

## Newsletter from the SUCCESS centre – December 2012 – no. 6

### Impressions from GHGT: CCS: Not if – just how, when and where

The biennial convention *Green House Gas Technology* (GHGT), hosted by the International Energy Agency (IEA), may well be rated as the most important event to attend if one wants to stay updated on what's hot and who is involved in research and development concerning Carbon Capture and Storage (CCS) around the world. The 11th GHGT conference was held in Kyoto in November. SUCCESS and Norway in general (e.g. Statoil, Gassnova, NPD) were represented in strength.

The Kyoto International Conference Center was beautifully framed by autumn foliage and filled to the brim welcoming an impressive 1600 GHGT participants. Fittingly, these were the same grounds where much of the political foundation for today's CCS activity was laid fifteen years ago, during the negotiations for the Kyoto protocol.

The GHGT is an arena where scientists from the industry and academia, as well as stakeholders and economists, meet and discuss challenges. During the breaks between technical sessions, there was a constant buzz from opinions being shared and agreed or disagreed upon. There was an overall feel of positivity regarding CCS feasibility – as elegantly phrased by one of our students, Helle; there seems to be a question of *not if – just how, when and where*.

Researchers are starting to become impatient to put theory into practice, however, waiting for the real, large scale projects to be initiated. Therefore, public acceptance and economy were recurrent topics

So what's new in the field of CO<sub>2</sub> storage? Since the previous GHGT gathering in Amsterdam a lot has been going on. Australian CRC has become a big player in CCS. A lot of new data from the Ketzin project in Germany and Weyburn in Canada has been compiled, as well as further experiences from Norwegian veterans in CCS; Sleipner, Snøhvit and In Salah.

SUCCESS contributed with ten posters and presentations (list of titles given on page 4), with participants from UiO, NGI, IFE and UiB. Scientific content spans multiple fields, e.g. geological reservoir characterization, mathematical models, monitoring and geochemical trapping. The final papers will be published early in 2013 through *Energy Procedia* as GHGT-11 conference proceedings. These findings and the work within SUCCESS in general will gain further importance in the near future during upcoming discussions and investigations of the potential for a large scale European storage hub in the North Sea. Exciting times for CCS, both nationally and globally.

*More on last page*

A.S.

*Happy SUCCESS delegates attending the GHGT conference dinner. From the left; Helle Botnen, Per Aagaard, Arne Dugstad, Helge Hellevang, Van Pham, Anja Sundal, Eyvind Aker, Anne Gunn Rike, and Hilde Hvidevold (Photo: E.S. Aagaard)*



## A SUCCESS look at Zero12:

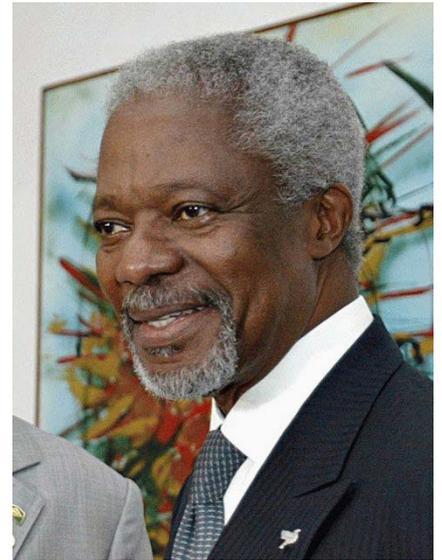
# Going banana and leaving the Stone Age

ZERO – the Zero Emissions Resource Organisation – a Norway-based independent not-for-profit foundation working for zero emission solutions to the global climate challenge – arranged its 7th annual conference on November 19th and 20th in Gardermoen. This is a gathering where representatives from the industry, policy makers and other stakeholders (as e.g. SUCCESS researchers) meet and learn from each other.

The keynote speakers this year were, among others, UN hotshot Kofi Annan, Prime Minister Jens Stoltenberg, Minister of Environment Bård Vegar Solhjell and the CEO of Statkraft, Christian Rynning-Tønnesen. The importance of conservation of forests was emphasized together with the need to save energy. The speakers all agreed that it is vital that we continue our effort in the development and installation of renewable energy.

The conference had a session on carbon capture. Perhaps it would be a challenge for SUCCESS to add storage to the future ZERO conference agendas.

One of several sessions was about the Doha Climate Change Conference and the challenges this meeting will encounter. We must hope that Kofi Annan were right when he said; “When leaders fail to lead, the people will make them follow”.



*Kofi Annan (Photo: Ricardo Stuckert/ Agência Brasil/ Wikimedia Commons)*

## – The Stone Age didn't end because we ran out of stones

As a warm-up for the ZERO12 conference, a seminar on climate communication was arranged. Among the speakers were Per E. Stoknes from BI Norwegian Business School and Ed Gillespie, co-founder of Futerra, a communication company which goal is to “make sustainable development so desirable it becomes normal”.

Stoknes talked about the climate paradox; while the amount of disturbing climate facts increases, the concern among people falls. He explained this paradox by the fact that climate change feels distant, that little action among the politicians weakens people's attitudes, that dissonance leads to denial, and that the solutions are presented as “cost and sacrifice”. He suggested new psychological solutions to stop the climate paradox: By using the strength in social networks, like comparing energy consumption with neighbors, people will be trig-

gered to use less electricity. He also stated that it must be easier to choose climate-friendly products.

Gillespie gave an inspiring and humorous talk about the importance of “selling the sizzle” when communicating climate change; “Instead of selling the dead pig, we must sell the smell of the sausage!” Public discourse about climate change has resulted in an erroneous idea that it is all about cost and sacrifice. Gillespie inspired us to start selling the idea of an en- >>

*Ed Gillespie also commented on literature in his lecture. See all his slides at <http://www.zerokonferansen.no/lastned-presentasjonene-fra-zero12>*



*Fifty Shades of Green*

## The SUCCESS Scientific Advisory Committee:

### First gathering

The SUCCESS Centre's Scientific Advisory Committee (SAC) consists of four members: **Claus Otto** from Exploratory Research and CO<sub>2</sub> Solutions in Shell, **Dag Nummedal** from Colorado School of Mines, **Nick Riley** from British Geological Survey, and **Stefan Bachu** from CO<sub>2</sub> Geological Storage at Alberta Research Council.

The Committee held its first meeting in Bergen, November 5th, where three of the members were present. They had access to Annual reports and Work Plans before the meeting and were given an introduction to the Centre by the Centre Manager, followed by short presentations of each of the Work Packages leaders. In addition, it was time for questions from the committee.

The meeting had a nice atmosphere and was characterized by good dialogue and constructive discussions. The Committee had a second gathering during the GHGT Conference in Kyoto later in November.



*Blue skies above. SAC together with the two scientific leaders of SUCCESS. From left: Ivar Aavatsmark, Nick Riley, Claus Otto, Dag Nummedal and Per Aagaard.*



Environmentally friendly way of living as a cheap insurance for things we appreciate in life, like clean air, green fields and a planet worth giving over to the next generation. He also spoke about the difficulty of developing energy projects since people tend to go BANANA (Build Absolutely Nothing Anywhere Near Anyone) and NIMBY (Not In My Back Yard). The paradox is that people living far away from energy projects, like wind turbines, tend to be more negative towards them than people living near them.

To make people choose a green living, we must make sure to sell the sizzle and make it easier to choose climate-friendly products. His encouraging conclusion was that we should keep in mind that the Stone Age didn't end because we ran out of stones.

*T.F.L.*

### Climit Days 2013

The Climit Days has become an important gathering for people working with different aspects of CO<sub>2</sub> handling. In 2013 this event is in Oslo February 25th–26th. The headline this year will be “co-operating for new and innovative solutions”. Another key issue will be an introduction to the new Climit program plan.

Read more: [http://www.climit.no/velkommen-til-climit-dagene-2013/?publish\\_id=1425&year=2012](http://www.climit.no/velkommen-til-climit-dagene-2013/?publish_id=1425&year=2012).

### The SUCCESS winter workshop

is set to March 11th–12th, and will take place in the Bergen area. The winter workshop is an annual SUCCESS event, mostly focusing on the work of students and junior researchers in the project. More info will follow.

# More Kyoto impressions

## **SUCCESS presentations at GHGT:**

Angeli et al. (UiO): Evaluating seal quality for potential storage site in the North Sea

Baig et al. (UiO): Potential Triassic and Jurassic CO<sub>2</sub> Storage Reservoirs in the Skagerrak–Kattegat Area

Botnen et al. (UiB): PVTx properties of a two-phase CO<sub>2</sub> jet from ruptured pipeline

Dugstad et al. (IFE): Effect of SO<sub>2</sub> and NO<sub>2</sub> on corrosion and solid formation in dense phase CO<sub>2</sub> pipelines

Dugstad et al. (IFE): Corrosion in dense phase CO<sub>2</sub> – the impact of depressurisation and accumulation of impurities

Hellevang et al (UiO): On uncertainties in modeling CO<sub>2</sub>–brine–caprock interactions

Hvidevold et al. (UiB): Assessing model uncertainties through proper experimental design

Park et al. (NGI): CSEM sensitivity study for Sleipner CO<sub>2</sub>-injection reservoir monitoring

Rike et al. (NGI): Metagenomics in CO<sub>2</sub> monitoring

Sundal et al. (UiO): Effects of geological heterogeneity on CO<sub>2</sub> distribution and migration – A case study from the Johansen Formation



*From left: Kyoto autumn foliage (photo: A. Sundal); Per Aagaard presenting Baig et al. at the GHGT poster session (photo: V. Pham); The intimidatingly huge main hall of KICC (photo: wallpaper.com)*



*The SUCCESS team wishes all readers a SUCCESSful holiday and a researchful new year!*

**SUCCESS (Subsurface CO<sub>2</sub> Storage – Critical Elements and Superior Strategy)** is one of several Norwegian centres for environment-friendly energy research, funded by the Norwegian Research Council and industry partners. For more info and contact address: [www.fme-success.no](http://www.fme-success.no).

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