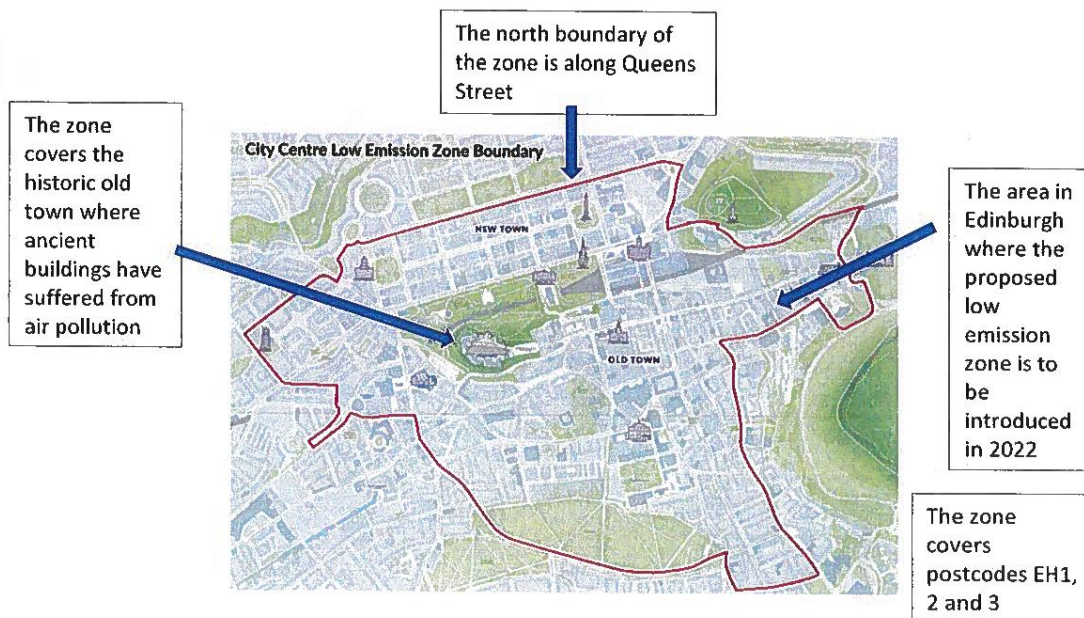


Candidate 1 evidence

Should Edinburgh implement a Low Emission Zone?

More people die from air pollution in Edinburgh than any other city in Scotland, where more than 1 in 29 deaths are attributed to this cause.¹ By introducing the Low Emission Zone (LEZ), it is hoped air pollution will be significantly reduced, see Figure 1. LEZs set an environmental limit on certain road spaces, allowing access to only the cleanest vehicles. LEZs are key to improving air quality as road traffic is the main source of city air pollution. Protecting public health and supporting Scotland's wider climate change ambitions by encouraging more sustainable transport options (e.g. buses), is key.² The aim is to transform towns and cities into cleaner, healthier places to live, work and visit. The development of these zones is one part of several actions that will help make Edinburgh's transport system cleaner and greener.³

Figure 1: Edinburgh's Low Emission Zone Boundary



Air pollution is a geographical issue, especially relevant as the Climate Change crisis gathers pace. Introducing the LEZ in Edinburgh will have environmental and economic impacts. It will lead to reductions in traffic flows caused by modal shifts towards public transport and active travel, which may result in the positive impact of reducing noise pollution within LEZ

¹ <https://www.scotsman.com/news/transport/deadly-air-pollution-causes-one-29-deaths-edinburgh-1376139>

² <https://www.lowemissionzones.scot/about>

³ <https://www.transport.gov.scot/our-approach/environment/low-emission-zones/>

zones.⁴ Limiting the most polluting vehicles in the LEZ will help to improve air quality in densely populated parts of the city. It is predicted this will help to reduce traffic related emissions (nitrogen dioxide) in the city centre by 55% when compared to 2019 levels.⁵

Edinburgh Council believe action is needed to help tackle air pollution and introducing the LEZ is the most effective method of doing so. However, some participating in the Council's consultation claimed the proposed LEZ boundary is too large and that it should only cover the city centre.⁶ This essay will investigate whether an LEZ should be introduced to the Capital.

⁴ <https://www.transport.gov.scot/media/49108/air-transport-act-lez-impact-assessments-regulations-ia-8-january-2021.pdf>

⁵ <https://www.edinburgh.gov.uk/news/article/13296/still-time-to-have-your-say-on-low-emission-zone-plans>

⁶ <https://democracy.edinburgh.gov.uk/documents/s9502/Item%207.5%20LEZ%20update%20with%20apps.pdf>

<https://theedinburghreporter.co.uk/2021/06/latest-council-consultation-is-all-about-the-low-emission-zone/>

The Edinburgh Reporter discusses the Public Consultation to gather views on the proposal for a LEZ. Transport and Environment Convener, Councillor Lesley Macinnes is quoted, "By introducing a LEZ in the city centre we want to significantly reduce harmful pollutants in this densely populated part of Edinburgh, and for areas outside the zone to enjoy the knock-on benefits of cleaner vehicles too." The article claims the LEZ is an important change for the city, and essential for a more sustainable environment. It goes on to state the public's opinion is important before implementing the scheme, as respondents to the initial consultation in 2019 said clean air matters to them. Author Phyllis Stephen states the LEZ will benefit all sections of society and will have minimal impact on surrounding neighbourhoods, maintaining national exemptions to allow access by car for all who need it. Funding support is available from charities including, Home Energy Scotland, to help lower income households and small businesses to prepare for the changes.

https://www.transportenvironment.org/sites/te/files/publications/2019_09_Briefing_LEZ-ZEZ_final.pdf

A briefing from The Transport & Environment Organisation reviews evidence on the effectiveness of LEZs in 250 cities across Europe. The briefing states existing LEZs significantly reduce air pollution, with the most substantial reduction being a decrease in the NO₂ concentration in Madrid by 32%. The organisation claims there are now more than 70,000 available studies providing health and social justice arguments supporting the introduction of LEZs. They refer to a global review which shows air pollution can harm every organ in the human body, decreasing life expectancy by an average of 1 year. According to a Eurobarometer poll in 2017, European citizens consider air pollution as the second most important environmental concern after Climate Change. They conclude by stating LEZs are not only considered the most effective way of reducing air pollution but are also validated by cost-benefit analysis.

<https://www.cockburnassociation.org.uk/planning-consultation-responses/low-emission-zone-consultation-2021/>

The Cockburn Association do not support the proposal for Edinburgh's LEZ. They believe the city-centre boundary must be expanded city-wide to avoid displacement of pollution into residential streets. The main areas for traffic pollution are out with the city centre e.g., Corstorphine and parts of Leith. The CA claim current proposals don't offer a solution to this issue and may result in higher levels of pollution. The proposed boundary excludes Queen Street and the Northern New Town but includes the Meadows, which they claim is incompatible with LEZ objectives. The proposed boundary creates an inner ring route allowing more polluting vehicles to bypass the LEZ. The Association notes significant impacts of increased diversions across the city, resulting in negative impacts for communities on the edge of the LEZ. They refer to the T&E Committee report, 16 May 2019: "there is a risk that a city centre boundary alone may displace polluting vehicles to other areas of the city and exacerbate existing air quality problems." The CA declare this remains a very real risk of introducing the proposed LEZ.

The Edinburgh Reporter is a news website for the Capital focussing on local news and events.⁷ The Reporter comes across as a casual news outlet due to the fact they “welcome contributions from anyone who has something to say about Edinburgh.” Author, Stephen is a multimedia journalist living and working in Edinburgh, also co-founder of the Website.⁸ Her first-hand experience of living in Edinburgh means her viewpoint is worth exploring. The source includes the use of statistics, however a lack of references or accompanying graphics from the article undermines their reliability as they are from unknown sources. As The Reporter is targeted towards residents of Edinburgh it may introduce bias through being dismissive towards the negatives to please readers who may be affected by the outcome.

Transport Secretary Michael Matheson agrees with Stephen’s views: “LEZs are key to improving air quality, protecting public health and supporting Scotland’s wider climate change ambitions by encouraging more sustainable transport options.”⁹ Planning Edinburgh concurs: “LEZs improve public health by discouraging the most polluting vehicles from entering an area. Benefits of this Zone will extend beyond the city centre by improving air quality, encouraging more sustainable travel and supporting the reduction of greenhouse gases across the city.”¹⁰

The T&E Organisation claim credibility is their key, increasing reliability. They are a non-profit organisation and are politically independent, combining the power of robust, science-based evidence and a deep understanding of transport.¹¹ As this article has been published online, the source is easily accessible to a large audience. As the article’s author is unknown, we do not know if the information provided is by a specialist. However due to the source having a wide range of Statistics such as “The highest reduction observed is a decrease of the NO₂ in Madrid by 32%”, this helps cement points throughout. This means that the source must be somewhat accurate and reliable as evidence is provided. This viewpoint agrees with source one as both highlight the benefits associated with the introduction of LEZs.

An article by The Urban Access Regulations in Europe agrees with views put forward by The T&E Organisation, “Low Emission Zones (LEZs) have had a positive impact on air quality in many European cities. They are one of many measures that are implemented in cities to improve air quality.”¹² Regulations in Europe give statistics from the introduction of the LEZ in Berlin to help give evidence of the benefits, see figure 2.

⁷ <https://theedinburghreporter.co.uk/about-ter/>

⁸ <https://phyllisstephen.com/about-me/>

⁹ <https://www.edinburghnews.scotsman.com/health/edinburghs-ban-worst-polluting-vehicles-start-may-2022-2953982>

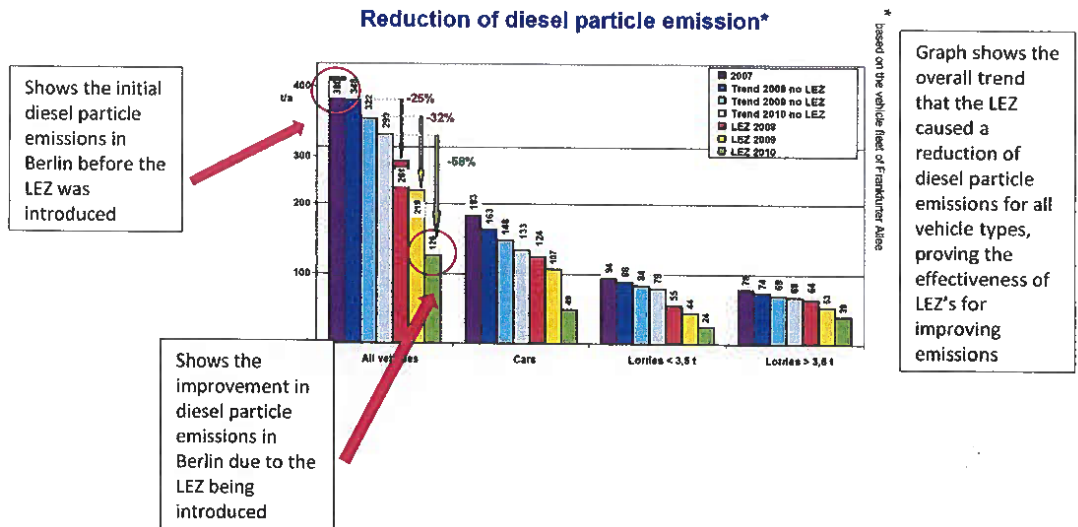
¹⁰ <https://planningedinburgh.com>

¹¹ <https://www.transportenvironment.org>

¹² <https://urbanaccessregulations.eu/low-emission-zones-main/impact-of-low-emission-zones>

Figure 2:

Graph to show the impact that the introduction of the LEZ had on Berlin



The London Assembly website provides further evidence of successful LEZ introduction: "New figures show there are now 13,500 fewer polluting cars being driven into central London every day and a significant drop in harmful air pollution, since the Mayor introduced the Ultra-Low Emission Zone six months ago."¹³

The Cockburn Association is a conservation charity that has protected, preserved, and promoted Edinburgh's built heritage, natural environment, and civic amenity for almost 150 years.¹⁴ The Association has extensive knowledge of Edinburgh, its residents, and environmental issues, which is why this source is chosen. The article clearly highlights the main concerns about the proposed LEZ, providing useful insight for its readers. It is written in a passionate and persuasive tone "... exacerbation traffic and pollution displacement issues. This would be a very real outcome and a significant objection to the current LEZ proposals," further highlighting the negative possibilities that could arise by introducing the current proposed LEZ. Use of emotive language such as "deeply concerning" may cause the reader to have strong feelings towards the proposal as it impacts them and their community. The article is comparative and balanced. It looks at not only the proposed plan, but also the wider picture. The article includes input from Edinburgh's community, which is highly effective as it shows the views of the people it will impact. The source is valuable given its grassroots viewpoint. This source differs from sources one and two as it highlights the problems of introducing the LEZ and provides solutions to make the LEZ more beneficial.

¹³ <https://www.london.gov.uk/press-releases/mayoral/ulez-reduces-polluting-cars-by-13500-every-day>

¹⁴ <https://www.facebook.com/TheCockburn/>

Richard Price from New Town and Broughton Community Council agrees with the CA's views: "we do not believe that the proposed scheme goes far enough both in terms of its geographical spread" adding further support to the viewpoint that the LEZ does not cover a large enough zone.¹⁵ Thomson, transport campaigner with Friends of the Earth Scotland, agrees with both the CA and Price: "The zone ought to cover a much bigger area. The Low Emission Zone is a low ambition zone. If it was much bigger, more people would be protected from the most-polluting vehicles and we would have better air quality across a bigger part of the city."¹⁶

In conclusion, all sources summarised give their views on Edinburgh's proposed LEZ. The Edinburgh Reporter highlights how important introducing the LEZ is for Edinburgh to ensure a cleaner environment. The Transport & Environment organisation agrees with this and helps to prove this by using positive data from current cities that have already introduced a LEZ. However, The Cockburn Association claims the LEZ zone boundary is not big enough to make a sufficient difference and may even negatively affect the residential areas surrounding the boundary. Overall, I feel The Cockburn Association source is the most convincing. They acknowledge the zone plan is not as effective as it could be, and not only put forward their reasoning for this, but also provide alternative solutions.

It is increasingly important to reduce the problems of air pollution, which play a major part in climate change and human health. As Lesley Macinnes states, "Being able to breathe clean air is a basic right that everyone in the city deserves and this scheme, along with the many other projects to encourage sustainable transport, is key to achieving this. We urgently need to address air pollution and the damage it's doing to our health."¹⁷ Introducing the LEZ will help reduce the negative health effects.

Globally, there are approximately 7 million premature deaths annually because of air pollution¹⁸ and introducing LEZs should reduce this number. Although Edinburgh's LEZ alone will not make a large difference, if successful, several cities may follow Edinburgh's lead, creating a highly effective way of reducing pollution.

Next, I think Edinburgh City Council must take a further look at the boundaries and either adapt the LEZ accordingly, if it is proven that the wider area will be more beneficial or provide sufficient evidence to the public to justify a smaller boundary. Overall, I feel the LEZ will be positive however negative repercussions for residents living out with the boundary must be fully addressed. Therefore, Edinburgh should implement a revised Low Emission Zone.

¹⁵ <https://www.ntbcc.org.uk/tag/low-emission-zones/>

¹⁶ <https://www.edinburghnews.scotsman.com/news/transport/edinburghs-low-emission-zone-foe-scotland-say-its-too-small-and-will-only-benefit-wealthy-residents-and-tourists-3430059>

¹⁷ <https://www.thenational.scot/news/19661118.edinburgh-low-emission-zone-plans-set-enforcement-begin-2024/>

¹⁸ <https://www.iass-potsdam.de/en/output/dossiers/air-pollution-and-climate-change>

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Wider reading

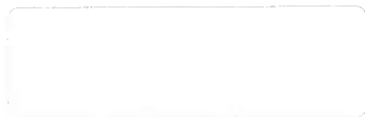
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Word Count: 1,898

Candidate 2 evidence

**Is Deep Sea Mining the Solution to the Climate
Crisis?**



Word count: 1951

Deep-sea mining could be essential to reaching net zero emissions by 2050. But the process has raised many concerns.

Deep-sea mining is the extraction of metallic nodules which sit on the surface of the seabed. To extract these nodules the seafloor is scraped. This can disrupt deep sea creatures and whips up large sediment plumes. But it is not all bad. The nodules are bountiful and the metals they contain are crucial for the production of eco-friendly technology such as electric cars and solar panels¹. A figure estimated by the World Bank suggests that if supply needs are to be met for the production of wind turbines and electric cars the production of cobalt will need to increase by 500%². Other options for acquiring these materials such as recycling and land mining will not meet these demands, leaving deep sea mining as the only viable option currently³. 1.5 million kilometres of seabed has been approved for explorative deep sea mining by the International Seabed Authority (ISA) for 29 countries⁴.

¹ Robin McKie, 2021 "Is deep-sea mining a cure for the climate crisis or a curse?" The Guardian [online] Available at: <https://www.theguardian.com/world/2021/aug/29/is-deep-sea-mining-a-cure-for-the-climate-crisis-or-a-curse> accessed 7/9/21

² Robin McKie 2021 "Is deep-sea mining a cure for the climate crisis or a curse?" The Guardian [online] Available at: <https://www.theguardian.com/world/2021/aug/29/is-deep-sea-mining-a-cure-for-the-climate-crisis-or-a-curse> accessed 7/9/21

³ Robin McKie, 2021 "Is deep-sea mining a cure for the climate crisis or a curse?" The Guardian [online] Available at: <https://www.theguardian.com/world/2021/aug/29/is-deep-sea-mining-a-cure-for-the-climate-crisis-or-a-curse> accessed 7/9/21

⁴ International Union for Conservation of Nature, 2018 "Deep Sea Mining" [online] Available at: <https://www.iucn.org/resources/issues-briefs/deep-sea-mining> accessed 5/10/21

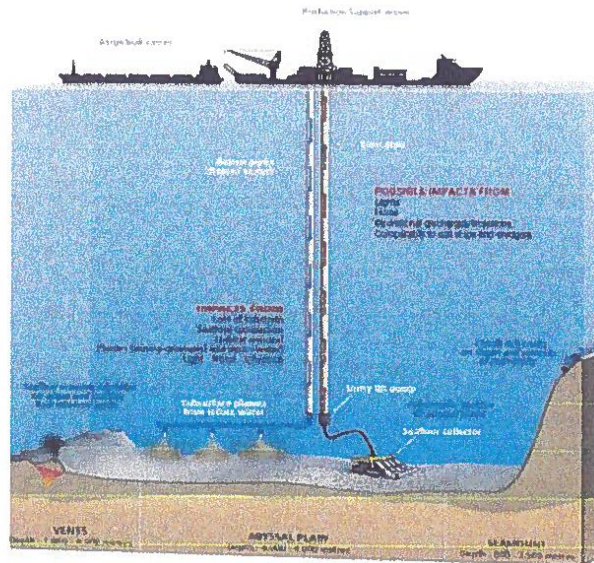


Figure 1: The process of extracting nodules from the ocean floor and its possible impacts⁵

The metallic nodules are a crucial element of deep-sea ecosystems. Many animals use the nodules as shelter, removing them could have hugely negative impacts on the fragile deep-sea organisms. Marine biologist Callum Roberts, of York University says that “They are critical attachment points for a variety of creatures that cannot live directly in mud.”⁶ The removal of nodules is not a clean process and will cause large quantities of sediment to form clouds within the sea. According to a prediction by The Royal Swedish Academy of Sciences approximately two million cubic feet of sediment discharge will be disturbed per day by each ship⁷.

The effects of deep-sea mining are still not fully understood, and yet many countries are pushing ahead with planning. Projects have been kickstarted by Nauru, an island state in the Pacific, who have activated a small clause in the United Nations (UN)

⁵ International Union for Conservation of Nature, 2018 “Deep Sea Mining” [online] Available at: <https://www.iucn.org/resources/issues-briefs/deep-sea-mining> accessed 5/10/21

⁶ Robin McKie, 2021 “Is deep-sea mining a cure for the climate crisis or a curse?” The Guardian [online] Available at: <https://www.theguardian.com/world/2021/aug/29/is-deep-sea-mining-a-cure-for-the-climate-crisis-or-a-curse> accessed 7/9/21

⁷ Wil S. Hylton, 2020 “History’s Largest Mining Operation Is About to Begin” The Atlantic [online] Available at: <https://www.theatlantic.com/magazine/archive/2020/01/20000-feet-under-the-sea/603040/> accessed 5/10/21

Convention on the Law of the Sea⁸. This means that the country could start mining within the next two years, regardless of whether regulations have been set by the UN

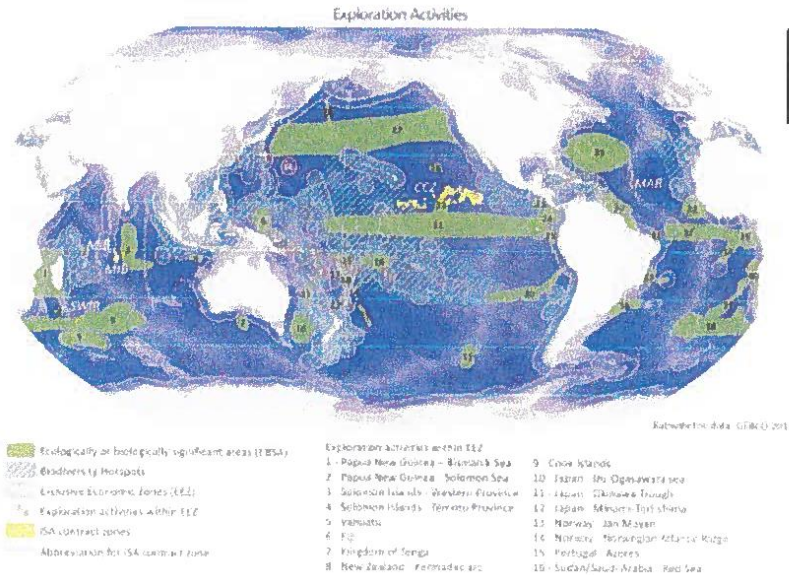


Figure 2: areas being explored for deep-sea mining

and ISA⁹. Many areas are already being explored as options for deep-sea mining projects as shown in Figure 2.

Deep sea mining is a controversial topic. On one hand there is the urgency to have more eco-friendly technology, which is essential to reaching net zero. This would require deep sea mining but the effects of deep-sea mining could be incredibly destructive to ecosystems and the environment. The full extent of the impacts of deep-sea mining are still not known.

⁸ David shukman, 2021 "Deep sea mining may be step closer to reality" BBC News [online] Available at:

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⁹ Biological diversity, 2015 "Deep-sea mining" [online] Available at: https://www.biologicaldiversity.org/campaigns/deep-sea_mining/pdfs/Deep-seaMiningFAQ.pdf accessed 5/10/21

Summary 1 “Is deep-sea mining a cure for the climate crisis or a curse?”**Robin McKie, The Guardian.¹⁰**

In the article written by Robin McKie it is explained that deep-sea mining will have massively negative effects on the creatures that live on the seafloor. And that “Mining deep-sea nodules would be catastrophic for our already stressed, plastic-ridden, overheated oceans.” Sediment clouds are whipped up by the mining, this could be deadly to seafloor dwellers¹¹. Marine biologist Helen Scales says that smaller and weaker creatures would be smothered by the plumes. This view is one that is shared by many. A review written for Frontiers says that “Even when plumes are restricted to deep waters, impact to benthic communities cannot be avoided considering that the overall topography of the seabed could be altered and organisms will endure some extent of smothering”¹².

McKie also raises the point of whether deep-sea mining is truly necessary. Recycling is a possibility for sourcing metals to create green technologies but Andrew Sweetman, a professor at Heriot-Watt University, says that metal recycling is not likely to provide all the necessary metal for improved technology. There will eventually be a demand for deep-sea mining. He says that research should be done now in preparation for this demand.

This article details the negative effects of deep-sea mining. It argues that deep-sea mining will do irreversible damage to deep-sea ecosystems. The article was written in August 2021 meaning that the information stated is up to date and more likely to be accurate. The article was written by Robin McKie. Robin McKie has worked for The Guardian since 1997 and is Science and Environmental Editor for The Observer.

¹⁰ Robin McKie, 2021 “Is deep-sea mining a cure for the climate crisis or a curse?” The Guardian [online] Available at: <https://www.theguardian.com/world/2021/aug/29/is-deep-sea-mining-a-cure-for-the-climate-crisis-or-a-curse> accessed 7/9/21

¹¹ Olive Heffernan, 2019 “Seabed Mining is Coming - Bringing Mineral Riches and Fears of Epic Extinctions” Nature.com [online] Available at: <https://www.nature.com/articles/d41586-019-02242-y> accessed 5/10/21

¹² Kathryn A. Miller, Kirsten F. Thompson, Paul Johnston and David Santillo, 2018 “An Overview of Seabed Mining Including the Current State of Development, Environmental Impacts, and Knowledge Gaps” Frontiers [online] Available at: <https://www.frontiersin.org/articles/10.3389/fmars.2017.00418/full#h1> accessed 23/11/21

This means that the article is more likely to be a quality piece of journalism. A wide variety of sources have been used to base the article around, including opinions from those investing in deep-sea mining, marine biologists and environmental activists. The article shows a wide variety of different viewpoints showing the consequences of deep-sea mining from both economic and environmental viewpoints as well as the positive and negative impacts. Covering a range of impacts helps to give a full impression on the issue and allows the reader to make their own educated opinion. The article was published by The Guardian which is widely regarded as a reputable news source for information on current issues.

Summary 2 “Deep-sea mining: An Environmental Solution or Impending Catastrophe?” Elizabeth Claire Alberts, Mongabay.¹³

This article details the negative environmental, economic and social impacts of deep-sea mining. Deep Green, a mining company leading in deep sea mining, believes that “polymetallic nodules represent an opportunity for these states, which have historically been left behind in global development, to level the playing field”¹⁴. But reports by the Deep-Sea Mining Campaign and Mining Watch disagree with this viewpoint. Although mining would bring in a new source of wealth and development it could destroy the fishing industry. As of 2009 the tuna sector provided \$446 million to the GDP of the Pacific Islands¹⁵. This figure was only set to grow as investments in the industry were to double the number of jobs in the tuna industry over the following decade. In Tuvalu, Kiribati and Federated States of Micronesia the fishing industry made up over 10% of their GDP¹⁶. As climate change forces deep diving fish species

¹³ Elizabeth Claire Alberts, 2020 “Deep-sea mining: An Environmental Solution or Impending Catastrophe?” Mongabay [online] Available at <https://news.mongabay.com/2020/06/deep-sea-mining-an-environmental-solution-or-impending-catastrophe/> accessed 17/11/21

¹⁴ The Metals company, “Nodules” [online] Available at: <https://metals.co/nodules/> accessed 15/01/22

¹⁵ International Labour Organisation, Forum Fisheries, 2016 “Providing Decent Employment for Pacific Fishers” [online] Available at: https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/---ilo-suva/documents/publication/wcms_486720.pdf accessed 13/02/22

¹⁶ International Labour Organisation, Forum Fisheries, 2016 “Providing Decent Employment for Pacific Fishers” [online] Available at: https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/---ilo-suva/documents/publication/wcms_486720.pdf accessed 13/02/22

east these populations will inevitably encounter the sediment plumes putting many deep sea snapper fisheries at risk. Tonga has agreed to sponsor Tonga Offshore Mining Limited. The Civil Society Forum of Tonga have called for a stop to the sponsorship saying that "The livelihood of a billion people in the world is based on the ocean including 90% of the Pacific People."

The article shows both the positive and negative impacts of deep sea mining using a variety of sources from professionals and the companies associated with the mining. This gives the article contrasting opinions meaning that many viewpoints on the issue are represented. The article covers all of the main viewpoints on deep-sea mining with information on economic, environmental, and social impacts being covered. Mongaby is a non-profit news platform which focuses on current news surrounding environmental science and conservation. This focus on environmental issues may bias them against deep sea mining as it can be environmentally negative. The article was written by Elizabeth Alberts who writes mostly on oceanic issues; this means that they will have a wide range of knowledge on areas surrounding this topic making them a more credible author. The article is written in a factual style and presents large amounts of data and facts making the article a more reliable piece of journalism.

Summary 3 "Can Mining the Seabed Help Save the Planet?" Christopher Pala, Foreign Policy.¹⁷

This article argues for the positive impacts of deep-sea mining on the environment. Pala suggests that though metals can be obtained from other sources that deep sea mining is the only viable option. In an interview with Steve Katona, an ocean mining consultant, Katona said that "If we don't get the metals we need from nodules, we'll get them from land, but that just means mines will have to be enlarged or new ones will have to be created. And a lot of the new nickel will probably come from tropical rainforests, which have much more biodiversity than the seabed." It has been estimated by Raconteur that by 2050 the number of electric cars in use will grow to 1

¹⁷ Christopher Pala, 2021, "Can Mining the Seabed Help Save the Planet?" Foreign policy [online] Available at: <https://foreignpolicy.com/2021/11/07/seabed-mining-marine-life-climate-change-electric-cars-pacific-auru/> accessed 23/02/22

billion. The demand for metals far exceeds the capacity of land mining. Figure 3 shows the need for large quantities of metals.¹⁸

Metal	Quantity Needed (kg)
Nickel	56
Cobalt	7
Manganese	6.6
Copper	85

Metal required to produce one tesla model three battery

Figure 3

Though the mining may cause disruption to aquatic life, a report funded by the metals company found that smelting metals from nodules is much less toxic. "The smelting process will produce 80 percent less toxic waste than onshore mining for cobalt, 60 percent less waste for nickel, and about 50 percent less for copper and manganese."

This viewpoint contrasts with the previous two sources. It states that metal recycling is not enough to reach net zero whereas Source One states that advancements within the industry could make it highly efficient within the next 15 years¹⁹. This article was written by Christopher Pala for Foreign Policy. Pala is a freelance journalist specialising in oceanic issues. This means that they will be knowledgeable on the topic and may be able to offer insightful views. The article was published on November 7, 2021. Because this article is recent it means that the information provided is up to date and more likely to be accurate. Foreign Policy is an award winning news publication winning awards such as the National Magazine Award for General Excellence in 2009: this award winning status shows that they produce quality journalism. Though mainly arguing for the benefits of deep-sea mining it does acknowledge the opposing view on the topic. This helps to remove bias and makes the source more reliable. But the article raises no full discussion on the

¹⁸ Karen McVeigh, 2021, "False choice': is deep-sea mining required for an electric vehicle revolution?" The Guardian [online] Available at: <https://www.theguardian.com/environment/2021/sep/28/false-choice-is-deep-sea-mining-required-for-an-electric-vehicle-revolution> accessed 16/03/21

¹⁹ Robin McKie, 2021 "Is deep-sea mining a cure for the climate crisis or a curse?" The Guardian [online] Available at: <https://www.theguardian.com/world/2021/aug/29/is-deep-sea-mining-a-cure-for-the-climate-crisis-or-a-curse> accessed 7/9/21

environmental impacts of the mining and does not acknowledge that many species such as sea sponges rely on these nodules and their removal could lead to imbalances in the ocean's food webs²⁰. The article is an argumentative piece meaning that the author's own opinion will be influencing both the writing style and selection of further information.

Conclusion

The articles all show the impacts that deep-sea mining could have on the environment and its further consequences. Source One highlights that deep sea mining could cause catastrophic damage to deep-sea ecosystems due to the removal of habitat and the release of sediment clouds. Source Two explains the knock on effects of deep-sea mining. Sources One and Two agree that deep-sea mining will have negative effects on the environment. The second source goes further into detail and discusses the impact that this damage on ecosystems will have on coastal communities and the fishing industry. Many rely on fishing as a source of food and income. Deep-sea mining could lead to the collapse of fishing industries in the Pacific Island Nations. The islands are already at risk due to rising ocean levels and further damage to their communities could be catastrophic. In contrast Source Three argues for the continued funding of deep-sea mining. Pala argues that deep-sea mining does offer a cleaner alternative to land mining with the smelting of nodules being much less toxic than other ores. If deep sea mining is to be used as a way to combat climate change extensive research is needed. It is a fact that deep-sea mining will cause damage to deep-sea ecosystems. Further research and experimentation is needed before it is implemented on a large scale. But this method of mining is necessary to reach the target of net zero by 2050 as the metals can not be obtained from land mining alone. Many areas of deep-sea ecology have not been studied such as recovery of damaged areas, effects of noise pollution and areas in which deep sea mining could be conducted²¹. Overall deep-sea mining

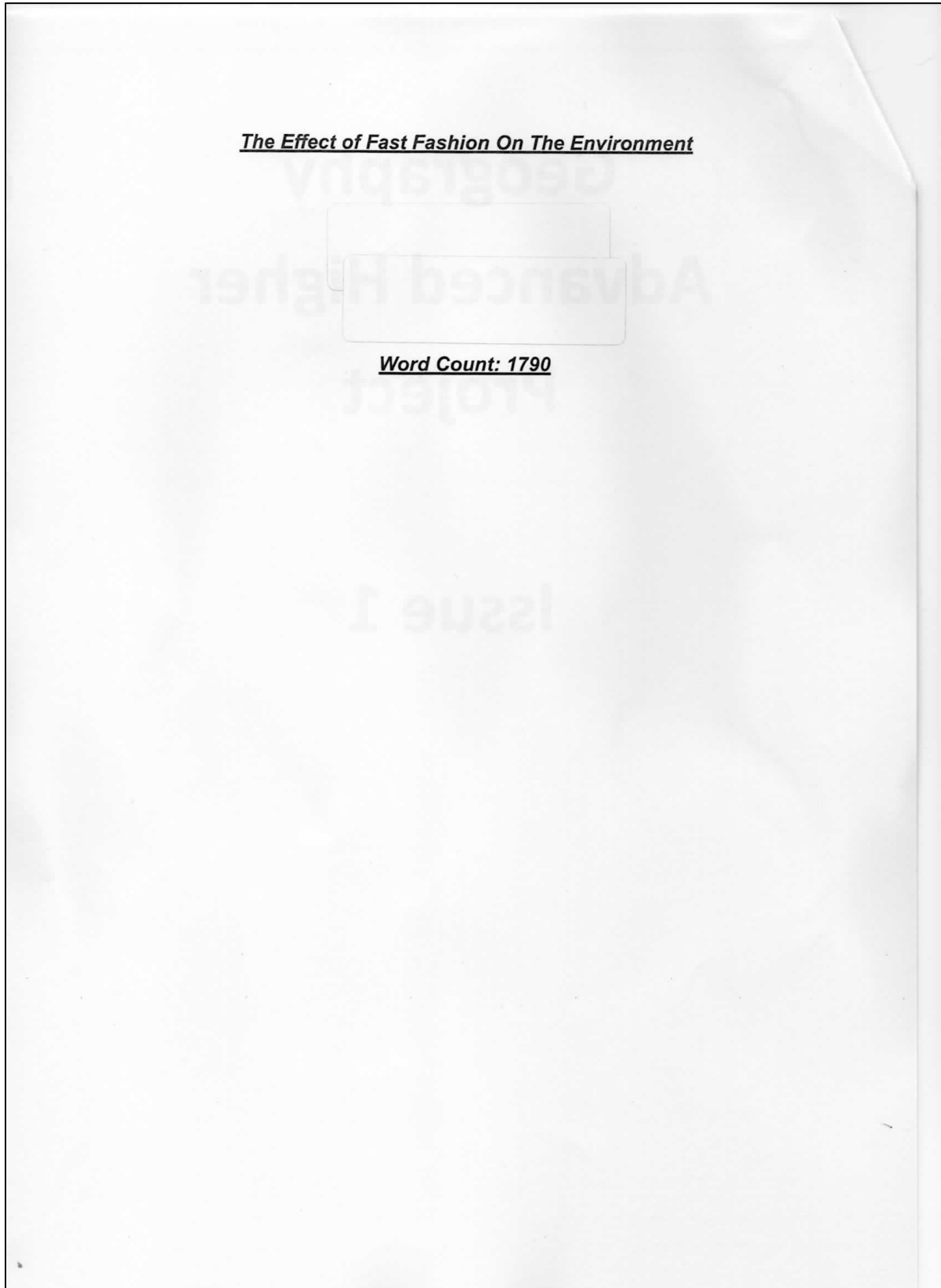
²⁰ Tanja Stratmann, Karlina Soetaert, Daniel Kersken, Dick van Oevelen, 2021 "Polymetallic nodules are essential for food-web integrity of a prospective deep-seabed mining area in Pacific abyssal plains" science daily [online] available at <https://www.sciencedaily.com/releases/2021/06/210610091113.htm#:~:text=The%20sponges%20use%20the%20hard,filter%20tiny%20particles%20from%20it> Accessed 18/03/22

²¹ Kathryn A. Miller, Kirsten F. Thompson, Paul Johnston and David Santillo, 2018 "An Overview of Seabed Mining Including the Current State of Development, Environmental

should be implemented as it could greatly help reach the UN goal of net zero, but only after extensive further research on the areas stated and under strict conditions.

Impacts, and Knowledge Gaps" Frontiers [online] available at
<https://www.frontiersin.org/articles/10.3389/fmars.2017.00418/full> accessed 23/11/21

Candidate 3 evidence



Introduction

The effects of fast fashion on the environment remain a major concern, with the fashion industry being the second largest polluter in the world as shown by figure 1. Due to constantly changing trends and new collections in the shops, our clothes quickly go out of fashion and we feel we need something new again. An average of 35kg of textile waste is generated per person each year in the US with most women only wearing 20 to 30% of the clothes in their wardrobe.¹ This has various destructive effects on the environment. For example, these fast fashion brands use chemical dyes that are extremely harmful and end up polluting rivers and oceans, as seen in figure 2. The synthetic fibres used such as polyester, are plastic fibres, therefore are non-biodegradable and can take up to 200 years to decompose. Synthetic fibres are used in 72% of our clothing.² Although Fast fashion comes at an environmental cost, there are a few benefits. It is an affordable way of shopping and allows consumers who do not have a large income to buy new trendy clothing at a very low price. Fast fashion also has a huge economic impact. It is responsible for both the recent and future growth of the apparel industry.

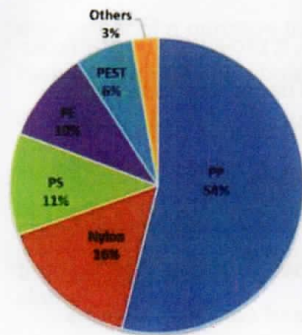


Figure 1

Percentage of microplastics in the water

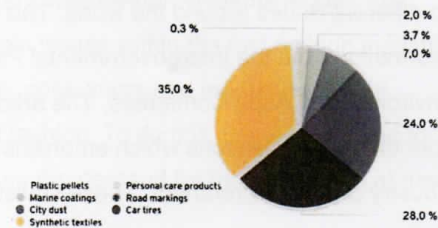


Figure 2³

¹ Fast Fashion Exposed – Helz Defined

² Our Mission and Values - Why Should We Care? - TORE (weareto.com)

³ The environmental impact of the fast fashion industry | Infographic & Stats (sanvt.com)

Source 1: "Fast fashion speeding toward environmental disaster, report warns" Nicola Davis. The Guardian.⁴

The Guardian published an article by Nicola Davis. This article explains how the fashion industry is having an extremely harmful effect on the planet. Nicola Davis argues that something has to be done in order to reduce the fashion industry's environmental footprint. Davis refers to an experiment which investigates solutions to the effects of fast fashion. She states that the Intergovernmental Panel on Climate Change calculated that the fashion industry produces 10% of the global carbon dioxide emissions every year. This is not only produced during the manufacturing process of the items but also includes the emissions released during transport such as shipping and flights. She also states that fast fashion leads to the pollution of rivers from the microplastics contained in garments. These microplastics are ingested by small aquatic organisms which are later eaten by fish, introducing plastic into our food chain. Nicola Davis also explains that it is estimated that clothing items travel around the world multiple times during manufacture, adding to the amount of greenhouse gases generated. She then goes on to argue that the fashion industry does not only contribute to environmental risks but also risks the health and safety of workers involved in the manufacturing of the clothing items.

Evaluation of source 1:

The Guardian is a trustworthy newspaper, founded in 1821. It provides many articles on different issues around the world. This article is credible because it includes information from the Intergovernmental Panel on Climate Change as well as the Environmental Audit Committee. The article also contains many reliable statistics from these organisations which emphasise the negative effects of the fashion industry on the environment. These statistics include information such as the amount of chemicals used to produce garments and the percentage of carbon emissions generated from the transportation of items. These statistics are displayed in a diagram created by the Guardian. The article is written by Nicola Davis who is a science correspondent for the Guardian and so her writing is likely to be reliable. Information similar to the points made by Nicola regarding the water pollution from textiles can also be seen in an article posted on Sanvt's website; a clothing brand

⁴ Fast fashion speeding toward environmental disaster, report warns | Fashion | The Guardian

dedicated to making carbon neutral practices more common within their industry. They state that the fashion industry is responsible for 35% of the microplastics in the sea and is the main source of microplastics in the ocean. They also state that the current figure of CO2 emissions generated from the fashion industry is more than all the international flights and ships combined.⁵

Source 2: "You Know Fast Fashion is bad for the Planet. So why can't you stop buying it?" Patrice J Williams, HuffPost.⁶

Huffpost published an article by Patrice J Williams. The article explains the fundamental problems associated with the fashion industry. The article refers to the film "The True Cost" where the environmental impact of the consumption of clothes and the exploitation of workers is revealed. The author also refers to the Council for textile recycling which states that the average American discards seventy pounds of clothing a year. She also states that more than half of the clothes are discarded in landfills within a year of being produced. This contributes to the carbon dioxide emissions which lead to the polluting of the environment. Williams refers to the United Nations Environment programme who states that every second, the equivalent of a garbage truck of textiles is burned or disposed of in landfills and the fashion industry contributes 20% of the world's wastewater. Williams argues that overproduction and consumption are the main issues within the fast fashion industry. She states that in order to change this issue, consumers and the industry must become better at recycling and reusing fast fashion. To do this, people will need to invest more in second hand clothing, lowering the demand for the production of new clothes.

Evaluation of Source 2:

Huffpost, formerly known as the Huffington Post until 2017, is an American news aggregator founded in 2005. It is a credible website, providing information on many different topics. Patrice J Williams is a travel and lifestyle writer. Her work has

⁵ The environmental impact of the fast fashion industry | Infographic & Stats (sanvt.com)

⁶ You Know Fast Fashion Is Bad For The Planet. So Why Can't You Stop Buying It? | HuffPost UK Style & Beauty (huffingtonpost.co.uk)

appeared in The New York times, Travel+ leisure, and many more, making her a credible and trustworthy source. The article refers to the film "The true cost" which is a groundbreaking documentary film exploring the impact of fast fashion on people and the planet. It is all about the clothes we wear, the people who make those clothes, and the impact it is having on the environment. Williams also uses statistics provided by The Council for Textile Recycling which is a non profit organisation devoted to creating awareness about keeping our clothing, footwear, and textiles out of landfills. Similar points made by Williams regarding the exploitation of the workers within the fast fashion industry can also be seen within an article posted on ethical consumer. They state how the fashion industry needs their costs to be low in order to sell their items for a low price and so the main way of doing this is by lowering the wages of workers within the supply chain.⁷

Source 3: "H&M pledges to use 100% recycled materials by 2030" by Elias Jahshan, Retail Gazette.⁸

In this article, Elias Jahshan explains how one of the biggest polluters in the fashion industry is trying to improve their sustainability. Jahshan states that H&M has made a landmark pledge to use 100% recycled or sustainably sourced materials in their products by 2030. This is due to the large amount of greenhouse gas emissions released into the atmosphere during the production of their garments. Jahshan refers to a statement by H&M group head of sustainability, Anna Gedda, explaining that they want to use the size of their business to introduce the change to renewable fashion as well as making the company more fair and equal. They also explain how they want to set an example when it comes to the environmental and social side of the company and so are using the "climate positive strategy". This strategy includes switching to 100% renewable electricity, using only sustainable sourced materials and achieving a climate-neutral supply chain by 2030. H&M has teamed up with the Ellen Macarthur Foundation which is a UK registered charity that promotes the circular economy as well as the Stockholm Resilience Centre at Stockholm

⁷ What is fast fashion and why is it a problem? | Ethical Consumer

⁸ H&M pledges to use 100% recycled materials by 2030 - Retail Gazette

University to research what a “circular system” of manufacturing textiles looks like. To add to this, 26% of H&M’s full product range was made from recycled materials and 43% of its cotton came from more sustainable sources. This is a massive difference to other clothing brands such as Pretty Little Thing who don’t use any eco-friendly materials and haven’t made an effort to reduce the use of hazardous chemicals or water in their supply chain. H&M was also one of the first to stock a ‘conscious’ sustainable fashion collection in their stores. The company also aims to improve the working conditions as well as the wages of the workers. This reveals the fact that not all fast fashion brands are harming the environment.

Evaluation of Source 3:

Retail Gazette aims to provide clear, concise, and accurate news reports and features about British retailers or international retailers trading in the UK. Elias Jahshan is an Australian journalist and editor based in London. The Article refers to the “Ellen Macarthur Foundation” which is a charity founded in 2009 designed to eliminate waste and pollution, circulate products and materials and regenerate nature. They have worked with many businesses, international institutions, governments and cities making them a reliable source. Jahshan also refers to Anna Gedda who has been head of H&M’s group sustainability for six years and is a member of the company’s executive management team making her statement reliable. Another article which was posted on the website “Good on You” which is the world’s best source of ethical fashion knowledge by writer Lara Robertson backs up Jahshans points as they state how H&M offers a recycling programme where clothing items from any brand can be returned in store. The article also reveals how H&M is using renewable energy for part of its supply chain and also has a policy to prevent the deforestation of endangered forests. The article also backs up Jahshans information about the brand using eco- friendly materials in some of their items, such as organic cotton and recycled polyester.⁹

⁹ How Ethical Is H&M? - Good On You

Conclusion

All three sources deal with the impact of fast fashion on the environment. Both source one and source two highlight the negative effects the fashion industry has on our planet as they explain how it is causing extreme water pollution as well as releasing harmful emissions into the atmosphere. Both sources use reliable statistics to back up their argument that Fast Fashion is destroying the environment. Source three explains how one of the world's biggest fast fashion companies is trying to help save the planet by making their products more sustainable. Source three also uses information directly from the brand itself on what they are trying to achieve. If fast fashion continues to be the most popular way to shop for clothing it is important that these companies make their products as sustainable as possible to reduce the negative effect it is having on the environment.

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- Sustain your style