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**EGU Tip Sheet**

# Climate, disasters, and biofuels—new research from IIASA

For more information please contact the researcher directly, or for assistance, contact Katherine Leitzell, IIASA press officer, at leitzell@iiasa.ac.at or +43 676 83807316.

**Monday, 8 April**

## Limitation of biofuel production in Europe from the forest market

The European Union has set a 10% target for the share of biofuel in the transportation sector to be met by 2020. To reach this target, second generation biofuel – biofuel produced from plants like trees, agricultural residue, or waste – is expected to replace 3 to 5% of the transport fossil fuel consumption. But the competition for the feedstock against the existing woody based industries, like pulp and paper mills or combine heat and power plants, becomes a major issue. IIASA's **Sylvain Leduc** and colleagues identify the ideal locations and policy for producing biofuels in Europe, by minimizing the cost and emissions of biofuel production chain.

10:45-11:00, Monday, 8 April
*ERE 1.7: Aspects of sustainable biomass utilization for energy and industrial raw materials*
Abstract: EGU2013-4125
Contact: Sylvain LeDuc

## Impact of current policies on future air quality and health outcomes in Delhi, India

Current air quality policies are not enough to address growing air pollution in Delhi, according to new IIASA research presented at EGU. The study showed that more stringent policies will be needed to address air pollution, which has major impacts on health in the region. In addition, the study showed, policies that focus on climate change could lead to further improvements in air quality. The study, which was led by IIASA 2012 Young Scientists Summer Program participant **Hem Dholakia**, analyzed policy options for controlling future air pollutant emissions in the city of Delhi using IIASA's GAINS model. IIASA researcher **Shilpa Rao and Pallav Purohit** will present the study.

15:45-16:00, Monday, 8 April, Room B10
*AS3.6: Megacities: Air Quality and Climate Impacts from Local to Global Scales*
Abstract: EGU2013-8830
Contact: Shilpa Rao, Pallav Purohit, Hem Dholakia

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**IIASA Tip Sheet**

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**Tuesday, 9 April**

## Greenhouse gas emissions from human land-use

Not only do humans emit greenhouse gases into the atmosphere, but they also do things that help remove these gases from the atmosphere—for example, planting more forests or other land management techniques can lead to greater uptake of greenhouse gases from the atmosphere. IIASA researcher **Hannes Böttcher** will present new results that combine all these land uses, estimating net land use emissions for the European Union. These scenarios provide the basis for policy discussions in the EU, and also help identify the least costly mitigation options for addressing climate change in Europe. Böttcher will participate in a press conference at 10am on Wednesday, 10 April to discuss his findings.

09:00-09:15, Tuesday, 9 April
*BG2.11 Greenhouse gas fluxes in managed ecosystems and regions*
Abstract: EGU2013-4501
Contact: Hannes Bottcher

## The potential of soil for mitigating climate change

Certain agricultural practices can increase the amount of carbon stored in soils, a benefit for climate mitigation as well as for soil quality. IIASA researcher **Stefan Frank** will present new results calculating the potential of soil carbon sequestration in Europe for climate change mitigation. The study, which uses the integrated Global Biosphere Management Model (GLOBIOM), identifies management systems and crop rotation strategies that can lead to the greatest carbon uptake.

13:45-14:00, Tuesday, 9 April
*SSS8.2 Land use change and land management impacts on soil organic carbon: From process understanding to regional assessments*
Abstract: EGU2013-4683
Contact: Stefan Frank

**Wednesday, 10 April**

## Behavioral bias and disaster preparedness

Behavioral bias and disaster preparedness The way people perceive risks affects how decision makers plan for and assess multi-hazard risks and implement mitigation measures, according to new research by IIASA's **Nadejda Komendantova** and **Anthony Patt**. Komendantova will present results from three case studies: The Kobe earthquake of 1995, the Sumatra-Andaman earthquake in 2004, and the 2011 Tohoku earthquake. The authors found that behavioral bias influenced disaster response and preparedness in all three cases. For example, they found that in Sumatra-Andaman, cyclone shelters could have been adapted for other types of hazards such as tsunamis and flooding. But because people perceived a tsunami as unlikely, they did not take action that could have saved many lives. Taking into account the

presence of behavioral and cognitive biases in addition to engineering science could therefore improve synergies in multi hazard risk mitigation measures. Komendantova will also participate in a press conference on Wednesday, 10 April.

15:30-15:45, Wednesday, 10 April
*H9.9 Multi-hazard natural and technological risks: assessment and impacts*
Abstract: EGU2013-1538
Contact: Nadejda Komendantova

**Thursday, 11 April**

## Global change and landscape in Ukraine

Ukraine must develop up to 1.62 million hectares more forests in order to adapt successfully to climate change, according to new research presented by **Anatoly Shvidenko**. Ukraine currently faces many ecological challenges, including soil erosion, water contamination, air pollution, and leftovers from the Chernobyl disaster. The country is predicted to become substantially warmer and drier by the end of the century, making the current environmental problems even worse. Shvidenko's research shows that a transition to sustainable forest management practices could have positive benefits both for the economy and for the environment.

13:30-13:45, Thursday, 11 April
*BG5.2 Environmental, Socio-economic and Climatic Changes in Northern Eurasia and their Feedbacks to the Global Earth System*
Abstract: EGU2013-10627
Contact: Anatoly Shvidenko

## Assessment of Costs for a Global Climate Fund

A new global assessment of weather related disaster risks could help countries better prepare for the financial impacts of weather events. Today, a majority of money spent on disaster response comes after the fact, reacting rather than anticipating disasters. A growing body of research suggests that money may be better spent by anticipating disasters and investing in systems that could reduce damage or lessen the follow on consequences – for example some have proposed a "global climate fund" that could serve as a sort of insurance for disaster response of high level country risks or to finance risk reduction efforts. But to do that, governments need a lot more information about the likelihood and potential cost of disasters. IIASA's **Stefan Hochrainer-Stigler** provides that information in a new analysis for 180 countries that includes probabilistic assessments of extreme weather events as well as the financial resilience of a given country. Hochrainer-Stigler will participate in a press conference on this research on Wednesday, 10 April.

14:30-14:45, Thursday, 11 April
*NH9.13 Global risk assessment for natural hazards: methods and practice*

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Abstract: EGU2013-10627
Contact: Stefan Hochrainer-Stigler

## The economics of disaster risk management

While there are many good arguments for disaster risk management (DRM) – a strategy for estimating and preparing in advance for potential disasters – there are few hard facts regarding the economic case for risk reduction. A comprehensive review by IIASA's **Reinhard Mechler** shows that DRM indeed pays across a range of hazards and DRM interventions. The study shows that the benefits of investing in DRM outweigh the costs by as much as 4 times, when avoided and reduced losses are taken into account. While governments around the world are tightening their budgets, this analysis shows that even in hard times, DRM should be an important priority for investment. Reinhard Mechler will participate in a press conference on this research on Wednesday, 10 April.

15:30-15:45, Thursday, 11 April
*NH9.3: The costs of natural hazards*
Abstract: EGU2013-12728
Contact: Reinhard Mechler

**Friday, 12 April**

## Sustainable productivity of soils: a question of balance

Unlike other regions of the world, Africa has struggled to increase crop yields. New research from IIASA and the International Food Policy Research Institute recently published in *PLoSONE* identified inexpensive and effective methods to increase yields, showing that applying small amounts of both phosphorous and nitrogen could improve crop yields substantially. The study, presented by IIASA researcher **Marijn van der Velde**, uses a historical database of 1358 FAO crop fertilizer trials in Africa and South America, analyzing the data using systematic modeling tools. Phosphorus generally is the limiting nutrient in these weathered soils with 76% of the crop trials showing stronger crop yield response to phosphorous than nitrogen additions. The study further showed that affordable and balanced micro-dosing of nitrogen and phosphorus at 10 kg/ha could save between 4 and 25 million hectares of cropland, or potentially feed between 64 and 150 million people in South America and Africa respectively.

14:30-14:45, Friday, 12 April
*SSS10.3 Organic farming and Sustainable productivity of soils: a question of balance*
Abstract: EGU2013-7282
Contact: Marijn van der Velde

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## Posters

### Fire risk and adaptation strategies in Northern Eurasian forests

Abstract: EGU2013-10406
Anatoly Shvidenko and Dmitry Schepaschenko
Thu, 11 Apr, 17:30–19:00, Room G5

### Impact of past and future climate variability and extreme events on carbon loss in European arable agriculture

Abstract: EGU2013-8395
*Juraj Balkovic*, Marijn van der Velde, Nikolay Khabarov, and Christian Beer
Fri, 12 Apr, 08:30-12:00, Room G4

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**About IIASA:**

IIASA is an international scientific institute that conducts research into the critical issues of global environmental, economic, technological, and social change that we face in the twenty-first century. Our findings provide valuable options to policy makers to shape the future of our changing world. IIASA is independent and funded by scientific institutions in Africa, the Americas, Asia, Oceania, and Europe.
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