit proposed plant

www.ethanolproducer.com/articles/11086/study-of-sweet-sorghum-to-benefit-proposed-plant

U.S. EnviroFuels LLC, a company working to build a 30 MMgy advanced ethanol plant in Florida, will participate in a University of Florida-led project to study sweet sorghum as a feedstock for ethanol production.

A research team from the University of Florida was awarded a four-year, \$5.4 million USDA grant to study the crop's potential as an energy source earlier in May. Multiple varieties will be developed and assessed, looking at water consumption needs, growth in Florida soil, heat tolerance and the tolerance to disease and pests. Cellulosic ethanol will also be produced using a genetically engineered bacteria developed at the University of Florida.

Roadmap shows how to improve lignocellulosic biofuel production

www.ethanolproducer.com/articles/11083/roadmap-shows-how-to-improve-lignocellulosic-biofuel-production

The roadmap was published May 15 and Co-authors of the review included scientists from the National Renewable Energy Laboratory and Oak Ridge National Laboratory.

The growth of the cellulosic fuel industry has created a stream of lignin that the industry needs to find valuable ways to use. At the same time, federal agencies and industry are funding research to simplify the process of taking biomass to fuels.

Research highlighted in the review has shown it is theoretically possible to genetically alter lignin pathways to reduce undesirable byproducts and more efficiently capture the desired polysaccharides – which are sugars that can be converted to other products – and enhance lignin's

commercial value.

A new review article in the journal Science points the way toward a future where lignin is transformed from a waste product into valuable materials such as low-cost carbon fiber for cars or bio-based plastics. Using lignin in this way would create new markets for the forest products industry and make ethanol-to-fuel conversion more cost-effective.

Today, lignin is mostly burned for energy to fulfill a small amount of the power requirements of the ethanol biorefineries. But the new roadmap emphasizes how, through genetic engineering tools that currently exist, lignin could become much more valuable to industry. The science could be applied to a variety of plants currently used for cellulosic biofuel production, such as switchgrass and poplar.

Now, plants to power planes!

www.zeenews.india.com/news/eco-news/now-plants-to-power-planes_931019.html

Biofuels may soon become a low-cost and environment-friendly alternative to costly jet fuels as researchers have developed a new technology to transform lignocellulosic biomass into a jet fuel surrogate. Lignocellulosic biomass is an abundant natural resource that includes inedible portions of food crops as well as grasses, trees and other "woody" biomass.

The proposed technology hinges on efficient production of furfural and levulinic acid from sugars that are commonly present in lignocellulosic biomass.

These two compounds are then transformed into a mixture of chemicals that are indistinguishable from the primary components of petroleum-derived aviation fuels. The technology was demonstrated through a multi-university partnership that brought together expertise in biomass processing, catalyst design, reaction engineering, and process modelling.

The study thus offered a comprehensive approach towards streamlining biomass processing for the production of aviation fuels. The multi-university team was lead by George Huber, professor of chemical and biological engineering at the University of Wisconsin-Madison in the US. The study appeared in the journal Energy and Environmental Science.

Europe

UK researchers aim to convert oilseed straw into biofuels

www.ethanolproducer.com/articles/11099/uk-researchers-aim-to-convert-oilseed-straw-into-biofuels

Researchers at the Institute of Food Research are looking at how to turn straw from oilseed rape into biofuel. Preliminary findings are pointing at ways the process could be made more efficient, as well as how the straw itself could be improved.

Straw from crops such as wheat, barley, oats and oilseed rape is seen as a potential source of biomass for second generation biofuel production. Currently the U.K. produces around 12 million metric tons of straw.

UK report highlights economic impact of bioenergy, biofuels

www.ethanolproducer.com/articles/11051/uk-report-highlights-economic-impact-of-bioenergy-biofuels

The U.K.-based Renewable Energy Association has published the results of an analysis that determined the renewable energy supports more than 100,000 jobs in the U.K. and has attracted almost £30 billion (\$50.95 billion) in investment since 2010. The report, titled "Review—

Renewable Energy View: 2014," provides a breakdown of the economic impacts for biofuels, biogas, biomass energy and a variety of other energy categories.

The U.K. biomass power sector employed approximately 3,320 people in 2012/13 across the supply chain, with 170 U.K. companies active in the supply chain. Sector turnover was £500 million. Annual generation is expected to increase from 9,275 GWh in 2013 to 22,826 GWh in 2020. Installed capacity is expected to grow from 2,024 MW in 2013 to between 2,505 GW and 3,366 GW, depending on which government forecast is referenced.

According to the REA, biofuel consumption increased by an average of 3.8 percent per year from 2009 through 2013. However, without an improved policy framework, it seems unlikely the U.K.'s legally binding 2020 sub-target of 10 percent renewable transport will be achieved.

Climate & Environmental Change

India

[Experts to study climate change effects on people in deltas](http://www.zeenews.india.com/news/eco-news/experts-to-study-climate-change-effects-on-people-in-deltas_933924.html)

www.zeenews.india.com/news/eco-news/experts-to-study-climate-change-effects-on-people-in-deltas_933924.html

Researchers from five countries, including India, Egypt and Ghana, will study the effects of climate change on inhabitants of the Ganga-Brahmaputra deltas in Bangladesh and India, an expert said Wednesday.

Experts from the UK, Bangladesh, Egypt, Ghana and India will investigate regions, including the delta of the Nile in Egypt and the Ganga-Brahmaputra in Bangladesh and India, as part of the project 'Deltas, Vulnerability and Climate Change: Migration and Adaptation (DECCMA)' over five years.

In addition, two smaller deltas, the Mahanadi in Odisha and the Volta in Ghana, are also under the ambit of the project that seeks to gain insights into the adaptive strategies of these communities in the last 50-100 years.

Research program for studying effect of climate change on livelihoods in South Asia

www.timesofindia.indiatimes.com/home/environment/global-warming/How-will-climate-change-affect-livelihoods-in-South-Asia/articleshow/35617840.cms

An initiative by Britain and Canada seeks to study and tackle the effects of climate change in South Asia, in tandem with TERI and Jadavpur University in India and similar institutes in neighbouring Pakistan and Bangladesh.

Canada's International Development Research Centre (IDRC) and the UK's Department for International Development (DFID) have launched a research programme to "take a fresh approach to understanding climate change and find ways to adapt" in some of the hot spots.

The programme, named Collaborative Adaptation Research Initiative in Africa and Asia (CARIAA), a seven-year Canadian dollar 70 million research initiative, seeks to study the effects of climate change in three hot spots — semi-arid regions, river deltas and Himalayan river basins.

In semi-arid regions, for example in Madhya Pradesh, where there is relatively high temperature and the rainfall hovers between 300-700 mm a year, rise in temperature can badly hit cropping patterns, said the researcher.

The Energy and Resources Institute (TERI) of India is involved in the study of climate change in Himalayan river basins. The Jadavpur University is involved in the study of deltas, while the Indian Institute for Human Settlements is working in the field of semi-arid areas. These institutes are working in partnership with institutes in Bangladesh and Pakistan to address the issues of climate change.

North America

Report says, Climate Change poses growing national-security threat www.time.com/98798/climate-change-security-threat-us/

A new report published by the Center for Naval Analyses Military Advisory Board this week finds that climate change is a "catalyst for conflict" and a "threat multiplier," proving to be a growing threat not only to the environment but also U.S. national security

Climate change does not only threaten the environment but also U.S. national security, according to a new study.

Global warming presents the U.S. with several security threats and has led to conflicts over food and water because of droughts and extreme weather, says the report, which was written by a dozen retired American generals and published by the Center for Naval Analyses Military Advisory Board on Tuesday.

The authors of National Security and the Threat of Climate Change urge U.S. policymakers to act quickly. "The increasing risks from climate change should be addressed now because they will almost certainly get worse if we delay," they say.

Researchers to innovate new ways to track carbon dioxide across the globe www.climate.gov/news-features/decision-makers-toolbox/tracking-carbon-dioxide-across-globe

Scientists at NOAA's Earth Systems Research Laboratory created CarbonTracker: a carbon dioxide measuring and modeling system that tracks sources and sinks around the globe. Between burning fossil fuels and clearing forests, humans emit far more carbon dioxide than Earth's natural physical and biological processes can remove from the atmosphere. Fundamental to any attempts to understand, slow, or reverse the build up of atmospheric carbon dioxide is a global accounting of where it's released and stored.

Europe

Adverse weather conditions for European wheat production will become more frequent with climate change www.nature.com/nclimate/journal/v4/n7/full/nclimate2242.html

Europe is the largest producer of wheat, the second most widely grown cereal crop after rice. The increased occurrence and magnitude of adverse and extreme agroclimatic events are considered a major threat for wheat production.

Recent global warming has markedly shifted the distribution of temperature variability and extremes, and precipitation patterns, although uncertainty remains regarding the relationship between global warming and climatic variability. These shifts have consequences for the production environments of most crops, including wheat, which is globally the second most widely grown cereal crop after rice.

A recent study showed that, by 2030, we should expect a twofold increase in the global wheat-growing area threatened by extremely high temperatures during critical developmental stages in a typical year, and a more than threefold increase of the area at risk by 2050. Other studies project, a significantly higher frequency of extremely unfavourable years under future climate conditions,

possibly resulting in poor economic returns in many European regions.

Other Countries

Record rains turned Australia into a giant green global carbon sink

www.theguardian.com/commentisfree/2014/may/22/record-rains-turned-australia-into-a-giant-green-global-carbon-sink

New research shows that semi-arid regions, such as Australia, will play growing role in Earth's carbon cycle. Record-breaking rains triggered so much new growth across Australia that the continent turned into a giant green carbon sink to rival tropical rainforests including the Amazon, our new research shows. Unexpectedly, the largest carbon uptake occurred in the semi-arid landscapes of Australia, Southern Africa and South America.

West Antarctic glacier loss appears unstoppable

www.climate.nasa.gov/news/1088/

A new study by researchers at NASA and the University of California, Irvine, finds a rapidly melting section of the West Antarctic Ice Sheet appears to be in an irreversible state of decline, with nothing to stop the glaciers in this area from melting into the sea.

The study presents multiple lines of evidence, incorporating 40 years of observations that indicate the glaciers in the Amundsen Sea sector of West Antarctica. The new study has been accepted for publication in the journal *Geophysical Research Letters*.

These glaciers already contribute significantly to sea level rise, releasing almost as much ice into the ocean annually as the entire Greenland Ice Sheet. They contain enough ice to raise global sea level by 4 feet (1.2 meters) and are melting faster than most scientists had expected. Rignot said these findings will require an upward revision to current predictions of sea level rise.

Three major lines of evidence point to the glaciers' eventual demise: the changes in their flow speeds, how much of each glacier floats on seawater, and the slope of the terrain they are flowing over and its depth below sea level. In a paper in April, Rignot's research group discussed the steadily increasing flow speeds of these glaciers over the past 40 years.