ENERGY INNOVATION FOR LIFE
A: Block E, Upper Grayston Office Park, 150 Linden Street, Strathavon, Sandton, 2146
T: +27 [10] 201 4800, F: +27 [10] 201 4820, E: information@sanedi.org.za
W www.sanedi.org.za

sanedi
South African National Energy Development Institute

SOUTH AFRICAN CENTRE FOR CARBON CAPTURE AND STORAGE

Call for Bursary Applications

The South African Centre for Carbon Capture and Storage[1] (SACCCS) hereby invites applications for bursaries from interested South African researchers.

SACCCS was established in 2009 and is responsible for all technical and capacity building on carbon capture and storage (CCS) activities in the country. SACCCS is looking to undertake a Pilot CO_2 Storage Project commencing 2017. The bursaries will cover study costs for Honours, Masters and Doctoral research-based studies in the area of Carbon Capture and Storage.

SACCCS aims to transform the energy R&D human capital available to the country, not only by growing it, but by ensuring that women and previously disadvantaged individuals receive sufficient support.

The selection will be done by SACCCS who reserve the right not to accept any application. Please note that the SACCCS bursaries are awarded subject to the *SACCCS Bursary Terms and Conditions*.

The application form can be found below. Please submit your application with any other supporting material by post or email to the address below.

Attention: Ms Evelyn Nyandoro
South African Centre for Carbon Capture and Storage
Upper Grayston Office Park
CEF House, 152 Anne Crescent,
Strathavon, Sandton, 2031
Phone: 011 038 4315

Post: P O Box 786141, Sandton, 2146
Email: EvelynN@sanedi.org.za

[1] A Division of the South African National Energy Development Institute (SOC).

1. Bursary Application Form

Personal details		
Surname		
First names		
Race group		
Gender		
Date of birth		
Place of birth		
Identification number		
Nationality		
Contact Details		
Residential address		
Postal Address		
Home Tel. Number	**Cell**	**University Tel. Number**
Email address		
Academic Qualifications **(Please attach a copy of your academic record)**		

Supervisor's Comments on applicant's academic record		
University	**Degree/Diploma**	**Year completed**
Relevant Modules Completed		
Describe your interest in Carbon Capture and Storage		

Area of further studies

(choose one topic)

Background to Research Topics

The South African Centre for Carbon Capture and Storage was established in 2009 with a mandate to carry out CCS activities in South Africa. The Centre is expecting to build a Pilot CO_2 Storage Project in 2017 to investigate the feasibility of CO2 Storage in South Africa. The topics included in this call are aimed at furthering the body of knowledge in the different fields of CCS, developing skills that are limited or not present in South Africa and to create skills that could be employed by SACCCS/PCSP after completion. The following background is aimed at assisting the process of topic selection as well as provide the expectations for each topic.

Monitoring

In the border region between KwaZulu Natal and the Eastern Cape is a fault line approximately 80 km long. Natural carbon dioxide emissions at three sites along this fault have been identified.

SACCCS requires skills in surface monitoring including monitoring CO_2 emissions as part of the Pilot Carbon dioxide Storage Project (PCSP) and has identified the natural CO_2 emissions at Bongwana as an ideal site to develop monitoring techniques of CO_2 emissions. Important aspects of the project will be to acquire and use the appropriate monitoring equipment to characterise and quantify the CO_2 emissions. The project could entail a study tour to an overseas facility to get acquainted with monitoring equipment, protocol evaluation of results. The learning from the study tour need to be applied at and adapted to the Bongwana site. It is expected that scientific publications will be an important output of the project.

Social

For close to a decade it has been understood that South Africa has potential to implement Carbon Capture & Storage (CCS) as part of a portfolio of carbon dioxide (CO_2) mitigation technologies to help address CO_2 emissions from large point sources such as power plants and industrial facilities.

For CCS to be fully considered as part of South Africa's energy strategy, and climate change mitigation actions, stakeholders must be engaged and provided with information about the basic principles around the CCS technology as well as benefits and potential risks of its application. This information must be given at a national and local level and address the following objectives:

- Raise awareness of CCS as a possible climate change mitigation measure;
- Develop understanding of CCS, key concepts, subsurface storage and key issues;
- Outline the benefits and potential risks of demonstration and deployment of the CCS technology in South Africa; and

- Place CCS in the context of South African climate change mitigation, energy production and use, coal use, resource development, job creation, amongst others.

Significant achievements were made on the Pilot Co_2 Storage Project (PCSP) Stakeholder Engagement in 2013/14. .

The Nat-Loc Plans commissioned and funded by the World Bank Group and endorsed by the Department of Energy (DoE) recommended that PCSP stakeholders should be engaged in the following order:

- National government;
- Provincial government;
- District Municipalities;
- Local Municipalities; and
- Local stakeholders.

This order was proposed to ensure the most important stakeholders were informed of the PCSP by SACCCS rather than hearing about it through less informed sources.

Public engagement will be an important part of the PCSP throughout the project life cycle.

Environmental

The PCSP is a project that SACCCS will implement in order to determine whether CO2 can indeed be stored and contained in South African geology. The PCSP is a proof of concept for CCS in South Africa. The effect of CO2 on its surrounding environment is an important aspect of CO2 storage and basin monitoring and the topics seek to evaluate the effects of naturally occurring CO2 on its environment and the possible effects in an environment like the Zululand Basin which is one of the basins being considered for storing CO2.

PLEASE SELECT ONE TOPIC OR SUGGEST A TOPIC OF YOUR CHOICE

Monitoring	
Analysis of the surface expression of the CO_2 emissions at the Bongwana site via soil gas concentrations, soil gas flux, analysis of satellite imagery or other techniques with consideration of its application to the Zululand Basin PCSP area of interest.	
Analysis of the atmospheric distribution of the CO_2 at the Bongwana site via eddy covariance, atmospheric tomography or other techniques with consideration of its application to the Zululand Basin PCSP area of interest.	

Social	
Analysis of the potential to draw on local/indigenous knowledge and traditional beliefs to contribute to geological characterisation and environmental monitoring, including a literature review and case study of the local belief systems about groundwater and CO_2 release at the Bongwana site, including myths, stories, and creation ideas.	
Analysis of the impact of South African specific factors on the perception, understanding and communication methods of climate change and CCS in South Africa (language, education, economic, etc).	
Environmental	
Analysis of the impacts of the Bongwana natural CO_2 release on the ecology and biodiversity in the region with consideration of its application to the Zululand Basin PCSP area of interest.	
Analysis of the impacts of CO_2 leakage on groundwaters and surface waters, via assessing water chemistries at the Bongwana fault analogue with consideration of its application to the Zululand Basin PCSP area of interest.	
Geology	
An evaluation and interpretation of the historical Zululand Basin 2-D seismic profiles as a means of identifying and assessing the storage potential of the Aptian and Cenomanian sandstone aquifers for the PCSP.	

Provide the key questions to be answered in relation to this topic (5-10 questions)	
1.	6.
2.	7.
3.	8.
4.	9.
5.	10.

Describe the methodology you would use for this study (500-1000 words)
Describe your interest in the topic you have chosen (500-1000 words)
Describe your qualifications and experience with relation to this topic (500-1000 words)
Supervisor Name and affiliation ***N.B. SACCCS is keen to explore the opportunity for co-supervision with international CCS experts for each of the topics. Discussion of co-supervision will be done after the bursary award.***
I hereby certify that the applicant is academically qualified with appropriate grades and has sufficient abilities to undertake the research project.

Supervisor endorsement	
Supervisor signature	