



# KEEP IT COOL

CLIMATE CHANGE EDUCATION

## Set 4 for Teachers: Planning your project

This is a support set for Teachers primarily, but also for Professional Learning Communities (PLCs) participating in the Keep It Cool: Climate Change Education (KIC:CCE) Project.

The KIC:CCE Project aims to implement innovative, curriculum activated CCE projects, involving learners and communities. The project aims to facilitate collaborative, continuing professional development and improve the teaching and learning of climate change education in the South African education system. Secondary school teachers will implement the change projects, with guidance and support from the school leadership team for the successful implementation of the projects. At the same time, teachers have the opportunity to form Professional Learning Communities (PLCs) to facilitate their professional development collaboratively. Key themes that run through the materials are gender equity, good governance, and social inclusion. The support sets provide stories, examples, tools and processes that can be used within the KIC:CCE Project by PLCs, the school leadership team and teachers.

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Brooklyn Forum  
1st Floor, Lobby 1  
377 Veale Street & Fehrsen Street  
Pretoria 0181  
South Africa

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Enquiries: +27 (0)12 753 1135  
[www.vvob.org](http://www.vvob.org)  
<http://southafrica.vvob.org>

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*Review team: Misser, S., Snyman, C., & Thomas, K.*

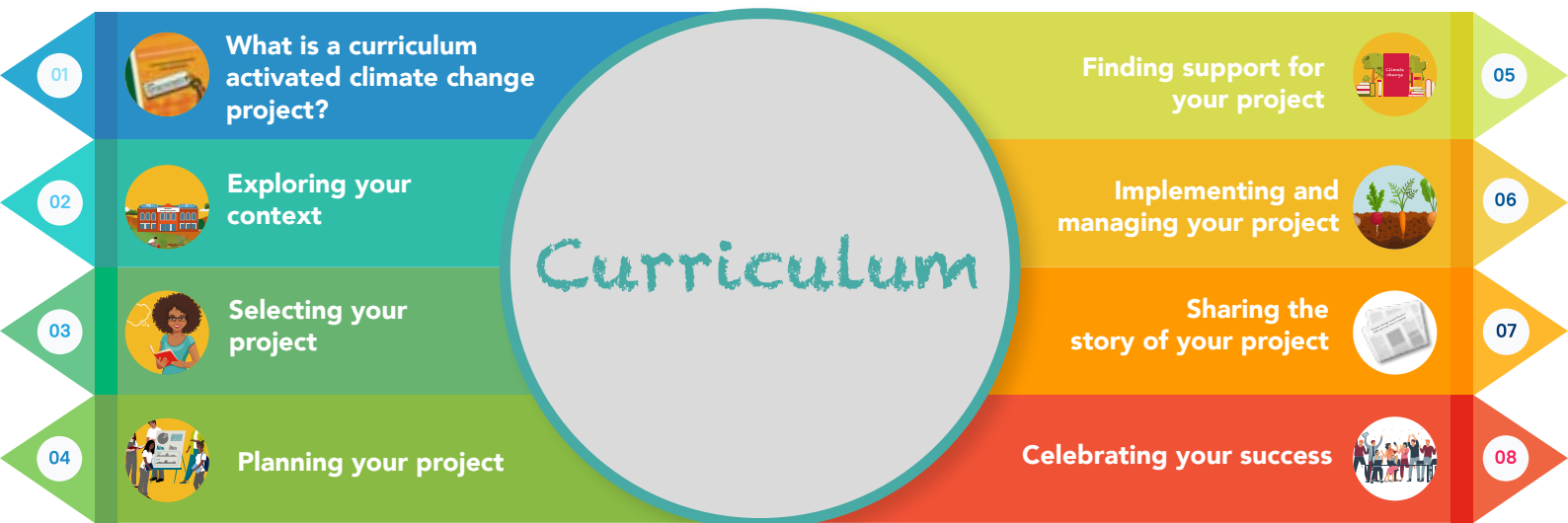
*Copy-editing: Angela Vogt. Original Cover Design: Francis Lotz, adapted by Leanne Burford. Pedagogic Graphic Design: Priya Vallabh. Layout: Nelson Sampaio.*

# ORIENTING TO THESE TEACHING SUPPORT RESOURCES

Set 4 looks at planning your curriculum activated climate change project by thinking about what you need, who will do tasks, how they will be done, where and when.

## ORIENTING TO THE NATIONAL CURRICULUM

There are 8 sets in this Keep It Cool: Climate Change Education (KIC:CCE) project. The first set (What is a curriculum activated climate change project?) provides an overview, from which you can start thinking about your project. Each set shares examples of curriculum activated climate change projects intended to support you to integrate climate change education into your classroom. The inspirational stories provide possibilities that you can explore.



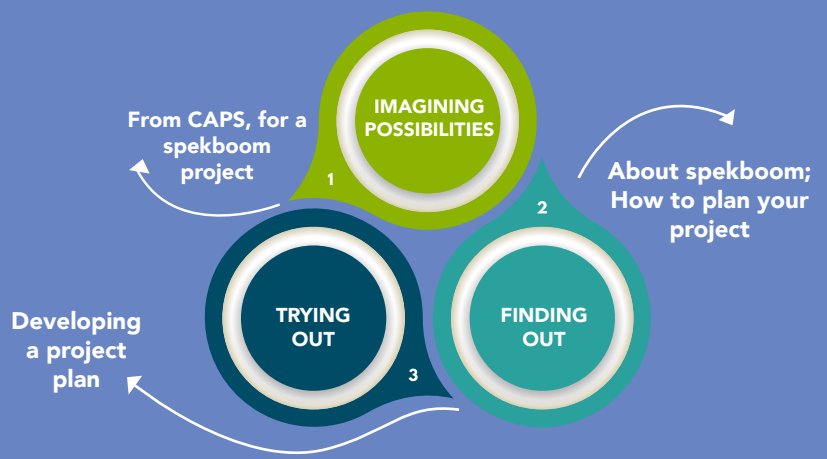
In this set, the curriculum activated climate change project is about the benefits of spekboom planting. Consider if there are other areas within CAPS where you could use the spekboom story. The stories will reference topics and page numbers from CAPS

## What will you find in the sets?

These sets are arranged into three key activity groups: IMAGINING POSSIBILITIES, FINDING OUT, TRYING OUT. Curriculum links / Project ideas/ Inspiring stories/ 'How to' guide ... choose, plan, implement....



The theme of this set is planning your curriculum activated climate change project, following the example of Spandau Secondary School's spekboom project.



## IMAGINING POSSIBILITIES

### A STORY OF CHANGE - RE-ESTABLISHING BIODIVERSE CARBON SINKS USING SPEKBOOM

This is the story of a climate change project that the Spandau Secondary School in Graaf-Reinet and their community implemented in the Samara Reserve, Eastern Cape.

### A SHARED MATTER OF CONCERN:

Globally, many carbon sinks have been eroded or destroyed over the last few hundred years. Less carbon has been stored in vegetation, and instead remains in the atmosphere. Rebuilding a carbon sink by restoring the indigenous vegetation addresses climate change.

### IMAGINING HOW TO IMPROVE YOUR LOCAL CONTEXT

The landscape became denuded and arid due to overgrazing by sheep and goats.

The images below depict the dramatic change in vegetation over the last 200 years. Here you can see the shift from lush vegetation cover to arid and denuded landscapes, and then the aspiration to replenish and restore the vegetation.



What it would have looked like 200 years ago.



Arid present-day environment.



The imagined future.

### Mobilising core knowledge about climate change

The next page maps out core knowledge that informed how and why this project was implemented. Core knowledge mapping is a useful resource. Think about building a similar map of core knowledge for your proposed project. The connection between the school and Samara started as follows:

Natural Sciences and Geography teachers at Spandau Secondary School identified an opportunity to link the Greenhouse Effect to the local environment. They knew about the Samara Game Reserve project and saw the links between spekboom planting; the Eastern Cape's ideal **carbon sequestration** conditions; and what they were teaching. With that realisation, they met and identified other curriculum opportunities in Natural Sciences and Geography: **drought and desertification; heating of the atmosphere; etc.**

### WHAT SPEKBOOM DOES:

Spekboom enables carbon sequestration that takes place most efficiently when temperatures reach 39oC or above.



### Building partnerships and networks

Spandau Secondary School collaborated with a range of community partners.



Spekboom about to be planted (from Samara, n.d.)

### Learning leads to action

Classroom lessons explored the Greenhouse Effect. Learners participated in different curriculum activated environmental awareness activities.

Samara staff helped them to develop applied skills such as growing spekboom plants from cuttings and transplanting them into denuded areas.

### Learners apply learning through practical actions



**Sour fig**  
Macassar High School in Khayalitsha monitors the rehabilitation of dunes after sand mining, by planting the indigenous 'sour fig' to bind the dunes.

*Is there a local matter of concern that could be addressed by planting indigenous trees, shrubs, or vegetables?*



**Acacia trees**  
Pax College (Polokwane) won an award from the Department of Environmental Affairs, for planting indigenous, water-wise trees.



**Wild olive, Wild plum, Natal Guarri**

Vulindlela High School and others in the Eastern Cape planted indigenous trees for Arbor Day, 2020.

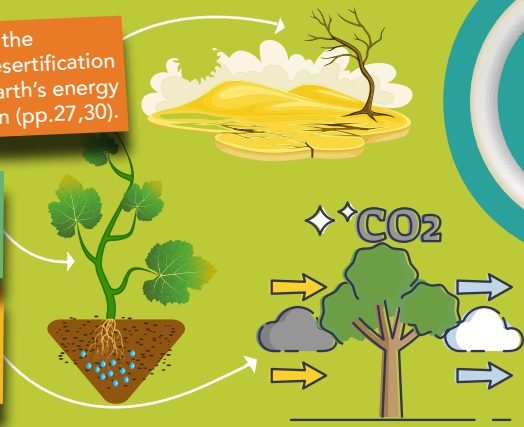
# A STORY OF CHANGE: RE-ESTABLISHING BIODIVERSE CARBON SINKS USING SPEKBOOM



CAPS for Geography covers heating of the atmosphere (pp.13,17); drought and desertification (pp.13,27); greenhouse effect (p.21); earth's energy balance (p.30); and global air circulation (pp.27,30).

CAPS for Natural Sciences covers the greenhouse effect (pp.82-84), and the uptake of carbon in photosynthesis (p.35).

Carbon sequestration is not mentioned in CAPS. Knowledge of carbon sequestration is therefore CAPS ++



## BUILDING CORE KNOWLEDGE

Many exciting climate change projects can be developed to help resolve climate change risks. Link core climate change concepts to your project to help you to design appropriate teaching and learning methods and strengthen curriculum links. Use core knowledge about climate change to help you to design stronger, more relevant projects.

Core concepts that made Spandau Secondary School's Spekboom Project an appropriate response to climate change risks:

1. Teachers' curriculum activated lesson plans built learners' core knowledge about key concepts linked to the project.
2. Learners engaged in fieldwork in the reserve.

**Concept map of some of the key ideas on which the project was built:**



### 1. Carbon sequestration

**Carbon sequestration** is about capturing and storing atmospheric carbon dioxide. This happens either geologically (through coal and oil deposits) or biologically. New technologies now sequester carbon in industrial forms.

### 2. Biological Carbon Sequestration

Plants process and store carbon dioxide through photosynthesis. Some plants **sequester** (store) carbon dioxide more efficiently than other plants.

### 3. Carbon Sinks

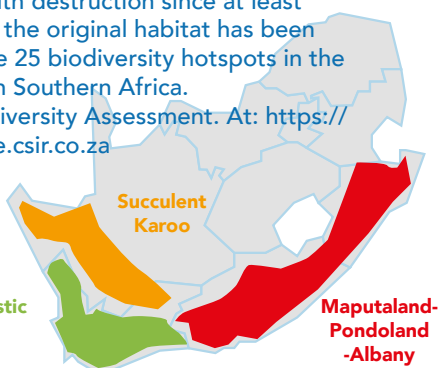
Geological or biological areas that store large amounts of carbon-containing compounds over long periods of time are known as carbon sinks. They provide a 'sink' for the carbon, keeping it out of the atmosphere. Sea plants, forests and grasslands are some of the planet's most important **carbon sinks**.

### 4. Genetic Diversity

Genetic diversity is about the amount of variation there is in the DNA of individuals, populations or species. More genetic diversity means stronger resilience to environmental risks.

## 5. Biodiversity Hotspot

Samara is in a **Global Biodiversity Hotspot**. This is a biogeographic region that is both a **significant reservoir of biodiversity** and threatened with destruction since at least 70 percent of the original habitat has been lost. There are 25 biodiversity hotspots in the world and 3 in Southern Africa. National Biodiversity Assessment. At: <https://researchspace.csir.co.za>



### Spekboom

The spekboom (*Portulacaria Afra*) is indigenous to the Eastern Cape. There is also a variety from Limpopo.

### More interesting facts about the Spekboom:

The roots of Spekboom can bind soil that has been overgrazed so that it does not erode

Spekboom is indigenous to South Africa

120 Spekboom plants completely offset 1 person's carbon footprint

Spekboom is water-wise and easy to grow

Spekboom absorbs up to 100 times more pollution than any other plant

Spekboom can live for 200 years!

# PLANNING IS IMPORTANT

Implementing a curriculum activated climate change project (Set 6) becomes easier when planned carefully.



What does planning involve?

Identifying the elements of planning

(This set)

Determining who can support the project

(Set 5)

Drilling down to specific tasks and accountability details - for implementation

(Set 6)

Think about each of the project ideas you identified and explored in Sets 2 and 3.

Create a mind map listing the elements of planning and complete it for each of your proposed projects. The spekboom project is a guide to inspire you: spekboom growing might not be appropriate in your area.

This set will support you to think about what is possible and practical for your school and your context.

**Reflection:** Is a small project sustainable and manageable?

The table below highlights the elements to be considered in planning. Can you use it as a guide for your change project?

Elements of planning	Example: what was required for the Spandau Secondary School spekboom project	Questions to think about for YOUR specific project, in your context
<b>Core knowledge and skills</b> (To develop)	Carbon sequestration; carbon cycles; genetic diversity; biodiversity hotspots; carbon sinks; biodiversity reservoirs; taking cuttings of, transplanting and caring for spekboom plants	What knowledge and skills do you need: <ul style="list-style-type: none"> <li>to address the curriculum?</li> <li>to support your teaching and learning?</li> <li>for your locally relevant project?</li> </ul>
<b>Resources</b> (What is needed)	Teaching support materials - images of spekboom and vegetation; area maps; planting information and implements	What resources do you need for: <ul style="list-style-type: none"> <li>teaching and learning?</li> <li>the project?</li> </ul>
<b>People</b> (Who and how)	Learners, Natural Sciences and Geography teachers, Samara staff, parents	Who is going to work in your project? How can your learners be involved?
<b>Place/s</b> (Where)	Teaching and learning at school; growing and planting at Samara Reserve	Where will your project happen?
<b>Funds</b> (What for, how much)	Collaboration with the reserve - free transport?	What expenses need to be covered? Where can you access funds? What resources can you secure without funding?
<b>Support</b> (Who can help and how)	Support from Samara Reserve's outreach staff; buy-in from the SLT; support from other Natural Sciences and Geography teachers	Who can support your project? How can learners support your project and be involved?
<b>Tasks</b> (What must be done)	Learners had specific tasks. Samara staff guided the actions	What are the tasks? What can learners take responsibility for?

Resource link: You can access the KIC:CCE project planning template at: <https://ibali.uct.ac.za/s/ccse/> You might choose to adapt this template for your context, or find and use another template.

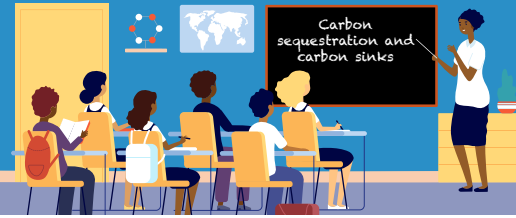


## THINKING ABOUT PLACE AND SPACE

Many curriculum activated climate change projects require access to particular places and space.

- Where will you 'do' the project?
- Will you need space?
- Will you need to travel somewhere?
- Which places will you need to access for your project?
- How will you access places and spaces for your project?

### 1. Classroom



### 2. Outdoor space



### 3. Game reserve



## INVOLVING LEARNERS IN THE CURRICULUM ACTIVATED CLIMATE CHANGE PROJECT

Let's think about the curriculum activated climate change project differently. Do you have to do everything? Or is there another way? Here's how a Geography teacher at Spandau involved learners in planning the project - activated by CAPS - on Greenhouse Gases.

Resources: photographs; information on spekboom; information on Samara; planning template; presentation format.

## Resources



### The Samara example

#### Step 1: The teacher did the following:

1. Displayed picture A - a denuded, arid landscape.
2. Displayed picture B - a lush spekboom landscape

## Core knowledge



### The Samara example

3. Asked: "How could we get from picture A to picture B?" "What is the concern and what caused it?" "Why would we want to effect a change?"
4. Did a quick quiz to establish current knowledge on the curriculum activated topic.
5. Asked learners to look at the draft planning template in groups, and make suggestions for improvement.

### Your project

#### **What thought-provoking question could you ask?**

- What do learners know?
- What do learners need to know?
- What analysis is needed?
- What is the cause of the denudation?
- Why should something be done about it?

## Task



### The Samara example

#### Learners finding out

#### Step 2: The teacher assigned a task to learners

Learners customised the template and prepared a project plan in groups and assigned tasks. Learners researched Greenhouse Gasses, related to the curriculum. The groups prepared presentations on their project roles and the knowledge areas they had researched.

### Your project

#### Finding out

**What tasks will your learners do for project planning?** (Learners finding out something new)  
What curriculum activated tasks will your learners undertake? What knowledge or process should learners learn about? How can you use a learner centred method?

### The Samara example

#### Learners trying out

#### Step 3: The teacher planned an introductory event

A planned field trip to Samara introduced the project. Learners experienced the landscape, discovered the project goals, and understood that they would plant spekboom at Samara.

### Your project

**Learners trying out for their chosen project** How could you introduce the idea of their involvement in the locally relevant and curriculum activated project, to learners? What could you choose as an introductory event? How could you ensure that the introductory event is interesting and relevant to your context and to the project

## The Samara example

### **Step 4: Learners presented their project plans, and reflected on their work and achievement**

As part of the learning process around the formative assessment task, learners presented their analysis, findings and recommendations. The group presentations were assessed by their peers. Learners also completed a journal on the project.

### **Your project**

How will the learners' voices be heard?  
How will their work be assessed, and by whom?

### **Some ideas for resources:**

**Watch a YouTube video.**

**Use the school grounds to explore the local context, observe conditions, discuss, and then prioritise.**

**Invite an elder to discuss Indigenous Knowledge about the local context, and lead a walk around the area.**

**A community member/elder could share a story about the area/community.**

What do you think are the benefits of learner involvement in the curriculum activated climate change project? For learners? For you? For the project?

## THINKING ABOUT PROJECT RESOURCES

Accessing resources for your project can be stressful if you don't think about this when planning. You can adjust the scope and focus of your project, depending on the available resources.

What kind of resources are needed for your project? Where can you access them?

	<b>What for</b>	<b>Examples</b>
<b>Teaching and learning support resources</b>	Help with your core work of teaching and learning Build core knowledge Support the development of core skills	PLCs, posters, websites, books, resource guides, learning apparatus
<b>Project planning resources</b>	Help with knowledge / skills	Open Education Resources, parents, community members, project partners, PLCs, local NGOs
<b>'Doing' resources</b>	To implement your project on the ground	People, collaborators, tools and equipment, transport, PLCs

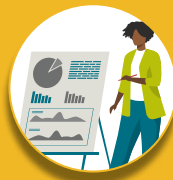
## ACCESSING RESOURCES

### Around the school



- The school and its broader community
- Community Based Organisations (CBOs)
- Non-Profit Organisations (NPOs)
- Churches
- PLCs

### Business



- Corporate Social Investment (CSI) projects
- Donations or goods/services in kind

### Government



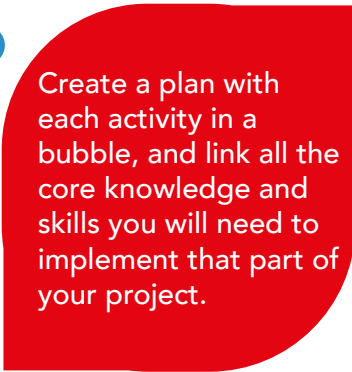
- Government departments that run programmes – Department of Basic Education (DBE); Department of Fisheries, Forestry, and the Environment (DFFE); Department of Water Affairs (DWA); Municipalities
- Expanded Public Works Programme (EPWP)
- Community Works Programme (CWP)




# DEVELOPING CORE KNOWLEDGE AND SKILLS

Plan appropriately by thinking about the core knowledge and skills you and your learners will need during project implementation. How is this core knowledge activated within CAPS? What core knowledge will support your learners to understand the links between climate change and project tasks? What skills will you and your learners need to achieve your project goals? How will you access support to help you to develop these skills?

Think about your core project activities.



Create a plan with each activity in a bubble, and link all the core knowledge and skills you will need to implement that part of your project.



Use this example of what the Spandau Secondary School's plan would look like, *as the inspiration and model for your project planning!*

## SPANDAU SECONDARY SCHOOL

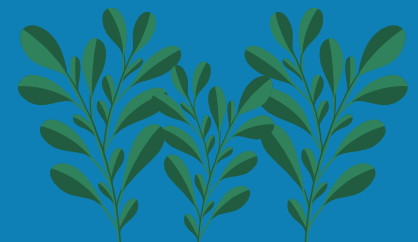


### Core knowledge:

Genetic diversity / carbon sequestration / biodiversity hotspot / biodiversity reservoir / spekboom and carbon sequestration.

### Skills:


Identifying spekboom / taking cuttings / growing spekboom / transplanting spekboom / caring for transplanted spekboom.



### FUNDING YOUR PROJECT

"Not all projects require a lot of money to get started. Successful projects use what is available. This could be space to work; improving what is already there; or using resources from nature." Sometimes, you do need to raise or access funds to run a project. Think about these questions to guide you:

- Do you need **funds** to implement your project?
- If you do need funds, **how much** will you need?
- Can you **generate funds** as part of your project?
- Where will you **access** your funds?
- How will you **manage** your funds?



Resource link: You can access KIC:CCE project planning and project budget templates at: <https://ibali.uct.ac.za/s/ccse/> You might choose to adapt these templates for your context, or find and use another template.

## By looking at this set, you have looked at how to plan your curriculum activated climate change project.

In the next set, we will look at ways to get support for your curriculum activated climate change project:



## WHAT HAS BEEN COVERED:

This set focused on supporting you in planning your curriculum activated climate change project thoughtfully and systematically. A step-by-step planning process will help you to be focused and clear about tasks; the resources you need; and who can assist you. The Spandau Secondary School spekboom project plan is a useful example.



### The 'IMAGINING POSSIBILITIES' story shared a successful climate change project that:

- Is curriculum activated;
- Aligns with climate change adaptation and mitigation;
- Involves learners participating in the project, and learning skills; and
- Has support from a project partner.

### The 'FINDING OUT' and 'TRYING OUT' sections:

- Build core knowledge on the curriculum and climate change;
- Suggest how to involve learners in planning the project;
- Provide key questions and a process to plan your curriculum activated climate change project; and
- Provide a link to a Project Planning template.



# REFERENCES

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### Another resource for you:

The KIC: Climate Change Education Project has developed an extensive digital library of materials for all KIC partners.

**What** is in the resource? Open Educational Resources (OER's) that focus on teaching and learning about climate change and sustainability

**When** will you be able to access it? The website is live

**How** can you access the resource? <https://ibali.uct.ac.za/s/ccse/page/welcome>

**How** can the resource be used? Its main purpose is to provide the teaching community (from primary, through to teacher educators) with relevant text and media resources to enhance their teaching practices and courses. You can do general searches by main categories such as climate change topic, foregrounded approach or target audience. Each general category is then broken down into subtopics to help you find your areas of interest.

If you would like more information about curriculum focused, transformative learning, and transformative teaching and learning methods, then look at the Fundisa for Change core resources. You can download them from the Fundisa for Change website.

<https://fundisaforchange.co.za>





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