

How our group worked through thick and thin to create our idea.

# Our Bigger Idea

Big Idea's Narrative

Felix de Bruin, Oliver Thom, Sean Craig

---

## Contents

Introduction .....	2
What is Big Ideas? .....	2
Who are we? .....	2
Felix de Bruin .....	2
Sean Craig.....	2
Oliver Thom.....	3
What is our idea? .....	4
What are the problems?.....	4
What are the specific problems that we addressed? .....	5
Who do these problems affect? .....	6
Who do we want to help?.....	6
Where did our project take place? .....	6
What SDG's are related to our project? .....	6
Why did we want to address them?.....	7
Why do we care? .....	7
Body .....	7
Ideas, thoughts and actions.....	7
Background research.....	8
This is what we did:.....	8
Here is the evidence of how it went.....	9

This is how well it worked: ..... 10

Conclusion. .... 10

Problems. .... 10

Recommendations going forward with the project. .... 11

Bibliography ..... 12

## Introduction

### What is Big Ideas?

#### Who are we?

##### Felix de Bruin

Hello, my name is Felix de Bruin and I am one of the members of this group. I lived in Bermuda for 7 years, until we moved to England until I was 10. After that we came to Cape Town and haven't moved since. I've never stayed in one school for more than 3 years, so I've gotten used to adapting to my surroundings. Bishops is one of the best schools I've been to, but that might be because it's a high school. Big Ideas seemed to stick out when mixed into the Bishops community, because we have stuck to traditional teaching methods. I believed that by doing Big Ideas, I would gain insight into the way our world works, and it would be interesting to see a new way of learning. So far, I have very few regrets.

##### Sean Craig

My name is Sean Craig and I am part of the Sustainable Development Goals (SDG) 7 Big Ideas Group. My group consists of myself, Oliver Thom and Felix de Bruin. I was

born and raised in Cape Town, South Africa. I have only moved twice in my life and I am currently living in a house in Constantia. I was at Reddam House Constantia from pre-school and moved to Bishops in grade 8. I moved schools because I love the idea of boarding school and wanted to be at an all-boys school. I am doing the Big Ideas program because I was interested in the alternative teaching methods and I want to participate in making a difference in my local and national society and the environment. Therefore SDG 7 (Affordable and Clean Energy) is so important to me.

### Oliver Thom

Hello, my name is Oliver Thom I'm one of the members of our group of three I've lived in Cape Town my whole life, I've stayed in different parts of cape town but never left the country for more than a year I've been at bishops since the pre prep. Our groups idea is two put solar panels in rural areas. Our group also wants to link goals up, so our goal is goal seven which is sustainable energy. I am in the process of linking our goal up with goal eleven sustainable cities. So instead of implementing skyscrapers we could use old shipping containers as housing, the containers aren't too expensive and would work nicely as housing, the houses would be the same size and could look very nice if a little work is done on them.



### What is our idea?

Our idea is to supply pylons with solar panels on them to rural areas so that they can have efficient and clean energy. The pylon is 12m high and has a base of 2x2m. The solar panel that we decided to use is the Renewsys Deserv 250W, and each one cost R1630. The battery we are using is REVOV LiFe 200Ah 10.2kWh LiFePO4 Battery. The average house in South Africa uses 30kWh, and the place we decided to implement this (Slangrivier) is very open to sun. And since it's a rural town, and they don't have many electrical appliances, you need 4 solar panels per house to take them off the grid. Each pylon will hold 40 solar panels, which will enable 10 houses to go off the grid with each pylon.

### What are the problems?

The problems we found were:

- 1: Would they want to go off the grid?
- 2: How would we maintain the Pylons?
- 3: Is the weather suitable for the solar panels to function?
- 4: Would the shadow of the pylon be an inconvenience to the residences?

5: Where would we gain funding?

6: How would we gain funding?

7: Who would install the Solar panels?

What are the specific problems that we addressed?

And here are the solutions we found:

1: Economically, yes. Because the project can be funded by an NGO, the residences wouldn't have to pay for their electricity anymore.

2: We can teach some of the adults how it works, and what to do to check it up daily. This will create a job, since then you wouldn't have to pay someone from a company to do the checkups.

3: The weather at Slangrivier has nothing especially bad, apart from having lots of sunlight. This makes it very effective for the usage of Solar Panel as a source of energy.

4: They would most likely be if we put them smack bang in the middle of the town, but we can put them on the side of the town. Because it's a very small town, it's very quick to get around.

5: We would gain funding from an NGO, which is a Non-profit organization

6: The NGO we would work with is the Social Change Assistance Trust (SCAT), because they focus on Rural Development in rural areas like Slangrivier.

7: This was our most difficult problem. We didn't want to do something like a Civvies Day at schools, because they don't raise that much money at all, and we want to not only include teenagers but their parents as well. Another idea for raising money with SCAT is with GDQ (Games Done Quick) which is a series of year-round charity video game marathons. They can raise hundreds of thousands for other charities like Doctors Without Borders and the Prevent Cancer Foundation.

### Who do these problems affect?

All around South Africa rural areas have been struggling to have a sustained amount of electricity, this effects students in their learning and even having a good warm meal when they get home this problem also effects workers all around South Africa that are living in south Africa, poverty is south Africa's biggest problem and starting off with little things like this will really help south Africa's economical standing point. Lack of electricity effects almost everyone who is living in poverty in south Africa this means that means that a huge percentage is affected by this problem and we need to start making a change

### Who do we want to help?

Our group has the intentions of helping rural family's all-around south Africa and help implementing clean safe energy to family's. 35.7% of South Africa is living in rural areas and we need to assist every resident in this country starting off with the people who are living in poverty. We want to start by helping rural areas but progressively help every resident who are living in poverty. Students in poverty also get effected by electricity and we want to help those in need.

### Where did our project take place?

Our project is going to take place in a rural area called Slangrivier located on the Western Cape of South Africa. It has a very small population of around 3000-5000 people and is a very Afrikaans area. This area is where we want to implement our project to start off with obviously over time, we want to expand our project to something bigger.

### What SDG's are related to our project?

Goal 13: Climate Action. Using solar panels is a well-known form of clean and sustainable energy that many people and companies have implemented to combat climate change. Goal seven links up extremely well with goal thirteen because the use of solar panels promotes the combat of climate change and a cleaner and more sustainable future.

Goal 11: Sustainable Cities and Communities. The idea of having a solar tower that provides power to a small rural village links up to goal 11 of sustainable cities and

communities in the sense that the solar power they are getting provided is clean and sustainable in their community.

Goal 1: No Poverty. Our project has been designed in a way that enables people who are less privileged to spend their money on things that will improve the standard of living they have. Our solar panels will first off, all provide them with power that will help them immensely in their day to day lives and second they will no longer have to buy electricity and can therefore spend their money in a more effective way.

### Why did we want to address them?

The supply of power to houses in south Africa isn't reliable as many south Africans have experienced in the form of load shedding. South Africa is also a very warm and has sunshine almost throughout the year. We chose to address SDG goal seven because of these factors. Solar panels can supply small communities with the power they need in a reliable and constant supply. There are many other forms of renewable energy but as a group we decided that solar energy was the best choice and would also be the most effective.

### Why do we care?

As a group we care highly about our country and in south Africa at this current point poverty is our country's biggest problem. As a group we want to help this country strive and push everyone to an equal standard of living starting off with rural areas we want to implement clean safe electricity. As group we have found past generations to have destroyed our economical standing point and want to start impacting positively and start building onto this country. Pollution is a very big problem and by supplying rural areas with clean energy this starts impacting positively on the environment.

### Body

#### Ideas, thoughts and actions.

We came in the course with all of us having some passion to renewable energy, but we didn't know what we wanted to focus on. So, we split up and did some research on a type of renewable energy that interested us, and why. Felix did Water Energy, and



mainly looking at perpetual motion machines. Sean went into Wind Energy and looked at the difference in wind power at different altitude levels. Oliver went into Solar Energy and focused on the reasons why solar batteries die. We eventually decided on focusing on Solar Panels, because in the summer there is a lot of available sunlight in South Africa.

### Background research.

When Felix started doing his research on Water Turbines, he came across a video talking about installing a Water Turbine that is easy to install and fish friendly (Tech Insider, 2018). The idea of continuous flowing water got him looking into Perpetual Motion Machines (J.S. Cook, 2016). The problem with them is that you can't get out more energy that you put into the machine. The entire idea of a perpetual motion machine goes against The Law of Thermodynamics, which is that energy cannot be created or destroyed.

Sean started off researching about wind energy and devoted a lot of his time towards different altitudes effecting the efficiency of wind power, in doing this he found that the slightest amounts of change of altitude with a turbine effects the efficiency so greatly. Sean found that wind energy isn't the most efficient energy source for a rural area due to it being very space dependent and the amount of noise pollution it producing being a favorite in the rural communities so we all decided to move towards solar energy due to it not being space dependent and this was a huge factor for rural communities .

Oliver started by researching solar batteries and what happens to them after they can no longer be used and must be disposed of. most solar batteries can be recycled but one of the main problems is the fact they could potentially leak battery acid into the environment which would consequently destroy the ecosystem and pollute it. Oliver also had to find the most effective way to mount these panels in such a way that they would produce enough amounts of power. He came to an end point when he designed a model that was both effective and unique.

### This is what we did:

Once we decided on our project, the first thing we wanted to do was find a place where we could implement it. The place had to be a rural area that was open and got lots of

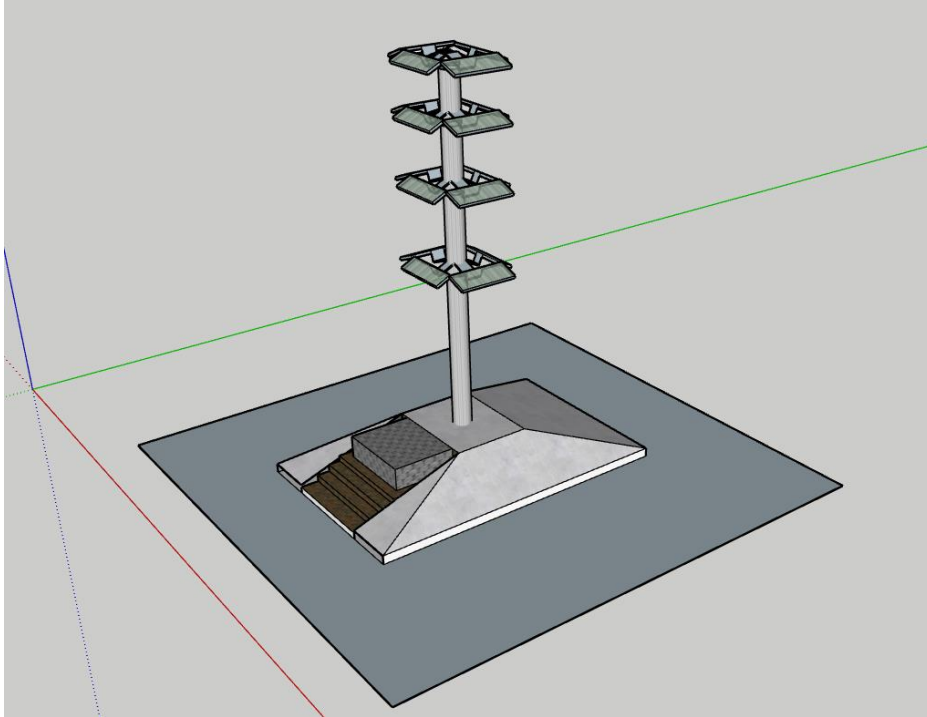
## OUR BIGGER IDEA

sun during the day. We chose Slangrivier because it matches all these properties and has a population of 5000, which is a nice and small place to start off. While we designed our pylon, we had to take terrain into consideration, because if it was muddy and rained a lot, then the pylon would sink into the ground if it was built straight up. So, we added a little slope at the base of the pylon to make it more stable. But of course, as you will see in an aerial photo of the area, it is very sandy. And along with a very dry weather pattern, it allows the pylon to be more stable than normal.

[Here is the evidence of how it went](#)



Here is an aerial view of Slangrivier.



*First solar tower model designed in SketchUp by Oliver Thom*

This is how well it worked:

Conclusion.

Problems.

Our biggest problem was nothing really to do with the project, but rather with all of us working together. We all have barely anything in common and have different expectations for the outcome of this project. We started working on this project isolated from the others in our group, and although we thought we accomplished a lot, we hadn't at all. We wouldn't talk to each other about laying the narrative out, when to finish bits of the project, and even what our idea was in the first place. We had a wake-up call in the 4<sup>th</sup> week of Term 4 from our Big Ideas coach, and we had a big discussion about our project.

Suddenly, we really started to enjoy brainstorming up ideas about what we can add to our polished idea. We were able to get together during the Big Ideas periods and get

lots of work done. We had to find a common ground, which was getting the project done, and slowly but surely, we started getting along quite well. Now, we are doing work quicker than ever.

#### Recommendations going forward with the project.

There are some problems that we didn't know how to solve and if you've enjoyed our idea and want to try and solve these problems for yourself, we would love to hear.

Rural Areas aren't fixed places. They can move around depending on the circumstances. The problem is that we don't know how mobile the pylons are, as well as how much it costs to move them.

Your Big Idea coach is a very important asset to your group and is the most reliable person to go to if you ever have questions about where to go next. Unfortunately, our coach was away on many trips throughout the course, so lots of our questions went unanswered until he came back. Try and communicate with your coach as much as possible.

## Bibliography

J.S. Cook, 2016. *These 7 Machines May Just Convince You Perpetual Motion is Possible..* [Online]

Available at: <https://makezine.com/2016/04/07/these-7-machines-may-just-convince-you-perpetual-motion-is-possible/>

[Accessed 17 September 2019].

Tech Insider, 2018. *YouTube*. [Online]

Available at: <https://www.youtube.com/watch?v=buF8ASmwXt4>

[Accessed 21 September 2019].

Wind turbine blimp <https://www.fastcompany.com/3028096/a-wind-turbine-inside-a-floating-blimb-can-bring-power-anywhere> 19 September 2019

Wind energy efficiency [https://greenliving.lovetoknow.com/Efficiency\\_of\\_Wind\\_Energy](https://greenliving.lovetoknow.com/Efficiency_of_Wind_Energy)  
23 September 2019

How a wind turbine works in depth

<https://www.energymatters.com.au/components/wind-energy/> 25 September