

# **The Lancing**

# *Geographer*

**Is the future vegan?**

**Diamonds are Forever?**

**Can the 'North' ever be levelled up?**



**Lancing  
College**

**Journal of the Geography Department of Lancing College**

## Editorial:

Hello and welcome to this year's Lancing Geographer – which aims to display and promote original work from College students.

In this issue, we see articles from around the world, from local beaches such as Littlehampton to international locations including Hong Kong.

We tackle issues about veganism and the future of climate change, as well as the ethics of diamond mining.

Other features discuss the North-South divide and the globalisation of Rotterdam.

We also present a few of the winning entries from the College sustainability poster competition.

Thank you for reading, and we hope you enjoy!

**Grace C, Thomas W, Bea J, Serena F, Adrian T, Izzy H, Mimi C.**

## The Editorial board



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*Thanks, and due credit is therefore given to: Sophie Clark, Flux Vegan (cover image and p3), fantastic (p6), barnyz (p17), Frans Berkelaar (p18), Daniel (p20), Klm Alniz (p21), Andrew currie (p26), Dumphaisizer (p33), Leminade (p39), Les Chatfield (p40), Oddafjord (p44)*

# Is the future Vegan?

*Grace C*



*Grace C* discusses the impact of switching to a Vegan diet.

Today 14.5% of global greenhouse emissions are due to the production of meat and dairy, and with the population forecast to increase before 2050, this number is only going to increase. This is a challenge, as more emissions increase the size of the greenhouse layer, leading to greater global warming. The Paris Agreement has created the target of well below 2°C in an attempt to slow the rate of climate change, and for this goal to be attainable, a change in diet is crucial.

Looking at a study published in 2018, the top 4 foods that produce the most greenhouse gases per kilogram are animal products, with beef being the largest, with almost 60 kg of CO<sub>2</sub> produced per kg of beef. This is mainly due to cow's and

sheep's ability to digest tough material, which produces methane, a powerful greenhouse gas. The release of methane also accounts for the higher climate cost of cheese and dairy compared to poultry.

Cows also take longer to grow and reproduce, which requires more land and feed than other types of meat. This additional time increases the cost of production, and as farmers are profit-driven, they will choose agricultural techniques that are cheap, and these tend to be more environmentally damaging. One example of this is the supply of grass needed for grazing, to increase supply, a nitrogen-based fertilizer can be used, but during the production of this fertilizer, CO<sub>2</sub>, and another potent greenhouse gas, NO<sub>2</sub>, is released.

The need for space for agriculture has led to an increase in deforestation, as land is cleared. This causes a loss of a long-term store of carbon in the biomass, and unsustainable deforestation techniques can further add to the emission of carbon into the atmosphere.

On average, plant-based foods release 10-50 times less greenhouse gas than animal products, with the exceptions of chocolate and coffee, though this tends to be due to production techniques, and as they are less highly demanded, their overall environmental impact is less significant.

The Intergovernmental Panel on Climate Change (IPCC) published a report comparing the impact on emissions of a “business-as-usual” diet, and a range of other diets, including veganism. The study also considered the projected increase in population size and showed that a complete switch to veganism could save approximately 8bn tonnes of CO<sub>2</sub>e per year by 2050, while a “business-as-usual” scenario would continue to produce 13.7bn tonnes of CO<sub>2</sub>e each year. This is predominantly due to the large amounts of land that would be freed to replant forests, increasing the amount carbon-storing biomass available. Other factors include the production techniques, as well as the transport of the food, which are counted as ‘food miles’.

There are also other goals that may be met due to a vegan diet, mainly by reducing the global mortality rate by 6-

10%, as diets will be more in line with standard dietary guidelines that promote a healthy, balanced diet. The most commonly over-consumed food with the highest health implications is red meat, so reducing the intake of this with further improve the physical health of the global population.

Factors that may influence the ability to switch to veganism include geographical location, as some climates are more suited to the production of crops that may make accessing a balanced diet easier,

which may promote veganism. There are also cultural and religious beliefs to consider, as some have restrictions on the types of food that can be eaten, as well as the methods of production.

There is significant data to show that a drastic switch to plant-based diets will have an impact on cutting global greenhouse gas emissions, but is it enough? Through the Paris Agreement, we will have to cut emissions by 7.6% per year until 2030, which is 15 gigatonnes of CO<sub>2</sub>e per annum. This will be a positive step towards the goal and paired with the additional stores of carbon in the biomass planted, we will be well on our way to reaching this goal.

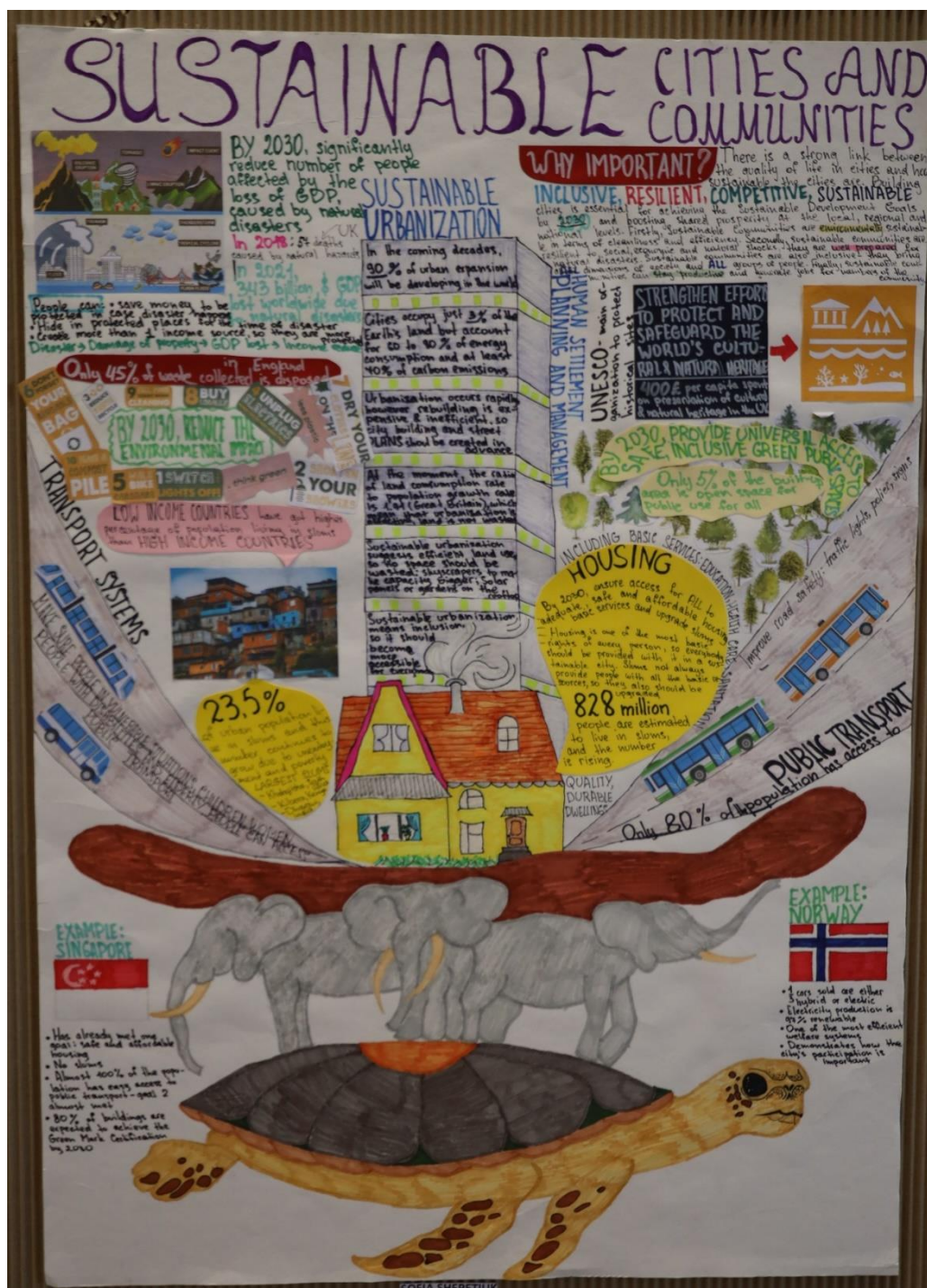
There is significant data to show that a drastic switch to plant-based diets will have an impact on cutting global greenhouse gas emissions

In the last decade, the prevention of further climatic change has become a serious issue, and without dramatic changes, we are unlikely to be able to prevent it, so what else can be done? Will we have to take a radical Malthusian approach, of a mass reduction of population, or will we be able to develop more sustainable farming techniques that

reduce the environmental impact of the meat and dairy industry.

Grace is a LVI Geographer, and is on the Editorial Board of the *Lancing Geographer* journal.

Below: The winning entry for the sustainability poster competition: Sofia S (IV Form)



# Branching out: Could coppicing be a solution to climate change?

**Ben MS**

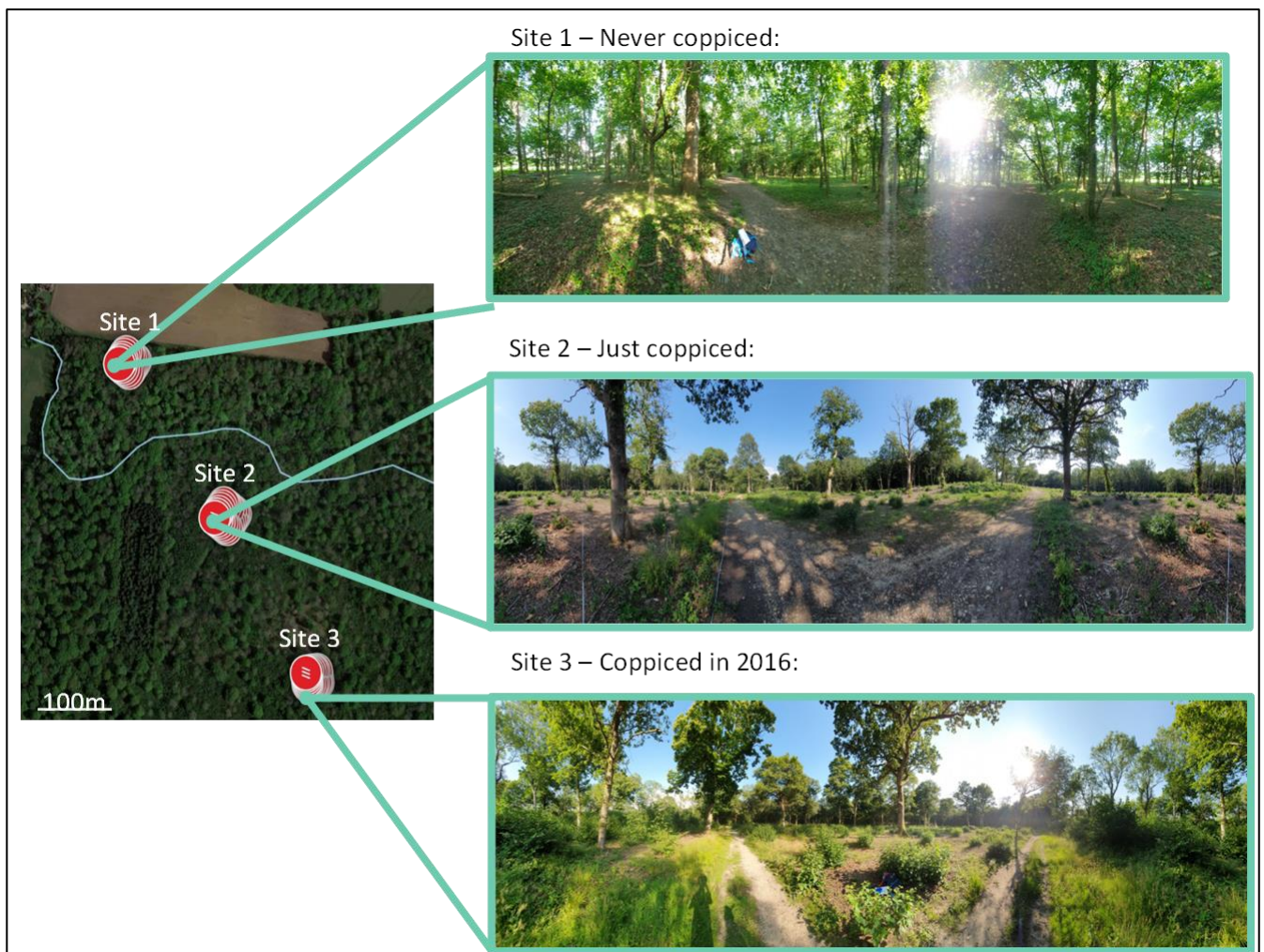
*Ben reports on original research, initially conducted for his A Level geography project, on the role that coppicing might play in managing climate change.*

Coppicing is a traditional method of woodland management which causes trees to put out new shoots from their stump or roots if cut down. It is traditionally done to promote new growth of trunks, preventing a tree from dying of old age by forcing its trunk to be in a permanently juvenile state, whilst also enabling the harvesting of wood from the same tree on multiple occasions over time (National Trust, 2021). This is the most common technique used for sustainable wood farming.

With the growing climate change crisis, it is becoming ever more necessary to examine methods of carbon sequestration and release. At the international COP26 meeting in 2021, the imperative of recognising and acting to mitigate climate change was plainly evident. Carbon dioxide is a greenhouse gas, and as such contributes to the global warming effect the Earth is currently experiencing (IPCC, 2014). Tree planting is a commonly cited method of increasing carbon sequestration, and reducing the amount of carbon dioxide in the atmosphere (OneTreePlanted, 2021).

I investigated the effects of coppicing over time on various carbon stores in a forest





at 3 different locations; the first having never been coppiced, the second being coppiced around 4 weeks before my data collection began, and one coppiced 5 years before my data collection, in 2016. I collected my data in The Isles Wood, near Crossbush, lying with the South Downs National Park in West Sussex, England.

At each of the three sites (one never coppiced, just coppiced and coppiced in 2016) I measured soil moisture, soil organic (carbon) content, and took canopy photos and used a range of statistical tests to reach my conclusions.

All weights are in grams unless otherwise specified.

### Soil moisture and organic content

The explanation for the higher overall levels of soil moisture in Site 1 is interesting. Because the large trees have deeper root systems, it is likely that topsoil moisture was less affected by the larger trees than smaller trees. Water is not removed from the topsoil by large trees' roots, because they instead remove water from lower down in the soil. Therefore, the site with the lowest mean soil moisture was Site 3, likely because of the large quantity of shallow-rooted coppice.

The explanation for the variability of soil moisture in Site 1 is the same – due to the aforementioned lack of plants in between the large trees, less moisture was absorbed there, with more moisture being absorbed around the large trees.

carbon and soil moisture were higher in Site 1 than Sites 2 and 3, whilst also being more variable within Site 1 than the other two.

The high variability within Site 1 may be due to the high canopy coverage from the large trees preventing the growth of significant plant life between the large trees, as such leading to more carbon sequestration around large trees, and less in between them. The data were not formally analysed in this study.

Soil organic carbon is likely higher in Site 1 due to the aforementioned higher sequestration of carbon by large trees – Site 1 has more large trees than Sites 2 and 3, and as such we would expect higher amounts of sequestration.

### Soil decomposition

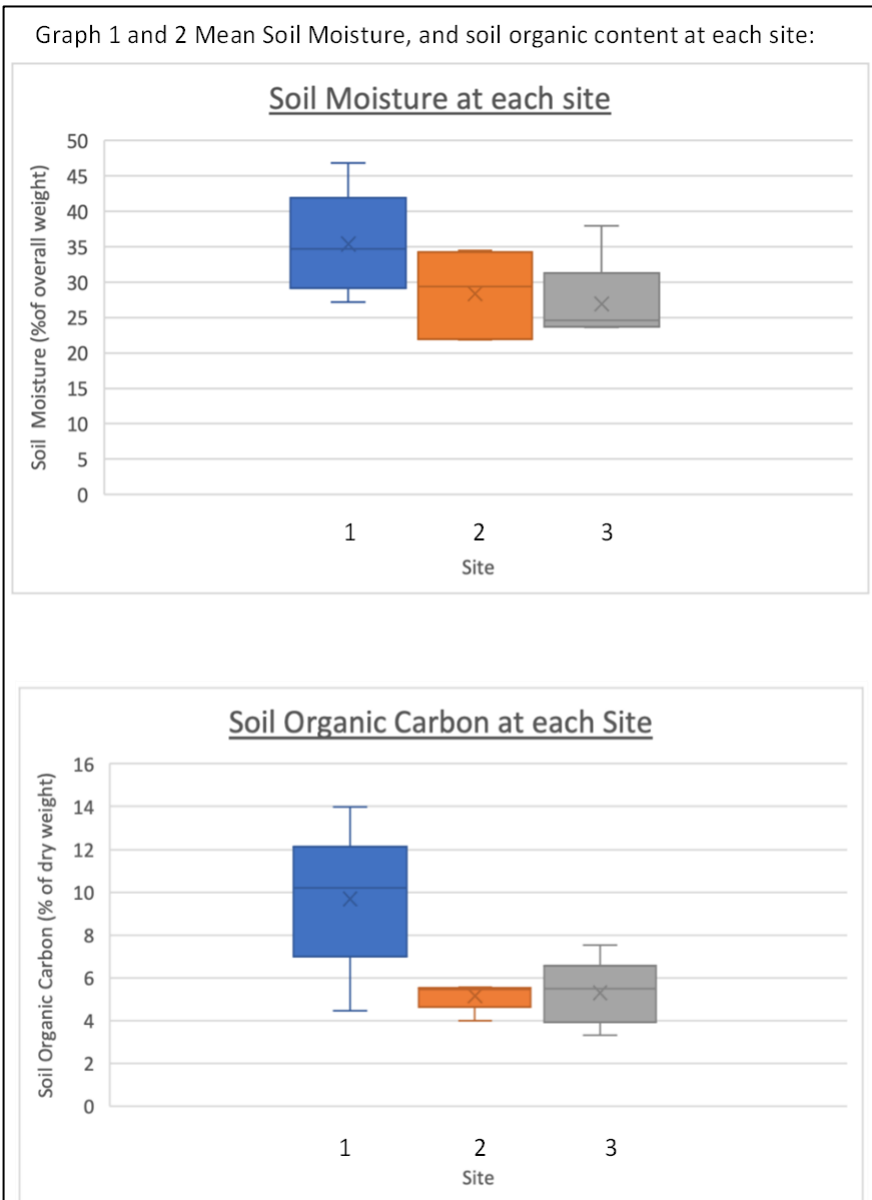
These figures demonstrate the differences in soil composition between each of the 3 Sites. As shown, Site 1's soil

contains a much higher quantity of carbon and water as a percentage of its overall mass in comparison to Sites 2 and 3.

Interestingly, here, t-tests showed that there is no significant difference between Sites 1, and Sites 2 and 3 combined.

However, there are significant differences

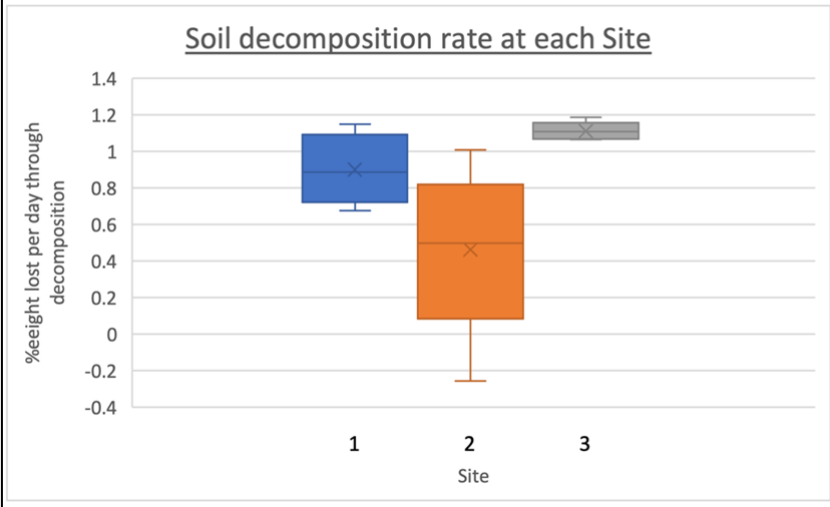
Graph 1 and 2 Mean Soil Moisture, and soil organic content at each site:



There is a significant difference in the soil moisture and soil carbon between Site 1, and Sites 2 and 3. For these data, I found no significant difference between Sites 2 and 3 for either soil moisture or soil organic carbon. As such, I combined these data sets to create an overall 'coppiced vs uncoppiced' picture. Both soil organic



Graph 2; Soil decomposition rates:



environment. Another interesting observation is the wide intra-site variation of Site 2 - most of the other data shows a higher intra-site variability within Site 1, with Sites 2 and 3 being more consistent. This could be explained because the microbiome in Site 2's soil adjusted at different rates, with the majority of areas taking time to adjust to the

new conditions, but other areas adjusting much more quickly, and as such causing significant variation within the site, between Site 1 and Site 3, and between Site 2 and Site 3. Highest decomposition rates were found in site 3, with no significant difference between Sites 1 and 2. This could be because the soil microbiome and organisms take time to adjust to the newly coppiced environment, and as such the soil decomposition rate could have remained similar to that of the pre-coppiced

new conditions, but other areas adjusting much more quickly, and as such causing significant variation within the site,.

There is a clear difference in the coverage of the sky between the coppiced and uncoppiced sites. In Site 1, the vast majority of the sky is covered by canopy - on average 85.7% was covered. This is a stark contrast to Sites 2 and 3, within

Canopy photographs at Site 1:





which there is much more sky visible, at 9.3% and 24.8% coverage respectively. Based upon an unpaired t-test I performed on the results, the difference

between Site 1 and Sites 2 and 3 is highly statistically significant. The critical value for my data was 2.16 for a 95% certainty that the results are not due to chance,





occurred, rather than 8 years as I previously postulated.

### Conclusion

The focus of this study was twofold: to investigate whether coppicing affects carbon stores and flows in a forest, and to evaluate whether this difference, should there be one, will impact a coppiced area's carbon offsetting capability.

For the first aim, I can conclude that coppicing does affect carbon stores and flows. My data show that carbon stores in trees and soil are negatively impacted by coppicing, most notably in the short-term.

This change is particularly evident in soil organic carbon, where the quantity of carbon sequestered in the soil was nearly halved between the coppiced and uncoppiced Sites, with my results showing a total sequestration of 62, 34, and 35 metric tonnes in Sites 1, 2, and 3 respectively.

This change, and the evident lack of recovery and slow upwards trend after coppicing raises the question— is the recovery and growth of carbon sequestration in trees enough to sequester the same quantity of carbon before the area is re-coppiced, usually after 12-14 years? From my results, I calculated that the rate of sequestration in trees is approximately 2.2 metric tonnes/year, so it would therefore take

around 21½ years for the overall sequestration in the site to match what it was pre-coppicing. As such, it would seem on the surface that coppicing is highly detrimental to overall carbon sequestration, especially in the short-term. What also needs to be considered, however, is how quickly the coppiced sites sequester carbon – around 2.2 metric tonnes per year in only a 20x20m area. Therefore, in the 12-14 years of its growth, the coppice should sequester between 26 and 31 metric tonnes of carbon. Assuming this cycle continues, coppicing should be beneficial overall to carbon sequestration, as it will continue to sequester the same quantity of carbon

every year. After just under 2 rotations (24-28 years) of coppicing, the Site should sequester more than that of a mixed forest.

It is also important to note that the usage of wood obtained from coppicing is crucial in determining

whether it is more effective at carbon sequestration. Should the coppiced wood be used as firewood, for example, and be burned, then coppicing would represent a poor method of carbon offsetting and sequestration – all the carbon sequestered by the trees in 14 years will just be added back to the atmosphere. Should the wood be used for construction, or anything else which does not involve returning the carbon back to the atmosphere, coppicing is a highly effective method of carbon sequestration and

My data show that carbon stores in trees and soil are negatively impacted by coppicing, most notably in the short-term

offsetting, due to the rapid nature of the sequestration.

In this study, I found that decomposition rate was highest in Site 3, the site coppiced 5 years ago. There was no difference between Sites 1 and 2, an interesting and unexpected result. I previously postulated that this could be because the soil microbiome could take some time to adjust to the new post-coppicing environment, although I have no data or direct evidence to support this theory. While slightly more carbon is being released into the atmosphere from Site 3, carbon is also being sequestered at a significantly higher rate than the other Sites. Therefore, this data does not change any overall conclusions – coppicing is still a more effective method of carbon sequestration than leaving the area as mixed forest.

Drawing from the soil moisture results, it is likely that both aerobic and anaerobic decomposition is occurring at all Sites, as

the soil moisture was neither especially high or low in any Site. As such, it is expected that this decomposition is releasing a mixture of carbon dioxide and methane into the atmosphere, with inter-site variation in soil moisture being too small to significantly influence the type of decomposition occurring. The balance between aerobic and anaerobic

decomposition is also influenced significantly by soil temperature, which was not examined in this study. Had I had the time, it would have been beneficial to collect this data, perhaps over the course of a week, to see how soil temperature differed between each Site, and what possible impact this could have had on the type of decomposition occurring.

As my data show, Site 1 has a much greater percentage canopy coverage than Sites 2 and 3. In addition, for the majority of the data, Site 1 showed much greater intra-site variability. This may be due to the canopy coverage differences between the Sites. The higher canopy coverage in

Site 1 prevents as much light from reaching the ground, which in turn has several impacts. Firstly, less light is available for plants to grow in-between the trees. As such, plant growth is much slower, if not impossible for many species. Less carbon will therefore be sequestered in the soil in areas between the trees, as well as there being less moisture absorbed from

the topsoil in these areas. A higher level of canopy coverage may also cause evaporation from the topsoil to decrease as less energy from the sun will strike the ground, heat up the moisture in the soil and cause it to evaporate.

The nearest neighbour analysis supports the assumption that Site 1 has never been

I can conclude that coppicing, if managed correctly, can be a legitimate part of a successful carbon offsetting strategy. This has important global implications in how forests should be managed to help combat climate change.

coppiced or managed, with a near-perfect random result, whereas Sites 2 and 3 showed more regular tendencies, as would be expected after coppicing. This is because an important facet of coppicing is to ensure that each plant is healthy, and has enough space, light, and nutrients to grow. As such, a more regular and ordered pattern of plants is ideal, to ensure that each plant does not infringe on any other nearby. This supports the validity and representativeness of using Site 1 as a comparison to Sites 2 and 3.

Overall, in this study, I was able to demonstrate that coppicing does affect

carbon stores and flows. Whilst researching, I have learnt about why and how coppicing is used and have gained further insights into the importance of trees as a carbon offsetting solution. I have gained an appreciation of the difficulties of obtaining data from the field. It has also helped me obtain a greater understanding and familiarity with several statistical tests and data presentation techniques.

I can conclude that coppicing, if managed correctly, can be a legitimate part of a successful carbon offsetting strategy. This has important global implications in how

forests should be managed to help combat climate change.

*Ben is a UVI Geographer. This article is an abridged version of Ben's A Level coursework.*



Left: I11 Form Geographer Isabella B's winning entry for the sustainability poster competition (the original poster is on display in the geography department)

# Can the 'North' ever be levelled up?

*Thomas W*

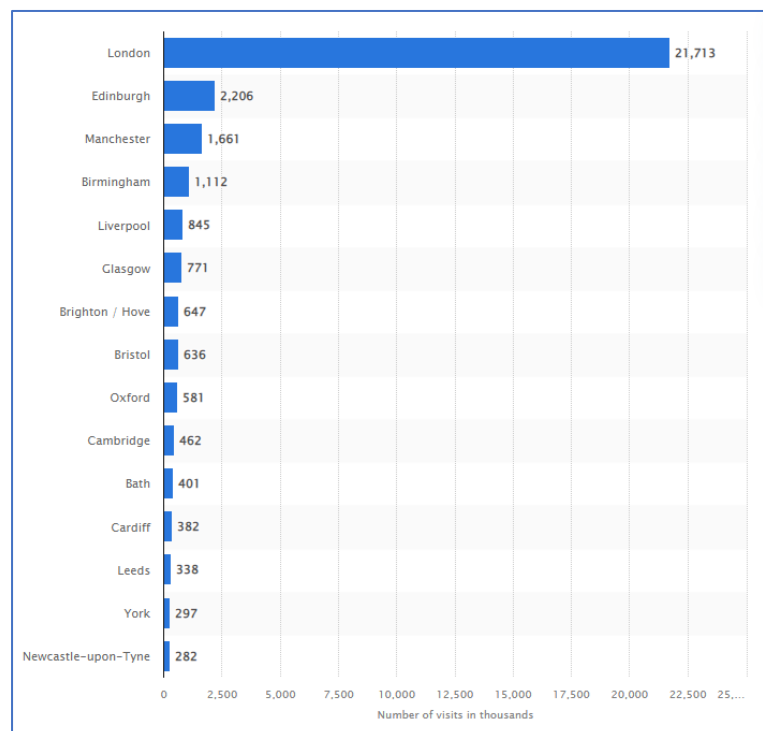
*Thomas W investigates why there is such an imbalance between London and the rest of the UK.*

We all know the UK is divided in many ways: country-to-country, county-to-county, constituency-to-constituency, but perhaps the largest division in the UK is not a political one, but rather a social one: the division between the "North" and the "South". But, just how present is this divide?

If I were to say "the United Kingdom", you're probably thinking of the Union Flag. Now, the Union Jack likely reminds you of Big Ben, Westminster Abbey, tea, red phone boxes, the Royal Family and the London Eye. All of which are in London. This brings me to the first point: London is the centre of everything 'UK'. It's the capital city. It's by far the most global city. If you type in on Google: 'Things to do in the UK', every single suggestion is a famous landmark or point of interest in London. Namely the British Museum, Tower of London, Buckingham Palace and so on. For example, the beautiful area of the Yorkshire Dales isn't mentioned anywhere. Yes, there is a fair amount of tourists that visit the Dales, however the huge majority of which are from the UK.

For international tourists, when they touch down in London, it is highly likely they remain in London. But can you blame them, though? With the huge amount of attractions, music festivals, places to eat, royal parks and more, there is more than enough to do for a pleasant couple of weeks in the city. That doesn't mean to say that other places, like York, Manchester or Leeds don't have all these things, but they're just less renowned. So, why is the M25 often the edge of the earth for tourists?

A big reason is because it is the air travel hub of the UK. London itself has seven airports, the two main ones being



*In 2019, 21.7 million people visited London*

Heathrow and Gatwick, with Heathrow being the busiest in the world in terms of air traffic with one flight taking off or landing every 45 seconds. It is also the seventh busiest in terms of size and the third busiest in terms of passenger numbers. It's the hub for the UK's flagship airline, British Airways, with other leading airlines like EasyJet and Ryanair operating from Gatwick and Stansted respectively. On top of this, four of the top five busiest airports in the UK all serve London. London is also the UK's only city to see international trains (Eurostar) to and from Europe.

Another reason is through advertisements. Movies and TV shows from the US, for example, give an informal representation of place for the UK, and often don't leave the London's boundaries in the

process. For example, 'Friends' shot two episodes in the UK, both in London. 'Parks and Recreation', 'Will and Grace' and 'The Simpsons' all feature the capital, and only the capital. The people who watch these shows often conclude that, if they want to visit, they'd 'go to London', not 'go to the UK'.

London is also often ranked highly among the 'World's Best Cities' list, with *Afar Magazine* rating it as number one. There is a tourism amplifier effect in London: the high amount of tourists means more gentrification and regeneration, which improves aesthetics and attracts more tourists, so more gentrification and

regeneration projects, attracting more tourists and so on. Because of this, London is often the government's centre of attention, and it's why London receives so much funding to improve it's (already positive) image. For instance, London is where the 2012 Olympic Games were held. It's where England won the 1966 World Cup and it acted as a magnet for the nation on the 2022 Platinum Jubilee.

So, is there any hope for the North, or anywhere else outside the M25? It's clear that there are many areas outside the capital that need 'levelling up' (essentially

If you type in on Google: 'Things to do in the UK', every single suggestion is a famous landmark or point of interest in London.

an upgrade), in particular northern seaside resorts like Blackpool, which have become ghost towns since the travel industry expanded to Europe in the 20<sup>th</sup> century. The South East (referred to as London commuter belt towns)

towns/cities such as Brighton & Hove, Canterbury and Dorking are all wealthy areas, as they often have residents who commute to their jobs in London, but at the same time, a spacious home and cheaper land in a less-dense area. As you begin to creep further out and further north of the commuter belt, however, urban areas become more and more in need of refurbishment.

The government has announced plans to help give these areas a much-needed upgrade, to close the gap of aesthetic inequality between stark opposites like Bradford and Knightsbridge. The plan was in the 2019 Conservative Party's





manifesto, with the aim of 'reducing the imbalances', primarily economic, between areas of social groups across the United Kingdom'. This includes infrastructure projects, such as the nearly £100 billion HS2, connecting London with the North. As wanted, this turned the Northern England constituencies blue in the 2019 election, Conservative got a majority and were in power, as the North began to sit back and wait for Parliament to do their bit in finally giving the them a bit of attention.

Immigrants may be surprised at how expensive London is to live in, so may look elsewhere in the UK for a home. This would likely include the South East commuter belt if they want/need to be close to the capital, but if not it would include other areas in the UK, such as Birmingham, Manchester, or Edinburgh. Edinburgh, Scotland's capital, has been rated the UK's most cultural city, and is the second-most visited city in the UK

after London, with 2.2 million visitors in 2019 (~20 million less than London).

So, can it be concluded that the North is non-existent? In terms of population, absolutely not. The North has a population nearly double that of London (14 million), and as a result it clearly requires more attention than the amount they're currently getting, as opposed to the low tourism numbers. In terms of how renowned they are, especially to the international eye, the rich culture of Leeds Castle and the walled city of York have been dissolved by the changing of the guards at Buckingham Palace and the red double-decker buses, that ultimately make the North seem invincible.

*Thomas W is a LVI Geographer, and on the Editorial board of The Lancing Geographer.*

# How globalised is Rotterdam?

*Marianna P*



*Marianna explores her home city, Rotterdam in The Netherlands.*

Globalisation is the increased connections between a place and the rest of the globe, such as with trans-national corporations, tourism, culture, and food. Globalisation has shown to that it has accelerated since the 18th century due to advances in transportation and communication technology, and Rotterdam (the Netherlands's second largest city) is an impressive example of this happening.

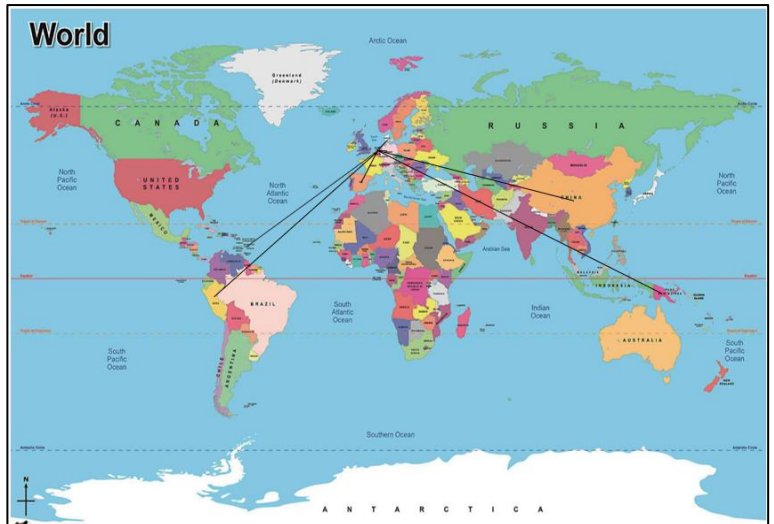
The Netherlands has been said to be one of the most globalised countries in the world, many geographers have spoken

and/or written upon the connections of Amsterdam (Netherlands's capital city) and Rotterdam harbour, as well as the city itself. A report by the OECD (Organisation for Economic Co-operation and Development) discusses Rotterdam as well as the development of the city. This includes trade, which is just one, but vital way that connects Rotterdam to the world. In 2021 alone, 468.7 million tonnes of cargo throughput passed through Rotterdam Port, an increase of 7.3% from 2020, and back to pre-pandemic levels.

This world map is a representation of where the boats in which passed through

the harbour during the half an hour I sat and watched. After looking up where the boats came from, I took the main country of origin and from the Netherlands as a country made a connection from the Netherlands to the country in which the boat had travelled from. This includes those docked in the area I was positioned next to the river. One of the boats which was docked was the Spanaco reliability vessel from Antigua Barbuda. The furthest reaching was one of the Maersk companies shipping boats which 2 vessels with an 18-day rotation enter through the Rotterdam harbour or get stationed there for trade purposes.

Rotterdam Centraal (Rotterdam's main train station) sees a wide variety of destinations. Many of them are located within the Netherlands (such as Amsterdam and Leiden). However, Rotterdam also has rail connections to around 6 different countries and their respective cities, such as Dusseldorf, Hamburg, and Koln (all within Germany), Brussels and Antwerp (in Belgium), Lille and Paris (in France) and London (UK).



Rotterdam The Hague airport is connected globally to a variation of different countries, mostly within Europe as shown on the second map (such as Iceland, Spain, Turkey, UK and Italy, among many others). The airport is a massive part in how transport impacts the extent of globalisation within the city as it connects to 50 destinations. The airport also sees local connections to the city centre, through buses and the Metro Lijn E. These direct rail and air links are especially helpful for the 50,000 international students in Rotterdam, as many attending the universities (such Erasmus University) mostly originate from one of these countries.



I interviewed people in three different districts: Beurs, Katendracht and Delfshaven. In Beurs, 8 of the 10 people interviewed stated they are not from Netherlands, 6 said they worked for a trans-national corporation. 5 said that Rotterdam does not have a wide variety of cultures, 2 saying it is not as international as Den Haag, and 7 saying they consider Rotterdam an

attractive place for students and workers.

In the Katendracht, 7 of 10 said they are originally from the Netherlands. 6 people said they work for a TNC, just 9 stated there is a wide variety of culture represented in Rotterdam, 6 said it is more globalised than Den Haag, and all 10 said it is attractive for students and workers. In Delfshaven, 6 of the 10 said they are originally from the Netherlands, 9 of the 10 said they work for a TNC, 7 said Rotterdam represents a wide variety of cultures, 4 say it is more international than Den Haag, and (the same as Katendracht), 10 say it is an attractive place for students and workers.

Rotterdam is a globalised city through its trading systems, harbour, global air and rail links, education and more. I wouldn't say that Rotterdam is primarily globalised through its trade and harbour, but I would say it definitely impacts the rate of

globalisation within the city. I would say that transport systems with the trainline as well as airport are the most significant in the globalisation of Rotterdam, the connections between a variation of countries are vast and allows flows from country to country or even within the country to further places, with over 50 destinations by plane and rail connections to 6 European countries. We can also conclude that the Beurs area is not the most globalised area in the city, according to the questionnaires, where members of the public suggested it is not as globalised as other areas (mainly Delfshaven where 9 of 10 say they work for a TNC), such as the city centre with many global retailers.

*Marianna is a UVI Geographer and this research formed her A Level project.*

Centraal station (an architectural masterpiece) enhances educational and economic globalisation and tourism through mass national and international rail connectivity.



# Diamonds are Forever?

*Bea J*

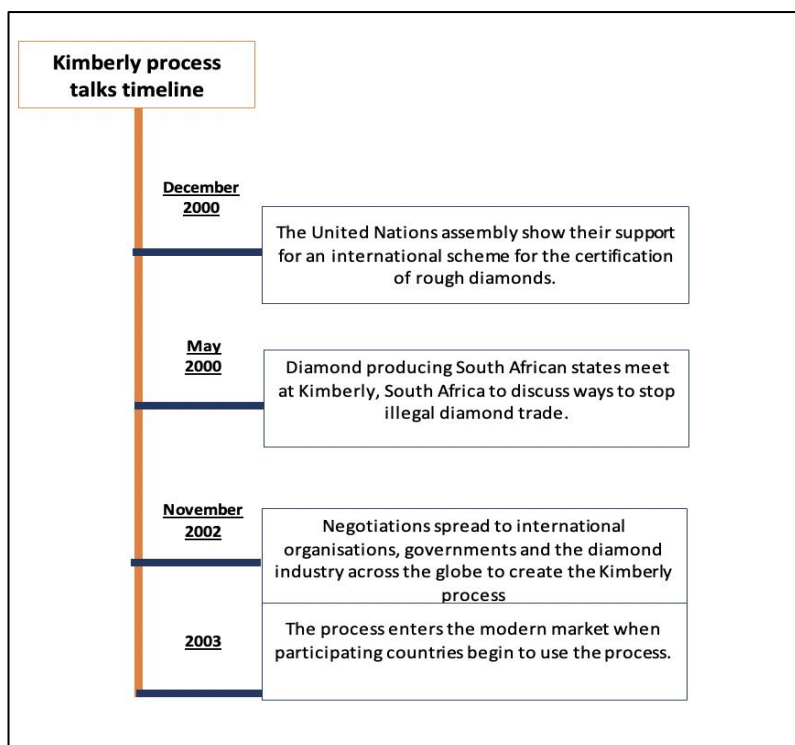


*Bea J investigates the ethics of the global diamond industry.*

Diamonds were discovered in South Africa in December 1866 by a 15-year-old, Erasmus Jacobs, when he found a transparent rock at his father's farm on the bank of the Orange River near Cape Town. This transparent rock became known as the Eureka Diamond. Since then, diamond mining erupted and has now become a vast industry in South Africa and many other countries. Many large companies, such as De Beers now mine across South Africa and across the world for both diamonds and other materials, due to the lucrative nature of this business worldwide. However, to what extent are these companies mining safely and in accordance with government regulation processes?

Historically and even in present times, diamonds have been used to fund enormous conflicts and many deaths can be attributed to the illegal trade of diamonds. This is where the infamous term 'blood diamond' originates from. In 1980 the world diamond council estimated that around 20% of diamonds sold were to be used for both illegal and unethical purposes. By 2004 this percentage had fallen to around 1% however, which highlights a significant improvement in governments cracking down on illegal diamond mining. Two reasons can be attributed to the decrease in illegal diamond trade, an investigation and a process to identify the authenticity and origins of diamonds

Firstly in 2000, the Canadian Ambassador for Angola, Robert Fowler, was appointed by the UN to investigate the illegal diamond trade. He produced a report which highlighted the following countries to be involved with illegally trading diamonds:



diamond mines in the 1990s. Now, however, they are responsible for 8% of diamond exports and a member of the Kimberly process. The second way illegal diamond mining was targeted was through a process known as the Kimberly Process, named after an alluvial diamond, mine found in Northern Cape, South Africa. Talks on the Kimberly process started in May 2000 to discuss ways to stop the trade in so-called conflict diamonds, therefore, making sure that the purchase of diamonds was not

- **Ivory Coast:** illegally traded diamonds in 1999 after the civil war broke out, they sold to war-stricken countries such as Sierra Leone. In 2005 this trading was combatted when the UN security council banned the export of diamonds.
- **Liberia:** from 1989 to 2003, Liberia was undergoing Civil war, the UN discovered the president of the country, Charles Taylor, was supplying Sierra Leone, with weapons in exchange for diamonds. The UN proceeded to ban diamond trading within the country. Once peace was gained, the UN lifted sanctions and they were able to resume diamond trading and became part of the Kimberly process.
- **The Democratic Republic of Congo:** suffered looting from their

financing rebel movements trying to undermine their governments across the globe.

Today the Kimberly process has 54 participants accounting for 81 countries. All these participants produce roughly 99.8% of diamonds sold today. However, to be member and to be allowed to certify diamonds as conflict free, there are an extensive list of requirements. These include, import/export controls and the provision of data, and any shipments of rough diamonds must be accompanied by a certificate indicating that the diamonds are conflict free. These requirements help to ensure all countries involved follow the rules and therefore reduce the illegal trade of diamonds.

A different country chairs the board behind the process on an annual basis, in 2022 Botswana is chairing the committee with Zimbabwe as vice chair. Once again

to chair the committee specific requirements must be met.

Humanitarian and safety have been another reoccurring problem for diamond mining companies and countries. Across the world there are many examples of alluvial diamond mines dug by hand in horrendous conditions. For example, the Kimberly diamond mines were constructed in 1872, in this time there was little infrastructure available, so 50,000 miners were used to dig large pits in order to make shafts underground, in horrendous conditions. This mine also provided the roots of one of the largest diamond mining companies today, DeBeers.

Safety in mining has always been an enormous problem across the world, governments and international organisations are constantly trying to improve conditions, due to the high proportion of fluke accidents and lack of safety standards. They happen both in Low income countries (LICs) and High income countries (HICs). When mining started to take off in America in the 1800s, there were many documented disasters. One of the worst occurred on 6<sup>th</sup> September 1869. It claimed the lives of 179 men and boys working in the mines at the time. A shaft collapsed due to a fire and the workers in the mine suffocated and died. Prior to this accident, owners of mines were rarely held accountable for any disasters that occurred. This accident prompted a quick increase in safety regulations due to the enormous scale of death. Some new safety regulations included:

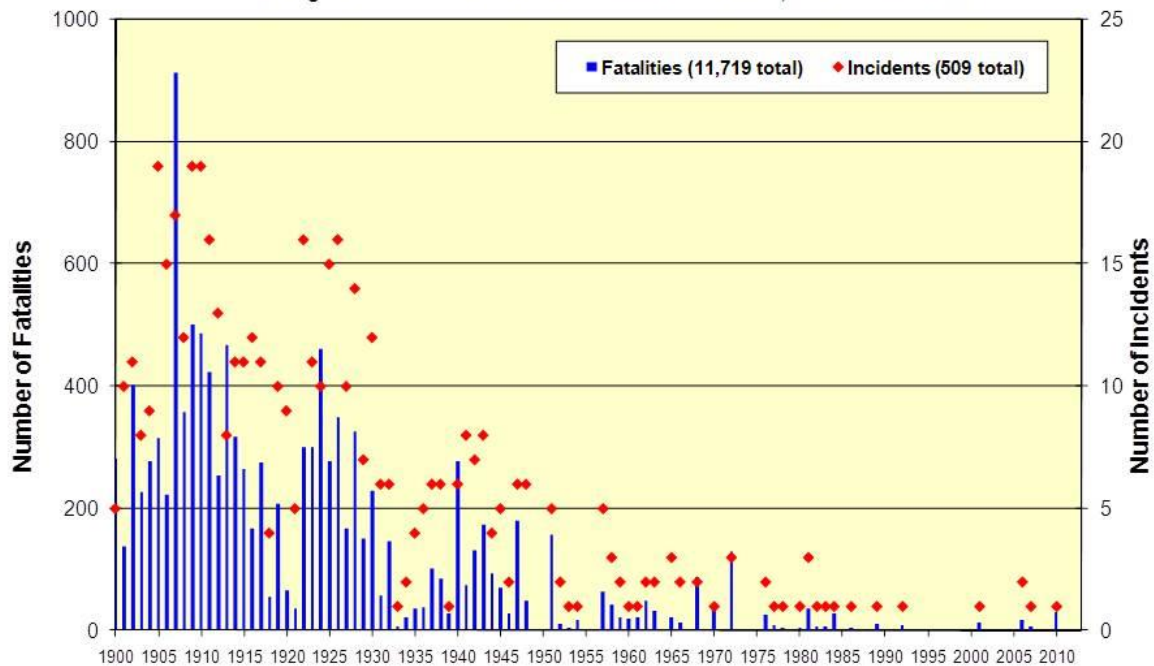
- Double shafted mines were to be compulsory as they provided an alternative escape route.
- Collieries could no longer be placed above mines.

Mining accidents also occur in the modern day in both LICs and HICs but given the contrast between LICs and HICs and the expectation they would have differing safety regulations due to their economy, it is surprising to know there is little difference between the two.

The 2010 Copiapo Mining disaster, Chile- a LIC. A section in the cave collapsed, trapping 33 men 700m underground with no way of escape. The lack of escape option was due to the unfinished ladders, the company running the mine, San Esteban, had not finished the ladders as a cost cutting method. The miners were trapped for 69 days and were eventually rescued after a temporary elevator was installed. This highlights the reason why the disaster was so severe- the company maintaining the mine, simply didn't want to spend their money on safety regulations.

## Coal Mining Disaster Incidents and Fatalities 1900 through 2010

A mining disaster is an incident with 5 or more fatalities; Data source: MSHA



Data source: MSHA



After the accident mining standards were raised across the world. In Chile, many laws were changed, and the mining department had a significant overhaul. After the collapse, 18 mines were shut, and a further 300 put under possible closure as the government deemed them unsafe. More rigorous safety checks in mines also began to take place across the world in order to make the workplace safer. This was a milestone for the global safety of mining, mainly in lower economically developed countries where workers did not have excellent working conditions. Because of the widespread media attention presidents of many countries acted quickly to check their own mines were safe.

On the 19<sup>th</sup> of November 2010, a massive methane explosion occurred in New Zealand, a HIC, at the Pike River Mine, near Greymouth. In the mine, there were 31 miners and contractors present. Two walked away with minor injuries due to where they were when the initial explosion occurred. The other 16 miners and 13 contractors were believed to be 1500m from the entrance of the mine making it incredibly hard to find them. On the 24<sup>th</sup> of November there was a second explosion, and at this point, the miners were believed to be dead by police. The explosion was believed to have been caused by a build-up of the highly flammable gas, methane and it was ignited by a spark. New Zealand apologised to families in 2012 because of the poor safety standards in place. The



investigation concluded that the mine violated 25 health and safety rules.

Both accidents have substantially changed the mining regulations in their respective countries, but is enough being done across the globe to ensure these accidents don't happen? The answer is yes. The UN along with many large international mining organisations are doing a lot to shut down illegal mines. Rules are now stricter and all HICs have been found to follow these regulations. In LICs there are organisations within the government to ensure that mines are safe. However, in LIC's challenges are still being posed, there are more "important things" on the governments list than checking the safety of mines.

To conclude, it is essential that governments have a heavy involvement in the management of mines and the industry to prevent disasters. If governments can also see what is going on in mines, they can help to prevent illegal trade of commodities. This will greatly help to reduce conflict in the countries where they have issues with the illegal diamond trade. As discussed above, the illegal diamond trade has nearly

vanished because procedures were put in place to stop it occurring, would it be viable to do the same with mining safety regulations by creating an international council consisting of any countries that mine? Yes, it would likely be a very successful method and ensure that all material coming out of mines has been mined safely and if not then it cannot be sold. The fundamental reason that these accidents keep occurring is because companies show little care in looking after their miners and more in making capital gain. This means that the mines are not safe and especially in LICs there are no checks to see if these mines are safe. Therefore, a system described above which checks that all material has been mined safely would be such an enormous success as companies would need to have safe mines in order to sell the material coming out of them. This method would need the support of every country that mines to be successful, but it is an achievable goal. In the coming years as technology improves, we are likely to see considerable improvements in mining safety standards and the likely the eradication of the illegal diamond trade

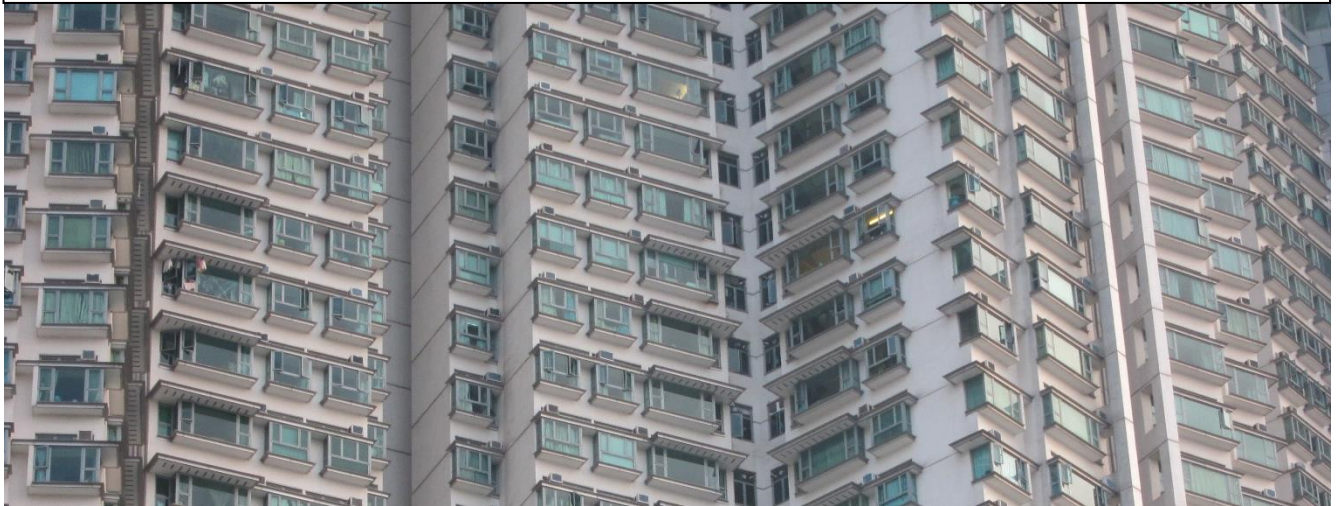
due to processes such as Kimberly and international investigations into the illegal mining of diamonds.



*Bea is a LVI Geographer and is on the Editorial board of The Lancing Geographer*

# All change in Hong Kong: How successful is the development of Tung Chung?

*James G*



*James G* investigates the rapid development of the Tung Chung region of Hong Kong.

Up until the early-1990's the Tung Chung area of Hong Kong's largest island, Lantau, consisted of a small fishing village of Ma Wan Chung (the Village) and a collection of historical monuments. The first phase of development of modern Tung Chung

commenced in the early 1990's as part of the Airport Core Programme of mega-projects to facilitate the relocation of Hong Kong's international airport to the nearby Chek Lap Kok Island. This phase was planned for a population of 22,000 people who primarily would serve the new airport. Subsequently, Tung Chung has been extended two more times and the population currently stands at about 100,000 people. Another phase of



reclamation and expansion is currently underway with an eventual target population for Tung Chung of 145,000 inhabitants planned.

In Tung Chung private housing developments and 5-star hotels are located in close proximity to government housing and traditional villages. Tung Chung can also be used as a case study for the challenges with planned towns; it could be viewed as highlighting the inequality in Hong Kong but equally this juxtaposition of various income groups may have a positive motivating effect on those that want to improve their social standing. By mapping the land use, conducting environmental quality surveys, and sending out questionnaires, I hope to get a better understanding of the sense of place in Tung Chung. In my investigation, I will use the old town around Ma Wan Chung village, as an approximation for the Tung Chung area before its development and examine problems with inequality in the area. The purpose of my investigation is to evaluate how the successful the development of Tung Chung New Town has been.

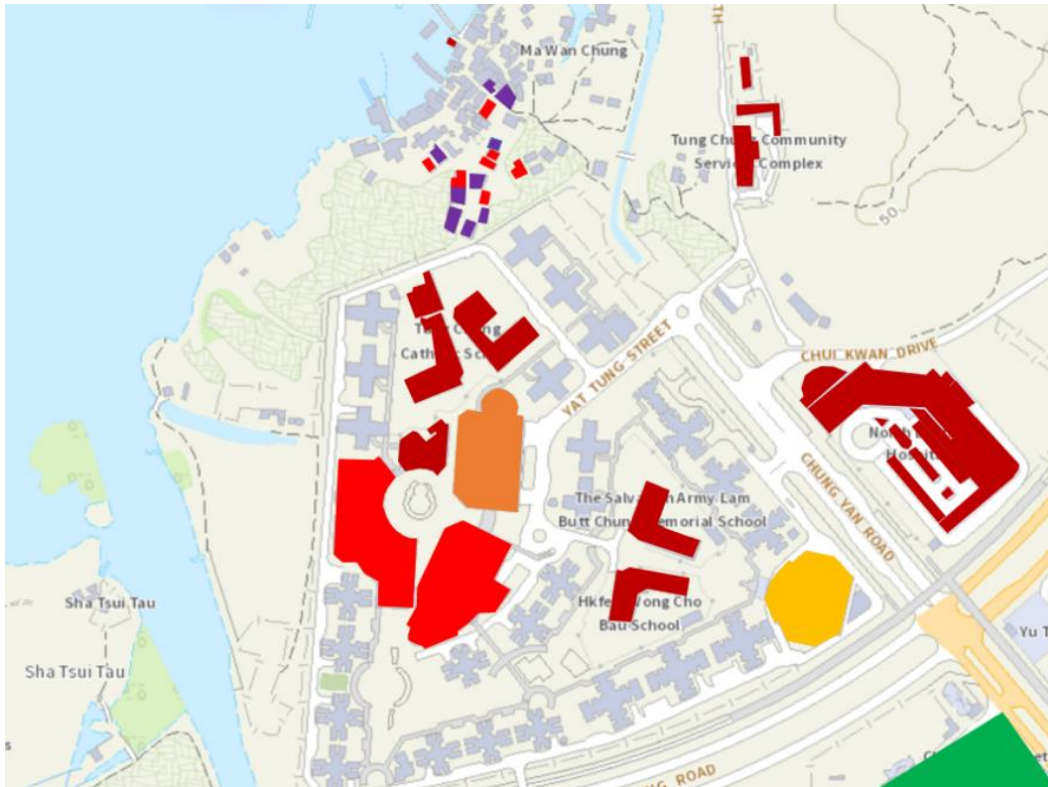
In this research, I also will answer the following questions:

- (i) Is land use more varied and suited to people's needs in planned towns?**
- (ii) How has the site changed over time?**
- (iii) How does the sense of place differ between the two sites?**

I used Google Earth Pro (GEP) to compare the physical landscape changes that the

developments have caused across different timescales. I collected this data using the timeline function on GEP and can use it to see different phases in the development. I made a screen capture of each map to record key points in the development. I learned that GEP satellite imagery is a very impactful way to show data, as it shows the real developments, when most of my other data contained assumptions of what life in Tung Chung would have been like prior to development. It is an accurate record and allows for time comparisons. I chose 5 screenshots as these correlate to different phases of the developments.

Annotated photographs and field sketches are a useful tool for building up a sense of place, and an impactful way to show data as they depict the site as encountered during the field surveys. They also facilitate greater understanding of the landscape than maps do, as generally we do not view areas from a bird's eye perspective. I used stratified sampling for my photos and field sketches to make them more visually impactful and maximised the amount of information that can be shown within a photo.



Code	Type of Land Use	Further information – extra letters
R	Residential	f = flat, t = terraced house, s = semi-detached house, b = bungalow, d = detached house
I	Industrial	l = light manufacturing, h = heavy industry, c = chemical, e = extraction/mining
C	Commercial	f = food, t = take-away, p = personal services, d = department stores, h = homeware & furniture, g = garage, m = market, s = specialist shop, o = office, v = vacant
E	Entertainment	h = hotel, s = sports centre, g = gym, t = theatre or cinema, b = bar, r = restaurant or café
P	Public building	e = education, l = library, h = hospital, c = place of worship, p = police station, a = ambulance station, f = fire station, w = welfare
O	Open space	f = farmland, p = park, c = cemetery, u = unused land, d = derelict building, s = sports field
T	Transport	B = bus station, t = taxi rank, c = car park, r = railway station
S	Services	f = financial, b = business, m = medical, e = estate agents, d = dental

schools, a hospital and a government facility. Commercial stores were the next largest land use, and could be found in both the estate and village. In the village, the main street has the most varied land use, as it is the only non-residential area.

**Question 1: Is the land-use more varied and suited to people’s needs in planned towns?**

Housing comprises the majority of the land area, and it can be seen as the grey colour. It is the most notable land use and dominates in both the village and estate. This is very unsurprising, as Hong Kong’s new towns are primarily built to house residents, according to government policy. Public buildings were the second most prominent land use, and they could only be found in the actual estate, with one anomaly of public toilets being found in the village. The Public buildings included

Restaurants dominate it, as the village is used as a mini entertainment hub.

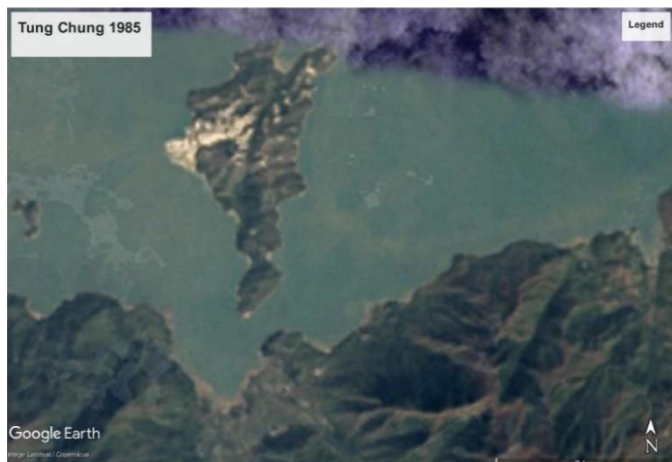
I was interested to find that the estate itself has much more varied land use. I consider that this is because government town planners and architects will prioritise the needs of residents. I also believe that it is because the population density of the estate is far higher. The village that has developed naturally has a land use that is very basic, as very little regulation has been followed making it difficult for a town planner or architect to decide on the land use that would most

benefit the village. Even if the village demanded a certain facility, it is unlikely to be added due to the small population of people that will benefit. The only government service added to the area is a public toilet nearby. On the other hand, the estate has a far more varied land use, including department stores, a shopping centre with land use variation within it, car parking, business centres, and of course housing. As can be seen by the map and pie chart however the land use in this area is still dominated by residential buildings.

**Question 2: How has the site changed over time?**

In this satellite of Tung Chung, the airport is further developed by adding a transportation hub through land reclamation, but also by reclaiming more of North Lantau to develop Tung Chung further. This is the Tung Chung New Town extension final phase of development, and the developers are aiming to finish this by 2030. When it is completed, it will have 49,600 residential flats and increase Tung Chung population by 145,500 people. It will also provide 500,000 square meters of land for office use, which will lead to a changing land use within Tung Cheung, with the aim of increasing the commercial component. According to “Towards A sustainable Reclamation for Hong Kong”, millions of cubic meters of sediment was dredged, and then replaced with marine sandfill.

These photographs show how the site has changed over time. In the earlier photograph, only a small village can be seen; when the initial land reclamation is



completed, the airport and city grow exponentially. The land reclamation completely transforms North Lantau, and this shows the scale of change that the development has caused. Whilst I focus on one area of the North Lantau development primarily, data from that area can be used to predict the impact of development in other areas.

**Question 3: How does the sense of place differ between the two sites?**

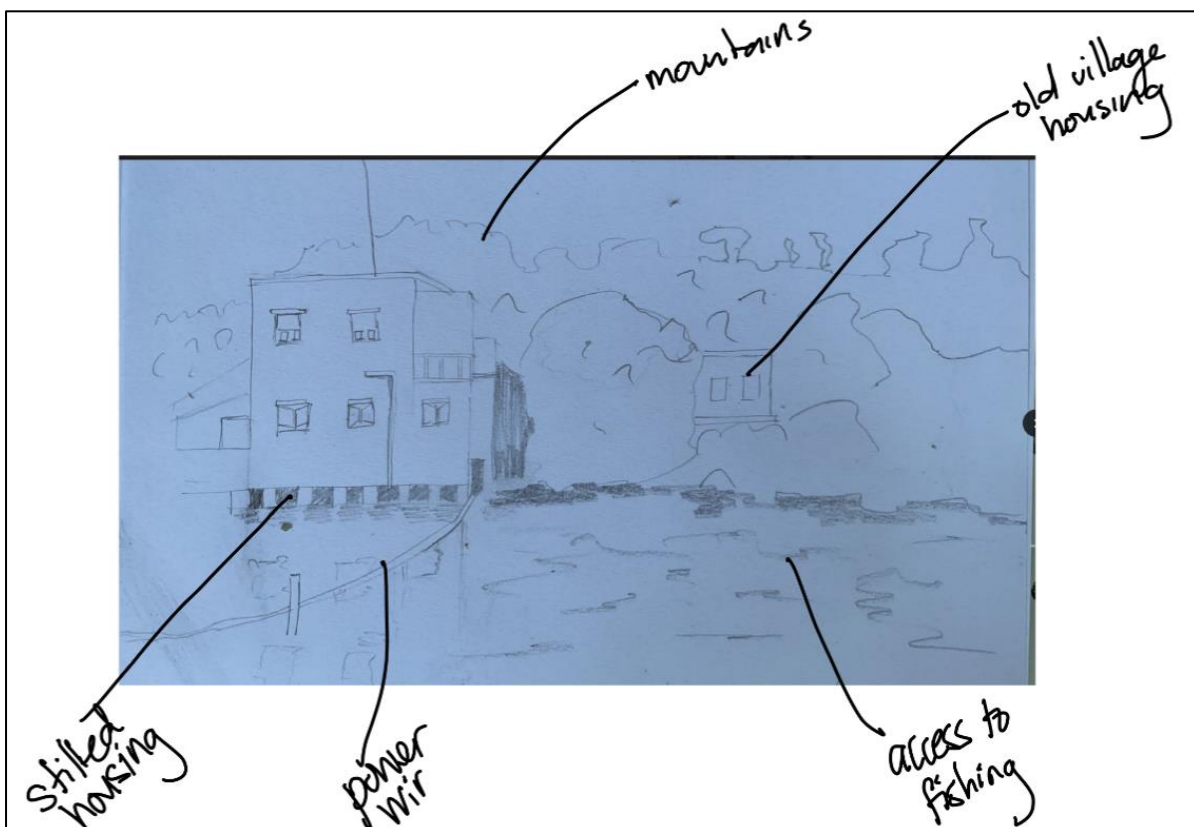
Sense of place can be conveyed in the annotated photograph and field sketch. These annotated photographs and field sketches show the difference in the sense of place between the two sites, Tung Chung Estate and the Old Village. Old stilted houses that are handmade and run down are found in close proximity to large high-rise buildings. The way of life of the villagers can be seen by the images and sketches, with fishing boats and restaurants are found all over the village. The proximity of the two sites is also very clear from the images, as the village is visible from the estate. Images are a useful qualitative tool for data presentation as they provide the opportunity for the reader to make their own judgements and cannot be construed. Images also allow the reader to

make their own judgements on the sense of place, and can show the cultural, environmental, and social characteristics that give meaning to an area. Cultural buildings such as Buddhist temples can only be found in the old village.

**Conclusion**

The aim of my investigation was to evaluate the success of Tung Chung New Town, and I aimed to answer this through various sub-questions. I concluded that Tung Chung New Town is a successful development, and that the quality of life in the Tung Chung estates compared to the nearby villages, is better.

This is backed up in the land use survey that I conducted, showing a more varied land use, catering to resident's needs, being found in the planned estate compared to the old village. I consider that successful developments allocate

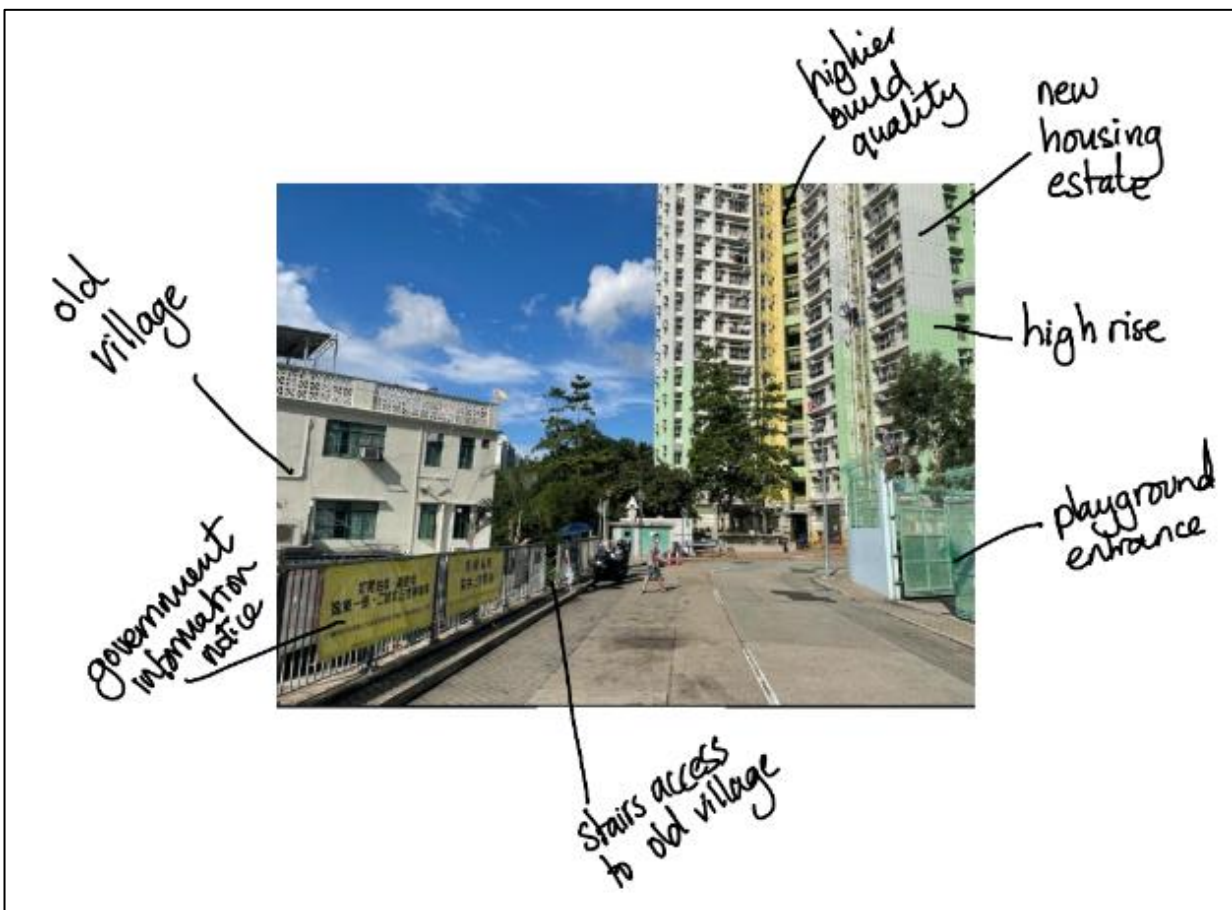


land use to cater for people's need, as this reduces the amount of time that residents need to spend outside of the town. Hong Kong new towns aim to be self-sustaining according to the Civil Engineering and Development Department (CEDD). I found that the land use was more varied in the Tung Chung compared to the old village, and this is due to the higher population in Tung Chung but also the fact that it is planned before being built, which allows for large public buildings and markets to be within the development. This relates to my first question.

One aspect of the new town that is not as successful is environmental quality. This means that the answer to my second question is no. The environmental quality of Tung Chung New Town is statistically no different to the nearby villages, and this

means that the government may not be doing enough to improve the environmental quality in their new developments. There was also a considerable amount of noise pollution at both sites. This is concerning as the estate was carefully planned by town planners and architects; the environmental quality of the town does not appear to have been a priority for them. Their street furniture, general outdoor space and quality of air is not better than the village sites, despite being planned by the government; this could be considered an oversight by government.

My questionnaire also showed that residents of the village also benefit from the developments, as 55% of them said that developments in Tung Chung positively impact their employment



prospects. This is partially due to the fact that most of the villagers rely on the restaurant industry, as shown by my land use survey, and therefore the development of Tung Chung brings more people to the area, and therefore generates more customers. The expansion of the airport will have the same impact, as many of the workers flock to the villages in north Lantau to enjoy a meal during their lunch hour. The fact that both parties benefit from the development means that it is successful, and people are not behind left behind from the developments. Despite this, some village residents said that their employment prospects worsened after the developments, presumably because of the environmental damage in North Lantau impacting the fishing industry, and village residents are less likely to say that they are positively impacted by the developments. My census data also showed that people in Hong Kong were attracted to new towns, as it is the primary destination for internal migrants. The quality of life is similar in planned and naturally evolved towns, but is slightly better in Tung Chung, where people have access to more facilities. Over time, the Tung Chung new town extension is improving the quality of life of residents overall.

The new town residents also felt that Tung Chung did not have a distinct identity, which is a view that emerged as I attempted to determine the changes in

The new town residents also felt that Tung Chung did not have a distinct identity

Tung Chung over time. Because new towns develop rapidly, and before 1980 there were very little residents in North Lantau, the culture around an area has very little time to develop, leading to a sense that an area lacks culture. Another factor leading to residents feeling that Tung Chung does not have a distinct identity is Doreen Masseys theory of a global sense of place, where time space compression and the dominance of a few global brands in each market leads to all towns looking similar, from new towns in Hong Kong to many other towns and cities in the world.

This case study can be used as a study for implementing a successful new town in an area that already has a population living in close proximity to it. Overall, I have demonstrated that the Tung Chung New Town development was successful; however, it has some issues that need to be addressed regarding poor environmental quality and a lack of local identity.

*James is an UVI Geographer. This article is an abridged version of his A Level geography coursework project.*



# What controls beach sediment in Littlehampton?

*Katherine E*

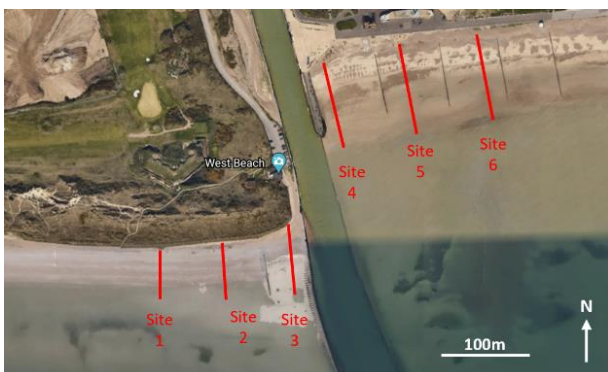


*Katherine investigates the different sediment sources in Littlehampton, to see 'what controls the beach profiles on East Beach and West Beach in Littlehampton?'*

I compared the sediment types and gradients of the profiles at each of the sites, and specifically, compare the West Beach with the East Beach.

Looking at the beach profiles, sediment types, sediment transport data, sediment sources and beach nourishment data, gave me an insight into the sediment budget in Littlehampton and allowed me to see if there is a correlation between the site location and if this has an influence on the profile of the beach due to its position within the system.

I investigated the different sediment sources in Littlehampton which is an open system local to me; meaning it's a group of interrelated objects comprised of stores and flows where energy and matter can be transferred from one system as an input, to another system as an output - forming a unified whole (Raw & et al,



*Figure 1: A map from Google Earth that I annotated to show the locations of my study sites 1-6. (Google Earth, 2021)*

2016). The sediment budget is the movement and balance of sediment volume entering (as an input) and exiting (as an output) a particular section of coast. There are many different factors influencing the sediment budget and profile of a beach.

Coastal landscape systems store and transfer energy and material on timescales that can vary from a few days to millions of years. Over this varied timescale and through different systems, coastal sediment can be eroded, transported, deposited and the energy may be kinetic, potential, or thermal, which enables the natural geomorphic processes to alter the shapes of the landscape.

Coastal Sediment can be derived from a variety of sources, such as fluvial transport from rivers, offshore locations by constructive waves, tides, or nearshore currents, longshore drift, aeolian transport by wind as well as humans through beach nourishment.

### **My research: 'What controls the beach profiles on East Beach and West Beach in Littlehampton?'**

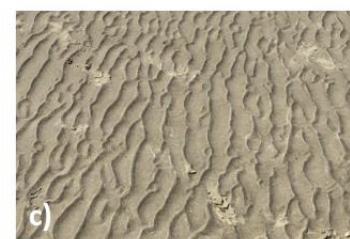
My Hypothesis for this is that the beach profiles of East Beach and West Beach in Littlehampton are different due in part to the position of the River Arun between them, and that there is a variety of different coastal sediment sources in Littlehampton.

### **Data**

To collect my primary data, I used a mixture of qualitative and quantitative approaches by annotating photos, measuring beach profiles, and recording the sediment type along the profile transects at six different sites in Littlehampton. Using stratified sampling I placed Sites 1 to 3 on West Beach and Sites 4 to 6 on East Beach, parallel with River Arun between them and systematically placed each site 75 metres apart from each other. In addition to this, the secondary data I used was sediment transport data and beach nourishment data on or around my study site. To gather this secondary data, I used the SCOPAC sediment transport study (Council, 2012 Update of Carter, Bray, & Hooke, 2004) and other relevant sources.



The following pages show the outcomes of my research.



*Photographs to show how I classified the types of sediment with shingle (a), sand and shingle (b), and sand (c).*

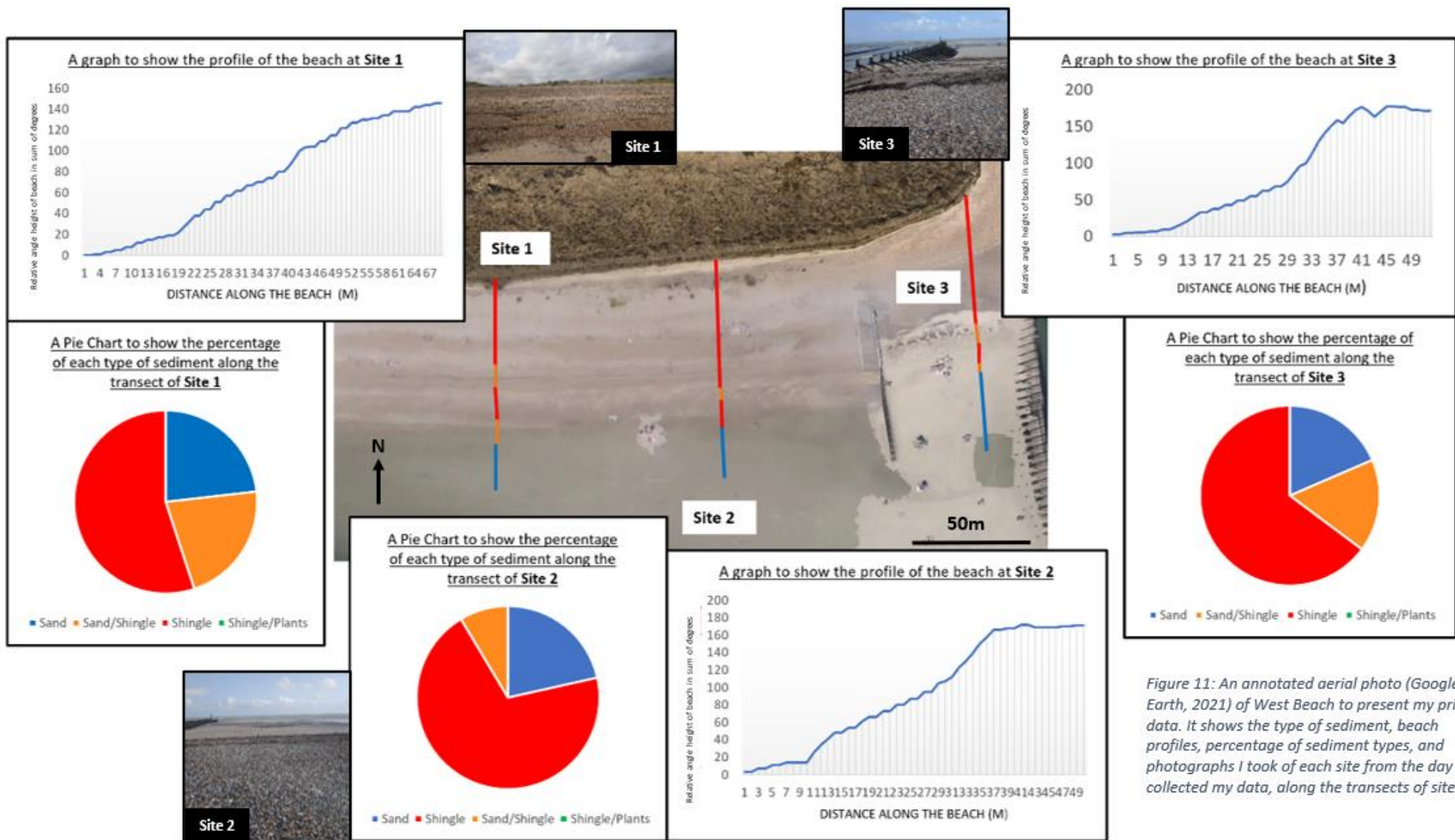


Figure 11: An annotated aerial photo (Google Earth, 2021) of West Beach to present my primary data. It shows the type of sediment, beach profiles, percentage of sediment types, and photographs I took of each site from the day I collected my data, along the transects of sites 1-3.

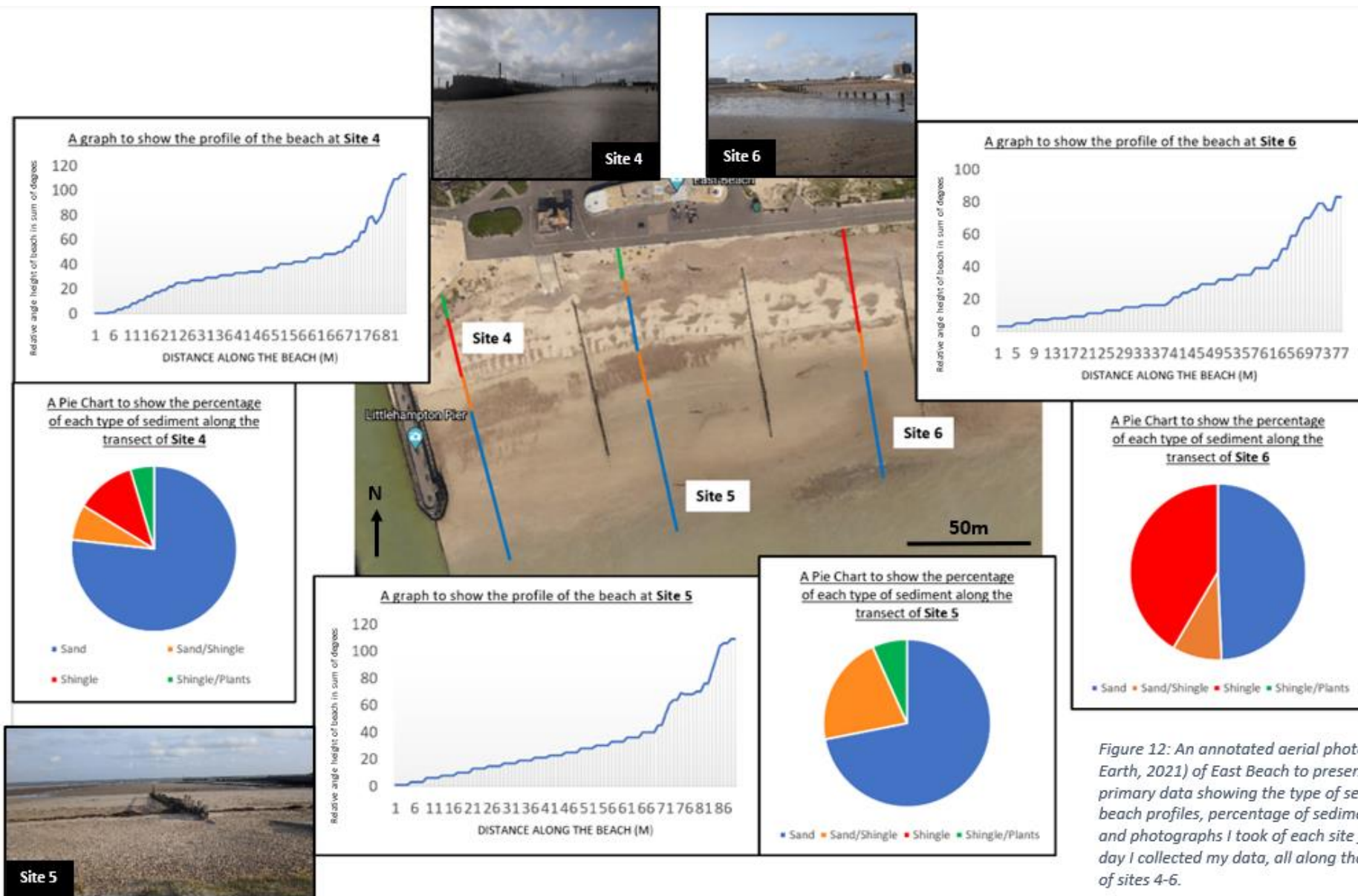


Figure 12: An annotated aerial photo (Google Earth, 2021) of East Beach to present my primary data showing the type of sediment, beach profiles, percentage of sediment types, and photographs I took of each site from the day I collected my data, all along the transects of sites 4-6.

My data show a number of things. There is clear difference between the beach profiles on West Beach and East Beach in Littlehampton this is evident in my graphs. The East Beach profiles at Sites 4-6 have very similar profiles to each other with a low gradient.

The graph shows that the beach gets progressively steeper as you move towards the top of the beach. The heights of these profiles are considerably smaller than the profiles on West beach.

West Beach is predominantly a steep shingle beach, with a high proportion of the beach only shingle at all three sites shown in red and East Beach is a shallow slope sandy beach with high proportion of sand. East Beach had some vegetation with shingle while West Beach only had vegetation at the top of the beach where the dunes began.

The profile of West Beach changes as you move west away from the Breakwater on the edge of the River Arun.

There is longshore drift travelling eastwards with 10,000-20,000 m<sup>3</sup>/a of gravel and sand towards West Beach Breakwater.

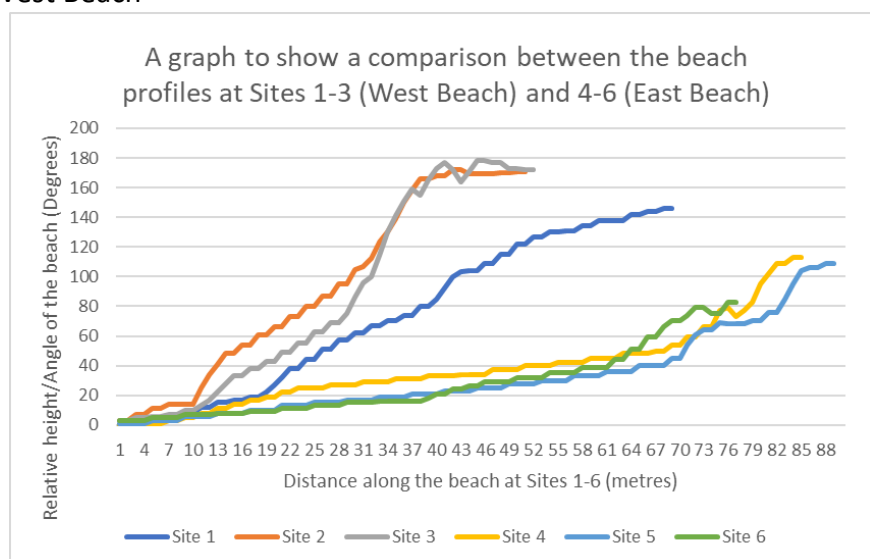
### Factors affecting West Beach

There are human factors influencing the sediment budget and beach profiles on West Beach. There is sediment extraction on West Beach for beach nourishment to replenish other local

eroding beaches as shown in the table. This extraction of sediment alters the natural profile and budget of the beach however, it is also replenished back through the natural process of longshore drift.

Longshore drift provides coastal sediment in the form of shingle from the West Beach to the mouth of the River Arun. Shingle makes its way along the West Beach until it is gathered by the wooden breakwater. At the landward base of the breakwater, dredging works take place in the entrance of the River Arun. This is because a large shingle bank, known as the 'Shoal Bank' can appear due to the continual overtopping and occasional breaches of the breakwater. This shingle is often extracted from the river mouth through dredging to keep access to Littlehampton Harbour and the River Arun open (The Littlehampton Harbour Board (LHB), 2016).

I found from the Littlehampton Harbour Board newsletter Autumn 2021, that at the start of October, they dredged the 'Shoal Bank' with a 22 metre long

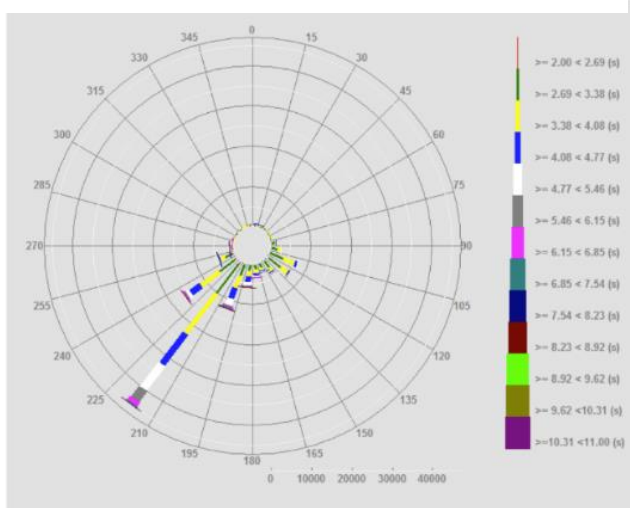


Extraction Site	Deposition Site	Years	Quantity m <sup>3</sup>
Littlehampton West Beach	Climping/Atherington Foreshore	1993	12,300
		1994-95	27,500
		1995	33,325
		1996	53,961
		1997	12,596
		1998	38,460
		1999-2000	13,312
		2000-2004	63,887
Littlehampton West Beach	Climping/Atherington Foreshore	2006	28,870
		2008	18,690
		2009	18,634
		2010	19,924
		2011-2012	34,817
	2012-2013	31,357	
Littlehampton Harbour Entrance	East Beach Littlehampton	1998	4,000m Beneficial use
Littlehampton West Beach	Rustington and Ferring	1981	7,500
		1991	1,800
Littlehampton West Beach	Sea Road, Rustington	2004	2,070

The table is from SCOPAC, to show the location, year, and approximate quantities of Beach Nourishment at Littlehampton between 1993 and 2013. (Council, 2012 Update of Carter, Bray, & Hooke, 2004)

excavator, where 6000 tons of material and 95% of which was loaded into lorries will be used in nearby coastal sea defences projects. These beach nourishment and dredging projects do not only affect the beach by extracting sediment, but also impacting the natural

A wave rose from Rustington directional wave rider buoy showing offshore wave heights between 01/05/2009 to 31/12/2014. (The South East Coastal group, The Environment Agency, 2017)



profiles of the beach with the use of large heavy machinery.

#### Factors affecting East Beach

East Beach is a very low energy beach environment in comparison to West Beach. This is due to the position of the breakwater between them which acts like a large groyne. This shelters the beach from the powerful offshore winds and waves arriving predominantly from the southwest (shown in the wave rose), which would have eroded the coast along Littlehampton but instead causes the sediment to build up on West Beach.

From my secondary data (Council, 2012 Update of Carter, Bray, & Hooke, 2004) and The Littlehampton Harbour Board (LHB 2016) I found that, through fluvial and estuarine sediment transport, there is a net output of sand, from the fast flowing river mouth of the River Arun. As the

sediment from the river and overspill from West Beach through the breakwater is transported seaward, it flows out to sea along a channel which lies beside the breakwater. Most of the sediment flows out, (if it is not extracted by dredging) where it is caught by longshore drift and transported east through offshore sediment transport. Due to this fast rate of sediment transport away from Littlehampton, the River Arun does not prove to be a significant fluvial sediment source for East Beach as it either flows east, through offshore transport or is extracted in dredging.

However, some of the sediment gathers at the bottom of West Beach at the seaward end of the breakwater, before being pushed around to East Beach so the sediment is transported in a westerly direction and accumulates in a shingle bank parallel to the breakwater extending to the third groyne on East Beach. This provides East Beach with a small source of

sediment, sand, which I found contributes to the highest percentage of sediment types along my transects on East Beach.

The profile of East Beach is not only due to the position of the river and position of the breakwater, since there are also groynes on East Beach to maintain the sediment budget, so it is not in deficit and eroded away. There is also the impact of human visitors on East Beach to consider since this is one of the most visited beaches on the South Coast and maintained with its shallow profiled, sandy qualities making it attractive to tourists, especially during the summer months.

*Katherine is a UVI Geographer. This article is based on her A Level coursework project.*



# Living the suburban dream: Where is better- Brighton or Hove?

Noah S



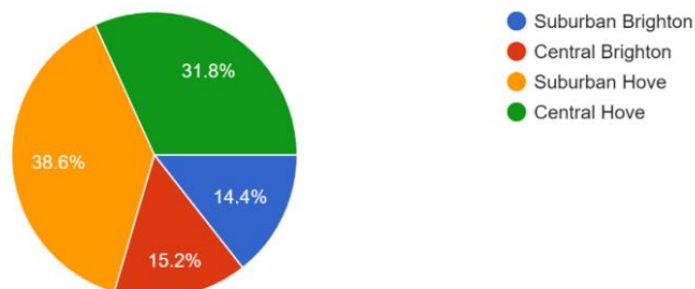
Noah Steele investigates the differences between Brighton and Hove.

Perception of place is an interesting topic to research because it is such an intangible, and subjective thing, as it depends on people and how they see and experience a place and determine what makes a place how it is. It can be

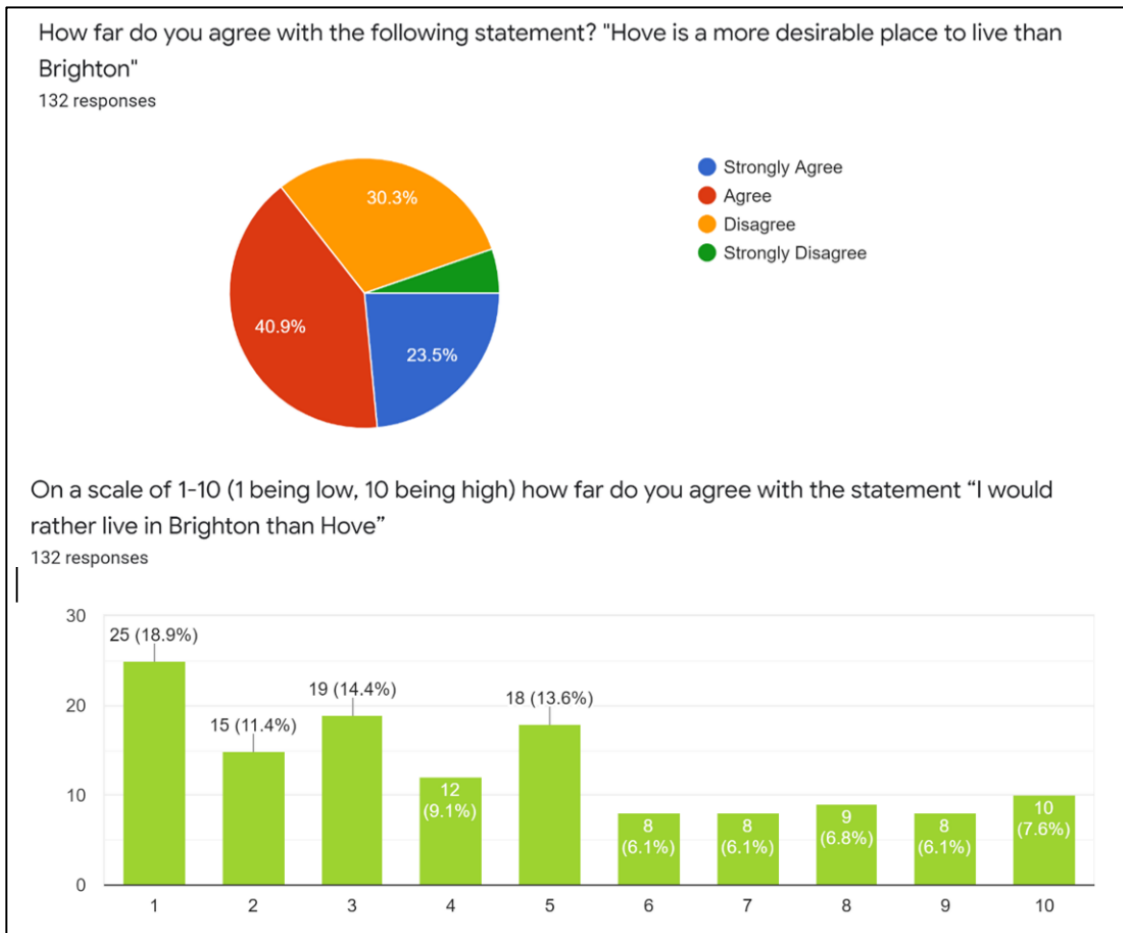
influenced by several varied factors, like age, gender, sexuality, and religion. The population in Brighton and Hove together is just over 290,000 according to the Office for National Statistics, with more than half of them living in Brighton, including almost 40,000 students at the university of Sussex and the University of Brighton. According to 2011 census data,

Which of these 4 areas would be most appealing for you to live in?

132 responses







there is an even, 50/50 split of genders in Brighton and Hove, with 47% of people being between the ages of 19 and 46, significantly higher than the national average (35%).

Based on the well-known "Hove actually" expression, I expected there to be a difference between the two areas suggesting that Hove is a more posh place with the perception it is wealthier than Brighton in general. I have 5 main research questions.

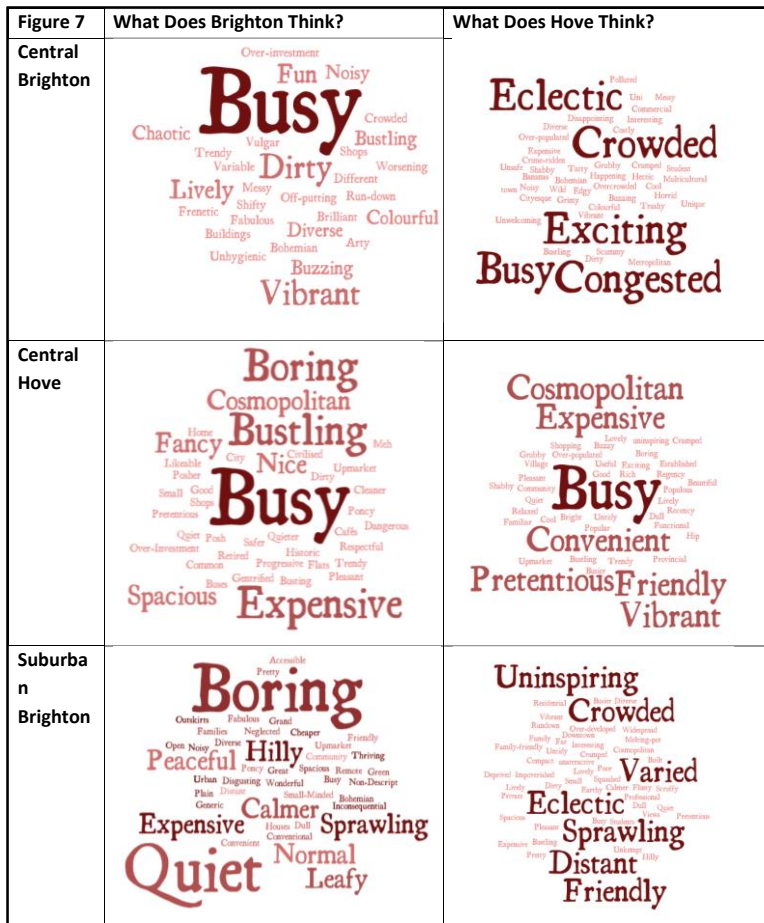
- How does environmental quality change between the town centre and the suburbs in Brighton and Hove, and how do they compare to each other?
- How do people perceive Brighton, and Hove?

- Is Hove "actually" better than Brighton?
- How significant is the change in environmental quality between the town centre and the suburbs?
- If given the choice which area would people rather live in?

My hypothesis is that environmental quality will be better in the suburbs than in the town centre. I also expect the general perception of Hove to be more positive and that it would be perceived as a more upmarket and affluent area to live, especially in the suburbs.

My data shows that more than 64% of people agreed that Hove is a more desirable place to live.

Many of the words that were used to describe these two locations carry negative



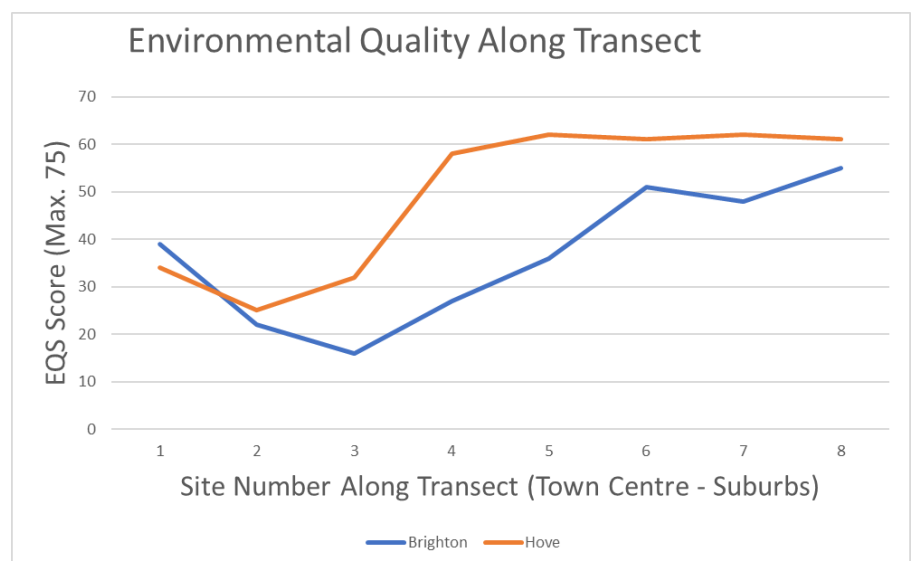
fifty-fifty split of positive and negative opinions surrounding the area. This could be partially a result of bias.

To calculate the Environmental Quality Index, I took a total score, with the maximum available points being 75, of the environmental quality survey using the data I collected. The line graph compares how the environmental quality in Brighton and Hove changes as you travel outside of the city centre. At each site, I also measured the sound level. Hove straightaway overtakes Brighton and rises at a much faster rate before levelling off after site 4. They both finish, again around 5 points away from each other, Hove having the higher score. When in Brighton Site 6 was the first site at

connotations (crowded, congested) although there were still positive words used (exciting, vibrant) As a comparison, the words used to describe Hove appear to be more positive words than those used for Brighton. This is shown on the word cloud- the more often the word was used by people in my research the larger it appears.

which most of the housing was single household residency, whereas in Hove, this could be seen from site 4 onwards. This could suggest one of 2 things: either there are more families in Hove, that need more space, or the space per person in Brighton is much lower than in Hove.

For the suburbs of Hove, people either used the word boring, or synonyms, or positive words, which suggests aside from not being that interesting, in both cases the suburbs are perceived in a positive way, much more so than the centres of each town. For Brighton however there seemed to be around a



Despite Brighton being noisier, the noise level decreased at an almost identical rate, as shown by the linear view of the change in noise level. Ambient noise is a good indication of environmental quality, as indicated by the survey where many people used synonyms for the word when describing the suburban areas of Brighton and Hove. After completing a product moment correlation test, the values were both close to one, suggesting there is a strong, positive correlation between the 2 variables.

To conclude all the data that I have collated, the survey suggested that people would rather live in Hove than in Brighton, and the general perception of Hove is more positive than that of Brighton.

People would rather live in Hove than in Brighton, and the general perception of Hove is more positive than that of Brighton.

My research found that Brighton is perceived to be safer, be less polluted, have more open space, have quieter roads as well as have better building quality. I also was able to conclude that in every location (bar 1 when they were tied) the ambient noise level is quieter in Hove.

- How do people perceive Brighton, and Hove? – *Generally, people used more positive words to describe Hove, and saw it as a more affluent, wealthy, and aspirational place to live, but the perception of the town centres was equal, it was only when I looked at the suburbs that a difference seemed to emerge.*
- Is Hove “actually” better than Brighton – *From the research that I have conducted, the answer is yes.*

*As a place to live, Hove has been shown to be more desirable, and the environmental quality, and noise levels are objectively better in Brighton than they are in Hove. However, it really depends on a person. It is an incredibly expensive place to live, and so in that respect it is worse than Brighton, where the average house value is lower. Whether or not it is “better” is very subjective.*

- How significant is the change in environmental quality between the town centre and the suburbs? – *Very. Figure 9 and Figure 8 both demonstrate this very visually, that the environmental quality is*

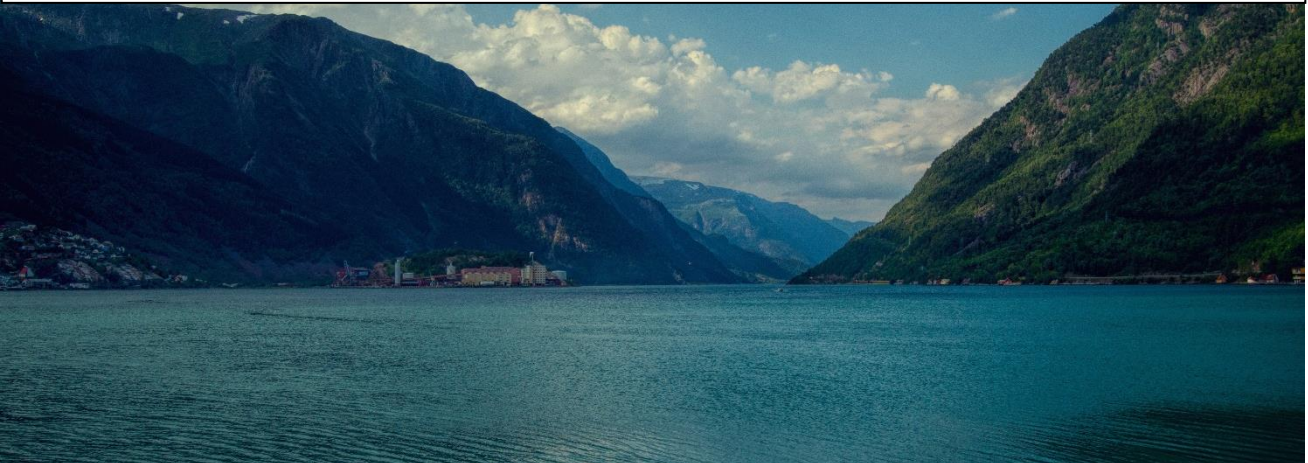
*far higher in the suburbs of both areas than in it in the town centre.*

- If given the choice which area would people rather live in? – *Hove. Even when considering that more people from hove answered the survey, there was still a majority agreement that Hove was a better place to live, or that people would rather live there.*

*Noah is a UVI Geographer. This research formed part of Noah’s A Level coursework*

# How does being located in a fjord influence the characteristics of a beach?

Alice S



*Alice investigates coastal processes in a beach system in a Fjord.*

I carried out my fieldwork project on the west coast of Sweden and looked at three beaches in order to see if being located in a fjord influences the characteristics of a beach. I did this by comparing one beach located within a fjord too two beaches located outside the fjord, I looked at both the characteristics of the beaches and significant flows of energy which influenced them.

Coastal landscapes can be viewed as systems as they store and transfer both energy and sediment. Systems may be at a state of equilibrium where the input is equal to the output, if not then the beach will either be eroded or there will be a build-up of sediment through deposition. In general, coasts are viewed as open systems, as material and energy can be both lost and gained, however, some

stretches of coastline are known as sediment cells as they are generally regarded as closed systems, typically no sediment is transferred between cells, the boundaries of these sediment cells are influenced by the coastlines shape and topography.

Coastal landscapes are influenced by a range of factors. The wind is a source of energy for coastal erosion, transportation and deposition. Waves which are also influenced by the wind can alter the coastline, they can cause longshore drift, erode and transport sediment and are key in the formation of many coastal

landforms, waves also play a key role in the beach profile and structure of a beach. Coastal landforms evolve over time due to climate changes, submerging landforms are created when sea levels rise. An example of this is a fjord, which is a submerged glacial valley, with cliff like

sides. They have a “U” like structure which reflects the original shape of the glacial valley.

Waves are commonly categorised into two types, constructive and destructive. Constructive waves tend to be quite low in height, have a long wavelength and a low frequency. The swash movement tends to be uninterrupted and so it retains its energy, a key feature of these waves is therefore that they have a stronger swash than backwash so tend to deposit material onto the beach. Beaches that are exposed to constructive waves tend to have a gentle gradient and smaller sediment. Destructive waves have a greater height, shorter wavelength and a higher frequency. In these types of waves, the backwash energy tends to be stronger therefore eroding the beach and creating a steeper beach profile with larger sediment as smaller sediment tends to be eroded.

The aim of my investigation is to compare the three beaches and see if there is a

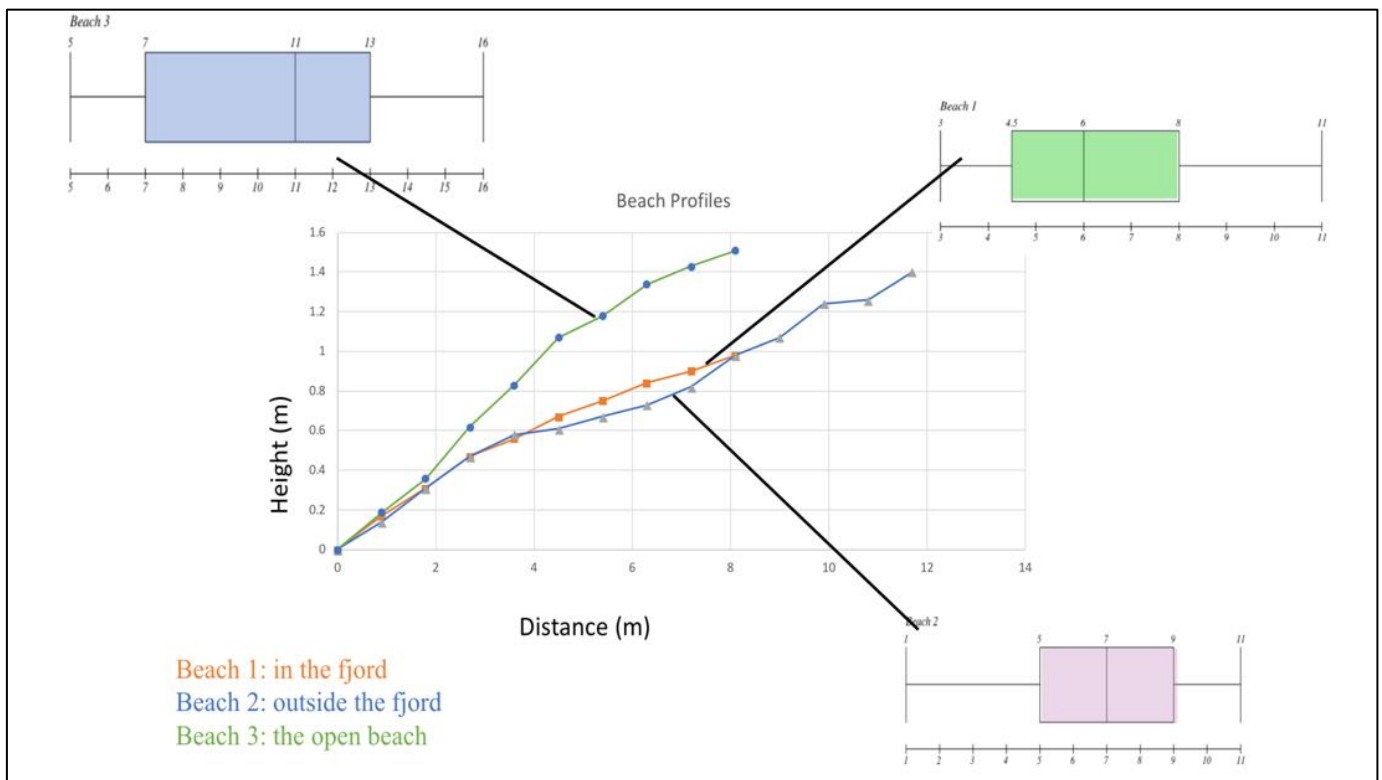
difference between the beach in the fjord and the other beaches through exploring their characteristics. I wondered if the beach profiles and sediment size would be different due to exposure to different flows of energy particularly waves. I also planned to use secondary data to look at wind and wave forecasts for each of the areas to see how they differed as well as using annotated photos and field sketches.

Throughout my project I refer to the beaches as

Beach 1: The beach located within the fjord.

Beach 2: The beach located outside the fjord, facing a different direction and not exposed to particularly large waves.

Beach 3: The open beach located in Tjurpannan.



I asked 4 sub-questions:

1. Are the beach profiles different at each of the beaches?
2. Does the sediment size vary between the beaches?
3. Do the wind speeds and waves differ?
4. How does the coastal landscape between the beaches vary?

After doing some research I realised there is quite a small amount of research on this area of coastline, and a gap in earth science & sedimentology literature, this is partly due to the beaches being very self-contained and more like closed systems. There has been some research performed on the fjord but this has focused on the change in fauna. I therefore thought that doing some research on the characteristic of beaches in this area would be interesting especially as this is a topic of particular interest for me. I conducted the research at this location as I live nearby, and it was easily accessible.

The data I collected and analysed was able to answer these questions. The beach profiles were different from each other, beach 3 had a steep beach profile due to destructive waves and higher windspeeds with a mean gradient of 10.6 whereas beach 1 and 2 had similar beach profiles with gradients of 6.6 and 6.9 respectively, despite beach 2 being exposed to more waves and wind. This suggests that the steeper beach profile may be due to being located within a fjord which has a valley shape with steep cliff sides. My student t test shows there is a less than 5% chance that these differences and lack of differences are due to chance, which supports my conclusion that a beach being located in a fjord does influence its beach profile.

There was little wind within the fjord and at beach 2, there is a slight difference between the mean wind speed at the 2 beaches, but it is very small as the standard deviation almost overlaps.

The waves within the fjord are typically very small this is due to protection from the wind, as well as the fetch which was very short as there were steep cliffs on either side. Smaller waves meant the sediment size was generally smaller as it was not eroded from the beach. The beach exposed to the most wind and destructive waves, beach 3, had larger sediment as smaller sediment was drained from the beach leaving only the larger sediment. This demonstrates that a beach being located in a fjord does have an impact on the sediment size. The patterns of longshore drift were different at each beach, I think being located in a fjord does not directly impact longshore drift and is not a main coastal process that influenced the beach in the fjord that I collected my data on. However, it could be argued that as waves are impacted by being located in a fjord that this has an indirect impact on longshore drift.

Overall, we know that several flows of energy and other aspects such as geology influence the characteristics of a beach. A fjord can influence some of the flows of energy such as wind and waves which impact features of a beach, the wind is typically obstructed by steep cliff sides and fjords tend to be quite narrow so there is not a long fetch for wave formation. The shape of a fjord, a steep valley shape that has been submerged influences the profile of the beach as the side of the fjord tend to be very steep. After comparing the beach inside the fjord with two located outside the fjord I

concluded that its location has influenced certain characteristics of the beach.

I formed my conclusions based on the data that I had collected from the three beaches; therefore, the data was specific to these three beaches and may not be representative for all beaches in the same conditions. The fjord I used is classified as a shallow fjord and having used a "traditional" fjord may have produced differing results, although perhaps it would only have produced more extremes of the data I found as the shape would have been more prominent and may have for example caused a steeper beach profile. The conclusion I formed answered my question which was generalised to all fjords and beaches within them however this may not be very valid as I only looked at one beach located inside a fjord and made comparisons using this. To validate my findings in the future using other

fjords and collecting data on these would help to prove or disprove the conclusions I have made.

*Alice is a UVI Geographer, and this investigation was part of her A Level Geography coursework.*

Below: Isabella C's (III Form) winning entry for the sustainability poster competition.

Back cover: Ciara H's (LPW) winning entry for the sustainability poster competition.

# CLIMATE ACTION

The Goal: to take immediate action to defeat climate change and its impacts

Human have caused climate change, it holds a threat to how we live and the future, we must build a sustainable world. 42 billions tons of CO<sub>2</sub> is emitted per year globally, we must halve it by 2030. CO<sub>2</sub> emissions must be reduced to net zero by 2050, so the reduction must begin now. We must make an effort to keep the temperature rising below 1.5°C.

**Denmark:**

- Denmark was ranked as the country with the highest achievement in climate protection.

**Morocco:**

- Morocco's National Energy Strategy that 53% of its generates electricity production will be with renewables by 2030, Morocco has already reached 35%.
- Morocco has invested in the Noor Ouarzazate complex, the largest concentrated solar farm in the world.

**Russia:**

- Russian Federation created a 'Strategy of socio-economic development of the Russian Federation with low greenhouse gas emissions by 2050', in October 2021.
- Russia's goal is to reach net zero greenhouse gas emission, by 2060.

**European Union:**

- The EU adopted into the law measures such as the goal for 32% of its electricity production to come from renewable energy resources, by 2030.
- In the EU countries have created their own goals: Malta with 10% and Sweden with 49% as a goal of reduction of emissions.

**USA:**

- The USA have re-joined the Paris Climate Agreement.
- The USA formed the first ever National Climate Task Force.
- They want to reduce greenhouse gas pollution from 2005 levels by 50-52% in 2030. Creating a carbon pollution free power sector by 2035. Reaching net-zero emissions economy-wide by 2050.

**Costa Rica:**

- Costa Rica aimed for its electricity production to be completely 100% renewable by 2021, in 2019 Costa Rica generated 98% of its electricity through renewable sources (hydropower), this happened for the fourth consecutive year.
- Costa Rica have a moratorium on oil extraction and exploitation, this goes from 2021 to 2050.

**Turkey:**

- Turkey invested \$11 billion in energy efficiency measures; they want to achieve energy self-sufficiency through an expansion in coal-fired power plants.
- Their efforts have been classed as critically insufficient by the Paris agreement rankings, if other countries follow the global warnings would exceed 3-4 degrees.

**The Gambia:**

- The Gambia is part of a programme that will increase their electricity capacity by one-fifth by the construction of one of the largest photovoltaic plants in West Africa.
- They launched a project to restore mangroves, savannas and 10,000 hectares of forest.
- They will replace flooded rice paddies (sources of atmospheric methane) with dry upland rice fields.

**Ukraine:**

- Ukraine plan to reduce the amount of emission and greenhouse gas emissions from 65% below 1990 levels in 2030.

**India:**

- India's aim is to generate 40% of its power through renewable energy by 2030. India is likely to complete this a decade early due to their rapid progress.
- They will investing in more renewable energy rather than fossil fuels.

**Norway:**

- Norway's emissions are predicted to decrease by only 7% by 2030, but the goal is to reduce its emissions by 40% by 2030.
- Norway adopted the legislation that the country will reduce its emission by 80-95% by 2050.

**UK:**

- The first country to create a legally binding national commitment to cut emissions, this is the climate change act of 2008, this pledges to cut emission by 80% by 2050. The 80% target was updated in 2019 with a target of 100% reduction by 2050, a net-zero.
- The UK created a climate change committee, they put forward carbon budgets to the government, they are on track to meet the third budget from 2018-2022.
- The UK joined the Paris Agreement which has the goal of limiting the warming the world to 1.5 degrees.

Things you can do to help:

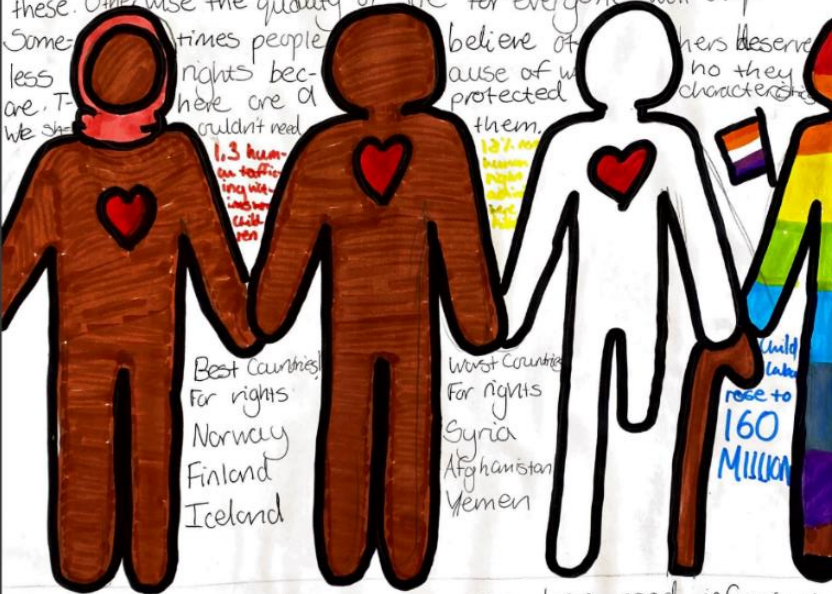
- cut your waste
- fly less and consider your travel
- choose eco-friendly products
- switch to electric vehicles
- save energy at home
- reduce, reuse, repair, recycle
- throw away less food
- speak up about the matter
- walk, cycle or take public transport

# ACT NOW

# HUMAN RIGHTS

## No. 16

Human rights are not a privilege they are a right. Sadly some people around the world are denied these rights. It's essential that people around the world are provided these. Otherwise the quality of life for everyone will drop.



The difference is the top countries have good infrastructure and justice systems. Now...

### What can we do?

- Use non-gender conforming words e.g. policeman - police officer
- Donate to charities helping the situation in countries with bad infrastructure.
- If you suspect someone is being treated unequally step in and help or, tell an authority.



*“There is significant data to show that a drastic switch to plant-based diets will have an impact on cutting global greenhouse gas emissions”*

