



IEAGHG International CCS Summer School Series

Tim Dixon

27th November 2012

COP-18, Doha, Qatar

IEA Greenhouse Gas R&D Programme



- A collaborative international research programme founded in 1991
- Aim: To provide information on the role that technology can play in reducing greenhouse gas emissions from use of fossil fuels.
- Focus is on Carbon Dioxide Capture and Storage (CCS)
- Producing information that is:
 - Objective, trustworthy, independent
 - Policy relevant but NOT policy prescriptive
 - Reviewed by external Expert Reviewers
- Activities: Studies and reports (>250); International Research Networks: **Risk, Monitoring, Modelling, Wells, Environmental Assessment, Oxy, Capture, Social Research, Solid Looping**,; GHGT conferences; IJGGC; facilitating R&D and demonstrations eg Weyburn; Summer School; peer reviews.





Objectives



- To improve CCS-knowledgeable human resource
 - To educate young researchers in all CCS areas
 - Broadens knowledge base
 - Wider context
 - To inspire young researchers to make career of CCS
 - To create CCS-awareness
 - To create global network of peers
- Travel and accommodation fully-funded



Rationale



- Shortage of education and training in CCS
- Growing need for expertise
- Anticipated future employment levels
- Level of student applications
- Host offers
- Impact – surveyed in late 2010:
 - 73/110 respondents still in CCS
 - > 12 moved into in CCS careers
 - (But too early in their careers to really assess)



Curriculum



Technical

- CO2 Capture
- CO2 Transport
- CO2 Storage
 - Storage mechanisms
 - Leakage pathways
 - Monitoring
 - Modelling
- CO2 Utilisation
- Safety
- Environmental Impact/Assessments

- Risk Assessment
- Capture from Industrial sources

Non-Technical

- Economics and Finance
- Legal and Regulatory
- Policy
- Public Engagement
- NGO perspectives



Group work



- Team work on specific topic or question
- Objective: Provide comprehensive approach to assessment and evaluation of the question or issue posed to your group
 - No 'right' or 'wrong' answer
 - Teams are **multidisciplinary, multinational, multicultural**
 - Will require research, collaboration, integration of collective skills, sharing of knowledge
 - Listening
 - Compromise
 - Consensus



Working groups



- **G1:** Can CCS be applied to small and medium CO₂ sources and sinks?
- **G2:** Can societal acceptance of CCS be addressed?
- **G3:** Can China set up a series of regionally integrated CO₂ capture, transport and storage networks?
- **G4:** Can CCS be made part of a commercially viable integrated, sustainable and secure energy system?
- **G5:** Is CCS a viable option for developing countries?
- **G6:** Should CCS be mandatory in the developed world?



IEAGHG International CCS Summer Schools



- 2007 - Germany, FzJ, Kloster Seeon
- 2008 - Canada, University Regina, Vancouver Island
- 2009 – Australia, CO2CRC, Lorne
- 2010 – Norway, NTNU-SINTEF, Svalbard
- 2011 – USA, ISGS, Champaign
- 2012 – China, Tsinghua University, Beijing
- 2013
- 2014

Phase 1

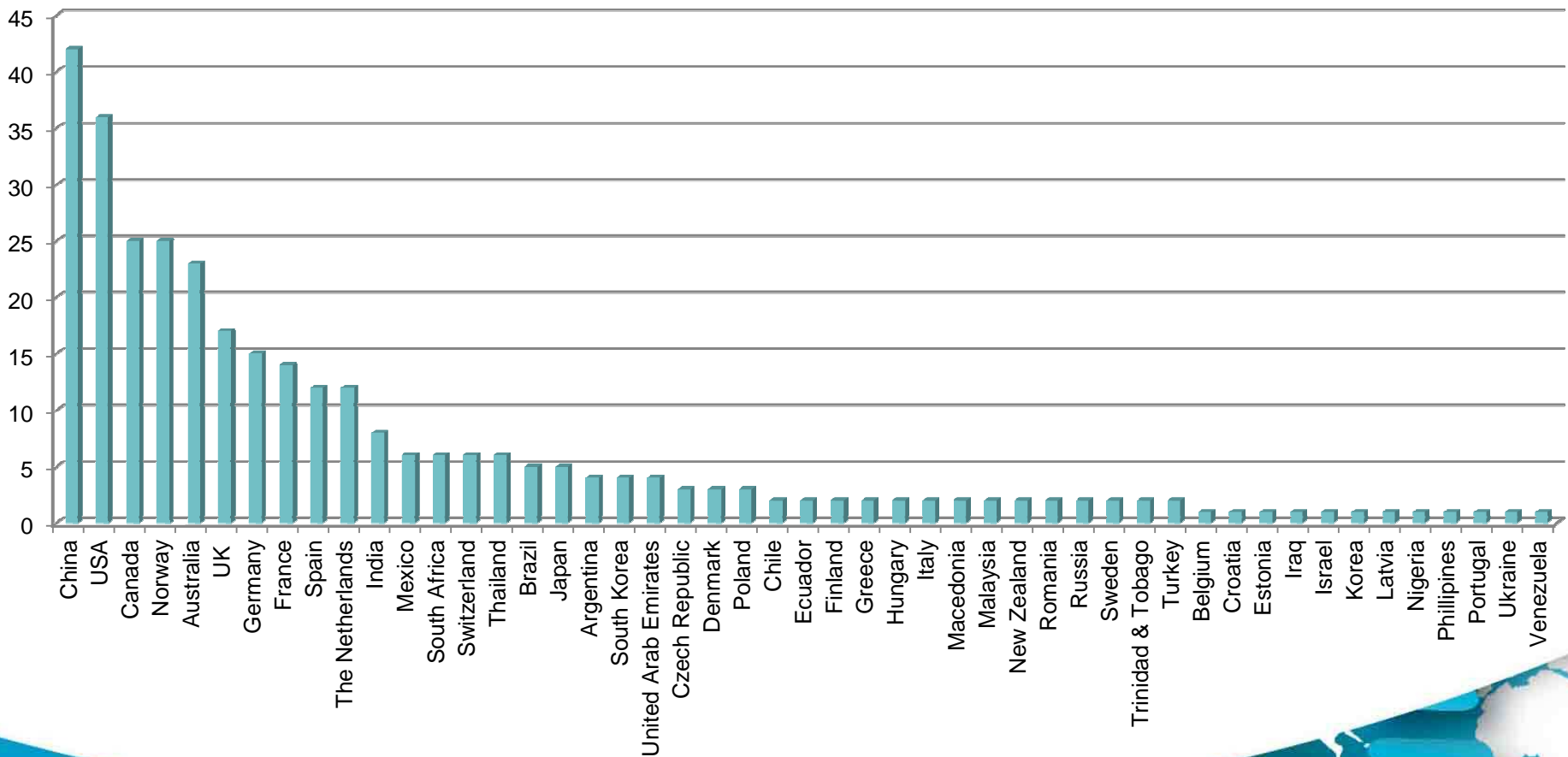
Phase 2



Alumni



326 students from 49 countries
28% from developing countries



Svalbard 2010



- 4th International Interdisciplinary CCS Summer School in Longyearbyen, Svalbard August 2010
 - 221 applications received and 56 students were selected, from 32 countries: 48% from developing countries



Field work



International CCS Summer School 2011 Champaign, Illinois



- 5th International Interdisciplinary CCS Summer School in Champaign, Illinois July 2011
 - Hosted by STEP & MGSC
 - 53 students from 25 Countries: 21% from developing countries
 - 29 Experts and 2 student mentors



International CCS Summer School 2012 Beijing, China



- 6th International Interdisciplinary CCS Summer School in Beijing, August 2012
 - Hosted by Tsinghua University
 - 47 students from 18 Countries and 22 nationalities: 51% developing countries
 - 19 Expert Mentors

Agenda



- Usual topics on capture, transport, storage, health & safety, economics, regulations, public perception and technical writing.
- New this year:
 - Utilisation (GCCSI)
 - Bio-CCS (IEAGHG)
 - Environmental Impacts (Gassnova & Uni. Of Texas)
 - NGO Perspectives (NRDC)
 - **Panel discussions**
- Field trip:
 - Huaneng Group's pilot capture plant at the Gaobeidian power station



Group Presentations



Best group: 'How can China set up integrated CO2 capture, transport and storage networks?'



Most outstanding students:
Niels Berghout, Utrecht University, NL
Vivianne Romeiro, University of Sao Paulo, Brazil



Feedback



- ‘Keep up the great job!’ *Lisa Joss*
- ‘Excellent – a great & memorable time. Thanks IEAGHG 😊’ *Tom Demetriades*
- ‘I feel this Summer School was great, I learnt a lot, worked hard, but at the same time I feel so much rewarded!’ *Yue Liu*
- ‘Perfect of all parts! I love it!’ *Bo Yu*
- “I now have an idea how to speak to people about CCS to increase awareness in my country”
- “The most favourite thing for me it was opportunity to see how CCS works in reality”
- “It was a full program but I learned a lot and had a really nice time”
- To improve the Summer School for next year I would...”have more time to sleep”
- To improve the Summer School for next year I would...”I think that invite NGOs which does not support CCS in order to have a very interesting discussion”



GHGT Mentored Student Programme



- GHGT conference series - largest on CCS
- GHGT-11, Kyoto, Nov 19-22nd 2012, 1300 attendees, 900 papers
- Mentored Student Programme to support and assist students from developing countries
- Guidance, mentoring, travel funding
- Global CCS Institute supported



Future: 2013 Summer School



- **Hosts:** University of Nottingham, UK
- **Dates:** 21st – 26th July 2013
- Open for applications January 2013 on IEAGHG website





Thank you

