



***“What are some of the environmental impacts of film and set production, and is the film industry doing enough to prevent these costs?”***

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## **Introduction**

In this report, I will investigate the negative toll that film production and cinematography has on the environment and how the industry, as a whole, is making an attempt to reduce these impacts. I chose this subject because I am inherently passionate about theatre production, and plan to progress and work within this business in the future, therefore wishing to discover the relevant issues that surround the trade so as to help create a more sustainable and developed workplace for future productions. This essay's topic explores: the main factors of productions that contribute towards damaging the environment; how companies are currently trying to make sustainable changes; credible solutions to these issues that I believe should be adopted by film companies as soon as possible. Recently, there's been an urgency for the shift to sustainable activities because of the predicted increase of production, as there was an unavoidable lack thereof during the COVID-19 pandemic, meaning that there is now a high demand for new, advanced content. This will contribute largely towards the levels of greenhouse gases in the atmosphere which, as research shows, has caused the planet to become significantly warmer over the past 35 years.<sup>1</sup> Studio spaces are designed to maximise their revenue generation, but this generally costs the wellbeing of staff and the environment. Due to the fast pace of film production and its time constraints, directors prioritise preparedness for unpredictable circumstances, which leads to incorrect waste disposal and a difficulty in cutting down energy (contributors include: the use of high-impact generators, transportation, and a possible increase of digital design). I plan on collecting my data by doing extensive research into primary and secondary sources such as articles, books, interviews, and websites. Throughout this project, I hope to improve my knowledge on the daily and long-term impacts of the entertainment industry, develop time-management and organisational skills, discover how to write a successful report within a limited set of time, and refine my communication and presentation capabilities.

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## **Discussion**

### ***What current environmental issues are there within the film industry?***

A 2006 study from UCLA<sup>1</sup> shows that the making of cinematic pieces produce more greenhouse emissions than manufacturing, hotel, and clothing industries; the main sources deriving 50% from fuel, 30% from energy utilities, and 16% from air travel. Traditional filming equipment (such as halogen lighting) has high energy demands, making it difficult to use solar and battery-powered generators. On another hand, in productions, there are few spaces for long-term parking arrangements, easily accessible locations, and recreation - as a result, people are inclined to make unnecessary trips from sites to access services for personal needs; 30% of energy usage in productions is from filming, and 4% is from temporary living quarters (i.e. trailers). The proposition of using electric vehicles to help solve this singular problem is unrealistic; they are unavailable for mass use since they're behind in manufacture and infrastructure, and are too unreliable to adapt quickly to rapid adjustments.<sup>2</sup>

After interviewing Andy Hopkinson,<sup>12</sup> a driver for Paul Mathew Transport Ltd (a company made up of around 25 drivers that transport shows, lighting, and sound systems between venues for the theatre industry), I discovered additional effects that transport particularly has on the environment. A single driver may drive up to 2000 miles per week, using 350-500 litres of diesel, travelling all over the UK and, occasionally, into Europe. The journey depends on the venue itself and the size of the show (how many trailers it has), however can last between a few hours to two days, and often requires the driver to sleep in the van. Andy subsequently spoke about the sets and props that he transports daily: “I suppose also the materials used to make up the sets, costumes; the sustainability factor is very low.” This can conclude that it is well-known within the production industry that, often, the materials used are not environmentally-friendly, and yet no one works to change this practice. Furthermore, Andy stated that he learned from multiple experiences that, when a show doesn't do well, it is often pulled: “Sound and lighting get returned, set is more than likely just

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destroyed at the tip. Thousands of pounds worth of food, timber and metal work just crushed.”<sup>12</sup> The horrific wastage that occurs within the set industry foreshadows its contribution towards the earth’s environmental decline as these problematic, normalised habits continue to go unchecked without any plan for improvement.

The Sustainable Production Alliance (SPA) is a collective association focusing on moving film towards sustainable habits, which produced a report explaining that tentpole productions in 2019 had an average carbon footprint of 3370 metric tons, with large films using 1081 metric tons. (In comparison, the University of Michigan stated in 2021 that the average household has an annual carbon footprint of 48 metric tons.)<sup>3</sup> Jennifer Lynch, the senior Vice President of Corporate Social Responsibility and Internal Communications at Paramount Pictures reinstated the opinion that everyone needs to contribute towards this sustainable movement for it to be effective: “Then it doesn’t just become a studio-by-studio initiative — but an industry-wide one.”<sup>3</sup> However, due to the severe lack of recent comparative studies, this issue is given little attention within society; the public’s perception of sustainability focuses upon topics that resonate with interest (e.g. reducing the use of plastic bottles), so the impacts of the well-liked entertainment industry are typically disregarded. “...this issue is one of ignorance and one of voluntary psychosis.” - Hunter Vaughan, 2019.<sup>5</sup> Vaughan discusses how television and theatre have the power to be a main form of distribution of knowledge about the environment and how it can easily influence its audience’s actions regarding how to live sustainably, in his book, ‘Hollywood’s Dirtiest Secret: The Hidden Environmental Costs of the Movies’. This is similar to the topics in Tina Kubrak’s article on the positive and negative impacts of cultivation theory - where she suggests that a viewer’s exposure to media affects their perception of reality and their actions (cinema is a “tool for broadcasting state ideology to the masses” - S. Zizek).<sup>14</sup>

Additionally, there is a strong reluctance towards using passive design solutions (like natural lighting or ventilation) as they’re often interpreted as limiting creativity and reducing the suitability of filming facilities.<sup>1</sup> Realistically, they wouldn’t deplete from

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finite natural resources or contribute towards carbon dioxide emissions and light pollution, however sales of toxic LED lights have continued to increase from a market share in 2013 of 5%, to over 50% of international sales in 2021.<sup>4</sup> But, also, recommendations made by appointed ‘eco-managers’ are frequently ignored, since they are viewed as impositions, which indicates that the movement towards sustainability focuses upon damage-reduction rather than the improvement of current conditions, and any attempts to fix the ongoing climate crisis are wasted and ignored.

### ***How is the film industry attempting to help?***

Nevertheless, a vast selection of film companies are working towards applying sustainable boundaries to the workplace. Paramount, a member of the SPA, proved to the economy that sustainable sets don’t have to be expensive by building an energy plant that saved 400 million imperial tons of greenhouse gases in a decade.<sup>3</sup> Sky Studios was certified by ALBERT, the leading screen industry organisation advocating for positive environmental impacts, and was specially mentioned in the Sustainability Standard for Studio Facilities study for advocating for green energy and banning single-use plastics on set.<sup>6</sup> Other sites have been adopting location libraries and microgrids to encourage the use of public transport and minimise energy demands. Location libraries help managers to obtain filming locations in a closer proximity to transport hubs, which limits the release of unnecessary emissions. Microgrids are battery storage systems that share local energy across multiple working facilities, therefore reducing energy losses across transmission lines. Productions such as ‘Downton Abbey: A New Era’ have started to use renewable diesel (HVO) - a biofuel manufactured from waste products, such as vegetable oil. It is a clean-burning, ISCC approved fuel which reportedly eliminates up to 90% of CO2 emissions.<sup>7</sup> Although, resources like animal fats and cooking oils are limited, and its manufacture can contribute towards deforestation and high carbon emissions if the wrong material is used (e.g. palm oil). Certain productions enforce restrictions and standards on employees to become more environmentally-aware, such as the release of Mammoth’s Screens’ Green Memo at the start of the production of ‘Poldark V’.<sup>11</sup> Some studios,

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altogether, need not only accept new advances, but must also improve the conditions of current energy-wasting appliances - such as the generators that power sets.

### ***How does the use of generators affect the environment?***

Louise Smith, the sustainability consultant from Neptune Environmental Solutions, focuses on energy and transport when hired to advise a film/TV production on how to cut down on carbon emissions.<sup>7</sup> She encourages the use of batteries to conserve generated energy overnight, and acknowledges how HVO isn't a perfect solution towards energy wastage. Generators are important for locations where the power grid isn't accessed, as they can run appliances without needing to charge the battery. Diesel engines and powering dynamos are attached to them, which reduce transmission losses and operation costs, and typically have a compact design, however contain high levels of extra insulation. There is an ongoing debate about the most efficient generator used by production agencies; battery generators, although renewable, require much planning, whereas diesel generators are conveniently flexible, which makes them popular in the film industry. However, the utilisation of diesel instigates a significant percentage of the energy crisis in cinematography - most productions generally hire two maximum power diesel generators, which consume around 80 litres of diesel every 12 hours, emitting half a tonne of CO<sub>2</sub>.<sup>8</sup> As well as impacting the environment, these released fumes affect the health of workers (in severe cases, the exposure to such gases can heighten the risks of lung cancer) and the machinery needs more cabling due to the required distance it must be kept from the set to avoid unwarranted sound while shooting. Nonetheless, electrical generators are becoming a practical alternative, as they reputedly reduce production impacts by 15% and limit noise levels, air pollution and additional costs.<sup>10</sup> Although, industry-wide acquisition is impossible due to a lack of the making of these generators. There, Green Voltage (a company that supplies emission-free, silent generators providing 10 hours of continuous power with wireless capabilities) saw a gap in the market. They have provided energy for the sets of Doctor Strange, Killing Eve, and Cruella, and have been highly recommended by David Sinfield, the cinematographer of the popular

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James Bond movie ‘No Time To Die’; he described them as “an excellent power source that can easily handle all manner of applications”,<sup>8</sup> promoting them to be an industry standard.

### ***How can studio locations become more sustainable?***

Studios play a critical role in the journey to sustainability, as their sites are designed to have functional requirements for cinematography. Recently, production teams have demanded sustainability credentials from studio locations, such as renewable electricity contracts and shared industry services. An example would be reuse networks (storage spaces for digitally tagged set pieces, costumes and props - which creates an online database); these are browsed by nearby productions and studios, which facilitates set reuse, as materials are often purchased and manufactured to specification which can limit recycling due to ‘artistic freedom’. At the end of filming, these specified set pieces are typically donated to charities, sent to energy generators or to landfill.<sup>1</sup> The MFTA (Material for the Arts) is a reuse centre in New York that donates reusable film and television pieces to art charities, schools and city agencies; this assists towards the reduction of landfill whilst educating people on the importance of recycling.<sup>1</sup> However, reuse services are limited, have high storage costs, and the distance between studios can result in transport and communication issues, making them an unfit permanent solution to the reduction of prop waste.

### ***How can the future of set design be improved to become more sustainable?***

Set designers can additionally minimise unnecessary material usage through digital design, with technological advances in VFX and CGI, creating supplemental virtual productions (with better production quality) and potential decreases in carbon emissions from reduced transport, fabrication of sets, and shorter periods of film-shooting.<sup>1</sup> Art departments commonly don’t consider digital fabrication and additive manufacturing due to its expensive stereotype but, in spite of this, design developments (i.e. stereolithography, laser sintering, and 3D printing) have many benefits: templates can make identical copies of products more accurate; updated

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software uses the exact amount of material necessary, so there is no excess; they allow users to print extra components personally and efficiently; they can produce integrated designs; they are able to print in larger quantities.<sup>13</sup> There are certain drawbacks included, as these methods can increase energy demands, take longer to print, and are not suited for mass production. However, the benefits arguably outweigh the detriments, so the adoption of digital manufacturing is a strong recommendation for set production.

The Vectar Project,<sup>9</sup> a carbon neutral film production studio, is another possible solution to this particular crisis. Tom Henderson was the Managing Director of Z Film Studios before visiting the Caribbean for a commercial project and seeing the wasteful, purposeful flooding and damage done to the environment for the shoot to take place, henceforth dedicating himself to sustainable production. Chris Gilmour (a cardboard sculptor) helped Henderson make props from cardboard manufactured in Sweden - the substance is made from tree branches and leaves, therefore leaving the trees intact, and is 90% lighter than traditional prop material. Vectar board is durable, saves money, can be built offsite, and is unharmed to the environment - consequently providing a clear, easily embraced fix to the future of set design.



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## **Conclusion**

My topic focus proposes that, due to rapid implications of filming, production companies aren't taking enough action to diminish negative environmental contributions, like carbon emissions and energy usage. Originally, I believed that there wasn't enough coverage on the subject in the media, which can still be argued even though the film industry (as a whole) has decided to contribute to the conservation of our environment through organisations (like the SPA). These alleged organisations visibly aren't doing enough, however - often, their aims for the future include distributing green memos and banning single-use plastics; changes as such make small impacts on the negative effects of cinematography, but won't make the industry completely carbon-neutral unless those companies are willing to be fully dedicated to the cause. Also, these issues are not publicly presented due to the large audience that the industry has and its demand for entertainment following COVID-19, so it doesn't receive sufficient awareness. Suggestions of modern lighting technologies (such as Daylight Harvesting controls and Lighting timer controls), reuse networks (like the MFTA), and set design solutions (namely Vectar or 3D Printing) are commonly ignored in the name of 'artistic freedom'.<sup>1</sup> This negative outlook upon sustainability and the typical stereotypes of extra expenses that surround it are not aiding the film industry in becoming an environmental advocate, as is the goal. By investigating this discussion, I was able to analyse the controversial impacts of filming, how companies are currently working towards fixing those issues, and discovered adaptable solutions towards those problems. I plan to make such sustainable changes if I join this industry, as I intend, and in my next project I would attempt to limit the extent of online research that I did, and use more primary sources, because I revised an unnecessary amount and had to condense the material that I included in my project. I would like to explore this topic further as an EPQ and discuss smaller topics that I have briefly researched throughout this project (but was unable to do so as it wasn't as relevant to my topic question as other resources were). I'd recommend, after researching this subject in depth, that production companies begin budgeting towards responsible and local sourcing, sustainable materials, and parametric design, since these can help

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lower costs while simultaneously diminishing a large portion of carbon emissions. Other moderate changes could also be adopted, such as: solar roof installations, wind turbines with quiet frequencies, and green infrastructure. The wellbeing of employees and the environment frequently coincide, so these low-cost adjustments affect the workplace in a multitude of ways and should be seriously considered by production managers, instead of being ignored (as the film industry is doing). I can conclude that the international enterprise is not taking action to do what is needed in order to terminate the detrimental effects of theatre and cinema production on the earth and environment.

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