



13th International Conference on Greenhouse Gas Control Technologies, GHGT-13, 14-18
November 2016, Lausanne, Switzerland

A collaborative approach to school community engagement with a local CCS project

Belinda Bloxsome^a, Dominique Van Gent^b, Linda Stalker^{c*}, Beth Ferguson^b

^aCSIRO, Scitech, PO Box 1155, West Perth, Western Australia 6872,

^bWestern Australian Department of Mines and Petroleum, Bunbury, Western Australia, 6230,

^cCSIRO, 26 Dick Perry Avenue, Kensington, Western Australia, 6151.

Abstract

The future of Carbon Capture and Storage (CCS) deployment requires research on geological, technical, economic, community and educational fronts. A program that has been running since 2009, CSIRO's Sustainable Futures – CarbonKids, is an education program that combines the latest in climate science with education for sustainability, with a strong focus on carbon.

In 2012 the Global Carbon Capture and Storage Institute (GCCSI) funded the CSIRO to develop and deliver 'carbon capture and storage' educational materials to be embedded into wider sustainability educational resources under the banner of CarbonKids, now Sustainable Futures - CarbonKids. Resources include a wealth of cross-curricular activities to support the teaching of sustainability and the environment in the classroom, school and community.

The Western Australian Department of Mines and Petroleum (WA DMP) is conducting the pre-feasibility phase of the South West Hub CCS Project (SW Hub) in the South West region of Western Australia. CSIRO Sustainable Futures – CarbonKids program partnered with WA DMP in 2013 to implement an innovative and unique approach to educating teachers, students and the community in the science and understanding of the carbon cycle and CCS. This partnership provides schools registered with Sustainable Futures – CarbonKids a suite of educational resources including carbon and CCS activities. Access to the program also provides opportunities for teachers and students to meet and learn from representatives of WA DMP, and research scientists from WA DMP's research partner the National Geosequestration Laboratory (NGL), who work collaboratively on the SW Hub. This brings real life science into the classroom; providing students and teachers with examples of local scientific knowledge being used to solve problems and enhancing their understanding of the effects of their personal actions relating to energy and carbon, which is an important learning requirement within school curricula. The aim of the collaboration with the SW Hub is to

* Corresponding author. Linda Stalker Tel.: +61 8 6436 8909.
E-mail address: linda.stalker@csiro.au

provide information and the opportunity for learning from a real world case (the SW Hub CCS project) which will increase awareness of carbon and the environment in schools, and improve students' understanding of activities relating to carbon, energy and low carbon technology CCS research.

© 2017 Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license

(<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Peer-review under responsibility of the organizing committee of GHGT-13.

Keywords: Carbon capture and storage; education; South West Hub; sustainability; Adom Book

1. Introduction

The development of educational resources for sustainability in general and for Carbon Capture and Storage (CCS) specifically began at a national level, with a recognition of the need for such resources in 2009 and continues with on-going program development and delivery in 2016 (Figure 1). A roadmap for CCS communication activities was developed in 2009 by Ashworth and others^[1] following a series of community surveys. The roadmap outlined the need to provide materials to improve understanding of new and advanced technologies relating to energy generation. The authors observed that policy makers around the world saw the need for strategies to aid in the development of materials that would both provide education and raise awareness of the changing face of the energy industry. Teachers and students were amongst those identified as having a lack of awareness and understanding of CCS^[2].

In 2012 GCCSI collaborated with CSIRO to produce CCS educational resources for schools. The project was comprised of three stages: 1) evaluation of current CCS education materials; 2) development, review and trial of new CCS materials, addressing gaps identified in stage one, and 3) test of the resources and activities with a wider sample size^[2].

The development and trial of the CCS educational resources soon after showed great promise for creating educational and community awareness, and improving understanding of emission reduction technologies. The partnership between CSIRO and GCCSI sought to widen the dissemination and implementation of the CCS resources, which were subsequently embedded into the CSIRO's existing climate science and sustainability educational program CarbonKids, which is now called Sustainable Futures - CarbonKids.

The focus of Sustainable Futures – CarbonKids is to provide the latest factual information on climate science, with an emphasis on education for sustainability. The CarbonKids program was initially developed by CSIRO, and piloted in 2009 with the support of Shell. During 2012, the GCCSI funded CSIRO to develop and deliver CCS materials specifically to encourage students to learn about low carbon emission technologies and the role these technologies play in reducing climate change.

Following a successful pilot program, the Sustainable Futures – CarbonKids is available to schools which choose to register with the program. The Sustainable Futures – CarbonKids program is sponsored in Western Australia (WA) by WA DMP; and nationally by Bayer; managed by CSIRO and delivered in WA in partnership with Scitech, which is WA's major science education outreach body.

The program has been running for seven years with 81 schools registered in WA and more than 450 schools registered nationally. There are two areas of focus in WA; the South West region where the SW Hub CCS investigation is being carried out, and the North West and Kimberley regions which are major energy and minerals resources hubs.

WA DMP sponsorship of the Sustainable Futures - CarbonKids program was officially launched in August 2013. A strong and growing relationship with schools has been nurtured in the South West and supported by the ongoing development of educational resources. Rolling changes to the national curriculum presented an opportunity for the Sustainable Futures – CarbonKids unit resources to be reviewed for content and updated to align with the new curriculum, including the CCS unit resource. In 2016 the program is strongly visible, with many schools participating and opportunities for inter-school collaborative learning.



در اجرای درخواست شما مشکلی رخ داده است

با سلام ☐ متأسفانه
مشکلی در فرایند
اجرای درخواست شما
رخ داده است ☐

همکاران ما در حال تلاش برای رفع این

مشکل هستند ☐

لطفاً درخواست خود را در ساعات دیگری

مجدداً تکرار فرمایید و اگر باز هم با این

مشکل رو به رو شدید، از طریق فرم تماس

با ما به واحد پشتیبانی اطلاع دهید ☐

برای یافتن مطلب مورد نظر خود می

توانید از روش های جستجوی زیر استفاده

فرمایید :

جستجو در میان موضوعات

برای جستجو در میان موضوعات، به محض این که عبارت خود را در فیلد زیر بنویسید، موضوع های مرتبط در درخت سمت چپ با رنگ متمایزی مشخص می شوند.

جستجو ...

جستجو در میان مقالات

اگر موضوع مورد نظر شما در لیست موضوعات اصلی وجود نداشت، با استفاده از فیلد زیر می توانید آن را در بین کل مقاله های سایت جستجو فرمایید.

جستجو ...

جستجو

لیست
درختی
موضوعات

- الگوریتم های هیوریستیک + <
- بازاریابی و مدیریت بازار + <
- حسابداری و حسابرسی + <
- روش های آماری + <
- سازمان و مدیریت + <
- سیستم های اطلاعاتی + <
- علوم اقتصادی + <
- مدیریت استراتژیک + <
- مدیریت امور فرهنگی + <
- مدیریت تولید + <
- مدیریت دولتی + <
- مدیریت رفتار سازمانی + <
- مدیریت مالی + <
- مدیریت منابع انسانی + <
- مطالعات اسلامی + <
- کارآفرینی و مدیریت کسب و کار + <

تماس با واحد پشتیبانی

همکاران ما در واحد پشتیبانی آمادگی دارند تمامی درخواست های شما عزیزان را بررسی نموده و در اسرع وقت رسیدگی نمایند.

پیگیری خرید مقاله

پس از خرید هر مقاله، یک کد رهگیری منحصر به فرد به شما تقدیم خواهد شد که با استفاده از آن می توانید وضعیت خرید خود را پیگیری فرمایید.

کد رهگیری

ارسال

پیگیری سفارش ترجمه

با ثبت کد رهگیری پرداخت، می توانید سفارش خود را پیگیری نموده و به محض اتمام ترجمه، فایل ترجمه مقاله خود را دانلود نمایید □

کد رهگیری

ارسال

کلیه حقوق برای «مرجع مقالات ISI» در ایران محفوظ است □

g+