

## Workshop on negative emissions: Bridging societal and mitigation needs

Date: Sept. 2<sup>nd</sup>- 5<sup>th</sup> 2015; Venue: Hokkaido University; Convener: GCP Tsukuba Office/[MaGNET](#)

**Background:** Negative emissions are an important aspect of most 2°C pathways in the Fifth Assessment Report (IPCC, AR5, WGIII, 2014), yet many aspects of large-scale deployment of bioenergy with carbon capture and storage (BECCS), soil carbon storage, enhanced weathering, direct air capture (DAC) etc. remain uncertain (Smith et al., submitted; Fuss et al., 2014). In particular, it is important to broaden the climate change mitigation perspective to take other policy objectives on board. In this workshop, we will therefore focus on the **negative emission technologies that are potentially at conflict with delivering on sustainable development objectives**<sup>1</sup>. These are typically those options that demand large areas of **land**, e.g. to grow huge feedstock of biomass for bioenergy, but we need to keep in mind that other options such as enhanced weathering with its large material flows and direct air capture with its high energy intensity have their own respective bottlenecks as well. In this workshop, we will try to zoom into these different policy objectives. This can only be done by combining top-down assessments with bottom-up geographically explicit approaches.

### Day 1, Wednesday 2<sup>nd</sup> September 2015

The first day of the workshop has as its main objective **capacity building** (e.g. at universities, research facilities) and **outreach** to possible stakeholders both in terms of policymakers and in terms of those parts of industry that would implement NETs. The NE technology currently mostly deployed in ambitious stabilization pathways is BECCS, i.e. capacity building drawing on multiple disciplines (land use planning, integrated assessment modeling, social sciences, geological and bio-geochemical engineering, policy analysis etc.) is needed, while also working at the science-policy interface in order to bring new scientific insights to the awareness of the public, the private sector and policy-makers.

<b>Open seminar (3-hour open symposium with registered guests from academia, government and business)</b>		
13:30-13:40	Welcome address and workshop outline/rationale	Hokkaido Univ. / NIES
13:40-14:10	The Need for Negative Emissions	Sabine Fuss and Pete Smith
14:10-14:30	From Global Biomass Issues to the Japanese situation	Florian Kraxner
14:30-14:50	2 <sup>nd</sup> generation agricultural biomass	Etsushi Kato
14:50-15:00	<i>Coffee break</i>	
15:00-15:20	Current trends and issues in utilizing biomass energy in Hokkaido, Japan (incl. 5 mins. Q&A)	Masahiko Fujii
15:20-15:40	CCS pilot in Tomakomai - Introduction of CCS and negative emissions	Atsushi Kurosawa
15:40-16:00	CCS in Korea	Yowhan Son
16:00-16:30	Panel discussion	All

### Day 2, Thursday 3<sup>rd</sup> September 2015

*The second day's program is closed for public participation. It is only open to GCP and selected experts.* The objective is to present work on negative emission options in current scenarios that are in conflict (or not!) with other land-related policy objectives (other mitigation strategies, achievement of SDGs, etc.).

<b>Morning (chairs: Florian Kraxner, Yoshiki Yamagata; rapporteur: Sabine Fuss)</b>		
09:00-09:20	Welcome address and workshop outline/rationale	Chairs
09:20-09:50	The use of carbon capture and storage in mitigation scenarios – an integrated assessment modelling perspective	Detlef van Vuuren
9:50-10:20	Negative emissions in the AR5 scenarios and the interaction with SDGs	Volker Krey
10:20-10:40	Japanese IAMs: different implications for NE and energy security	Atsushi Kurosawa, Shunsuke Mori
10:40-11:00	<i>Coffee break</i>	

<sup>1</sup> <https://sustainabledevelopment.un.org/sdgsproposal>

11:00-11:30	Implications of NE for sustainability (ecosystem services, water, SDGs, etc.)	Yamagata, Hanasaki, Aoki
11:30-12:30	Brainstorming and discussion: <ul style="list-style-type: none"> <li>What can we already say about impacts on SDG based on current scenarios, what are the gaps?</li> </ul>	All

Lunch break (12:30-14:00)

<b>Afternoon (chairs: Sabine Fuss, Ayyoob Sharifi; rapporteur: Florian Kraxner)</b>		
14:00-14:30	Limits to BECCS	Pete Smith
14:30-15:00	Trade-offs between biomass supply, land use related mitigation options and other societal goals: Insights from a global, bottom-up land use model (GLOBIOM)	Petr Havlik
15:30-16:00	<i>Coffee break</i>	
16:30-17:00	Japanese land use modeling and insights of low stabilization pathways and SDG implications	Yamagata, Kato, Kinoshita, Ito
17:00-18:00	Brainstorming and discussion: <ul style="list-style-type: none"> <li>What can we already say about impacts on SDG based on current scenarios, what are the gaps?</li> </ul>	All

### Day 3, Friday 4<sup>th</sup> September 2015

The objective is to synthesize the input from day 2, develop a storyline for a potential output and look into tools for the actual planning/implementation of large-scale NET deployment given local specificities. Other NETs than afforestation and BECCS can be part of the discussion.

<b>Morning (chairs: Volker Krey, Pete Smith); rapporteurs: S. Fuss, F. Kraxner</b>		
09:00-09:30	Report by rapporteurs	Rapporteurs
09:30-10:00	Discussion on storyline for possible product	All
10:00-10:30	<i>Coffee break</i>	
10:30-10:50	From global to local planning of BECCS	Florian Kraxner
10:50-11:10	Other sustainable NE options (Biochar, etc.)	Pete Smith
11:10-11:50	Final discussion and plan ahead	All
11:50-12:00	Wrap-up and closing	Yoshiki Yamagata, Sabine Fuss

In the afternoon, we will leave for an optional excursion to CCS pilot close to Hokkaido. **More information about the CCS plant in Tomakomai area can be found [here](#).**

### Day 4, Saturday 5<sup>th</sup> September 2015

The objective is to look into some other technological and governance aspects of NETs, synthesize the workshop results, and have open discussion on funding opportunities, papers, etc.

<b>Co-chairs: Sabine Fuss, Yoshiki Yamagata; rapporteur: Ayyoob Sharifi</b>		
ESM perspective/Technology/Ecosystem assessment of NETs		
09:00-09:20	Can we achieve 2 degree target after overshoot?	Yoshiki Yamagata
09:20-09:40	CCS assessment: Presentation on Korean CCS case study	Hyeon Min Christine Yun
Regulation/Governance of NETs		
09:40-10:00	Earth System Governance reflections on Negative Emission Technologies	Ruben Zondervan
10:00-10:30	<i>Coffee break</i>	
Future directions of MaGNET		
10:30-12:00	First round of discussions (funding opportunities)	All
12:00-13:00	<i>Lunch</i>	
13:00-15:00	Second round of discussions (Possible paper draft)	All