Screen New Deal Transformation Plan

Screen New Deal: Transformation Plan for Wales

Beddgelert, dir. Medeni Griffiths, Ffilm Cymru Wales.

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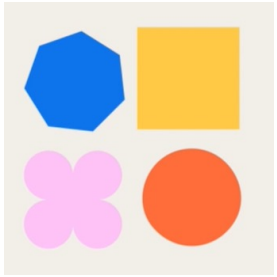
Contacts



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ARUP

Florence Mansfield
Senior Climate Change Consultant, Arup
Florence.Mansfield@arup.com

Charlotte Hudson
Climate Change Consultant, Arup
Charlotte.Hudson@arup.com

ALBERT

Steve Smith
Sustainability Consultant & Project Manager, albert
steves@bafta.org

BFI THE NATIONAL LOTTERY

Yvonne Harris
Senior Fund Manager, Research and Innovation
BFI Commissioning Contact
yvonne.harris@bfi.org.uk

About

albert is the leading screen industry organisation for environmental sustainability. Founded in 2011, albert supports the film and TV industry to reduce the environmental impacts of production and to create content that supports a vision for a sustainable future.

The BAFTA-owned, industry-backed organisation offers online tools and training, events, practical guidance and thought leadership to all screen industry professionals to help them identify and act upon opportunities on and off screen which can lead to effective climate action.

Creative Wales is an economic development agency within the Welsh Government that supports the development of the fast-growing creative industries in Wales. We focus on promoting growth across TV, film and animation; games, VFX and post-production; music and comedy and publishing, positioning Wales as one of the best places in the world for creative businesses to thrive.

We invest in creating opportunities for people in the industry by supporting Skills and Talent initiatives for our workforce; we fund projects that boost infrastructure and creative businesses, provide specialist advice and actively promote sustainability, diversity and equality for all across the creative sectors.

Arup is a global collective of designers, engineering and sustainability consultants, advisors and experts dedicated to sustainable development, and to using imagination, technology and rigour to shape a better world.

Working in more than 140 countries, the firm's designers, engineers, architects, planners, consultants and technical specialists work with clients on innovative projects of the highest quality and impact. Our holistic practice engages at all stages of cultural projects, from developing a strategic brief, initial feasibility study through design, construction, and commissioning and operations.

Media Cymru is a £50m collaboration of broadcasters, media companies, universities, regional and national agencies led by the Centre for the Creative Economy at Cardiff University. It supports green, fair, global growth and aims to make the Cardiff Capital Region a global home for media innovation. Media Cymru builds on the Centre's successful Clwstwr programme (2018 – 2023), which helped bring the Screen New Deal to Wales.

A central pillar of Media Cymru's work is using innovation to green the screen sector. This includes initiating, curating and funding research and development, across the media sector and its supply chain, to provide the media sector with the tools and support needed to reduce its environmental impact.

Founded in 1933, the BFI is a registered cultural charity governed by Royal Charter. It is a National Lottery distributor, and the UK's lead organisation for film and the moving image. The BFI Board of Governors is chaired by Tim Richards.

The BFI's mission is to support creativity and actively seek out the next generation of UK storytellers. To grow and care for the BFI National Archive, the world's largest film and television archive. To offer the widest range of UK and international moving image culture through its programmes and festivals - delivered online and in venue. To use its knowledge to educate and deepen public appreciation and understanding. To work with Government and industry to ensure the continued growth of the UK's screen industries.

Ffilm Cymru Wales is the development agency for Welsh film. We are dedicated to advancing and sustaining a strong film industry for Wales; one that we can all be proud to call our own.

We do this by providing funding and training to emerging and established Welsh filmmakers, offering exciting cinematic experiences to audiences across Wales, and developing new skills and career paths through a range of training programmes.

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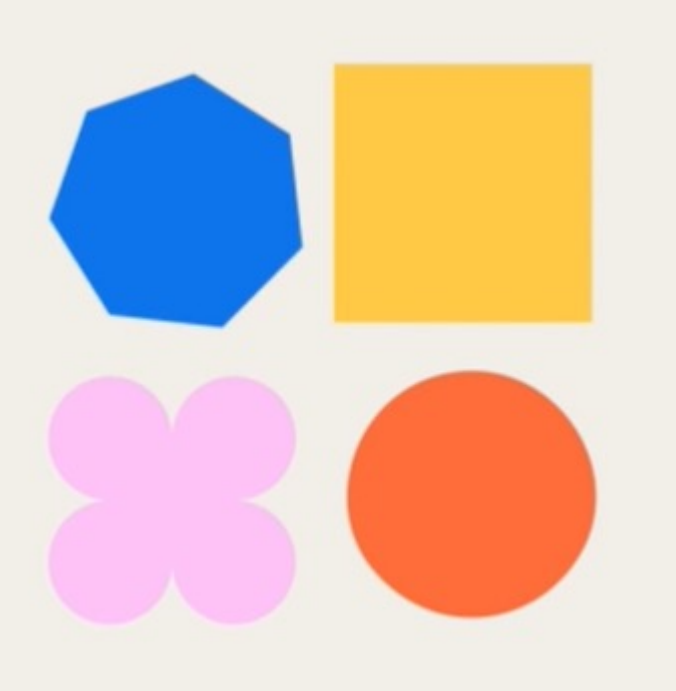

Executive summary

Executive summary

Screen New Deal Transformation Plan

The Screen New Deal: Transformation Plan for Wales follows the BFI National Lottery-funded Screen New Deal report[1] released in 2020. A first of its kind, the Plan provides a technical routemap for informed stakeholders in Wales to transform the film and high-end television (HETV) industry to a zero-carbon, zero-waste sector, and is designed to act as a blueprint for use in other UK nations and England's regions.

This work was commissioned by the BFI using National Lottery funds to collaborate with industry in Wales, led by BAFTA albert, Arup, Creative Wales, Ffilm Cymru Wales and Media Cymru. Whilst this work has a focus on industry in Wales, most of the findings and recommendations are broadly applicable across the whole industry in the UK and should be considered and adapted for other UK nations and England's regions. For an industry digest of this technical work, please see the summary document.

The Welsh creative industries make a significant contribution to the nation's economy, with just under 45,000 people employed in creative sectors last year and with overall turnover increasing from £3.95bn to £4.24bn in the four years to 2022.[2] This economic growth represents significant purchase power to help shift to sustainable infrastructure and supply chains.

Sustainability efforts to date have been promising, but fragmented and iterative, meaning they have had limited impact. Whilst legislation and policy change in Wales demonstrate that there is a growing legislative and policy framework to support industry's efforts, the industry routemap set out here aims to provide a single, coordinated framework that can be adopted by film and HETV production alike.

The report sets out 14 core recommendations that the film and HETV industry in Wales must implement between now and 2030 to make the necessary progress to align with climate targets. The recommendations have been grouped into four key themes: **energy and fuel resources, rethinking transport, a circular film industry,** and **information creation and dissemination,** which reflect the greatest areas of opportunity for the industry.

The findings and recommendations in this report have been developed based on a literature and data analysis, and engagement with individuals within the industry. It is important to note that whilst immediate action must be taken in these areas, long-term monitoring is also required to ensure progress is tracked.

These recommendations will require a shift in the underlying culture of the production industry by engaging the whole industry to consider sustainability a 'core' issue. For example, it will be essential for the industry to assign budgets and teams to support sustainability efforts, providing incentives to do so.

The film and HETV industry in Wales has the potential to demonstrate meaningful change and encourage other nations and regions to take the initiative and act now to avoid further contributing to climate change.

Recommendations	
Theme	**Core recommendations**
Energy and fuel resources	1. Eliminate diesel in generators 2. Maximise renewable energy use at the studio 3. Increase energy efficiency
Rethinking transport	1. Map the challenge 2. Eliminate diesel in road transport 3. Minimise the need for travel 4. Shift modes of transport
A circular film & HETV industry	1. Tackle waste 2. Address food and circularity 3. Create the space and infrastructure for reuse 4. Adopt a circular productions toolkit
Information creation and dissemination	1. Experts on the ground 2. Conduct asset life cycle assessments (LCAs) 3. Provide supplier sustainability support

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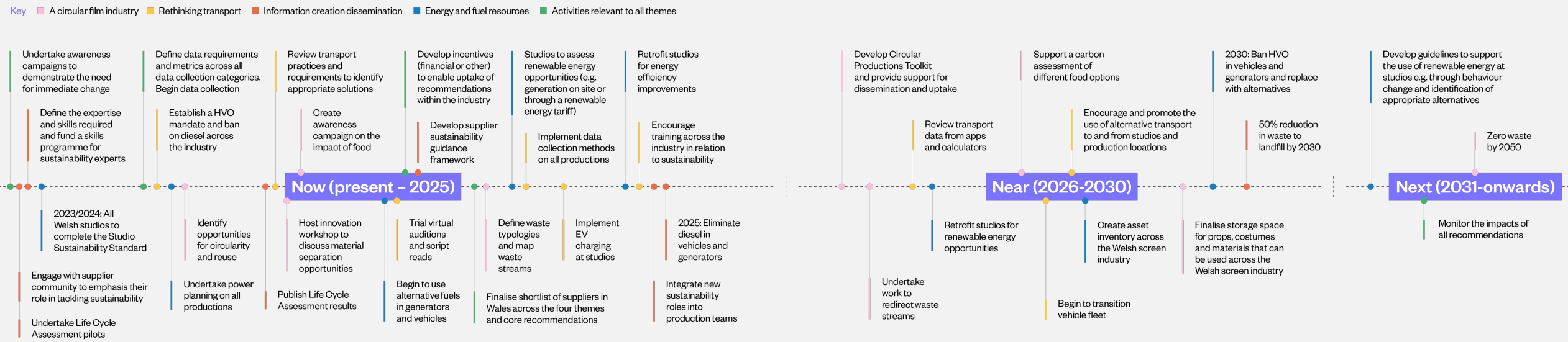
This routemap has been developed to bring together the actions and targets identified within the transformation plan. The key actions are colour-coded by theme and are placed on a timeline to 2031 and beyond. Some actions relate to multiple themes. Key stakeholders are listed in the implementation actions within this report.



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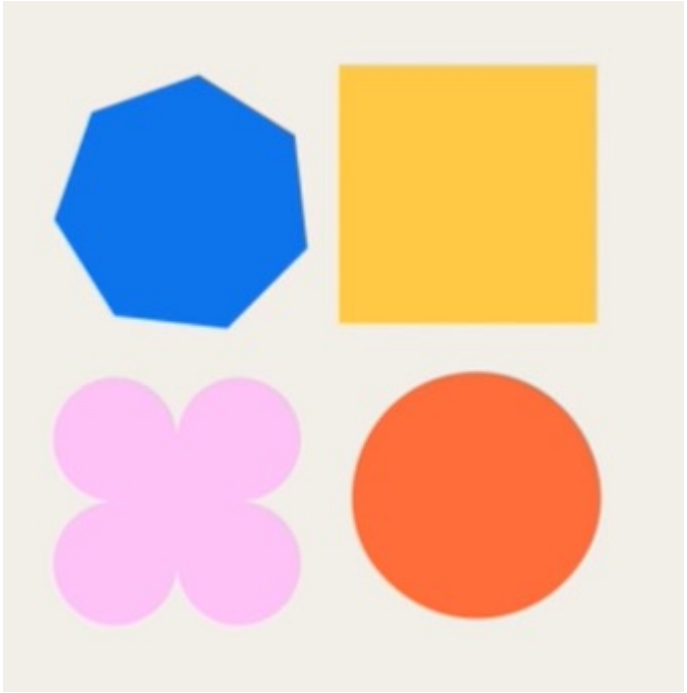


1. Introduction

1. Introduction

Screen New Deal Transformation Plan

1.1 Introduction

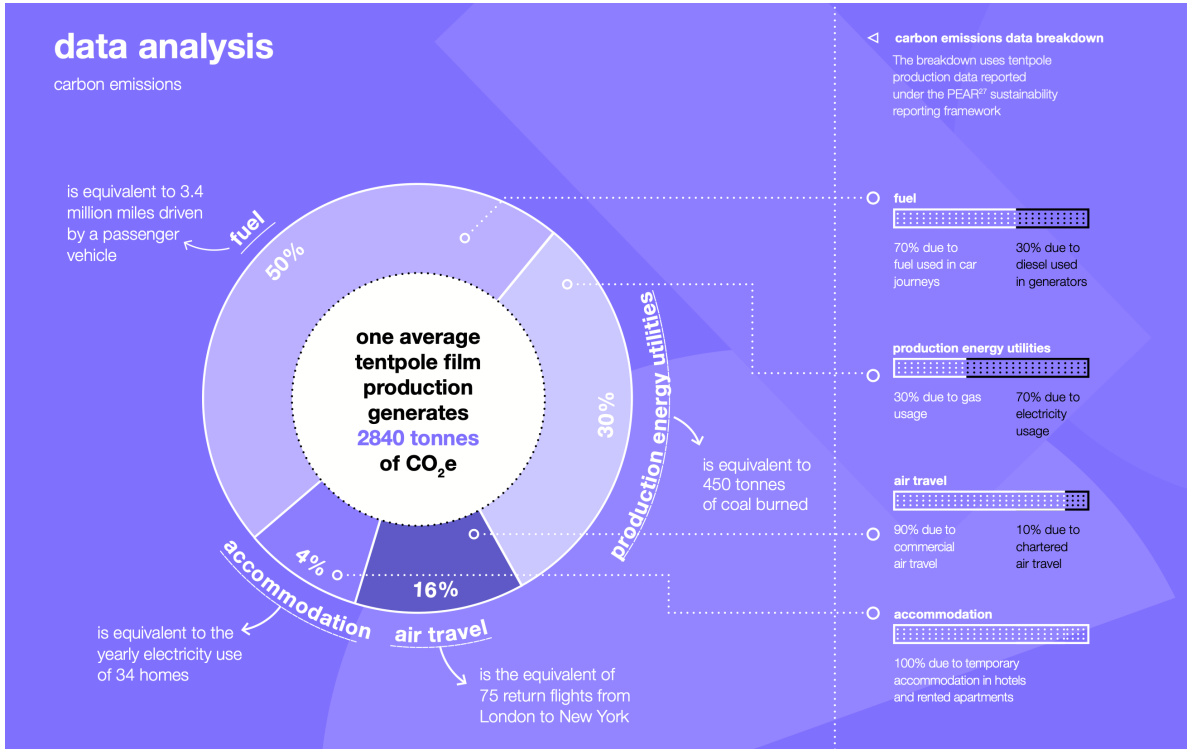
The film and HETV industry has a significant impact on the environment and society. The Screen New Deal[1] report showed that the average tentpole film production – a film with a budget of over US$70m – generates roughly 2,840 tonnes of carbon dioxide equivalent (CO_2e), the equivalent to driving around the world over 300 times in the average diesel car. But it is not just about carbon emissions. Film and HETV productions use a lot of materials (e.g., timber and steel), the extraction, processing and transport of which can cause pollution and environmental harm. Productions generate lots of waste, including plastic, props and construction materials, which often end up in landfill. Incorporating sustainable practices will prevent environmental harm, help meet net zero policies and ensure compliance with net zero and environmental legislation.

Environmental regulations and expectations are increasing, making sustainable practices essential for the long-term viability of any industry, with organisations that fail to comply risking reputational and legal consequences. The film and HETV industry in Wales is ambitious and has already demonstrated its commitment to sustainability (e.g., through the production *GALWAD*[2]). It is in a strong position to adopt sustainable practices, making it fit for the future in a rapidly changing world. There are also strong co-benefits to adopting sustainable practices. As funders and investors become more environmentally conscious, they are already opting for productions, studios and talent that are engaging with sustainability by taking action on fuel efficiency and renewables, using low-carbon transport and reducing waste.

The film and HETV industry is uniquely positioned in terms of its profound influence on society and popular culture. The Department for Business, Energy and Industrial Strategy (BEIS) Public Attitude Tracker[3] from Autumn 2022 highlighted that people place more trust in TV and radio documentaries than newspapers. Though this report's focus is on off-screen environmental impact, it is crucial to acknowledge the unparalleled opportunity the industry has to engage audiences in sustainability, normalising positive environmental solutions on screen as much as engaging with them in off screen production.

This report

Led by albert, Arup, the BFI, Creative Wales, Ffilm Cymru Wales and Media Cymru, this work follows and builds on the BFI National Lottery-funded Screen New Deal (SND) report which was published in 2020. The SND identified appropriate areas of sustainable transformation, proposed a practical route forward for scripted film and related production (such as HETV and studio-based productions) to reduce emissions and waste, aligned with net zero and science-based targets. To enable SND to be applied across the industry, a cluster-based mapping and data collection exercise was required to identify the film and HETV-related services already in existence, the gaps that exist, and understand if and how those services can be adapted to become more sustainable, and/or whether completely new services need to be created. This first Screen New Deal transformation plan provides a proof of concept in the form of a Transformation Plan for Wales. Wales was selected as an appropriate cluster (nation) for this Plan due to its ambitious sustainability and climate-related targets. Although undertaken for the screen industry in Wales, the recommendations included within this report are designed to be transferable to other UK nations and England's regions.



Carbon emissions from one average tentpole production. Source: Screen New Deal (2020)

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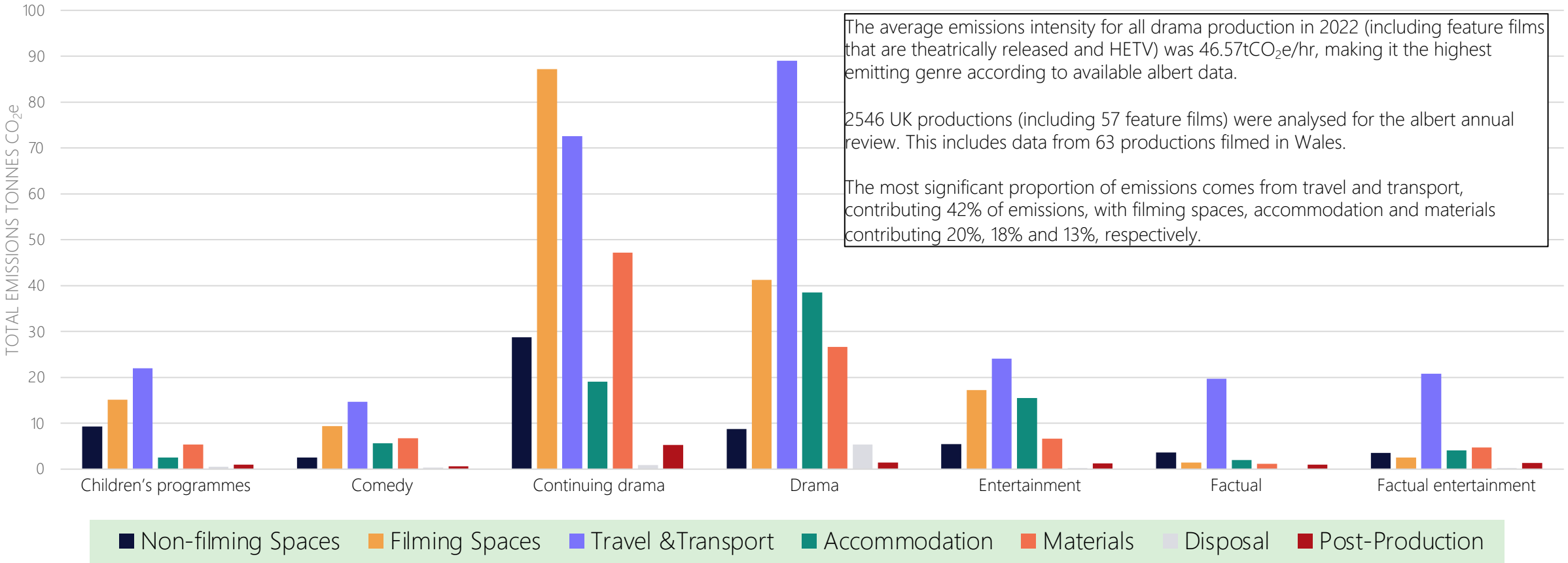
Average genre emissions data per hour of TV

To illustrate the significant impact film and TV production has on the environment and society, this graph provides an overview of the average emissions by genre tracked by the albert calculator in 2022, highlighting carbon emission pinch points. While emissions vary between genres, travel/transport and filming spaces remain consistent as the two highest emitters across genres. The total emissions from albert footprints in 2022 are over 130,000tCO_2e, around half of which came from travel and transport. The yearly average emissions are 12.8tCO_2e per hour of film and TV produced.



The average emissions intensity for all drama production in 2022 (including feature films that are theatrically released and HETV) was 46.57tCO_2e/hr, making it the highest emitting genre according to available albert data.

2546 UK productions (including 57 feature films) were analysed for the albert annual review. This includes data from 63 productions filmed in Wales.

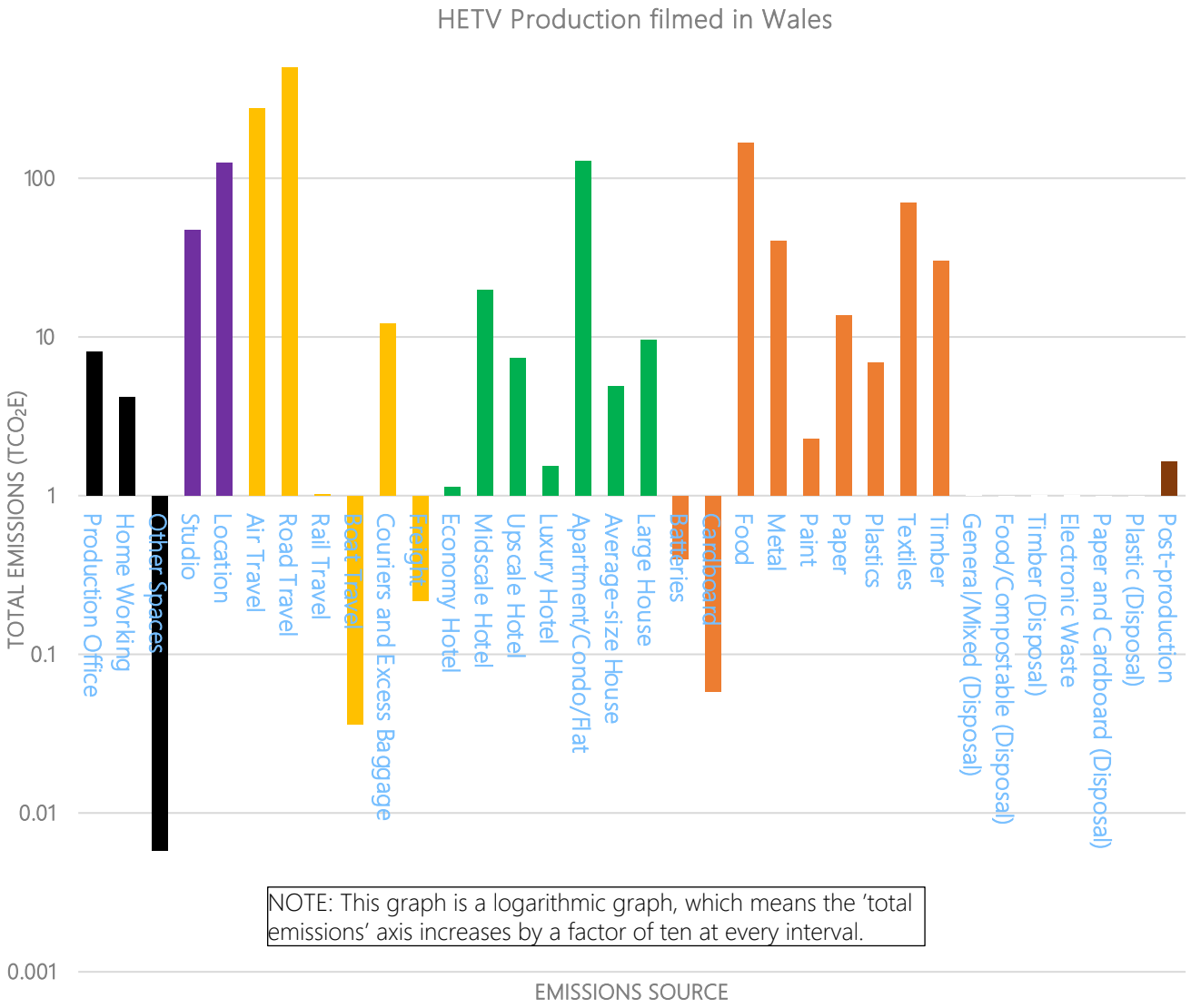
The most significant proportion of emissions comes from travel and transport, contributing 42% of emissions, with filming spaces, accommodation and materials contributing 20%, 18% and 13%, respectively.

NOTE: Given the size and scale of high-end dramas it is crucial to identify emission-reduction actions that can be implemented on-set. For example, taking economy rather than business or first-class flights can reduce emissions associated with flying by a quarter. Utilising local crew and equipment will also reduce travel emissions and will additionally reduce the amount of accommodation required. Materials should be rented or purchased second-hand to reduce lifecycle emissions from props and costumes. Alternative fuels for generators should be considered. For example, HVO-powered generators can reduce emissions by up to 80-90% compared to diesel generators, which remain industry standard.

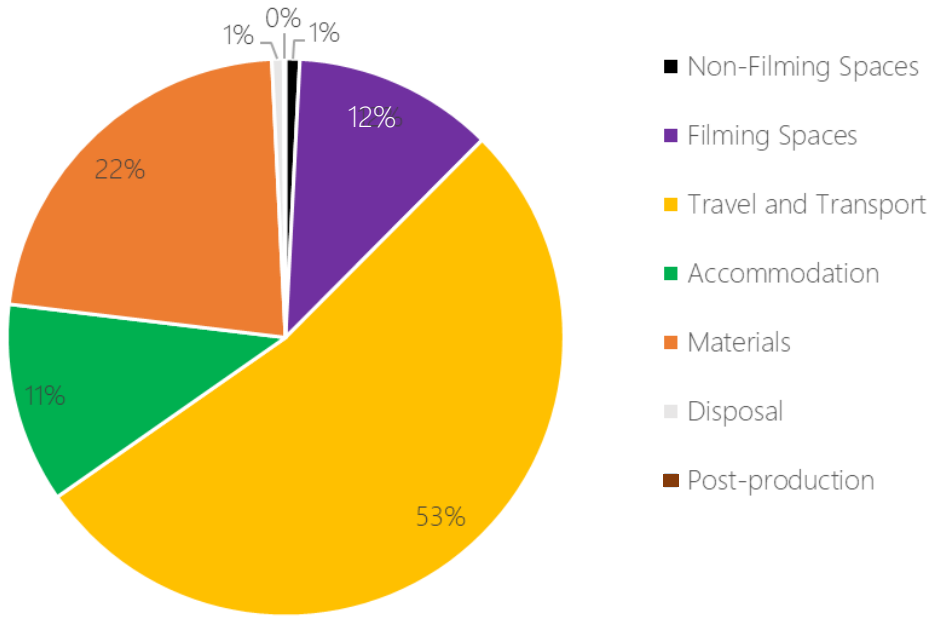
Source – albert 2022 annual review

1. Introduction

Example emissions data for a HETV production filmed in Wales



NOTE: This graph is a logarithmic graph, which means the 'total emissions' axis increases by a factor of ten at every interval.



These charts show the emissions footprint data for a HETV drama production filmed on location and in studio in Wales during 2021/22. The data is consistent with the findings of the original SND report, which highlighted the scale of emissions from the average scripted tentpole production.

The total footprint for this scripted HETV production was 1487tCO_2e, equating to 743tCO_2e per hour of screen time. This is approximately 16 times greater than the 47tCO_2e emissions per hour of the average drama.

As with most productions in this genre, travel and transport was the highest source of emissions, making up 53% of the total (782tCO_2e). The next highest impact was from materials (including catering), producing 22% of emissions (330tCO_2e). Energy at both the studio and on location was responsible for 12% of production emissions (172tCO_2e). Accommodation choices produced 11% of emissions (172tCO_2e) and waste / disposal accounted for only 10 tCO_2e, less than 1% of the total emissions.

Source – albert annual review 2022

1. Introduction

1.2 Aims

The main aim of this pilot is to create a clear, actionable routemap for the film and HETV industry in Wales to transform its way of working and reduce its environmental impact. Global CO_2 emissions must halve every decade for the next three decades to achieve net zero in 2050. The film and HETV industry has a key role to play here, with the largest industry players setting targets to reduce their greenhouse gas (GHG) emissions and move towards net zero carbon, and all stakeholders in the value chain need to align. Film and HETV production emissions are still rising, as highlighted in albert's 2022 annual report (slide 10) where the average hour of TV's carbon footprint is 12.68tCO_2e, up from 5.7tCO_2e the previous year. Emissions for the average hour of TV produced in Wales was 30.9tCO_2e. This is skewed upwards by the number of HETV productions with larger footprints that filmed in Wales in 2022.

This routemap aims to:

1. Identify sustainable solutions. The speed of film and HETV production does not lend itself to allowing individual productions to seek out individual solutions. Production teams need to understand, and be aware of, the sustainable solutions that are available throughout the industry and at a variety of filming locations. This routemap aims to provide guidance on these solutions.
2. Enhance data collection and usage. Data collection in the film and HETV industry is very poor. This routemap aims to provide guidance on how to overcome this.
3. Look beyond carbon. As well as reducing carbon emissions from the film and HETV industry in Wales, this routemap also aims to assess how circular economy principles can be used to reduce waste and extend the life of materials, props and costumes.
4. Provide actionable solutions. The Screen New Deal report provided a bold and challenging vision for change in the film and HETV industry. This routemap provides a series of clear and simple actionable steps, an implementation timeline and details of the stakeholders who need to be engaged. Implementing the actions will require significant changes to 'business as usual' for all productions.
5. Be Wales-specific. Several policies in Wales, such as the Well-being of Future Generations (Wales) Act, The Environment (Wales) Act and the Beyond Recycling Strategy, demonstrate that action in Wales is moving in the right direction. This work set out to identify which elements of the Screen New Deal were most relevant to Wales and how they could be integrated with the progress, policies and development plans already in action in the country.
6. Share transferable learning and inspire action beyond Wales. With a largely freelance workforce, people in the screen sector work across the UK and internationally where many of these recommendations will apply. This routemap should inspire behaviour change and actions that can be taken across the UK nations and English regions immediately.

A Discovery of Witches was filmed at Wolf Studios in Wales. Source: UK Screen Alliance

1. Introduction

1.3 Methodology

This report is informed by a research approach that combines a depth and breadth of insight. It integrates industry-focused qualitative and quantitative data with literature on policy and climate initiatives in Wales.

More than 70 interviews were conducted with a diverse range of stakeholders, including studios, productions, industry bodies, service providers, suppliers, academic institutions, broadcasters, commissioning bodies and the Welsh Government. Specific roles included studio managers, production managers, sustainability managers, directors, set designers, sustainable energy suppliers, catering suppliers, timber suppliers, waste contractors, commissioners, broadcasters, academics and Welsh government heads of departments. Following this, further interviews and reviews were undertaken with technical experts in material use, energy, transport, climate and carbon management, and the arts and culture industry. This engagement was essential in developing and shaping the recommendations in the report. In addition, views on existing challenges and barriers were gathered during training that was provided to over 150 Welsh-based film and HETV stakeholders, ranging from production teams to crew to suppliers. This insight was incorporated into the research.

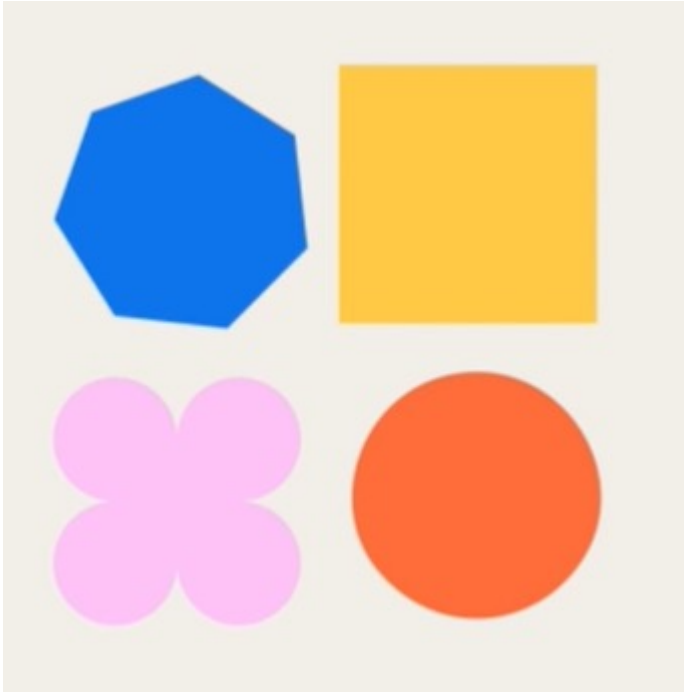
To gather further industry insights, two surveys were created and circulated, one for industry suppliers and one for productions. In total, responses were received from 17 productions and 11 suppliers.

The analysis of data derived from the 2022 albert annual report of 2,546 productions, including 63 Welsh productions and 57 feature films from across the UK, was instrumental in this project. In addition, anonymised data from a recent Welsh feature film production was reviewed and included in the analysis.

The report also benefitted from data from the Studio Sustainability Standard Year 1, which drew to a close in June 2023 and included data from one studio in Wales.

In parallel to the qualitative and quantitative data collection and analysis, a review of over 60 documents, including industry reports and academic research, allowed the project team to identify emerging trends and ascertain the landscape of existing Welsh sustainability initiatives and policies, their impact, and key challenges and opportunities.

All of these components informed the project team's understanding of the film and HETV industry within Wales as well as the current climate policy and development initiatives. This helped to identify where the greatest opportunities for systemic change lie. This underpins an aspirational, yet actionable, routemap to implementing the Screen New Deal vision in Wales.



2. The Welsh context

2. The Welsh context

2.1 Wales and the climate emergency

Climate change represents significant risks to society, including the film and HETV industry, with 83% of the UK public being concerned about the topic.[1] In 2022, IPCC's Sixth Assessment Report highlighted that human activity has contributed to warming of 1.1 degrees Celsius above pre-industrial levels, which has led to more frequent and intense extreme weather events, and action that has been taken to tackle climate change has been insufficient.[2] To avoid continued warming, it is essential that rapid and sustained reductions in GHG emissions are achieved across all sectors and align with net zero. This includes the film and HETV industry. Several broadcasters and studios have already developed science-based net zero targets and plans,[3] with huge opportunities for those who lead on climate action. The implementation of environmentally friendly production processes and outputs will not only mitigate the damaging impacts of climate change but also stimulate job creation, delivering better work, health and financial outcomes for the UK.

Recognising the urgency for climate action with the declaration of a climate emergency in 2019,[4] the Welsh Government has set a range of positive climate targets. A hallmark of this response has been the 2021 update of the Environment Act (Wales) 2016,[5] which included setting a net zero target for 2050, and implementing a system of five-yearly carbon budgets and interim targets which serve as stepping stones for regular progress. Welsh ministers are responsible for reporting progress against these budgets for their respective portfolios. These carbon budgets provide long-term economic predictability for all sectors, helping to encourage investment and stimulate green growth. This policy has helped to encourage a 39% decrease in total Welsh annual GHG emissions from 2020, compared to a 1990 baseline.[6]

However, whilst Wales has taken positive steps in relation to climate policy and has successfully achieved its first carbon budget, the Climate Change Committee (CCC) Progress Review published in June 2023[7] highlights that the country is not on track to meet its remaining targets. Insufficient progress in decarbonisation indicators has been reported across several areas that are dependent on Welsh government policy. For example, progress is slow for tree planting rates, peatland restoration rates, and the development of electric vehicle (EV) charging infrastructure. Further action is needed to achieve the required emissions reduction targets for the third carbon budget.

Looking beyond carbon, the Welsh Government has also identified the 2020s as a period in which substantial resource efficiency improvements are necessary. Beyond Recycling, a strategy the Welsh Government published in 2021, aims to combat the climate emergency and associated biodiversity crisis by keeping resources in use for as long as possible, thereby avoiding waste.[8] The ultimate ambition of the policy is for Wales to become zero waste by 2050. To help mobilise this strategy, the Welsh Government has created the Circular Economy Fund, which through 2020-21 made over £43m available to businesses and publicly funded bodies for the development of innovative projects that grow the circular economy.[8] These policies, amongst others, signal that the pathway towards a low-carbon, zero waste economy is a priority for Wales. The CCC highlights that more progress has been made in the waste sector towards decarbonisation than in other sectors of the economy. Additionally, recycling rates remain higher in Wales than in the rest of the UK.[7]

Summary of progress against key indicators where Welsh Government policy has significant influence

Agriculture and land	Waste	Transport
New woodland	Total waste	Charge points
Peatland restoration	Recycling rate	Rapid charge points
Livestock numbers	Landfilled waste	Car km
Meat consumption	Biodegradable waste	Van km
Machinery emissions	Energy from waste	HGV km

Key:

- On track
- Slightly off track
- Significantly off track
- Too early to say
- Data not reported
- No benchmark or target

Notes: An indicator is on track if it is going in the right direction at an appropriate rate. This is determined either by comparing to a quantified pathway/benchmark or making a judgement.

Adopted from: 'Summary of progress made against key indicators in Wales where government policy has a significant influence' in Progress report: Reducing emissions in Wales.[7]

2. The Welsh context

2.2 The creative industries in Wales

The creative industries in Wales represent a significant component of the nation's economy. In 2022, the creative industries in Wales (as supported by Creative Wales[1]) accounted for 2.2% of employment within the nation (35,000 people). The value of this sector is rapidly expanding, with overall turnover increasing from £3.95bn to £4.24bn between 2019-2022.[2] This trend is particularly pronounced in the Cardiff Capital Region (CCR), which is establishing itself as a centre for film, TV, radio and photography. A surge of creative activities in the area has increased regional annual turnover by 30% since 2017.[3]

The growth experienced within creative industries has meant that the sector (which includes film, TV, radio and the arts) is increasingly viewed by policymakers and academics as important for urban regeneration and renewal. The Welsh Government identified the creative industries as one of six major target sectors for industrial and economic expansion, establishing Creative Wales in 2020 to support the screen sector and drive further growth. As the sector continues to expand, and its influence on urban transformation grows, there will be an associated increase in the importance of sustainable industry practices in realising Wales' low-carbon and zero-waste targets.

Film and HETV production and post-production represent the most dynamic media subsectors within the CCR creative cluster. The number of film and TV production companies within the region grew by 79% from 2005 to 2018 (the most recent data available), bringing the estimated annual turnover of the CCR audio-visual media sector to £545m (as of 2021).[3] This progression has established Cardiff as the third largest film and TV cluster in the UK.[3] As with the Welsh creative industries more widely, it will be critical for the growth of the film and TV industry to adhere to national climate strategies if Welsh government targets on decarbonisation and circularity are to be achieved. Multiple initiatives have been established to help guide this transition.

Ffilm Cymru Wales, the development agency for film in Wales, has created the Green Cymru programme. It aims to support screen sector professionals and companies in Wales to achieve net zero emissions by 2050 through funding, training, research and development. Media Cymru has a range of funding and support schemes to develop innovations to drive the move to net zero. Media Cymru and Ffilm Cymru Wales have created the Greening the Screen fund, which was launched in September 2023 to support services or processes that aim to reduce the screen industries' carbon footprint in the CCR.

To better equip the sector to implement these actions, the programme has become a signatory of CineRegio's Green Manifesto network, a knowledge-sharing network of European film funders to disseminate sustainable film carbon calculators and toolkits. As a result, the Green Cymru programme has been able to facilitate an increase in the uptake of applications amongst Welsh filmmakers, exhibitors and film educators.

The work of the Green Cymru programme also included a collaboration with Clwstwr, a five-year programme that aimed to create new products, services and experiences for the South Wales screen industry. Their initiative, the Green Cymru Challenge Fund, was a multidisciplinary innovation fund which made £75,000 available for individuals, organisations and cross-sector collaborations to research and develop new sustainable film and TV industry practices.

The range of organisations and programmes described above demonstrates how multiple players are involved in supporting sustainable initiatives in the industry. Following a coordinated approach, which this plan aims to support, the film and HETV industry in Wales has the potential to not only comply with climate ambitions, but to lead action as a pilot for the wider UK film and HETV industry. People have a higher level of trust in TV and radio documentaries than newspapers,[4] and therefore change in this sector could have a large impact in wider circles if it raises awareness and demonstrates action.

The Arborist, dir. Clare Sturges, Ffilm Cymru Wales

2. The Welsh context

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2.3a Existing policy and legislation

This summary of the current legislation and government policies in Wales highlights and underpins the need for significant change within the film and HETV industry.

Well-being of Future Generations (Wales) Act 2015

Environment (Wales) Act 2016

Climate Change (Wales) Regulations 2018

Climate Emergency declared in Wales

Climate Change (Carbon Budgets) (Wales) (Amendment) Regulations 2021
Beyond Recycling: Making the circular economy a reality in Wales (2021)

Net Zero strategic plan (2022)

Welsh legislation, strategies and commitments driving relevant to this work. Adapted from: Net Zero Strategic Plan (2022)[4].

The Well-being of Future Generations (Wales) Act 2015.[1] This legislation highlights Wales' commitment to sustainable development and the well-being of its citizens and future generations. It provides a framework for promoting a more sustainable and equitable society, encouraging collaboration, innovation, and long-term thinking to address the challenges of the present and to secure a better future. It also has strong links to the United Nations' Sustainable Development Goals (SDGs) and demonstrates the ambitious nature of policy in Wales.

The Climate Change (Carbon Budgets) (Wales) (Amendment) Regulations 2021.[2] In Wales, GHG emissions are regulated by the Environment (Wales) Act 2016. Whilst this originally introduced a target of cutting emissions by 80% from 1990 levels by 2050, the advice of the CCC in 2019 and 2020 led Wales to increase its ambition to be net zero by 2050. This has increased pressure to more quickly reduce emissions in order to meet the Welsh Government's third carbon budget.

Beyond Recycling: Making the circular economy a reality in Wales (2021).[3] Wales' *Beyond Recycling* strategy set out the aim to achieve **zero waste by 2050**. It goes beyond traditional recycling practices by prioritising waste prevention, product design for reuse and repair, and promotion of circular business models. Through collaboration with businesses, communities, and local authorities, the strategy seeks to reduce Wales' environmental footprint, conserve natural resources and create a more resilient and sustainable economy for the future.

Net Zero strategic plan (2022)[4]. This Welsh government plan sets out 54 initiatives that will be assessed and reviewed in 2025 and 2030. These ambitious initiatives and targets rely on increasing efficiency, keeping materials in use and avoiding waste, and investing in decarbonising buildings and vehicles. It also requires change throughout supply chains and partnerships, to ensure everyone is working toward net zero. The strategic plan highlights that reducing carbon emissions must become an integral part of decision and policymaking within Wales.

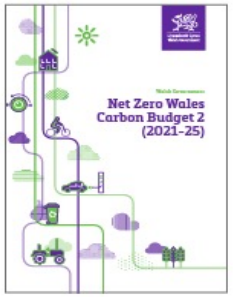
2. The Welsh context

Screen New Deal Transformation Plan

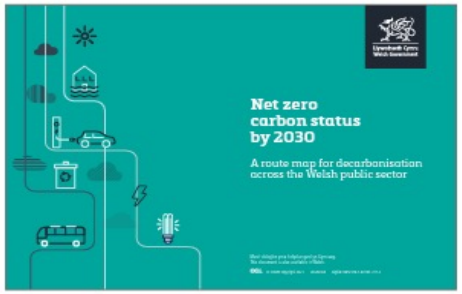
2.3b Existing strategies

Several strategies, plans, and standards have been developed in Wales which support the implementation of measures to reduce emissions and wider environmental impacts.

Electric vehicle charging strategy for Wales



Net Zero Wales Carbon Budget 2 (2021–25)



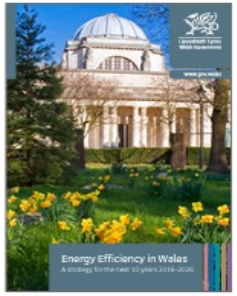
Net Zero Carbon Status by 2030, Public Sector Route Map

Welsh Procurement Policy Notes

Welsh Public Sector Net Zero Carbon Reporting Guide

Sustainable buildings standards

Beyond recycling – making the circular economy a reality



Energy Efficiency in Wales, 2016–2026

2.3c Forthcoming strategies

At the time of publication, further legislation is forthcoming including:

Environmental Protection (Single-use Plastic Products) (Wales) Act. This Act came into force on 30th October 2023 and makes it a criminal offence to supply or offer single-use plastic products to consumers in Wales.

Phase one of this Act will have a significant impact in terms of catering and will include single-use plates, cutlery, drink stirrers and cups, among other items.

Wales-wide strategies and guidance relevant to net zero. Adopted from: Net Zero Strategic Plan (2022).

2. The wider industry context

2.4 Findings on challenges and barriers

There are clear challenges and barriers faced by the UK film and HETV industry. The nature of production is characterised by significant travel and power consumption as well as the use of equipment and construction of sets, often on a one-off basis. Freelance crews are often used which creates a barrier to consistent training and in establishing a culture of sustainable behaviour. Awareness of the potential impact of traditional practices or the benefits of new approaches are low, hindering uptake of sustainable practices as set out in detail below.

Time. Productions have tight schedules making it challenging to prioritise sustainable practices, or source alternative solutions and suppliers. Time-poor producers also struggle to embed sustainability management initiatives, such as albert calculation and certification. Without dedicated time and resources starting in pre-production, albert certification may be treated as a box-ticking exercise rather than being embedded throughout, as shown through numerous interviews with producers.

Budget. Production managers, line producers and production executives complain that, without direct budget lines allocated for sustainability, they are financially constrained over implementing sustainable solutions. In the short to mid-term, working sustainably (sustainable fuel, batteries, environmental waste management etc.) can cost more.

Talent expectations. In many instances, cast may stipulate requirements (e.g., business class flights or private vehicles), which are carbon intensive. The culture of the industry makes this difficult to overcome at present. Initiatives such as green riders are making a tentative start in tackling these ingrained cultural challenges for the industry.

Lack of data. Detailed and accurate data can support implementation of quick-win, effective actions. Whilst there is some measurement, this needs to be more consistent to inform decision-making. Carbon footprint data currently submitted to albert can be inaccurate and incomplete, and there are no consequences for not completing it comprehensively and accurately. If data is patchy and poor, it is difficult to use it strategically in order to reduce emissions.

Complexity of supply chains. A wide range of suppliers are used during productions. This makes the implementation of sustainable practices more complex as several stakeholders are involved. A lack of industry-wide coordination and standards complicates the implementation of relevant actions.

Availability of local resources and crew. In some instances, the required resources (e.g., costumes, set materials, catering) are not available within the local area of a studio/production. This can mean that resources are brought in from further afield, which generates more emissions from transport and requires storage.

Trained specialists. There is a shortage of experienced production sustainability specialists and crew who have been trained on how to integrate sustainability into their role. There are also no formal qualifications aimed at production sustainability teams and the required competencies needed to affect change at all levels.

Lack of specific targets and resources. Many sustainability policies do not include mandatory actions or targets and therefore do not have the desired effect of promoting the on-set behaviour change that is required. The film and HETV industry relies on a highly mobile, freelance workforce. This makes training complex, and many team members are unaware of the actions they can take. Sustainability training is not tailored to specific crew roles or made relevant enough to their day-to-day work.

Offsetting and the cost of business-as-usual is cheap in the short term. Many productions, especially those working to achieve albert certification, carry out a predictive carbon calculation and project an estimated cost to offset their expected emissions. However, the cost for offsetting emissions is often cheaper than spending more time to change ways of working or pay for lower carbon alternatives. Therefore, the low cost of offsetting is unlikely to drive decarbonisation efforts and the necessary behaviour change.

2.5 Biodiversity spotlight

Screen New Deal Transformation Plan

Biodiversity refers to all the living things that share our planet, from animals (including ourselves) to birds, plants, insects and fungi, right down to microorganisms like bacteria. The links between climate and biodiversity mean it will not be possible to achieve net zero targets without considering biodiversity.

The film and HETV industry can have large negative impacts on biodiversity, for example through its contribution to GHG emissions, production of waste and selection of set locations. However, the impact can also be beneficial, through the positive on-screen portrayal of environments. Nonetheless, the industry should care about biodiversity for several reasons:

- Existing and upcoming legislation requires that biodiversity is protected[1]
- It will not be possible to achieve the required emissions reductions without supporting biodiversity
- Supply chains are reliant on biodiversity to provide the natural resources that the film and HETV industry relies upon
- Cost savings could be realised by reducing resource use
- Reputational benefits could arise from taking action to reduce biodiversity loss
- As with promoting sustainability within content, the importance of biodiversity could also be highlighted within productions [2]

Wales supports a wide range of important flora and fauna. Therefore this is of particular importance to the film and HETV industry in Wales.

Productions should consider the impact of their catering, vehicles, structures, costumes, props, location selections, batteries and waste on biodiversity and look for opportunities to promote its protection and restoration.

The albert biodiversity guidelines - Biodiversity & the Screen Industries A Guide for Productions - should be used to integrate consideration for nature in production.

There is great potential for the impact of the industry to be positive and support biodiversity and nature recovery.


Eryri (Snowdonia) National Park Unsplash

Impact of the screen industry

The film & TV industry can impact on biodiversity through its production practices, supply chain, and through its portrayal of biodiversity on screen

Upstream - supply chain

All materials sourced for a production could have an impact from costumes to catering, props & paint

Examples include the use of lauan plywood in sets and biodiversity damaging ingredients in catering

Directly - on location

Damage or disturbance of habitats and species through noise, lighting, and access

Waste & pollution of waterways

Introduction of non-native species or disease from plant material and animals on set

Downstream - on screen

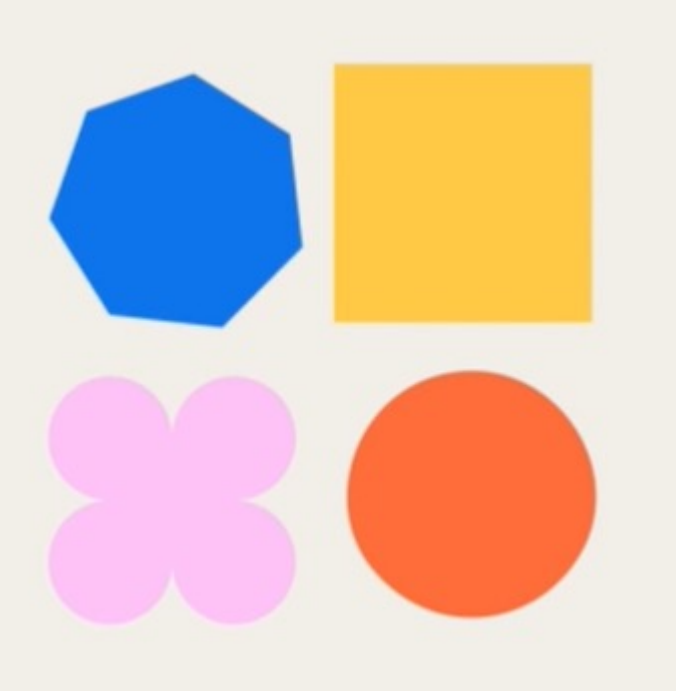
Increasing demand for biodiversity damaging products or ingredients

Increasing visitors to sensitive locations

Impact on individual species

Plus, impacts at an organisational level through, for example, investments, pensions and planning developments

ALBERT



3. Recommendations overview

3.1 Recommendations overview

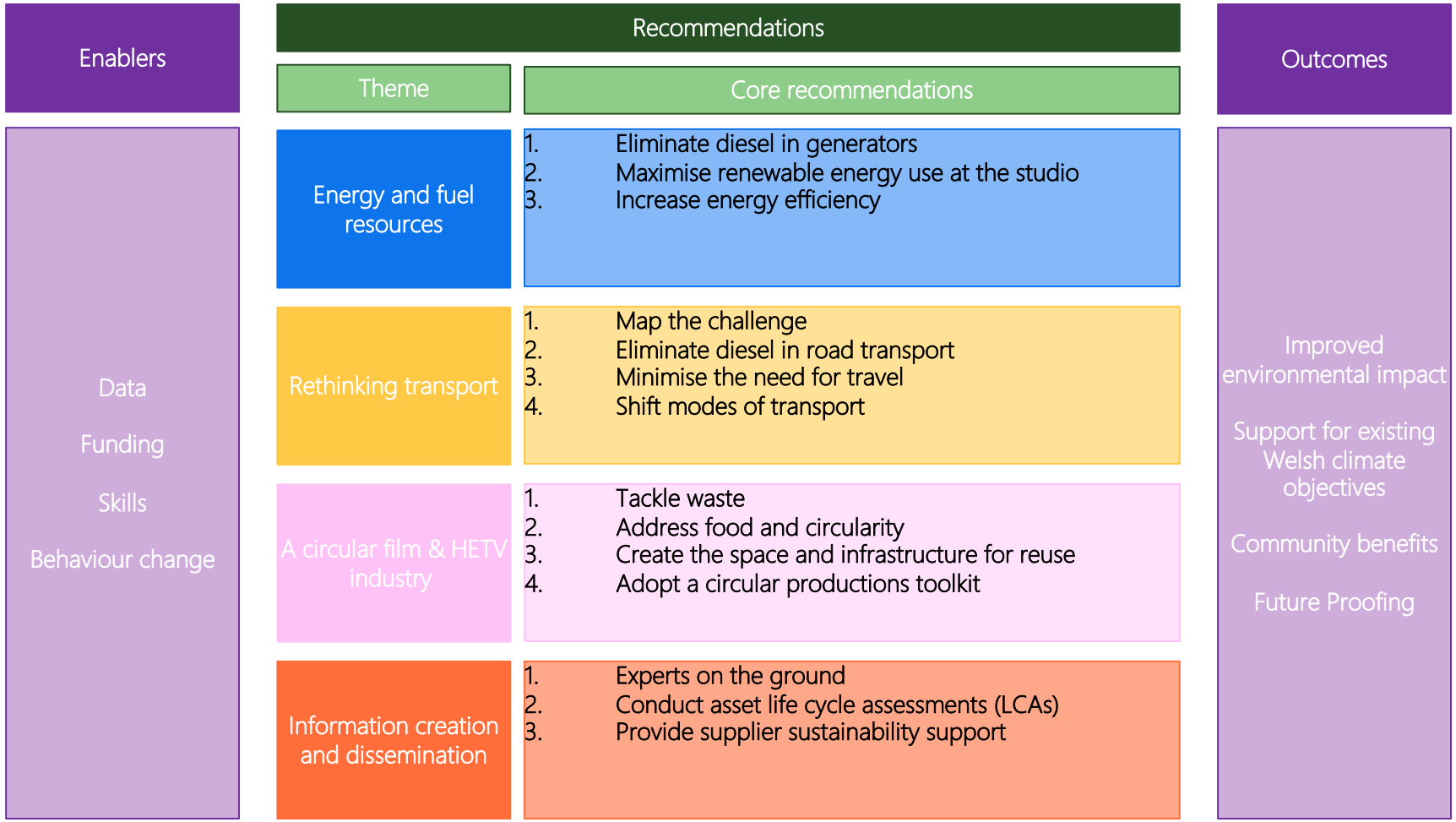
Screen New Deal Transformation Plan

The recommendations in this routemap are based on extensive stakeholder engagement with industry professionals and members of the Welsh Government, analysis of available production data, and information obtained from the desk-based literature review. The evidence demonstrates that sustainability is not currently being sufficiently prioritised, and that the necessary reduction in emissions will not be possible without swift, major change. Whilst the amount of production carbon data currently available is limited, that must not prevent progress. Below are recommendations that can be taken in the short-to-medium term which should have hugely positive impacts on production sustainability and deliver big emissions cuts. If the industry is committed to real change, production sustainability and net zero ambitions need to be taken seriously change needs to be implemented quickly and in a practical, scalable way and it must come with clear targets for delivery.

Enablers. Four 'enablers' were identified during Phase Two of this pilot through data analysis, the literature review and engagement with stakeholders and industry. The enablers will support the implementation and success of the core recommendations.

Themes. Four key themes were identified under which core recommendations have been developed. These four themes capture the largest areas for potential impact within the industry and will be relevant to all productions/studios.

Outcomes. Four key outcome areas represent the potential co-benefits that could be achieved through the implementation of these core recommendations.



3.2 Spotlight: Sustainability advisors and managers on set in Wales

Screen New Deal Transformation Plan

Recent productions in Wales, including *Havoc* (Severn Screen for Netflix), *Black Cake* (CBS/Hulu), *Steel Town Murders* (BBC) and *Out There* (Buffalo Pictures for ITV) have benefitted from allocating budget to employ sustainability managers on set to provide information and advice to production teams.

This role ensures sustainability is embedded across the production team and that initiatives are promoted throughout the process to promote sustainable choices and actions, in addition to ensuring that appropriate data and information is gathered to enable final reporting.

This role can also provide tailored departmental advice and interdepartmental coordination, on-the-ground waste and recycling management, and development of circular economy principles (e.g., building networks with schools and prop houses etc. for reuse). Sustainability managers can join production planning meetings to support logistics planning from an early stage.

The presence of a named sustainability lead on a production can support with managing short-notice changes in production planning in a sustainable way, drawing on knowledge of sustainable solutions or suppliers.

On-set support also has the benefit of inspiring and empowering new ways of working across departments, not only on one production but on future productions for the crews involved.

Waste management Unsplash

3.2 Spotlight: Sustainability advisors and managers on set in Wales

Screen New Deal Transformation Plan

Five high-impact actions recommended by a sustainability manager in Wales

1. Energy – Switch to renewable energy to support emissions reductions from studios.
2. Transport – Undertake transport planning for the entire production to minimise locations, flights and the need for private vehicles *before* production begins. This will allow appropriate considerations to be made to reduce transport. For example, using local suppliers and crew can reduce the need for transport in addition to proactively using EV or hybrid vehicles and facilitating EV charging where possible.
3. Circular economy – Use resources as efficiently as possible by applying 'whole life cycle thinking'. This should involve sourcing from local green suppliers, repurposing and reusing materials and storing, donating, recycling or selling materials at the end of production.
4. Green procurement – Identify and develop a network of green suppliers that are as local as possible to reduce transport impacts and support the local economy.
5. Power – Prioritise the use of battery and hybrid generators on location, recognising the challenges associated with transporting large battery generators. Additionally, hydro-treated vegetable oil (HVO) should be used as a transition fuel to run traditional and hybrid generators.

"Over the last couple of years, my role as sustainability advisor has become increasingly recognised and valued by production teams, crew and suppliers as they navigate the mandated actions required to reduce carbon emissions on production and complete the detailed carbon footprint required for BAFTA albert certification.

The sustainability agenda in Wales falls under the Well-being of Future Generations Act (2015) and the One Planet Agenda - my job is very much part of a broader vision for Wales to develop a globally recognised programme of targeted net zero goals and actions.

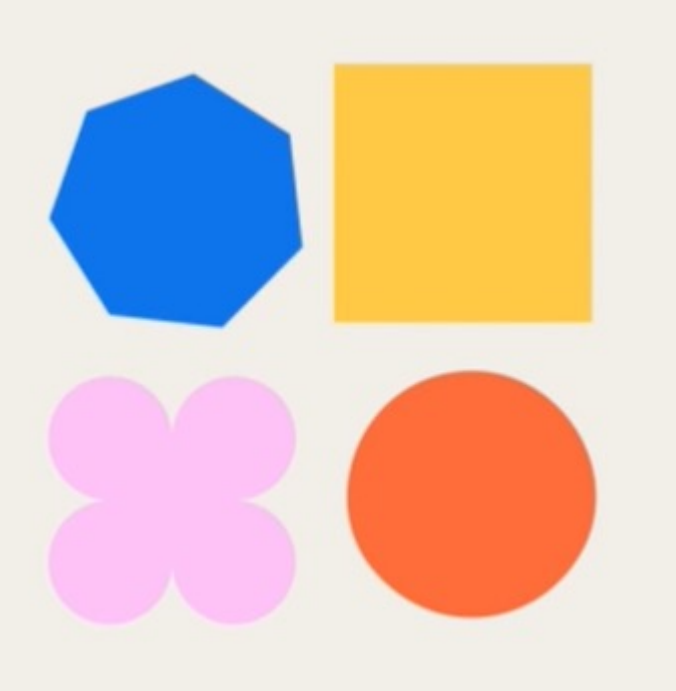
I am working hard to both lower the carbon impact of productions and implement a circular economy model for our use of resources.

To really scale up this work fast, however, we need 'green teams' on the ground and ringfenced sustainability budgets."

Tilly Ashton, Sustainability Advisor at Severn Screen

August 2023

Further information can be found at: Severn Screen: Making film production greener | Ffilm Cymru (ffilmcymruwales.com)



4. Recommendations

4.1 Energy and fuel resources

Core recommendations

4.1a Eliminate diesel in generators
4.1b Maximise renewable energy use at the studio
4.1c Increase energy efficiency

Wind turbine, Wales Unsplash

4.1a Eliminate diesel in generators

Screen New Deal Transformation Plan

Description

When film and HETV productions are on location, they rely on generators which are often dependent on diesel, contributing significantly to a production's direct carbon emissions and air pollution. According to albert data, at least 68% of productions that calculated their carbon footprint in 2022 used generators powered by diesel on set.[1] However, switching to a more renewable or hybrid alternative can have numerous benefits for the environment and the production (e.g., reduced emissions, noise and pollution).

Between 2021 and 2022, 25% of albert-certified productions used biodiesel-powered generators.[1] It is recommended that the use of diesel in generators is no longer permitted at studios where grid power or alternatives - as set out below - are more readily available. On location, where it can be more difficult to access grid power, diesel in generators should be phased out in favour of alternatives. Again, albert data shows that this transition has already begun to grow year-on-year, from 16% in 2021 to 25% in 2022. The most appropriate alternative should be selected based on the production requirements, cost and availability.

Alternatives to diesel

Battery 'generators'. Battery storage units powered by renewable energy are a low-carbon alternative to diesel power. These are increasingly available and offer a flexible solution which can operate in both static and portable applications.

Ideally, these units are recharged using onsite renewables or through connection to the grid (the environmental benefits of this will increase as the grid continues to decarbonise) and can reduce CO_2 emissions by 25%-100%.[2]

These sources of power are also silent, do not create any fumes and can therefore be used much closer to the set, reducing the amount of cabling, space and set-up time that is required.

Whilst the upfront costs of renting a battery power source are currently greater than renting a diesel generator, the overall cost (e.g., including electricity) could be lower when diesel costs are made visible in production budgets. Additionally, rental services offer a temporary solution to the high initial costs of purchasing a battery power source, which could encourage a shift in behaviour.

Hydrotreated vegetable oil (HVO) (see also recommendation 4.2b) can also be used to replace diesel in generators and can reduce CO_2 emissions by up to 90% compared with diesel.

HVO has the added benefit of being a 'drop-in' for diesel (i.e., it can be used in generators and vehicles that would normally take diesel without requiring any modifications).[3] This makes it an ideal transition fuel as more sustainable alternatives are sought. Therefore, productions and studios should consider co-investing in an HVO tank with others nearby who own or manage a large number of generators or vehicles. This may allow the purchase of HVO at higher economies of scale, which in turn will help to increase access, advocate for change in the community and lower capital expenditure.

Certified HVO is readily available across the UK and there are at least three suppliers based in Wales. The cost of switching to HVO can be challenging for some production budgets with the price per litre between 20p-50p higher than the costs of diesel.

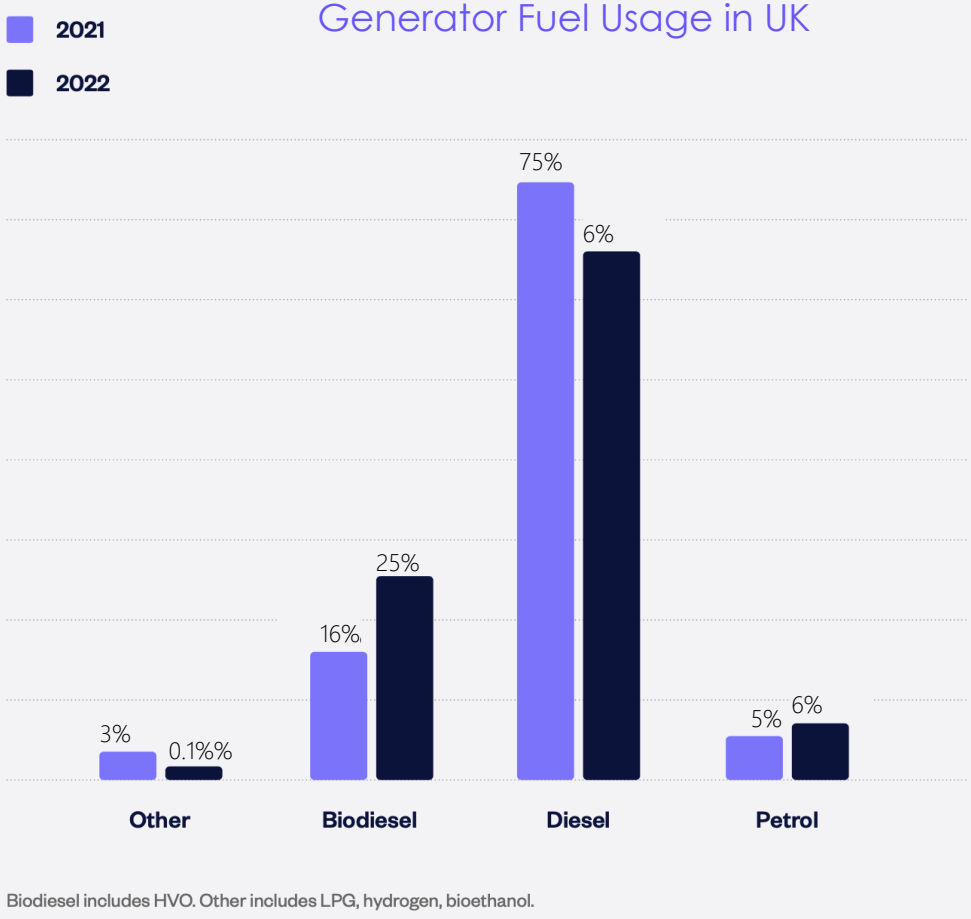
Further information on HVO can be found on slide 48.

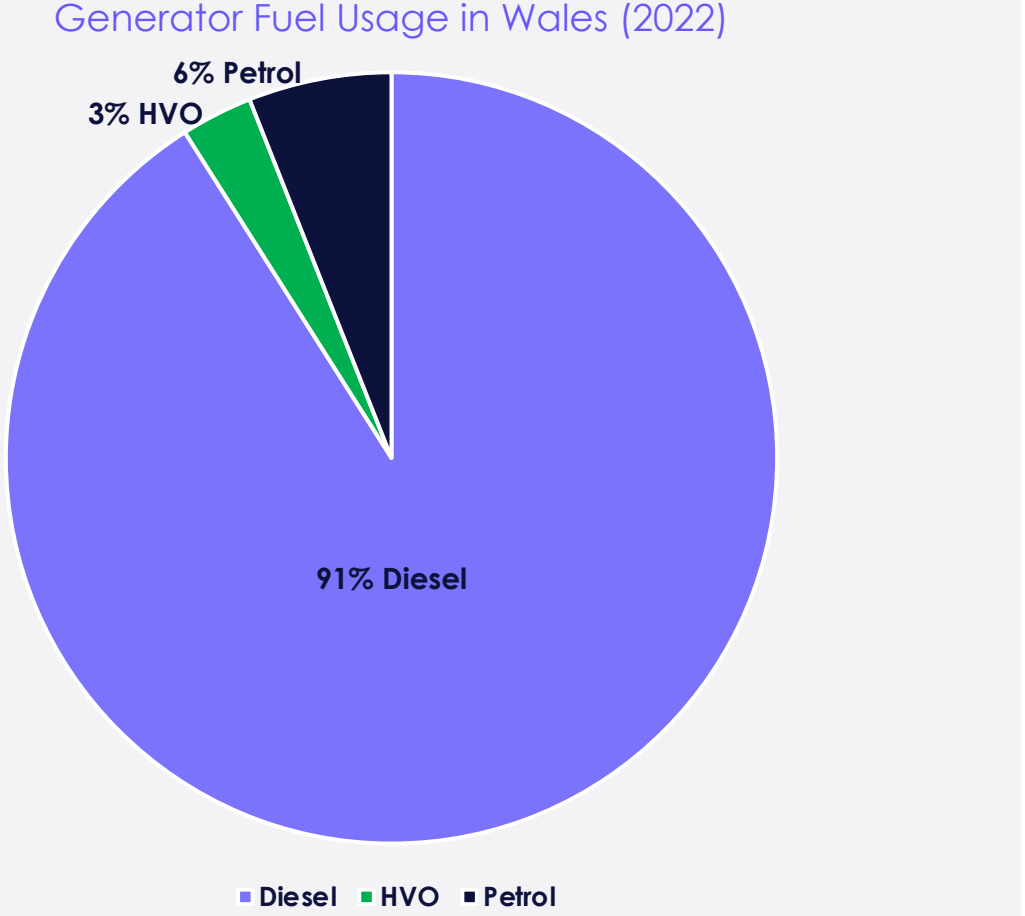
Note:

1. HVO should only be used as a transition fuel. It has other negative environmental impacts and should only be used until 2030 when other alternatives, such as hydrogen, will be more readily available.
2. Productions need to ensure that certified HVO is used, guaranteeing that it is sourced from 100% waste materials and does not contain any products (like palm oil) that contribute to global deforestation.

4.1a Eliminate diesel in generators

The proportion of UK productions using diesel in generators fell from 75% in 2021 to 69% in 2022. The use of biodiesel-powered generators subsequently increased from 16% in 2021 to 25% in 2022, highlighting the importance of advanced biofuels such as HVO as transitionary fuels on the path to net zero. The proportion of productions using low-carbon generators rose from 19% in 2021 to 33% in 2022



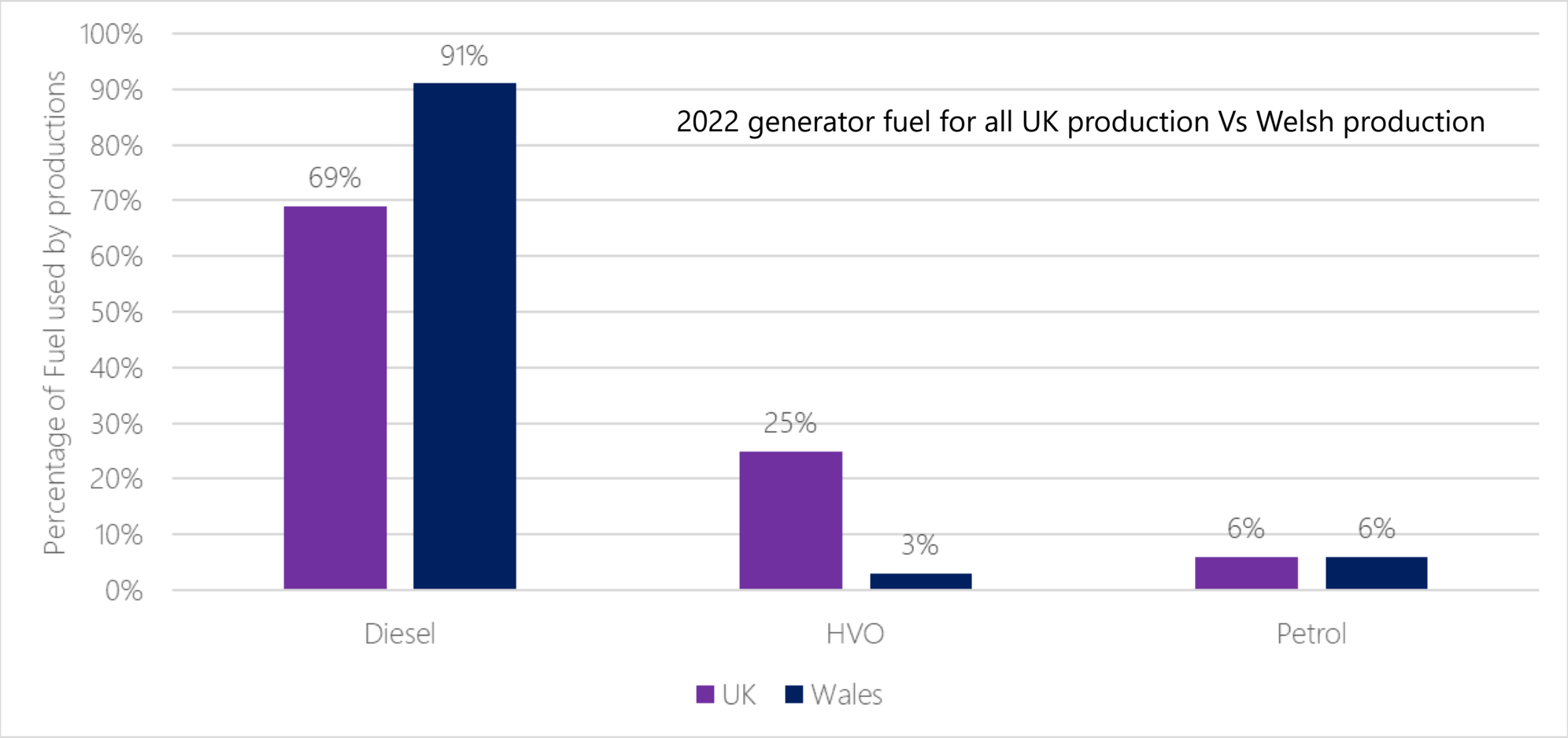


In Wales during 2022, respondents reported that 17 productions used generators. Of these, 10 productions used diesel in generators and only two productions used HVO. Of the 17 productions reported as using generators, 91% of the fuel used was diesel and only 3% was certified HVO. If all 17 productions had switched to HVO there would have been an 88% reduction in carbon emissions, saving 475tCO_2e.

Source – albert footprint data 2022

4.1a Eliminate diesel in generators

According to the latest albert footprint data, 69% of all UK productions used diesel in generators in 2022. This was down from 75% in 2021. The use of HVO-powered generators in all UK productions increased from 16% in 2021 to 25% in 2022. Looking at the data for Wales-only productions during 2022 (17 productions reported on in total), 91% of the fuel used in generators was diesel and only 3% of the fuel used was HVO.



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Source – albert footprint data 2022

4.1a Eliminate diesel in generators

Screen New Deal Transformation Plan

More alternatives to diesel

Hydrogen. There are two static hydrogen power solutions available for power generation at a studio which can achieve up to 100% emissions reductions compared to diesel.

1. Hydrogen fuel cells, which are larger (the size of a shipping container) than battery units which means they have more power and greater storage capacity. They allow for silent power and zero emissions of particulate matter, but they are challenging to transport due to weight, and health and safety.
2. A hydrogen generator which uses direct combustion of hydrogen for power. These are smaller than hydrogen fuel cells, which makes them easier to transport, and have a similar performance level to diesel in generators.

At present, there are barriers to the availability of hydrogen, including a lack of infrastructure, high upfront cost, and storage. Renting hydrogen power units could overcome these challenges as the units will be provided with a supply of 'green' hydrogen.[1] Continued infrastructure development may make hydrogen generators, as an alternative to those running on diesel, more feasible. However, requirements for a specific production, and the availability of hydrogen generators, should be considered.

Whilst alternatives to diesel in generators exist, the hydrogen market in the UK is currently dominated by 'grey' hydrogen, which is generated using natural gas and is therefore carbon emitting. 'Green' hydrogen (which is generated using electrolysis powered by renewable power) is a clean alternative and will be essential to material reduction of emissions. Some small-scale production of 'green' hydrogen is underway across the UK[1] and there are plans to produce 'green' hydrogen in Wales. A £150,000 grant has been awarded to an Anglesey-based consortium – the Hydrilyte™ Refueller Prototype project - to research the feasibility of a Holyhead Hydrogen Hub, a storage prototype to explore whether hydrogen can be easily and safely stored and transported.[2] Meanwhile, Statkraft (Europe's largest generator of renewable energy) plans to develop the UK's first 'green' hydrogen production facility in Pembrokeshire.[3]

Hybrid. Hybrid generators use two energy sources: a standard fuel (or renewable fuel) and a built-in battery. These generators can switch to the back-up conventional energy supply when battery power is low to avoid power loss. Battery and hydrogen solutions are increasingly available as hybrid systems. The most common approach at present is a diesel generator with battery. These systems manage energy consumption and maximise battery discharge during the peak of use and slowly recharge the battery from the diesel engine at optimal load during quieter periods.
Whilst hybrid sets do not necessarily completely eliminate diesel, they could support the transition towards more sustainable (battery or hydrogen) alternatives, and support a change in behaviour. If a suitable HVO source could be identified, this should be used in place of diesel immediately. As with battery power sources, hybrid generators require a lot less cabling and set up time.

Note:

1. Overpowering is common in the film and HETV industry to avoid any potential downtime. A lack of power-planning in pre-production results in inefficient use of power, using more fuel, wasting money and producing more emissions. Changing this mindset will be critical to reduce the number of generators on set in the first instance and support the adoption of alternative generators (hybrid or electric). Energy and efficiency tracking must become standard practice. Remote monitoring (a use of smart technology which applies data from sensors in machines and systems to provide instant and accurate insights on how equipment is performing) and diagnostics, via software platforms, will be essential to ensure up-to-date information on generator performance is obtained. This will help productions to make the right choice on power sources, and also allow their performance to be tracked. In June 2023, Film London launched the Grid Project, a pilot supplying renewable energy to productions in the capital that will reduce air pollution, CO_2 emissions and noise pollution. The Grid Project introduces the supply of green energy via the mains network, installing an electrical feeder pillar at a key unit base in Victoria Park, London.

2. The adoption of alternative generators may at first require an increased appetite for risk among production managers and location managers. However, generator suppliers should have sufficient data on the performance of alternative generators to improve confidence.

4.1a Eliminate diesel in generators

Screen New Deal Transformation Plan

Case study of electric generators and co-benefits

Voltstack provides portable electric generators. To power the production of *Cure of the Reefer Beast* by Purple Door Productions[1] a system comprised of two Voltstack 5k units and one Voltstack 30k unit were used.

Benefits included:

1. **Reduced sound pollution:** A traditional generator can emit a noise level of **73 decibels.** However, Voltstack 5k units are **completely silent.** This allows them to be placed much closer to the set location, which also make set up easier and reduces the need for soundproofing materials.
2. **Reliable power:** The Voltstack ecosystem was able to support the required capacity for the production. It powered the production for **12 hours** a day over **12 days**.
3. Emissions reduction: **900kgCO_2e** were abated.
4. **Particulates:** No poisonous fumes were released, which benefits the health of the individuals on set.

Hybrid generators can contribute similar benefits. Greater savings and benefits can be achieved if hybrid generators are supported by power generation from a mobile solar panel array, for example. However, better data collection will allow additional benefits to be demonstrated for a range of productions.

In the meantime, it is important to consider how using smaller generators can bring environmental benefits. BBC Studios research[2] indicates that downsizing a generator can bring about 50% fuel savings. In addition, the BBC's data shows that most drama and comedy unit bases are oversized by 75%. This is an immediate opportunity for potential reductions.

Enablers

Data	Data on generator energy use and requirements will support the identification of suitable alternatives for productions.
Funding	A potential group-buying scheme for HVO, or alternative generators, would be beneficial for the film and HETV industry in Wales to incentivise change. No immediate infrastructure investment is required as HVO is a 'drop-in' fuel for diesel.
Skills	Information and training will be required for relevant crew members to understand the alternatives and how they can be used in place of diesel in generators (e.g., to avoid any loss of power). Appropriate courses (e.g., on power planning and green power solutions) should be promoted within the industry.
Behaviour change	This relies on strong leadership across production. Crucially, studio managers need to ensure that grid energy reaches all areas of a studio and must promote sustainable alternatives where generators are required. Confidence in alternatives is required, which will be dependent on available information.

Outcomes

	Improved environmental impact	Placing generators closer to the set location will reduce disruption to the wider environment due to cabling. A reduction in the release of air pollutants; nitrogen oxides (NOx) emissions and particulate matter (PM) can be reduced by 20% and 80%, respectively, by using HVO. This will have benefits for local air quality and will align with the new Environment (Air Quality and Soundscapes) (Wales) Bill.
	Support for existing Welsh climate objectives	A reduction in the release of carbon emissions will support Wales in meeting its carbon reduction targets. HVO, for example, supports up to 90% reduction in CO_2 emissions.
	Community benefits	Moving away from diesel in generators will have wider health benefits due to a reduction in air pollutants. The silent nature of alternative generators will also benefit local residents, particularly at night.
	Future proofing	Reduced reliance on diesel will support wider behaviour change. Moving towards more sustainable alternatives will support the resilience of the sector against any future legislation or price shocks. It may also reduce operational costs in the long-run.

4.1a Eliminate diesel in generators

Screen New Deal Transformation Plan

Key targets

- **Eliminate diesel in generators by 2025.** Supplement with certified HVO as an immediate 'drop-in' fuel.
- **Eliminate HVO by 2030.** HVO should be a transition fuel until the infrastructure to provide renewable power is scaled up.
- **Prioritise battery power use when shooting on location.**

These targets should be set across the industry and regularly reinforced / checked by industry bodies. They should also be supported by sustainable procurement advice and access to a group-buying scheme for HVO.

Hydrogen generators used on BBC SpringWatch. Source: GeoPura

Case study: *Springwatch* and *Winterwatch*

BBC Studios' Natural History Unit made history in January 2021 through the live transmission of a full episode of *Winterwatch* using 'green' hydrogen and energy saving batteries.[1] Across the show's presenter locations, the production team used batteries powered by intelligent hybrid generator systems which use spare energy to charge batteries, significantly minimising the use of diesel fuel and CO_2 emissions. The use of 'green' hydrogen instead of diesel in generators at all sites during the live episode avoided the generation of 3.3 tonnes of carbon emissions.[1]

The hydrogen generators, which were provided by Siemens Energy and GeoPura, use hydrogen gas which is made by splitting water into hydrogen and oxygen, using electricity generated by solar and wind power. The only 'exhaust' emission from this is water – making the entire process emission-free.

Throughout the *Winterwatch* series, a hybrid generator was used to provide critical back up and additional power. This approach could be used to support the transition towards 'green' hydrogen in the film and HETV industry in Wales. Following this trial, all 12 episodes of the later *Springwatch* series were powered using 'green' hydrogen.[2]

A 250kW hydrogen power unit was used to power the episodes. This demonstrates the potential of 'green' hydrogen as a reliable source of clean energy and makes the case for large-scale TV series to transition to this energy source.[2]

Using diesel in generators to produce the energy for the *Springwatch* series would have released 7 tonnes of CO_2, alongside air pollutants (NOx and PM).[2] This case study could provide production managers with confidence in using hydrogen generators on future productions. It also demonstrates the benefits of a trial period to encourage more consistent use in the future.

Source: GeoPura. *Springwatch* and *Winterwatch*

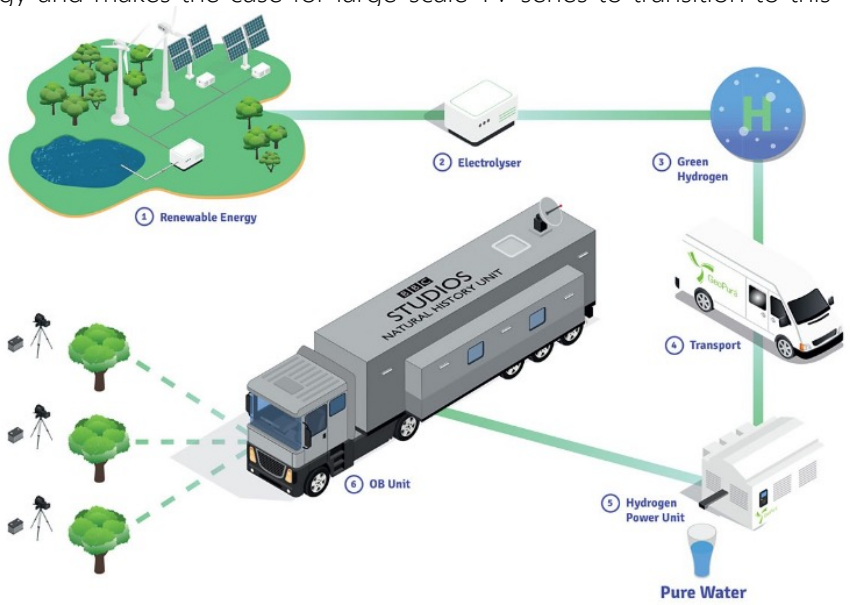


Image (right): The renewable energy set up for *Winterwatch*. Source: *Winterwatch*

4.1a Eliminate diesel in generators

Implementation timeline

Screen New Deal Transformation Plan

Action	Description	Implementation timeline	Stakeholders
Target definition	Diesel should not be used in generators by 2025, with HVO being used as an interim fuel solution only until 2030. Productions should follow *GALWAD's* example which used HVO in the place of diesel to power the final event (see 2022 *GALWAD* case study). All productions should undertake battery trials with the aim of transitioning to batteries by 2030.	Now	• Industry-wide • Welsh government
Data collection and usage	Data collection must be undertaken on every production to understand current energy requirements and inform future power planning. This information must be made available to other film and HETV productions through industry forums to allow generator requirements to be understood and appropriate alternatives to be selected.	Now	• Industry-wide • Productions • Studios
Create suppliers list	Develop a list of alternative generator suppliers, with priority being given to those in, or as close to, Wales / productions as possible. This information should be made available to film and HETV productions to allow suitable companies to be selected by studios/productions.	Now	• Industry-wide
Undertake power planning	Productions should undertake power planning to ensure that a production's power requirements are accurately calculated, and generators are appropriately sized. Generators are ordinarily at their most efficient when running at 75% capacity or more.	Now	• Productions • Industry-wide
Implement alternatives	A transition towards alternatives should begin immediately after power planning has been undertaken. HVO hybrid generators should be used first if immediately available and to avoid delay. However, battery generators and hydrogen generators should be prioritised going forward. This approach could be adopted in Welsh cities. The shift towards alternatives could be further encouraged by allowing generators to be sourced from outside Wales until they become more readily available.	Now-near	• Studio managers • Production managers • Heads of department
Development of incentives	Financial and non-financial incentives, such as tax credits or subsidies, should be provided to encourage the move away from diesel. For example, the City of Vancouver offers discounts on shooting fees to productions without diesel in generators.	Near	• Industry-wide • Welsh Government • Productions and studios • Local authorities
Education	Educate and train key individuals within the industry (e.g., electricians) on energy efficiency, the use of alternative power sources and equipment. albert must identify appropriate courses and promote these (for example, the ScreenSkills and albert sustainability e-learning course, which has department-specific modules).	Near	• Production managers • Electricians • Industry-wide • Skills providers
Monitoring	Monitor and evaluate progress towards the transition over time.	Now	• Studios / productions • Industry-wide

Spotlight: Skills and training

Screen New Deal Transformation Plan

ScreenSkills and albert e-learning module

ScreenSkills and albert are co-developing a 30-minute e-learning module: **Introduction to Sustainability for the Screen Industries**. This is designed to provide an overview of sustainability for **anyone** working in the screen industries, particularly film and TV production. It covers the following areas:

- Why do the screen industries need to transform?
- Measuring the environmental impact of the screen industries
- What are the key principles of sustainability in the screen industries?
- What can I do in my role?

The final section will include case studies from experts working in departments across film and TV production to provide examples of how others in similar roles are introducing new practices to reduce the carbon footprint of their activity.

The module will be launched in January 2024 and will give individuals the required skills and training to adopt new approaches. This will be essential to support the behaviour change required to achieve real impact within the industry.

People in a meeting Unsplash

NOTE: Creative Wales leads the skills agenda for Wales and can support projects through a skills fund. The Creative Skills Action Plan focuses on the short and long-term skills needs of the screen sector, shaped by the Creative Skills Advisory Panel, a group of industry experts established by Creative Wales in May 2022. It is a three-year plan that will continue to evolve and responds to future challenges and opportunities in the creative industries.

See Creative Wales Sustainability Priorities in appendix

4.1b Maximise renewable energy use at the studio

Screen New Deal Transformation Plan

The average tentpole* film production generates 34% of its emissions from mains electricity and gas use. Shifting towards renewable energy could reduce this.[1]

The Welsh Government has committed to meet 70% of its electricity demand from Welsh renewable sources by 2030. In 2021, the Energy Generation in Wales report estimated that the equivalent of 55% of Wales's electricity consumption comes from renewable sources.[2] This shows the potential for renewable energy in Wales, which would also have benefits for any generators that are charged through connections to the grid.

Investment in renewable energy is underway in Wales (see the table opposite), which may increase the availability of renewable energy tariffs. At present, 70% of all renewable electricity generation in Wales comes from onshore and offshore wind.[2] The electricity capacity growth rate of 13% in 2021 within the country was higher than both England and Scotland.[3]

Solutions for studios

It is not just about using renewable energy tariffs. Many studios could install on-site renewable energy technologies. Several Welsh studios are already investing in this. Wolf Studios, for example, has achieved 100% renewable electricity sourcing.[4]

The most appropriate on-site renewable energy solutions are:

- **Solar PV arrays**: Due to the large roof space on a film studio, many solar panels can be installed which could generate a significant proportion of studio energy needs.
- **Canopies with PV panels:** Install canopies over studio car parks then put solar PV panels on top. Disneyland Paris is already doing this, with an on-site solar canopy plant producing 36 GWh/year.[5] This will have the dual benefit of shading vehicles.
- **Use renewable energy to charge battery packs:** This can have large benefits in terms of reducing CO_2 emissions for the studio and the vehicles that drive to and from it. Studios that can generate their own renewable energy should aim for on-site battery storage, with the ability to sell excess energy to the grid through the Smart Export Guarantee. Powerskid second life batteries could also be used to store excess renewable energy generated on site to access stored free power during peak times or when generation is low.

It is critical that renewable grid power reaches all parts of a studio site to ensure that generators are not required. This will support recommendation 4.1a to eliminate diesel in generators.

** a film with a budget of US$70m or more.*

Examples	Overview
Monmouthshire County Council	Monmouthshire has built a solar farm which contributes a significant amount of renewable energy into the national grid each year.[6] It will generate sufficient power to provide electricity to 1,400 homes and save over 2,000 tonnes of CO_2e annually. Already over 90% of the energy purchased by Monmouthshire Country Council comes from renewable energy sources.[6]
Morlais Infrastructure Project	Funding has been confirmed for the Morlais Infrastructure Project[7] which aims to further the development of tidal generation technologies by expanding grid connectivity. This is a £30 million EU-funded project.
Cardiff Capital Region	The CCR purchased the decommissioned coal-fired Aberthaw Power Station in South Wales with the intention of converting it into a compound for green energy production.[8]
Ynys Mon (Angelsey)	A £150,000 government grant was given to fund research linked to Ynys Mon social enterprise's ambition to realise the potential of renewable energy. The funding will be used to complete a feasibility study with Menter Mon into the concept of storing hydrogen as a liquid. If this is successful, funding will be released to build a prototype at the proposed Holyhead Hydrogen Hub.[9]

Energy efficiency for studios

Use of renewable energy at studios should be complemented by energy efficiency (see recommendation 4.1c). If information can be obtained on the greenest times to use energy (e.g. to recharge generators, or use a lot of energy), this will have wider environmental benefits. For example, renewable energy could be used to recharge battery generators to be later used on location.

The challenges

Despite recent growth in renewable energy generation in Wales, it is slowing due to barriers including:

- the ability to secure a financially viable grid connection
- the complexities of gaining planning permission
- a lack of financial support.[2]

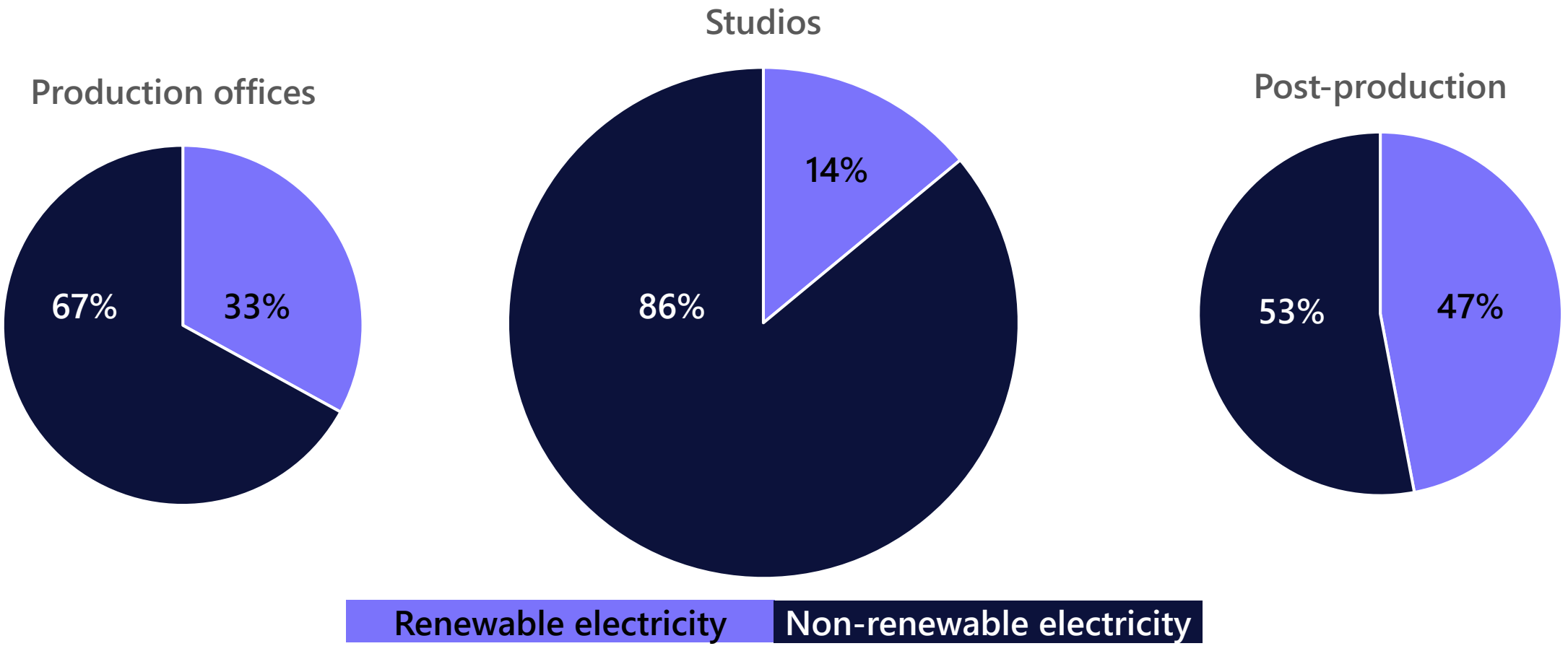
Partnerships could be an effective way to overcome funding issues (see TBY2 studios – slide 39) but further collaboration and policy support is required. All studios could also join and complete the Studio Sustainability Standard to enhance data collection and identify opportunities for collaboration.

4.1b Maximise renewable energy use at the studio

In 2022, only 14% of energy supplied to productions filmed in UK studios was renewable electricity.

Emissions from production offices predominantly originate from energy consumption. In 2022, one third (33%) of production offices were run on renewable electricity. Switching to a 100% renewable energy supplier and using on-site renewables will reduce production office carbon footprints.

Compared to studios and production offices, a comparatively high proportion of post-production suites run on renewable electricity, with just under half (47%) powered by green energy.



Source – albert footprint data 2022

4.1b Maximise renewable energy use at the studio

Screen New Deal Transformation Plan

Evidence

Maximising renewable energy usage will reduce operational carbon emissions by eliminating the need for fossil fuels completely. In Autumn 2022, 2,380 solar panels were installed at the Bottle Yard 2 Studios (TBY2). The solar panels have a total of 1 Megawatt of generating capacity and fully power TBY2.

Wolf Studios sources 100% of the electricity it uses from renewable sources. This is used throughout the site. It also offers electric vehicle charging on site.

Seren Studios is entirely powered by green electricity, which is generated by the on-site 2.3MW wind turbine, owned by Ecotricity. This provides sufficient energy to power the entire site, in addition to sending some back to the grid. The studio hosts both feature film and HETV production, and there are plans for the facility to include a virtual production research and training academy (in collaboration with Media Cymru).

During a recent production, only 19% of the power generated was used during filming, 12% during peak production and 7% during pre-production. This demonstrates the possibility of using renewable energy to power film studios entirely, even with the high energy requirements associated with virtual production. Whilst the presence of a large wind turbine on the site makes this a unique example, alternative renewable energy sources, particularly solar, will be more applicable elsewhere.

Seren Studios. Source: Great Point Media

Take note:

1. This recommendation is complementary to the implementation of energy efficiency measures at studios (see slide 40 and 41). This will allow renewable energy sources to meet 100% of demand.
2. Assessments should be undertaken to identify the most appropriate renewable energy options in different areas. Critically, (renewable) grid energy must reach all areas of a studio site to avoid the need for generators.
3. If studios are unable to generate renewable energy onsite, a hydrogen unit could work as an alternative as it will not require transport.

Enablers

Data	Data on current energy requirements is essential to allow appropriate alternatives to be selected. Additionally, understanding when the most energy is required will allow back-up generators (powered by renewable energy) to be used when needed.
Funding	Financial support or incentives from government or partnerships will be required to support a shift to renewable energy sources, particularly where upfront costs may be high. However, this is likely to be a short-term incentive, as opposed to a long-term subsidy.
Skills	Additional knowledge on the operation and maintenance requirements for renewable alternatives will support their use and longevity at a site.
Behaviour change	Developing confidence in renewables will be critical to support the adoption of alternative energy sources. This must go hand-in-hand with a shift towards more energy efficient behaviour in studios (see recommendation 4.1c).

Outcomes

	Improved environmental impact	Improvements in air quality will be achieved through the use of renewable energy resources which do not release harmful chemicals, such as sulphur dioxide and nitrogen oxides (NOx).
	Support for existing Welsh climate objectives	Reduced GHG emissions will support Wales in achieving its carbon reduction target.
	Community benefits	Renewable energy projects could provide more green energy back to the grid. This will benefit local communities in Wales.
	Future proofing	Shifting towards renewable energy sources will insulate studios from potential price rises associated with fossil fuels in the future. It will also have reputational benefits and ensure compliance with future regulation.

4.1b Maximise renewable energy use at the studio

Screen New Deal Transformation Plan

Implementation timeline

Action	Description	Implementation timeline	Stakeholders
Define metrics for reporting	Define a common set of metrics for reporting power consumption. This will enable studios and productions to accurately report their power consumption and aid power literacy.	Now	• Industry-wide • albert
Review and target setting	Review current energy use to understand energy consumption requirements. Specific goals should be defined to incentivise the implementation of renewable energy alternatives (e.g., studios must use 100% renewable energy by 2030, generated offsite or supplied via a tariff).	Now	• Studio and production managers
Studio Sustainability Standard	Studios should complete the Studio Sustainability Standard to understand their position relative to other Welsh studios. This will provide guidance on the actions that can be taken for improvement by individual studios or through collaboration. Creative Wales will fund this initiative in 2023 to enable all studios to participate at no cost to themselves.	Now	• Studio managers
Awareness raising	Raise awareness of renewable energy opportunities within Wales.	Now	• Welsh Government
Assessment	Studios should assess renewable energy opportunities and either progress towards implementing renewable energy generation technology on site or seek out partnerships with renewable energy providers.	Now	• Studio and production managers
Develop financial incentives	Short-term tax credits or grants for technology could be provided to support and incentivise the implementation of renewable energy technologies.	Near	• Welsh Government
Alignment	Align energy requirements with appropriate alternatives: • Where possible, renewable energy generation technologies should be installed on site. Any additional energy that is required beyond that generated from renewable energy technologies should be obtained from renewable energy tariffs. • Where this is not possible, studios should switch to renewable energy tariffs. Establishing partnerships with renewable energy providers will ensure a reliable supply of energy for studios.	Near	• Renewable energy providers • Studios
Guideline development	Guidelines to support the use of renewable energy (either through on-site generation or renewable energy tariffs) should be developed to provide clear and practical steps towards integrating renewable technologies. This may require some training for industry professionals.	Next	• Industry-wide • Studio and production managers • Production crews • Electricians

4.1b Maximise renewable energy use at the studio

Screen New Deal Transformation Plan

Spotlight: The Studio Sustainability Standard

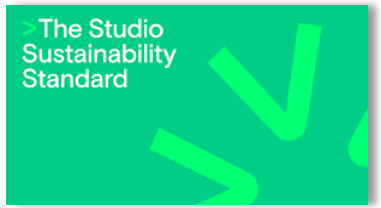
The Studio Sustainability Standard is a voluntary standard for studio facilities, administrated by albert.[1] It allows studios to pinpoint key areas within their facility where they can make improvements to reduce their environmental impact, with a focus on six areas: climate, circularity, nature, people, management and data. After completing the standard, studios receive a performance report and a grade/score which enables them to benchmark their own progress and compare themselves to other studio facilities.

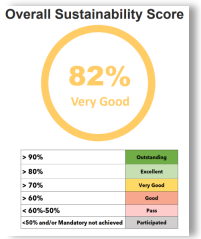
The report is designed to provide guidance on sustainability improvement, external recognition, a clear pathway to align with net zero legislation and current reporting processes, and overcoming challenges in benchmarking performance data.

All studios in Wales are encouraged to complete the Studio Sustainability Standard in the financial year 2023-2024. This will allow a sector-wide understanding to be developed and, as studios are being evaluated in relation to others in the country, it will incentivise change.

Embracing the Studio Sustainability Standard enables accurate measurement of carbon emissions which will provide crucial data for effective reduction strategies, enhancing operational efficiency and leading to cost savings. By joining the Studio Sustainability Standard community, studios become part of an industry-wide movement shaping a greener future for film and television. The shared knowledge, best practices and collaborative network create a powerful force for lasting change.

It is expected that this commitment to sustainability will support the development of a positive brand image, attracting environmentally conscious partners and investors who support sustainable productions, while meeting audience demands for more sustainability on and off screen.[2] The data-driven insights provided by the Studio Sustainability Standard will reveal the progress made by studios in reducing their carbon footprint. Each year, the Standard's report will guide studios towards a future where creativity and sustainability coexist. Participating in the Standard will also support the alignment of studio facilities with the Welsh Government's Well-being of Future Generations Act and support the Government's sustainability priorities for the screen sector (see Appendix 5).





Case study: TBY2: solar-powered studio space, Bristol

In, 2022 the Bottle Yard Studios opened a second studio: TBY2. This is a state-of-the-art facility which is powered by a 1MW rooftop solar array comprised of over 2,000 photovoltaic panels.[3]

TBY2 studio is run by Bristol City Council. The original plan for this site was to install a 283kWp solar array. However, through additional funding from the Bristol Energy Cooperative a much larger, and therefore more impactful, PV array was installed. It represents the largest community-owned array in the West of England. Any surplus energy produced at TBY2 is 'sleeved' (transferred through an intermediate retailer) to other nearby buildings within the city through the Bristol City Leap Sleeving Pool. This model has additional benefits in terms of reducing the consumption of non-renewable energy beyond the studio.

Similar funding opportunities should be sought in Wales to allow potentially wide-reaching benefits for studios and their surrounding areas to be realised.

Solar-powered studio space at TBY2. Source: The Bottle Yard

4.1c Increase energy efficiency

Screen New Deal Transformation Plan

Description

Energy efficiency has a significant role to play in relation to climate-related targets in Wales and can help to reduce operational carbon and other operational costs. Solutions need to be tailored to each group of buildings: studios, prop storage areas and office space, for example, will have different energy requirements. To avoid over-specification and waste, an assessment should be undertaken to understand the differing requirements.

Making studios more efficient

Many buildings that are used as film and HETV studios today were not designed or constructed with energy efficiency in mind, even though in some cases the acoustic design helps with efficiency. The Energy Efficiency in Wales[1] strategy highlights this as critical in the transition towards a more sustainable future, and studios both new and old can support this transition.

New buildings in Wales, and those that have undergone substantial refurbishment, must meet certain energy efficiency requirements (Building regulations guidance: Part L2), complementing the acoustic requirements of studios. This may include building design measures such as optimised use of daylight, natural ventilation and optimised orientation. Where existing buildings are being retrofitted, enhanced insulation should be considered, in addition to window and door upgrades.

Options for both existing and new buildings:

1. Adopt energy efficient fittings. Now commonplace domestically, LED lighting uses half the energy other forms of lighting and emits less heat. It should be used in addition to a complementary lighting sensor system so that lights are only on when needed.
2. Replace studio heating, ventilation and air conditioning (HVAC) systems.
3. Complete the Studio Sustainability Standard to support the identification of actions that can be taken to enhance efficiency.

It is recognised that retrofitting older studios will be an expensive task. However, it may contribute to future cost savings due to more efficient energy use. Nonetheless, this could be supported by making production processes more efficient, which may be a quick win for the industry, as detailed below.

More efficient production processes and equipment

Changing requirements for lighting, heating and cooling throughout a production can mean that equipment is often over-specified to account for any unanticipated demand changes. Tackling the overspecification of equipment (particularly lighting and generators which often have capacities above the average required for a production and even above maximum level of power used during a production) will be critical to improve efficiency in the industry. This will require several steps, including the selection of appropriate equipment as informed by data and anticipated requirements (to be determined in pre-production power planning). Whilst this will require improved data collection (See recommendation 4.4a), this will also allow better selection of alternative fuels for generators by allowing requirements to be understood and therefore matched to supply.

Options to maximise behaviour change:

1. Stagger production timings to ensure energy requirements can be met using mains electricity (preferably from a renewable energy tariff) to avoid the need for additional generators at a studio.
2. Encourage the unplugging of devices and shutting off lights when they are not required.
3. Promote energy-efficiency measures on daily call sheets.
4. Track energy usage through smart meters to raise awareness of overall usage.

4.1c Increase energy efficiency

Screen New Deal Transformation Plan

At the studio: Addressing outdated lighting

The Bottle Yard and TBY2 Studios have implemented several energy efficiency measures. In 2022, all lighting in TBY2 was replaced using LED lighting.[1] This is a more efficient alternative to traditional lighting and contributes to lower electricity consumption relative to other, similar studios. More data collection and monitoring will enable the specific benefits of this to be understood.

On set: Energy efficient alternatives

GeoPura Hydrogen Power Units (HPUs) are very efficient and can deliver 250kVA of three-phase 400V electrical power which is backed up by an integral 216kWh battery system.[2] These HPUs produce electrical energy directly from hydrogen fuel. This is a more efficient process than traditional combustion engines which firstly convert fuel into heat and then into mechanical energy. This demonstrates the potential efficiencies that could be achieved by adopting alternative equipment.

Note: The Green Production Guide[3] demonstrates that there is an opportunity for film and HETV productions to normalise and represent clean energy and associated topics into character roles, storylines and visual content. Productions could weave energy efficiency practices into shows to normalise and promote this concept. This could set the stage for a society which moves towards alternative fuels and approaches. For example, energy-efficient windows are referenced in Season 1 of *Ozark*[3]. Actions such as this will help to make these storylines, and the use of appropriate (energy-efficient) measures during production, more common.

Enablers

Data	Information on the performance of alternative, more energy efficient equipment will be critical to support behaviour change and selection of these alternatives. To achieve behaviour change within production teams, data which demonstrates the amount of energy that is saved through simple, everyday changes (e.g., turning light switches off when leaving a room) would be beneficial.
Funding	Funding (either from government or partnerships) may be required to support potentially high upfront costs for studio retrofits.
Skills	Knowledge of studio energy requirements will be essential to ensure the most effective measures are implemented. Effective analysis and communication of the impacts will support long-term change. The ability to undertake detailed power planning will be essential, and upskilling will be required to achieve this.
Behaviour change	A shift in confidence in alternative technologies will support the required change in everyday actions.

Outcomes

	Improved environmental impact	Reduced use of fossil fuels due to increased energy efficiency will have benefits in terms of air pollution due to a reduction in the release of sulphur dioxide, nitrous oxides (NOx) and particulate matter.
	Support for existing Welsh climate objectives	Reduced GHG emissions will support Wales in achieving its carbon reduction target.
	Community benefits	Energy efficiency improvements may align with local community targets to reduce peak demands.
	Future proofing	Reduced reliance on fossil fuels will protect film and HETV productions from potential price volatility. It will also have reputational benefits and ensure compliance with regulation.

4.1c Increase energy efficiency

Screen New Deal Transformation Plan

Implementation timeline

Action	Description	Implementation timeline	Stakeholders
Assessment and target setting	Assess current building energy performance to identify quick wins. Studio and / or production-specific goals could be defined (e.g. reducing energy consumption by a certain percentage within a specified timeframe). To achieve this, all studios in Wales should join and complete the Studio Sustainability Standard in 2023.	Now	• Production managers and studios • Industry-wide
Implementation	• Implement appropriate measures for the studio itself (large scale retrofit vs small scale retrofit). This should include upgrading lighting systems, optimising heating, ventilation, and air conditioning. (HVAC) systems and encouraging the use of energy efficient equipment. • The successful and quick implementation of energy efficiency measures may require incentives (e.g., short-term grants/other financial incentives). • Guidance should be provided to production managers to support the implementation of energy efficiency measures (e.g., guidance on staggering production timing). • On-site green team members should share green memos to promote energy efficient behaviour.	Near	• Production managers • Studio managers • On-site green teams • Welsh Government or Local Authorities • Partnerships with external funders could support implementation • Heads of Department
Monitor	Monitor energy usage and progress overtime to understand the impact of any implemented changes. This can be supported by joining and completing the Studio Sustainability Standard.	Next	• Industry-wide • Production managers • Studio managers

Screen New Deal Transformation Plan

4.2 Re-think transport

Core recommendations

4.2a Map the challenge
4.2b Eliminate diesel in road transport
4.2c Minimise the need to travel
4.2d Shift modes of transport

Road in South Wales Unsplash

4.2a Map the challenge

Screen New Deal Transformation Plan

Description

Sustainable transport has a significant role to play in helping Wales reach net zero and generating wider benefits across health, air quality, accessibility and the economy. The Climate Change Committee (CCC) has proposed a carbon reduction pathway for Wales, setting out that emissions from surface transport must be roughly halved between 2020 and 2030 from six million tonnes to three million tonnes of CO_2.[1] However, progress in this area is not on track.[2]

For most production genres, travel and transport make up the largest proportion of a production's carbon footprint, with road and air travel being the largest contributors (see slide 45). Filming often involves long-distance travel to identify locations, shooting elements of the production, transport to and from a studio for crew, and other activities.

Within Wales, crew transport is often reliant on personal vehicles. Albert production data for 2022 highlights that road travel accounted for 80% of production transport emissions in Wales. Long hours, the use of various locations which cannot be reached by public transport, and mileage allowances (which become an additional source of income) support the status quo. Transport behaviours need to adapt to reduce negative impacts to the environment.

Better travel data is essential to understanding and mitigating the environmental impact of film and HETV-related travel and the pace of changing behaviour over time. At present, where crew pay for their own travel, essential data is not collected. This needs to change.

To allow hotspot areas of emissions to be identified and ensure effective actions are implemented, it is critical that data is collected. Key impact areas are:

- Flights
- Crew travel via road (to and during the job)
- Unit moves between studio and location
- Supply chain transport emissions

Information is needed on why and where travel is required, the distances travelled, and the modes and fuels used. Not only would this information provide an understanding of the current position of the sector, it would also allow for future monitoring and tracking overtime.

Enablers

Data	Improved data collection and availability will allow an in-depth understanding of the transport associated with the film and HETV sector to be achieved. This will enable intervention areas to be identified.
Funding	Funding for improved data collection methodologies will support consistency and reliability in data collection.
Skills	Developing effective data collection and analysis methods will be essential to allow the collected data to be used most effectively. This may require the development of skills in relation to digital software and data storage.
Behaviour change	Reporting and recording all trips will be essential to understand the true transport footprint for a production. This will require individuals to track their travel.

Outcomes

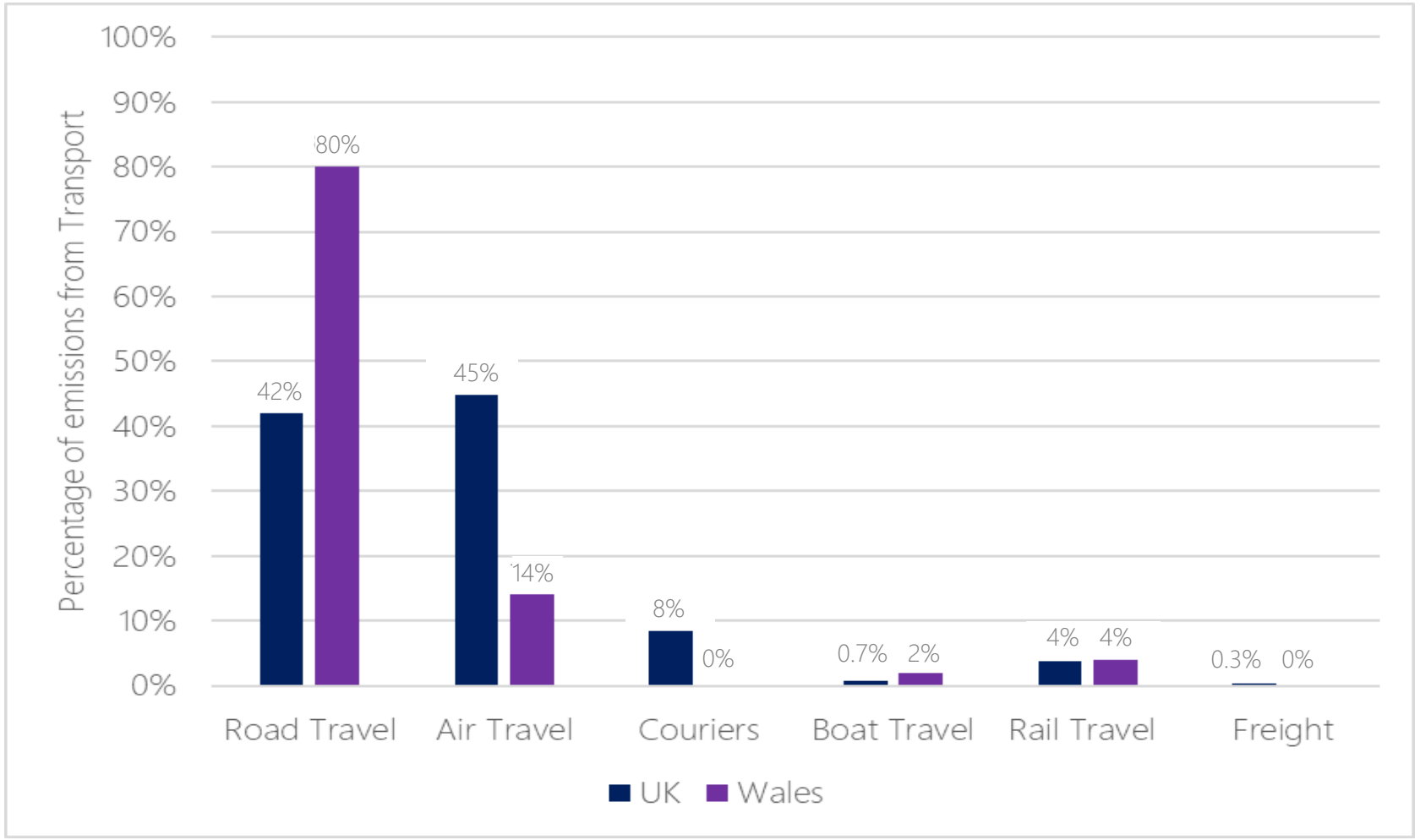
	Improved environmental impact	Mapping transport data will illustrate potential environmental improvements from reduced transport emissions.
	Support for existing Welsh climate objectives	Mapping transport data will help inform policy decisions to support the Welsh Government's transport reduction pathway.
	Community benefits	Mapping transport data will highlight potential improvement to air quality from reduced transport emissions.
	Future proofing	Understanding the current state of play will ensure that the most appropriate interventions can be implemented in the future. This will allow other outcomes (environmental benefits, climate benefits and community benefits) to be achieved.

4.2a Map the challenge

Screen New Deal Transformation Plan

Travel and transport remain the biggest part of a production's carbon footprint in all genres, except continuing drama (where it is the second greatest source of emissions). Travel emissions can be reduced by using rail travel or car sharing and switching to electric vehicles where possible. If flights are required, flying economy (instead of premium, business or first) reduces emissions.

During 2022, across all UK productions, air travel emissions (45%) were slightly higher than road travel (42%). For film and TV production in Wales during 2022, albert footprint data highlights that road travel accounts for the majority (80%) of transport emissions, whereas rail travel only accounts for 4% of transport emissions across all productions.



Source: albert annual review data 2022

- Data from 2,546 UK productions (including 63 productions in Wales) with a post-production end date falling within 2022
- Data from all genres, including film and HETV productions (57 feature films in the sample)

4.2a Map the challenge

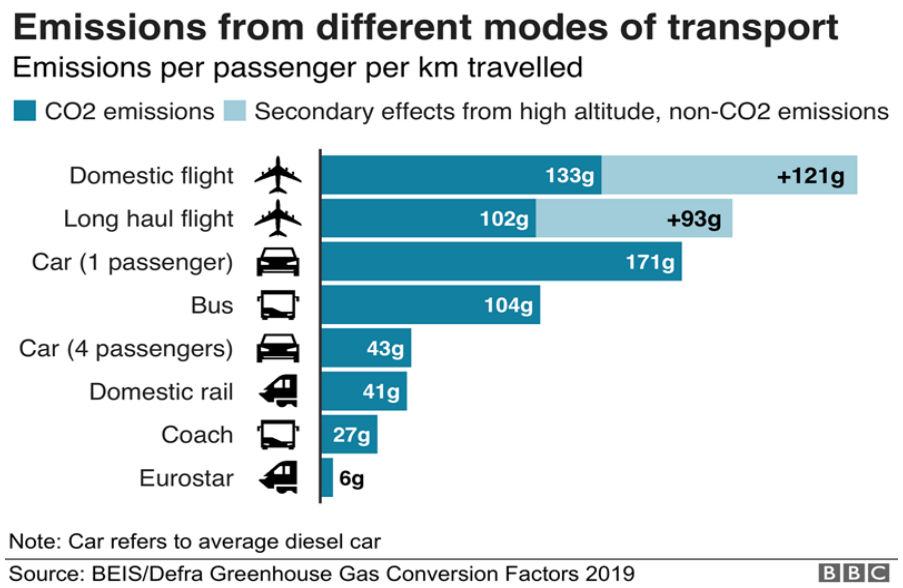
Screen New Deal Transformation Plan

Evidence

A recent travel survey was undertaken with a crew and a production on a location shooting day. Of the 50 people who responded to the survey on the chosen day, 72% had travelled to set by driving either a petrol or diesel car or van or a self-charging hybrid car. The average distance travelled was 35 miles (a 70-mile round trip). A rough estimate, based on BEIS/ DEFRA emissions factors, calculates that this would result in approximately 19kg CO_2e emissions for a single return trip, or 703kg CO_2e across the 72% of crew members who drove on that day.

The location of this day's shoot was near a train station; as a comparison, the same number of people travelling by train would have generated in the region of 166kg CO_2e. This highlights the large CO_2 savings that can be achieved by moving away from personal vehicles. Due to the nature of working on location, particularly in Wales, it is impractical to expect crew to rely on public transport all the time. However, where large groups are travelling from similar start points, there are opportunities for group transport solutions.

Carbon emissions could have been reduced by around 76% if trains were used instead of personal vehicles for the above shoot.



Data collection apps

Green Wing

Green Wing aims to support the media sector to become greener through a range of tools designed to reduce its carbon footprint but also to support productions on their sustainability journeys. Green Wing's Carbon Footprint Manager App can be used by every member of the production team to record relevant information. This is an efficient tool which removes silos between sustainability teams and the wider production crew. This app allows real-time, as opposed to retrospective, data collection, which improves accuracy. Encouraging the use of this app will allow relevant, consistent information to be collected across the film and HETV industry.

TripShift

TripShift is an app which automatically tracks carbon for different transport needs (e.g., employee commutes, business travel). The app captures how and where teams are moving and automatically assigns carbon emissions to these journeys. For example, this can support alignment with key climate frameworks (e.g., the Task force on Climate-Related Financial Disclosures, TCFD, the International Financial Reporting Standards, IFRS and Scient Based Targets Initiative, SBTi) and monitoring against key carbon budgets for productions.

NOTE: A new train station, Cardiff Parkway, is planned for St Mellons in east Cardiff (close to Seven Studios), enabling journeys to Cardiff Central or Newport to be undertaken in just seven minutes. Transport for Wales hopes it will be built by 2024. The intention is to run eight trains an hour to Cardiff and Newport. This could help to significantly reduce the need for personal car travel to the studio.

4.2a Map the challenge

Screen New Deal Transformation Plan

Implementation timeline

Action	Description	Implementation timeline	Stakeholders
Raise awareness	Engage people with why and how to collect and use accurate transport data. Information should also be provided on ways in which key information can be recorded (e.g., through apps or short crew travel surveys).	Now	• Industry-wide • Production managers • Crew
Review current practices	Undertake a review of current practices in relation to transport for specific studios / productions (e.g., using the Studio Sustainability Standard). Identify where travel is taking place and how this can be tracked. Working with suppliers will be key to encourage data collection in relation to the distances travelled and fuel used. Some companies are already doing this. For example, Facilities by ADF log all fuel used by their facilities vehicles, and all fuel used by cast and crew who have fuel cards. A similar approach could be adopted by other companies.	Now	• Industry-wide • Production managers • Crew • Heads of Department
Data acquisition	Implement appropriate data collection methods (e.g., apps, reporting, calculators) based on the above review.	Near	• Production managers • Crew
Review	Review data and identify areas for improvement.	Near	• Industry-wide • Production managers
Monitor	Monitor progress over time as interventions are implemented.	Next	• Industry-wide

4.2b Eliminate diesel in road transport

Screen New Deal Transformation Plan

Description:
In the UK, the sale of new petrol or diesel vehicles will be banned from 2035. The film and HETV industry not only has a responsibility to reduce its CO_2 emissions, it must also adapt to get ready for these legislative changes. One of the key contributing factors to CO_2 emissions from the film and HETV industry is road transport, which is currently predominantly dependent on diesel. Adopting alternative fuels could have a significant impact on reducing carbon emissions. Three key sustainable alternatives are available: (1) HVO (hydrotreated vegetable oil), which is a suitable bridge fuel (when sustainably sourced) where alternative technologies are not yet available; (2) electrification via battery-powered EVs, and (3) hydrogen. These are presented in order of cost, with the lower cost option of HVO given first, although the ultimate aim should be to move fleets to EVs.

HVO
Hydrotreated vegetable oil (HVO) is a renewable diesel (rather than a biodiesel) that can be produced from vegetable oils and fats. There is also an HVO fuel which is made from renewable feedstocks,[1] as classified by the EU's Renewable Energy Directive REDII (wastes and residues from industry that are unfit for animal or human consumption), which contains an engine-enhancing additive.

HVO is a 'drop-in' fuel for existing diesel vehicles.[2] It is fully compatible with existing Euro 6 and many older vehicles, meaning that it can be used now without needing to manufacture or retrofit vehicles. It is also easy to store, unlike hydrogen, contributing to increased safety.

A supply chain assessment will need to be undertaken to ensure due consideration is given to the source of the HVO. Virgin palm oil is used within the supply chain which has an impact on biodiversity loss and deforestation globally. Whilst used cooking oil may be sourced at a global scale, transporting this can reduce the GHG benefits associated with using HVO. It is also essential to ensure that demand for HVO does not put pressure on other feedstock supplies which may contribute to deforestation.[2]

It is important to note that HVO is a transition fuel and should only be used to support a transition away from diesel. Additionally, per litre, HVO is more expensive than fossil diesel, and without new fiscal support this premium may remain.[3] However, maintenance costs may be lower.

Batteries
Electric vehicles (EVs) are an alternative to internal combustion engine vehicles (ICEs) that are available now (with the exception of HGVs, which will likely become more available from 2025) and can be charged using grid electricity, therefore removing the need for diesel completely. These vehicles also produce no emissions, and whilst the exact emissions saving will depend on several factors (including the location of battery production and the energy mix used to charge the car), according to Transport and Environment,[4] electric cars outperform cars running on petrol or diesel in all scenarios in terms of emissions. Even in locations with carbon intensive grids (e.g., Poland) EVs are around 30% better than ICE vehicles.[3] Greater emissions savings can be realised where EVs are charged using clean energy, which will only become more viable in Wales.

However, EVs are not a simple 'drop-in' solution. Lithium-ion batteries are predominantly used in these vehicles at present and there are environmental issues associated with mining lithium, cobalt and other minerals used in battery production.[2] Whilst the development of less metal-intensive technologies (e.g., sodium-ion batteries) is ongoing, these environmental impacts should be considered.

Additionally, there is a lack of charging facilities across Wales at present. Whilst the EV Charging Strategy for Wales[5] includes a commitment to ensure that, by 2025, all users of EVs (cars and vans) in the country can be confident they will be able to access charging infrastructure when and where they need it, the application and uptake of EVs may take longer as confidence in the infrastructure will be required. Furthermore, the charging infrastructure for HGVs will take longer. For the film and HETV industry, a first step could be to ensure that all studios have charging points, which would enable vehicles to return to a set base to charge overnight.

EVs are also currently more expensive than typical ICE vehicles. However, they have fewer moving parts and therefore are likely to have lower maintenance costs over their lifetime. Additionally, an industry-wide car loaning scheme, similar to those in place for bikes, could be an alternative to buying EV cars. Several salary sacrifice schemes are available which allow employees to pay for an electric vehicle monthly using their gross salary. These schemes will make EVs more appealing and affordable and therefore support their uptake.

Hydrogen
A final alternative is hydrogen which has a higher energy density than current battery technologies and can be used in a combustion engine or to power an electric motor via a fuel cell.[5] This is already being used within some vehicles and presents an emission-free alternative, with the only exhaust gas being water vapour. However, a fuel cell system also requires a battery, and therefore similar environmental concerns to those relating to battery technology must be considered.

Whilst hydrogen is available now for use in some vehicles, it is likely to become more readily available by the end of this decade. This means battery and HVO (as a transition fuel) alternatives should be prioritised now.

4.2b Eliminate diesel in road transport

Screen New Deal Transformation Plan

Case study: Royal Mail's electric vehicle fleet[1]

Royal Mail operates approximately 41,500 vans and 6,200 trucks and trailers across the UK. EVs (trucks and vans) have been deployed across the country to reduce the company's carbon emissions. This has allowed them to keep pace with changing emissions limits in various cities across the UK and contributed to a 29% reduction in carbon emissions since 2004-2005. Royal Mail also introduced telemetry (a system which encourages more fuel-efficient driving) into its fleet in 2015. Since 2019, this system has saved about 177,000 litres of fuel within its small vehicle fleet, contributing to a reduction in CO_2 emissions of 459 tonnes. The electric vehicles transport the same 7.5 tonnes as the original vehicles and have a modular build, allowing flexibility.

This case study demonstrates both the potential of EVs in terms of CO_2 emissions savings, and that the technology is largely already available. This means progress on a transition towards electric vehicles, and ultimately emissions savings, could begin now. In the interim, the introduction of a telemetry system into vehicles used during production could be beneficial to encourage more efficient driving practices. This may also provide useful insights into vehicle use and requirements, which could inform the transition towards EVs.

Case study: Electric buses in Newport[2]

In 2022, Newport Bus revealed its ambitious plans to be the first fully electric bus and coach service in the UK by the end of 2023. Newport Bus now has 44 fully EVs within its fleet. It is estimated this will equate to an emissions saving of 1068 tonnes of CO_2 annually, and a 33% reduction in operating costs.

Newport Bus carbon savings. Source: Newport Bus

This was made possible by a £6.3 million grant that was secured by Newport Transport (which was allocated to Newport City Council from the Welsh Government). This grant aimed to rectify the issue of poor air quality.

Electric bus routes that stop at studios could help reduce private car travel.

Case study: Disneyland Paris Solar Canopy[3]

Solar canopies have been adopted at Disneyland Paris through co-investment with Urbasola. They aim to provide 36 GWh/year which, for context, equates to the annual energy consumption of a small city with a population of 17,400. It is estimated that the solar canopy, which will cover 11,200 spaces, will contribute a reduction in GHG emissions for the Val d'Europe territory by ~890 tonnes of CO_2 annually when it is completed by the end of this year (2023).

This demonstrates the potential of solar canopies, which could be implemented above large areas of open space at studios.

Enhancing electric vehicle uptake will require better charging infrastructure at studios. Whilst initially this should be prioritised in car parks, it would help to have rapid charging opportunities in backlots and unit bases, for example. Studios should prioritise the implementation of solar canopies in these areas which will not only protect vehicles from the weather (e.g., sun, heavy rain, or snow) but will also support renewable energy generation which could power EV charging points or be stored on site to charge electric vehicle at a future date (e.g., using Powerskid second hand batteries).

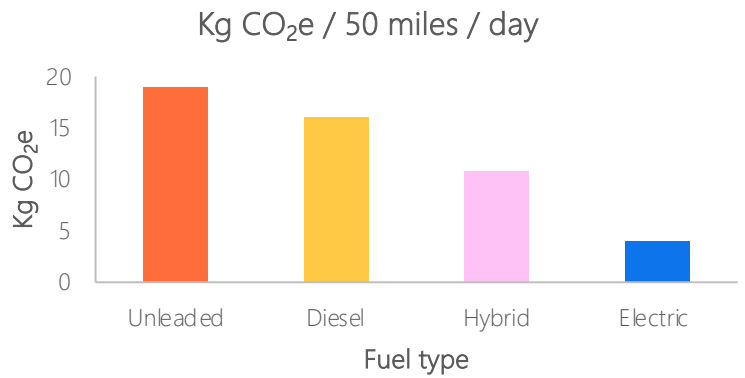

Disneyland Paris Solar Canopy. Source: Disneyland News

4.2b Eliminate diesel in road transport

Evidence

Transitioning towards renewable alternatives will have benefits in terms of reducing GHG emissions. As the UK's electricity grid continues to decarbonise, greater GHG emissions reductions will be realised when using EVs. Data from an anonymous film production in Wales highlights that, compared to a vehicle running on unleaded fuel, using an EV reduces emissions by 79%. A hybrid vehicle would reduce emissions by 43%.

This demonstrates the benefits of adopting an alternative fuel type for road transport. While they do not represent a long-term solution, hybrid vehicles could be used for the transition from traditional ICE vehicles to EVs or alternative fuels.



Hypothetical scenario

On a typical production, in which diesel is used as the primary fuel, with some petrol, hybrid and electric vehicles used, up to around 58,170 kgCO_2e could be emitted. However, by replacing 30% of the diesel vehicles used with alternative (electric) vehicles, emissions could be reduced to around 40,720 kgCO_2e. Transitioning 75% of vehicles to EVs could allow emissions to be reduced to around 14,540 kgCO_2e.

This demonstrates the significant CO_2 emissions reductions that can be achieved through a transition to electric vehicles. The full impact will depend on the fuel used to generate the electricity. However, grid decarbonisation will allow the full extent of these savings to be realised.

Enablers

Data	Consistent, reliable fuel and travel data needs to be collected across productions. Effective action in this area will require information on the cost of alternatives.
Funding	Funding will be required for a group buying scheme. For hydrogen, funding for feasibility studies in relation to storage and transportation would benefit the transition towards hydrogen vehicles. For EVs, tax incentives should also be promoted (e.g., salary sacrifice schemes). Additionally, the OZEV Workplace Charging Scheme grant should be utilised. This allows businesses to claim up to £350 per charging socket installed.
Skills	Some upskilling may be required to allow appropriate alternative options to be identified and implemented. An understanding of vehicle charging needs will also be required.
Behaviour change	This relies on strong leadership across production. Crucially, the behaviour of everybody requiring a vehicle needs to change. Vehicle sharing may need to become commonplace to support the transition.

Outcomes

	Improved environmental impact	HVO has benefits in terms of NOx and PM emissions. Figures from an industry testing report found 5-10% and 10-33% reductions in NOx and PM respectively.[1]
	Support for existing Welsh climate objectives	HVO can reduce GHG emissions by 90% compared to retail diesel.[1]
	Community benefits	Batteries emit no air pollutants to the local area. HVO has a decreased fire risk, is biodegradable and non-toxic.[1]
	Future proofing	Adopting key technologies such as HVO, with a pathway to move towards more sustainable alternatives, will reduce operational costs in the long run.

4.2b Eliminate diesel in road transport

Screen New Deal Transformation Plan

Implementation Timeline

Action	Description	Implementation timeline	Stakeholders
Target definition	Appropriate targets for the film and HETV industry in Wales should be defined. It is recommended that diesel is eliminated by 2025 and HVO used as a transition fuel only until 2030.	Now	• Welsh Government
Establish regulatory measures	Implement an HVO mandate for the film and HETV industry. All company-owned vehicles should be powered by HVO as a minimum standard by 2025. This should be supported by the implementation of an HVO group buying scheme.	Now	• Welsh Government • Industry-wide
Vehicle duty cycle analysis	Undertake analysis to understand current vehicle duty cycles, this defines how much a vehicle is used and can help an organisation increase energy efficiency, reducing emissions and lowering energy costs in fleet trucks, vans and cars.	Now	• Industry-wide
Invest in infrastructure	Investment in infrastructure will be required to support the transition towards alternatives (e.g., EV charging infrastructure or alternative fuel refill stations). Collaboration with energy companies and charging infrastructure providers is needed to ensure strategic locations for charging stations are identified to maximise availability.	Now	• Industry-wide • Welsh Government
Development of incentives	Financial and non-financial incentives should be provided to encourage the uptake of alternative fuels and vehicles. For those that currently utilise personal vehicles, the fuel payment benefit will need to be replaced.	Near	• Industry-wide • Welsh Government • Productions and studios
Identification of alternatives	Using the vehicle duty cycle analysis, identify appropriate alternative vehicles to develop an appropriate routemap away from ICE vehicles.	Near	• Industry-wide • Production teams
Upgrade vehicle fleets	Transition fleets towards sustainable alternative fuels. This may require collaboration with fleet operators / owners over time to ensure nearly redundant vehicles are replaced first. The actions and steps required to complete this should follow those within the Fuel Project Report (launched by Film London). This will need to be undertaken over time, recognising the different scale of some vehicle fleets.	Next	• Studios • Productions • Industry-wide
Monitoring	Monitor and evaluate progress towards the transition over time.	Next	• Studios • Productions

4.2c Minimise the need for travel

Screen New Deal Transformation Plan

Description:

The Wales Screen Workforce Survey 2022 highlighted that Wales has a highly mobile workforce, with 60% of respondents working in more than one location within the previous 18 months and 11% working in more than 10 locations.[1] Due to the use of various locations, a number of which cannot be easily reached by public transport, as well as long working hours, crew are largely dependent on cars or other personal vehicles. Additionally, productions often require multiple individuals to go to multiple places for a single production. A shift in behaviour can support a move away from this car dependency. Several changes could be made, including:

- Using local sites for filming, ideally those which can be used to film multiple scenes; this should go hand-in-hand with a change in behaviour and production ordering to ensure that, if multiple scenes are shot at the same location, they are done in succession, avoiding the need to repeatedly travel to and from a site
- Utilising digital platforms, satellite imagery and online databases to conduct virtual location scouting and research
- Using video conferencing or other platforms for casting and auditions where possible
- Using video conferencing for pre-production, meetings, table readings, production planning and other meetings
- Permitting people to work from home (or work remotely) where possible
- Storing props close to filming locations and at studios to reduce the need for transport to/from the studio
- Encouraging the use of local vendors and suppliers; this can reduce the need for travel and therefore transport emissions
- Employing local talent and crew to support a reduction in Scope 3 emissions
- Encouraging car-pooling or vehicle sharing when travelling to from the studio or shooting location
- Employing remote production techniques as an alternative to filming on location; employing remote approaches could also be used to scout locations, which reduces the need for travel (for example, online databases could be used, followed by virtual reality simulations)
- Utilising remote filming technologies; these techniques were used effectively by some productions during COVID-19 and provide a means of recording remotely from anywhere in the world, which not only reduces GHG emissions but is also cost-effective

Evidence

As demonstrated by the hypothetical scenarios on slides 50 and 55, significant emissions savings can be achieved by shifting behaviours associated with transport. Reducing the overall quantity of travel will allow greater emissions savings to be realised.

Enablers

Data	Knowing the environmental (for example GHG emissions) impacts associated with various alternatives will support evidence-based decision-making. Comprehensive data sets will be required to understand this.
Funding	Funding will be required to implement alternative solutions or financial incentives for using local suppliers if they are more expensive than others (e.g., due to their scale).
Skills	Information on alternative software and production options will be required, in addition to a shift towards effectively using this for production, auditions, casting and meetings.
Behaviour change	Adjusting behaviour away from traditional approaches used within the industry will be required. This may need an increased appetite for risk at first as new approaches are trialled. Some additional planning may be required for some changes (e.g., implementing a car sharing plan).

Outcomes

	Improved environmental impact	Wider environmental impacts may include a reduction in waste; for example, if props are stored and reused. Benefits may also be achieved in terms of air pollution.
	Support for existing Welsh climate objectives	A reduction in travel will contribution to a reduction in GHG emissions. The extent of this reduction will depend on the fuels used.
	Community benefits	The local economy will benefit if local suppliers, actors and infrastructure are used.
	Future proofing	Minimising the need for travel will ensure the best talent can work on a production, regardless of vehicle ownership. It will also minimise the potential impact of supply chain disruptions if local suppliers are used. It may also better insulate productions/studios from the impact of any potential global crises (e.g., COVID-19).

4.2c Minimise the need for travel

Screen New Deal Transformation Plan

A note on inclusivity: The reliance on personal vehicles within the film and HETV industry has created an additional barrier to entry for individuals who either do not drive or do not own a car. These factors, coupled with the distances to some shooting locations, lack of infrastructure for public transport and childcare constraints, present significant barriers to individuals wanting to work in the industry. Removing the need for personal cars and driving will not only have emissions benefits but also inclusivity benefits.

Case study: Virtual production at Seren Studios

Great Point Media is collaborating with Fields Park, Seren Virtual Production Ltd and Media Cymru to build a virtual production hub in Cardiff by the end of 2023. The new facility, Seren Virtual Productions[1], will support all aspects of virtual production in addition to a virtual production research and training academy. This will be developed in collaboration with Media Cymru, and it will aim to support the development of the region into a thriving hub for media innovation with a focus on green technology.[2]

Seren Studios, Wales. Source: Insider Media.

This could not only inspire other Welsh studios to develop virtual production capabilities, it could also enhance trainees' knowledge of virtual production techniques and its opportunities through the training academy.

Case study: The Mandalorian (Disney, 2019)

Virtual production was used during the making of *The Mandalorian*. Several remote locations had previously been used for *Star Wars* productions, but by moving filming into studios, virtual production reduced the need for long-distance travel.

Virtual production allowed the production team for *The Mandalorian* to shoot the series on Stagecraft (a virtual production platform) which was able to provide over 60 backdrops. This demonstrates the potential of this approach.[3] Fewer sets were produced, and the production reduced its carbon footprint by 30 tonnes compared to a typical production of the same size. This was also associated with cost savings.[3]

Case study: Emissions savings from virtual production

A study undertaken by ICF compared the emissions from an on-location shoot and virtual production shoots for two television shows.[4]

The analysis demonstrated that scenes that were produced using virtual production techniques had the potential to reduce emissions.

The GHG emissions associated with virtual production A were estimated to be 80% lower than the emissions associated with shooting on location. For this production, emissions were driven by fuel consumed on-site and by vehicles. Similarly, for production B, virtual production emissions were estimated to be 76% lower than the GHG emissions associated with shooting on location. In this case, emissions from vehicle fuel combustion and accommodation contributed a large proportion of the emissions.

	Production A		Production B	
	On-Location	Virtual Production	On-Location	Virtual Production
	MT CO_2e	MT CO_2e	MT CO_2e	MT CO_2e
Scope 1*	**2.92**	**0.22**	**12.33**	**0.15**
On-Site Fuel Combustion	1.59	0.19	1.50	0.04
Vehicle Fuel Combustion	1.10	<0.01	10.81	0.07
Refrigerants	0.23	0.03	0.02	0.04
Scope 2[a]	**<0.01**	**0.06**	**0.00**	**2.05[b]**
LED Panel Array Purchased Electricity	N/A	0.04	N/A	1.46
Virtual Stage Purchased Electricity	N/A	<0.01	N/A	0.09
Rendering Equipment Purchased Electricity	N/A	0.01	N/A	0.50
Filming Location Purchased Electricity	<0.01	N/A	IE[c]	N/A
Scope 3	**0.17**	**0.33**	**4.15**	**1.81**
Hotel Stays	0.00[d]	0.27	2.59	0.25
Waste	0.17	0.06	1.56	1.56[e]
Total	**3.09**	**0.61**	**16.47**	**4.01**

4.2c Minimise the need for travel

Screen New Deal Transformation Plan

Implementation timeline

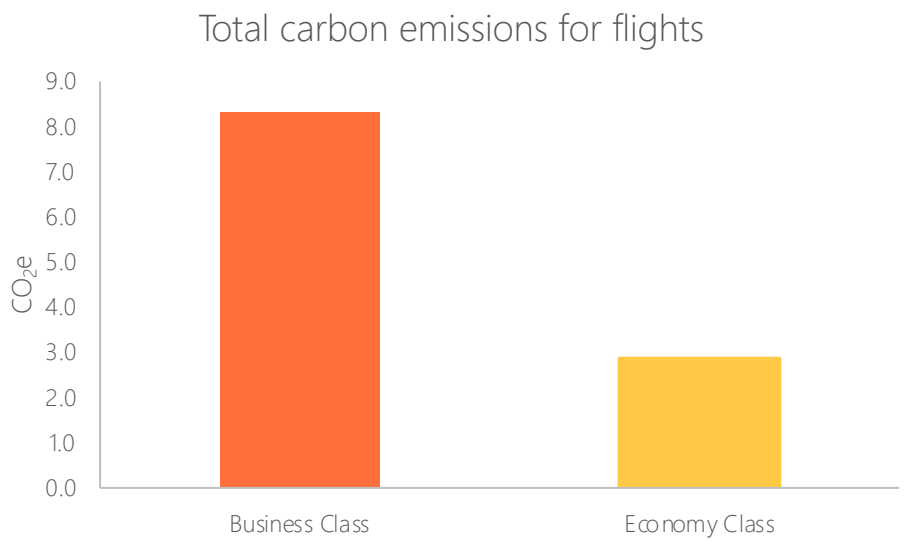
Action	Description	Implementation timeline	Stakeholders
Collate and review ideas	Current productions should adopt a critical perspective and identify where travel is currently happening and where this may not be necessary. Opportunities should be identified, reviewed and shared across the industry to promote change.	Now	• Production managers • Studio managers
Implementation	An iterative approach of continuously minimising travel should be adopted which encourages all departments across studios and productions to implement appropriate measures to minimise transport. Production managers, location managers, writers and directors will need to support a shift towards a potentially smaller variety of locations for a production or adopt alternative approaches (e.g., virtual production). This could be supported by changes in production planning to ensure as much filming at a particular location is completed in the fewest number of trips (e.g., collaborative scheduling, consolidating deliveries). Studio managers should also consider implementing initiatives to support crew transport (e.g., car sharing, studio buses).	Near	• Production managers • Studio managers • Location managers • Writers • Directors
	Continued iterative implementation of measures to reduce the need for travel in film and HETV production.	Next	• Industry-wide

4.2d Shift modes of transport

Screen New Deal Transformation Plan

Evidence and data

Shifting modes of transport can have significant environmental benefits, which will reduce the environmental impact of the sector as a whole. The graph below relates to an anonymous production in Wales. It shows the reduction in CO_2 emissions by changing from flying business class to economy. In total, 5,460 $kgCO_2e$ can be saved per person per flight simply by moving from business class to economy class.



Hypothetical scenario

During the filming of this production in Wales, in total 133,911 $kgCO_2e$ were emitted due to flights. Just over half of these emissions were associated with passengers travelling in business class. However, if all crew members, production team members and talent were to travel in economy class, approximately **63,722$kgCO_2e$** could be saved. This demonstrates that there is a significant potential saving in terms of CO_2 emissions if a shift towards flying economy class is achieved. This saving could be further enhanced if the amount of travel is reduced, using the proposed solutions on slide 52.

Enablers

Data	Data from the transport recommendation to map the challenge will be essential for this intervention to be effective.
Funding	Funding may be required where initial upfront costs are high; for example the implementation of EV charging stations at studios. Funding in the form of incentives may be required for members of the crew who have previously benefited from fuel cards on a production.
Skills	An understanding of vehicle ranges (when using alternative fuels) will be required to reduce 'range anxiety' and encourage the uptake of alternatives. Information on how to efficiently drive vehicles would also be beneficial.
Behaviour change	A shift away from personal vehicles will be required. To achieve this, a greater awareness - and provision of - alternatives is needed. This applies to both cast and crew.

Outcomes

	Improved environmental impact	Shifting towards more sustainable modes of transport will contribute to a reduction in air pollution.
	Support for existing Welsh climate objectives	Shifting towards more sustainable modes of transport will allow carbon emissions to be reduced.
	Community benefits	Shifting towards public transport or the use of multi-person vehicles may reduce traffic in local areas. A shift towards alternatives may encourage public transport improvements.
	Future proofing	This will have reputational benefits and potentially ensure alignment with future regulations. Adopting alternatives over time will support a transition towards alternatives as vehicles come towards the end of their duty cycles, therefore avoiding an abrupt shift.

4.2d Shift modes of transport

Screen New Deal Transformation Plan

Description

Making real changes to transport in the film and HETV industry in Wales is reliant on gathering more data on patterns of usage so that decisions can be based on evidence. Where alternative, more sustainable modes of transport can be used these can then be recommended using the 'avoid, improve, shift' model.

Avoid

Transport cannot be reduced to zero, but it is possible to reduce the number of vehicles that are used and the journeys taken through initiatives such as those introduced in recommendation 4.2c (e.g., car sharing schemes, buses for staff, or activities such as consolidating deliveries). Where possible, crew could commute to a depot/studio via public transport before travelling in larger vehicles from there, if needed. The move towards working from home could also allow some travel to be avoided. For example, the first table read of a script could happen online.

Improve

Where transport cannot be avoided, efficiency is needed, which could be supported through fleet management practices. The Energy Saving Trust, as referenced within the Film London, Creative Zero and Green Screen 'The Fuel Project: Supplier Guidance Report'[1] has suggested 'quick wins' for truck fleets:

- Encourage fuel-efficient driving behaviours
- Measure fuel consumption
- Fit the best tyres and keep them inflated
- Optimise routes
- Improve vehicle aerodynamics
- Introduce telematics to help manage the fleet

This will require travel pre-planning to ensure these solutions can be optimised. Additionally, training drivers will be essential to ensure they are aware of the above and ways to avoid maintenance, emissions and costs (see Royal Mail case study, slide 48).

Shift

Shifts towards alternative technologies (specifically those from recommendation 4.2b) should help further reduce the impact of essential travel. This will also require changing mindsets, forward planning and appropriate data collection (recommendation 4.2a) to inform decision-making. Engaging staff with better information on the range of EVs, where used, will help reduce 'range anxiety' (concerns about access to EV charging and the associated risk of delay in journeys). Getting buy-in from talent and cast is also important as contractual agreements often include high-carbon travel, such as gas/diesel luxury vehicles, private jets and frequent international flights between filming. Promoting the Equity Green Rider to increase cast requests for low-carbon travel will help transport captains prepare for the shift.

Quick wins could include:

- Prioritising vehicles with low mileage demands (for example, to align with current battery technology) and ensuring vehicles are returned to studios at the end of a shift (e.g., for storage and therefore charging).The implementation of alternatives should follow the proposed plan in recommendation 4.2b, with vehicles relying on HVO as a transition fuel, with the aim of moving towards battery electric and hydrogen vehicles. This could also support a shift in reduction in mileage in general, should alternatives (particularly EVs) be limited in terms of range.
- Reducing the reliance on vehicles all together, encouraging the use of public transport (e.g., train or bus) and active travel, like walking and cycling. A first step could be to promote car sharing, primarily back to the studio from a location. Additionally, a studio-specific bus service could be implemented. At Wolf Studios outside Cardiff, a bus service runs specifically from the studio to Cardiff Central station. In Wales, the future South Wales Metro may overcome some of these challenges.

4.2d Shift modes of transport

Screen New Deal Transformation Plan

Case study: Creast – the start-up helping to reduce the screen industry's emissions

Creast[1] is a sustainability company for the entertainment industry which was founded in 2019. It provided advice to the Goya Awards (the Spanish equivalent of the Academy Awards) during its planning stage and, as a result, prevented the release of 100 tonnes of CO_2. This was achieved through several methods, including encouraging members of staff to travel via train rather than plane and stay in accommodation that was close to the ceremony venue. These actions enabled 55% of transport-related emissions to be cut.[2]

Creast also advises productions and works to review scripts, budgets and production designs to assess their potential carbon footprint. This takes into account the number of on-screen vehicles, number of locations, transport and accommodation requirements, energy requirements (for both filming and post-production), and the materials required for props and costumes.

To ensure sustainable principles are implemented throughout production, team members from Creast are present on site to undertake reviews. This holds the production accountable.

Creast's workplan. Source: Adapted from Creast

Case study: The Crown[3]

Left Bank Pictures, producer of *The Crown*, has worked with sustainability partner Greenshoot to reduce the environmental impact of production. Greenshoot manages the Green Screen sustainable production programme and has supported Left Bank Pictures in achieving a Gold Standard stamp in relation to sustainability. One element that contributed to this includes reducing the production's carbon footprint. This was achieved by shifting the modes of transport that were employed during filming. For example, travelling to France by train rather than plane which prevented up to 95% of the production's potential carbon emissions in a business-as-usual scenario.

Case study: Wolf Studios

Wolf Studios operates a minibus service to support key crew members in getting to and from the studio from the centre of Cardiff. This presents an alternative to the use of personal vehicles and therefore will support a reduction in emissions associated with a production. This service is available throughout the day, with an accurate timetable to encourage its use by members of the production team.

Wolf Studios. Source: The Studio Map

4.2d Shift modes of transport

Screen New Deal Transformation Plan

Implementation timeline

Action	Description	Implementation timeline	Stakeholders
Raise awareness	Inform people of the need to shift away from polluting travel modes.	Now	• Industry-wide • Production team
Set targets	Undertake a target setting exercise to incentivise change. For example, reducing personal vehicle usage by a specified percentage or increasing the use of public transport, cycling or active travel.	Now	• Industry-wide • Production team
Identify alternatives	Review alternative options, and undertake an exercise to map vehicles / current travel modes to alternatives. This should be complemented by the measures in recommendation 4.2b to eliminate diesel and 4.2c to minimise travel.	Now	• Industry-wide
Implement EV charging points at studio locations	Using OLEV funding, encourage the implementation of EV charging points at studios to facilitate their uptake.	Now	• Studio managers
Promote the shift to alternative modes of transport	Promote modal shift on all productions. This could include, for example, encouraging the use of bicycles for short-distance travel on and around film sets through the provision of secure bicycle parking facilities, or coordinating car/ vehicle pooling. Production managers and location managers will need to plan shooting times and locations to allow for alternative modes of transport to be used. Promoting the Equity Green Rider will empower cast to reduce the impact of their travel requirements.	Near	• Industry-wide • Production managers • Location managers

4.3 A circular film and HETV industry in Wales

Core recommendations

4.3a Tackle waste
4.3b Address food and circularity
4.3c Create the space and infrastructure for reuse
4.3d Adopt a circular productions toolkit

Circular economy. Unsplash

4.3a Tackle waste

Screen New Deal Transformation Plan

Description

Waste is one of the biggest challenges when it comes to sustainability. The film and HETV industry, like all industries, produces a huge amount of waste. This comes from both studios and productions. However, unlike other industries, the film and HETV industry has several factors that make this waste problem uniquely challenging. Waste is produced very quickly at a high volume because huge sets are created and there is limited time and resource to dispose of them consciously and in the correct waste streams. In 2022, for example, according to albert footprint data, over 1,000 tonnes of wood were used in Welsh productions and less than 25% of this was recycled. Initiatives like Community Wood Recycling are seeking to change this.

The availability and reliability of waste data is also a substantial issue. Data is essential in order to map the waste streams and make strategic decisions about how to redirect them. The industry is disparate, with multiple organisations, sites and operations spread over a large area with multiple stakeholders, but it needs to create a way of controlling and managing these waste streams so effective change can be implemented.

Total average waste generated by a film production (tonnes)

Data was gathered from anonymous productions which gave an insight on the extent of waste created in large-scale film production. This chart shows the average amount of skip waste generated by one large-scale film. The 413 tonnes of skip waste is huge in comparison to the amount that was recycled, and the skip waste will inevitably end its life in landfill. Multiplying this by the number of productions happening in Wales each year gives a sense of the huge amount of unnecessary waste entering landfills.

Enablers

Data	Accurate and reliable data is essential to solving the issue of waste. Productions need to create a data gathering framework to report their data at the end of production.
Funding	Funding for improved data collection methodologies will support consistency and reliability in data collection. Funding could also support wider waste systems that support multiple productions.
Skills	Skilled individuals, who understand the principles of waste management and can ensure systems are operating correctly, need to be part of each production.
Behaviour change	All individuals across the production need to understand the impact they can personally have on waste management in the production. Once they do, accountability needs to be reinforced.

Waste targets

Wales has in place a target to achieve a **50% reduction in waste to landfill by 2030.** Significant changes need to be made in the film and HETV industry to achieve this.

Outcomes

	Improved environmental impact	If waste is redirected from incineration and landfill this will reduce the carbon impact of the production.
	Support for existing Welsh climate objectives	Changes to the Environmental Protection Act[1] will require organisations to undertake waste separation, recycling, and to identify waste hierarchy.
	Community benefits	Waste contains precious resources, such as materials that can be reused, which can be channelled into communities.
	Future proofing	Legislative changes will enforce strict measures for the management of waste. Data will be needed to ensure studios and productions are compliant with this legislation.

4.3a Tackle waste

Screen New Deal Transformation Plan

Key targets

Key targets (from the Beyond Recycling Strategy[1]) that are relevant to this recommendation are:

- 50% reduction in waste to landfill by 2030
- Zero waste by 2050

These targets should be set across the industry and regularly reinforced / checked by industry bodies, such as BAFTA albert.

Implementation approach

The first step of this recommendation is around data collection. Productions need to be given the understanding, methods and tools to collect and manage their waste data. Waste typologies need to be defined and articulated. A study needs to identify these waste types and give a clear metric for each so that productions can declare the total figures of each waste type and report these accordingly (for example, within albert production footprints). Once these totals are understood changes can be identified and implemented.

In addition to this, productions need support in creating the infrastructure to manage these waste types. Where recycling is an option, this needs to be highlighted at the beginning of the production. There needs to be accountability for a particular individual to manage these assigned waste streams to ensure no cross contamination.

Education is needed on how to capitalise on reuse opportunities. All items that can be reused should be kept to retain their value and should be identified at the outset of the production.

Case study: Veolia for Selfridges[2]

Veolia undertook an analysis of Selfridges' waste streams. This was done to meet Selfridges' sustainability targets and to add to the cardboard and glass recycling solutions already in place. Based on this analysis, Veolia introduced several new recycling waste streams, including dry mixed recycling and food waste. Working with Selfridges, Veolia segregate coffee cups and use the recycled fibres to create the iconic yellow Selfridges bags. Each bag now contains 24% recycled coffee cup material. These new services were introduced with educational campaigns to nurture a sustainable culture within Selfridges, where waste is seen as a resource.

This included educational visits to Veolia's Southwark Integrated Waste Management Facility as well as working directly with the cleaning and project teams. This built on Veolia's strong partnership with the facilities management team to ensure the new services were well received.

Veolia has more than trebled recycling rates at Selfridges from 15% to 55%, delivering 100% landfill diversion from day one.

Selfridges case study source: Veolia

4.3a Tackle waste

Screen New Deal Transformation Plan

Implementation timeline

Action	Description	Implementation timeline	Stakeholders
Define waste typologies	All waste types need to be identified across the film and HETV production ecosystem. This should be done through analysis of waste data as well as anecdotal evidence and engagement with industry stakeholders. An inventory of waste types (or typologies) should then be collected.	Now	• Industry-wide
Map waste streams in a typical production	Once all the waste typologies are identified, the industry can then begin mapping these using a flow diagram. This is heavily dependent on accurate data on waste outputs from productions.	Now	• Industry-wide
Waste stream redirection	Work can then be done to redirect these waste streams. Once quantities are known, a production can create waste stream flows that show how much of each waste typology flows to where (e.g., landfill, incineration, reuse….)	Near	• Industry-wide
Waste data collection with metrics	The key to tackling this problem is understanding quantities accurately. Once waste typologies are defined, metrics can be defined for each. All productions should report waste in these specific metrics to ensure accurate and coherent waste reporting.	Now, near	• Industry-wide
Stakeholder roles	Production managers should ensure that waste management systems are set up before production begins. Accountability should be assigned to a sustainability manager who will ensure the systems run effectively.	Now	• Productions

Case study: GALWAD (2022)[1]

Screen New Deal Transformation Plan

Multi-channel storytelling event *GALWAD* brought together social media and television to imagine a version of the future using contributions from hundreds of people in response to the social, economic and cultural consequences that could result from a 1.8-degree centigrade rise in global temperatures. Inspired by the Well-being of Future Generations Act, it also aimed to set an example of good practice for sustainable development in the arts. The production went beyond the boundaries of traditional storytelling and brought together characters and storylines across television drama, live performance, social media and the news. Messages and information were received on social media channels from a week 30 years in the future, with a final, live performance at the end of the week on Sky Arts revealing this imagined version of the world in 2052.

GALWAD finale. Source: GALWAD Sustainability and Impacts Report

GALWAD had several environmental aims:
- To achieve a net zero carbon impact
- To minimise waste and implement a circular economy
- To conserve the environment and biodiversity
- To provide sustainable catering
- To nurture team well-being

The production had a commitment to achieving a net zero carbon footprint through energy reduction, fuel choice and in-set design. Overall carbon emissions for this project amounted to 166 tonnes, with the majority of these emissions coming from travel and accommodation, which reflects the fact that this was a pan-Wales production. However, these carbon emissions were directly inset (see below) or offset by 155 tonnes through a range of measures. This included the use of HVO in the place of diesel to power the final event in addition to local 'insetting' projects. For *GALWAD*, insetting involved finding local mitigation measures and community initiatives rather than outsourcing the offsetting to a remote agency. Actions with potential long-term impacts undertaken by the *GALWAD* production within the filming area (Blaenau Ffestuniog), including the sharing of energy advice and tree planting, will contribute to the saving of over 3,000 tonnes of CO_2 in the future.

Employing the principles of the circular economy and applying the 'reduce, reuse and recycle' method for waste supported *GALWAD*'s aims. Second-hand materials were used for production sets. At the end of the production, new uses for the materials were found. For example, all the wood used within the set design was sent to a wood recycling community enterprise in the local area. Total waste from the production amounted to just over two tonnes, which is low for a production. However, 99% of the set materials and 83% of the materials from the live week of events were re-used.

The myriad of sustainable solutions that were implemented within this production demonstrate the large sustainability benefits that can be realised from a single production, both immediately and in the long-term. If similar reductions in emissions and waste are achieved across numerous productions in Wales, a significant impact could be achieved. This case study also demonstrates the possibility of including sustainability themes within the script itself. This could pave the way for other productions in Wales.

Insetting: Carbon insetting (as opposed to 'offsetting') is based on the approach of direct low-carbon interventions on real material-impact areas of the company's value chain, as opposed to financing carbon reduction elsewhere. Industry or production insetting projects should focus on projects with high strategic relevance to industry sustainability, such as fuel and energy, transport, waste and biodiversity solutions. For further information on insetting, please see: A Practical Guide to Insetting

4.3a Tackle waste

Screen New Deal Transformation Plan

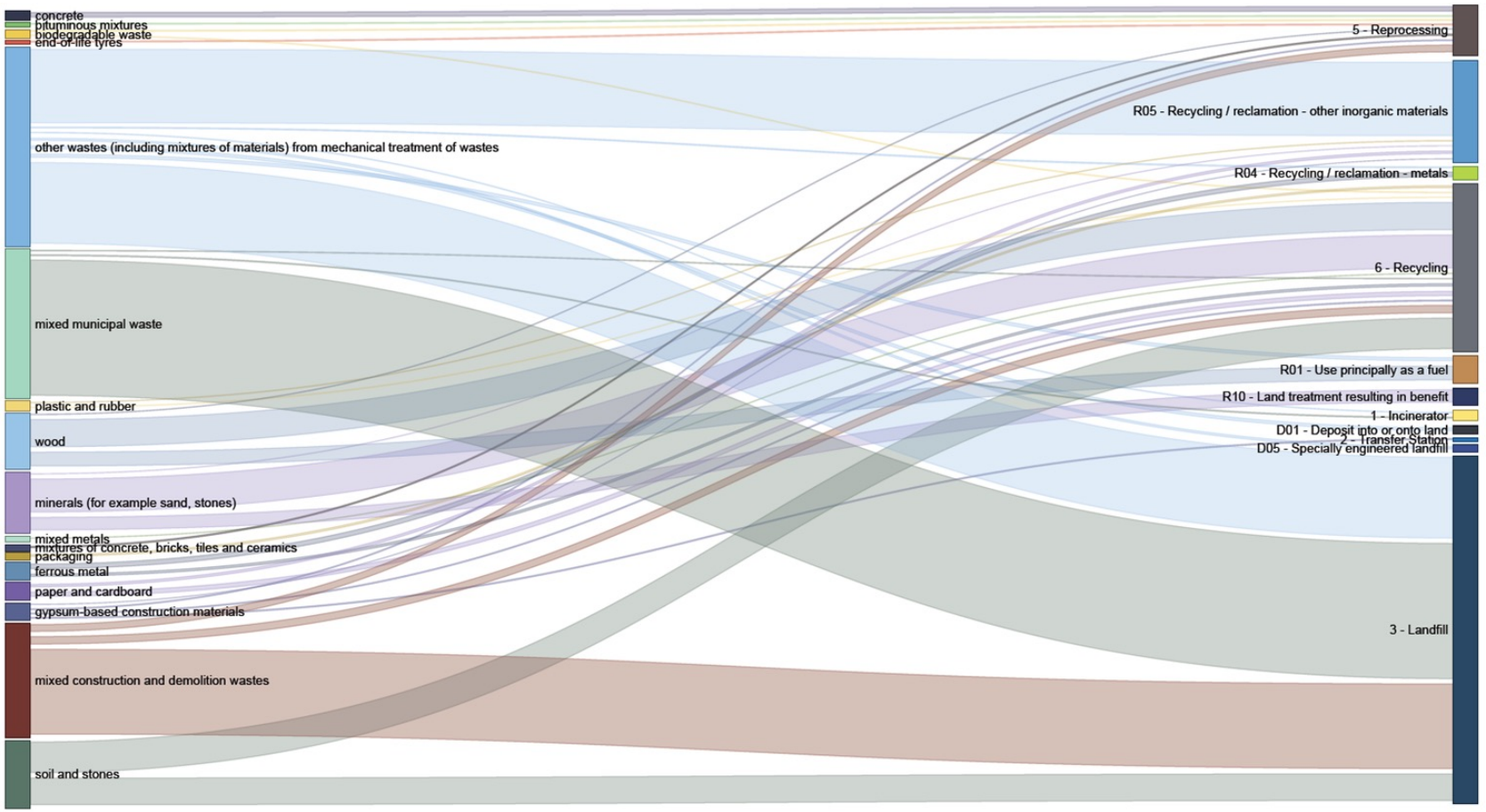
Technical spotlight

Waste stream mapping.
Using Sankey, or flow diagrams, to map waste streams is a powerful and informative tool when trying to improve the management of waste in a system, organisation or industry.

The process involves analysing waste data to identify the waste typologies and the journey this waste takes. This insight is incredibly powerful and helps map the problem, which is now based on estimates and assumptions.

This diagram can then be examined, and decisions can be made to redirect these waste streams.

Understanding the waste quantities makes it possible to estimate the required effort, resources and financial requirements of redirecting these waste streams.



Arup project example of waste stream mapping using Sankey diagrams

4.3b Address food and circularity

Screen New Deal Transformation Plan

Description

Changing food systems is one of the most impactful things that can be done to address climate change, create healthy cities and rebuild biodiversity. The existing global food system has fuelled urbanisation, economic development, and supported rapid population growth. However this has been at an enormous cost to society and the environment.[1] Creating demand for local, sustainable food reduces the footprint of productions whilst contributing to social sustainability.

Circularity (or circular economy) is the principle of mimicking natural systems by eliminating waste and keeping resources within the economy for as long as possible. There are three circular food principles: source food grown regeneratively and locally where appropriate; eliminate food waste; design and market healthier food products.[1]

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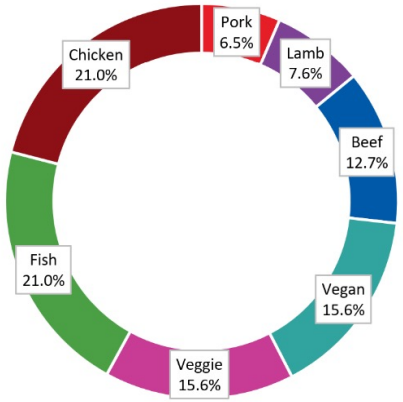
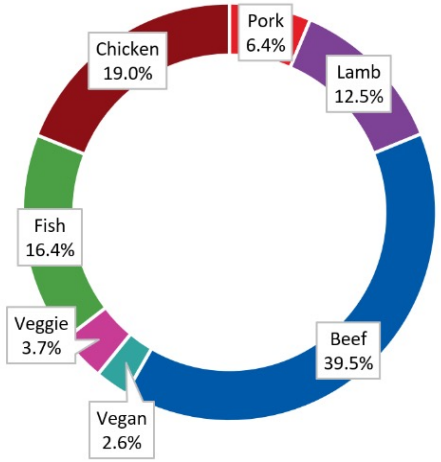
Meals by type



Meals by CO_2 footprint



The charts shown here are taken from an anonymous production. The top chart shows the percentage of each meal type that was selected throughout productions.

The bottom pie chart shows the overall CO_2 impact of each of these meal types across the production shooting period.

It shows that beef (despite being the 5th choice with only 13% popularity) has the largest CO_2 footprint. Vegetarian and vegan meal choices have the smallest CO_2 impact. This is justification for trying to move away from carbon-intense food choices.

Enablers

Data	Showing the carbon footprint of different foods will enable conscious choices to be made based on the environmental impact of food served. Food and catering suppliers that can provide data on the carbon impact of food ordered will enable productions to better track their emissions impact.
Funding	Funding is needed to communicate the carbon impact of meals and food choices to both caterers and consumers. Funding support is also needed to help Welsh catering suppliers reduce the carbon impact of their menus and present this data accurately to customers.
Skills	n/a
Behaviour change	Key decision-makers in the production team need to be made aware of the impact of selecting local catering suppliers over other suppliers. In addition, individuals need to be influenced to choose lower impact food. This will be enabled by catering suppliers presenting material that state the impact of each food option.

Serving a 30% fish, 50% vegetarian and 20% vegan menu was shown to save 33 tonnes of CO_2 compared to a standard mixed menu on a production

Outcomes

	Improved environmental impact	Conscious, sustainable food choices result in a lower carbon impact.
	Support for existing Welsh climate objectives	The Welsh Government is aiming to develop a plan for Wales to become a net zero food system by 2035.
	Community benefits	Contracting with local food and catering suppliers will support the local economy.
	Future proofing	This change will support the local economy and help stimulate the local market for food suppliers, stimulating greater choice in the future.

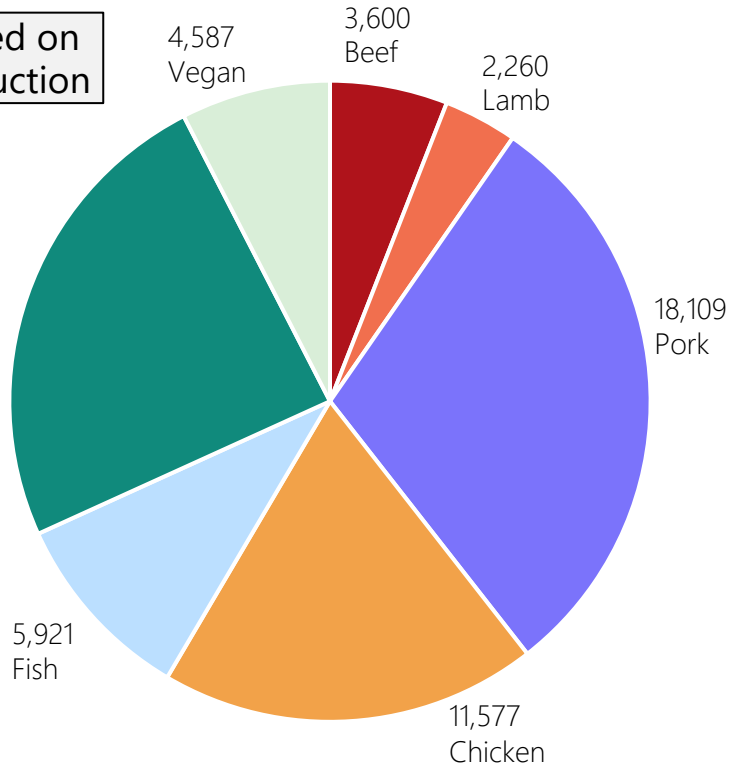
4.3b Address food and circularity

Location and studio catering has a significant impact on a production's carbon footprint. During 2022, albert collected footprint data from 63 (film, HETV and TV) productions made in Wales. The total food emissions from these productions was 396tCO_2e. The data below comes from a typical HETV scripted production filmed on location and in studio in Wales during 2021/22. This production filmed for just over 13 weeks, serving over 61,000 meals producing 166.61tCO_2e. The catering choices accounted for approximately 11% of the production's total emissions (1,487tCO_2e). Reducing the amount of meat and fish served on location will significantly reduce food emissions. On this production, the vegetarian and vegan meals accounted for just over 32% of the meals served and only 8.5% of food emissions. The meat and fish meals accounted for 68% of meals served and 92% of food emissions.

To help achieve climate change targets and limit global warming to 1.5°C, the Climate Change Committee recommends a 20% reduction in meat and dairy by 2030 and a 35% reduction in meat by 2050, eating better meat and opting for plant-based alternatives.

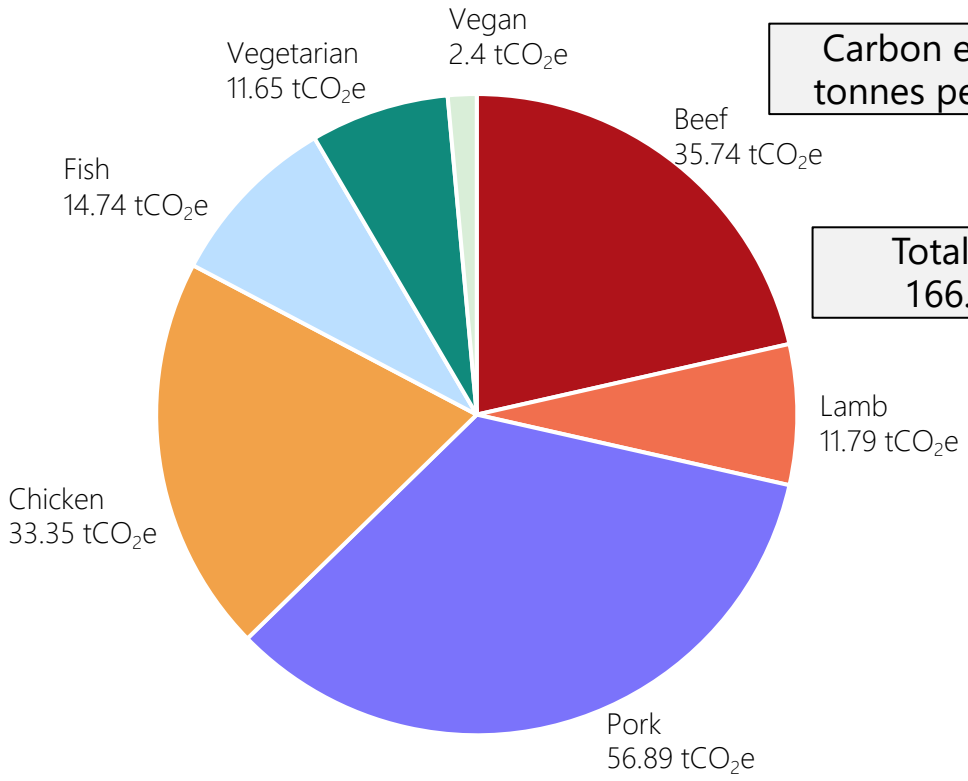
Number of meals served on an example HETV production

Total meals 61,388



Carbon emissions in tonnes per meal type

Total emissions 166.61 tCO_2e



Beef Lamb Pork Chicken Fish Vegetarian Vegan

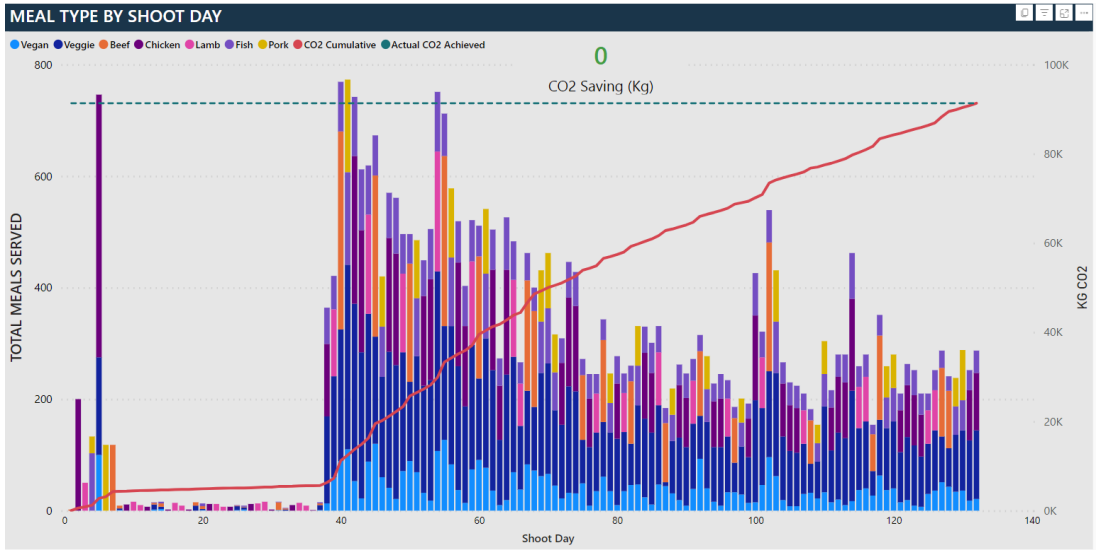
Source – albert footprint data 2022

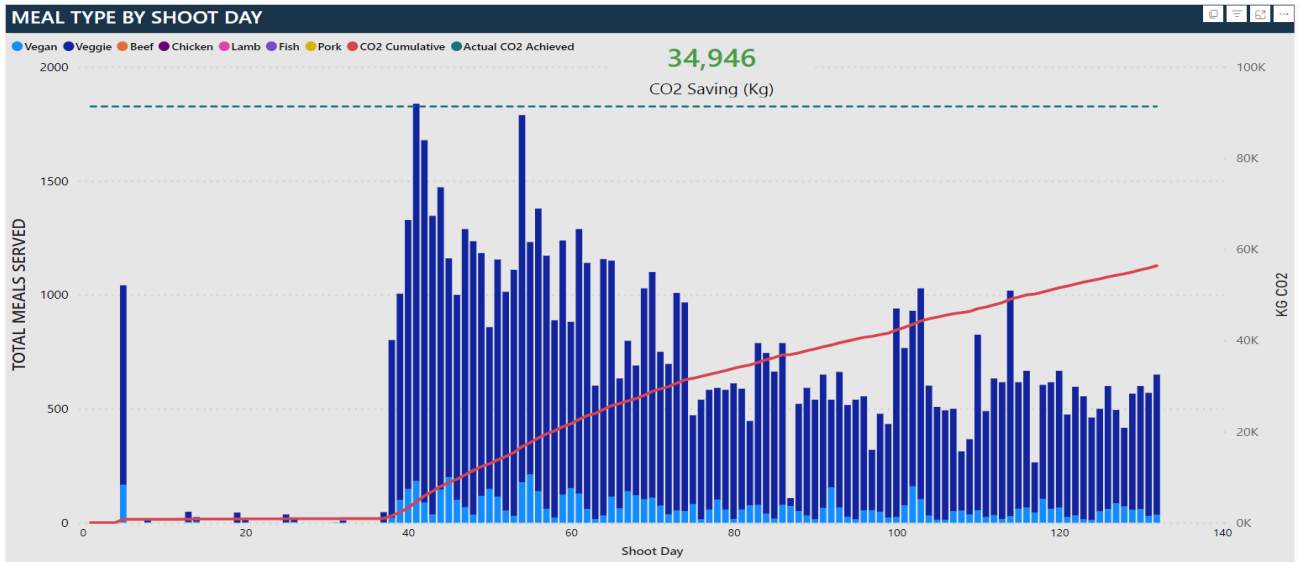
4.3b Address food and circularity

Screen New Deal Transformation Plan

The graph to the right is taken from an anonymous production showing the meal choices across 132 shoot days (15% beef, 5% pork, 10% lamb, 20% fish, 15% vegetarian, 20% chicken, 15% vegan). The total CO_2 for the whole shoot is **91,318kg.**

The graph below shows a hypothetical scenario where meals were 75% vegetarian and 25% vegan. The total carbon saving resulting from this scenario is **34,946kg**, demonstrating the convincing argument for increasing vegetarian/vegan meal choices.





Case study: Carbon Counts, Sky[1]

Sky is introducing a brand-new food emissions labelling programme, Carbon Counts, which is helping 25,000 employees make informed decisions on the carbon impact of their food choices. Data from the project will also be used to help decarbonise recipes without compromising on taste or value.

Carbon Counts labelling will be added to cafe and restaurant menus across Sky's estate, giving staff the ability to track their carbon footprint and average daily carbon emissions. To launch the labelling programme, Sky has partnered with Foodsteps, an award-winning platform which calculates environmental impacts across large and complex food operations.

Research shows that swapping just one meat dish for a plant-based alternative saves enough energy and its associated greenhouse gas emissions to charge a mobile phone for two years.

The labelling shows impact ratings ranging from A-E, assigned according to the carbon footprint per kilogram of each food item (the carbon intensity), with 'A-rated' food having a 'very low' carbon intensity. This measure allows an easy comparison between different servings and meal sizes.

Empowering colleagues to make informed choices about the impact of their meals is the latest in a series of Sky initiatives to protect the environment.

sky

CARBON COUNTS

4.3b Address food and circularity

Screen New Deal Transformation Plan

Implementation timeline

Action	Description	Implementation timeline	Stakeholder
Awareness campaign around impact of food choice	Initiate a campaign across the film and HETV industry in Wales that raises awareness of food choices and their carbon impact. This campaign should reference the three circular food principles: source food grown regeneratively and locally, where appropriate; eliminate food waste; market healthier food products.	Now	• Industry-wide
Welsh caterer shortlist and engagement	Identify a pilot group of catering suppliers in Wales and encourage productions to use these local food sources to avoid the carbon footprint associated with transporting food great distances from other parts of the country. To start, consider engaging suppliers that have already shown interest in becoming more sustainable.	Now	• Industry-wide • Suppliers • Heads of Department
Provide support for assessing the carbon footprint of food options	This pilot group of suppliers should then be supported to develop carbon assessments of their menus. This might require education for some suppliers if they are new to this process. For others it might be a case of providing technical support for the LCA/carbon calculation.	Near	• Industry-wide • Suppliers

4.3c Create the space and infrastructure for reuse

Screen New Deal Transformation Plan

Description

There is a huge challenge in the film and HETV industry when it comes to the ability to reuse materials, products and props. Due to the nature of productions, decisions are made quickly and are based on convenience, artistic requirements and cost. Environmental impact is not often prioritised. Once productions are complete, most assets, materials and costumes are disposed of. There is a huge opportunity for these assets to be reused but the infrastructure to ensure things are passed on or repurposed does not exist to support this.

There are ad-hoc organisations that have begun to support the capture and reuse of materials and assets, for example the CAMA asset store, but this is not yet happening at scale. To enact real change, the industry needs to be supported through investment in infrastructure to create this process. Infrastructure can include physical spaces, services, information and business support.

Costume cupboard Unsplash

Enablers

Data	Data will play a huge role here. Inventories of materials, props, costumes and other assets would mean productions could understand quickly what is available and where.
Funding	This intervention will require significant start-up funding to help small businesses acquire sites and adopt business models to scale material reuse.
Skills	There would be an element of upskilling around circular economy and the skills required to manage a reuse process. This could be done with support from a circular economy expert.
Behaviour change	This would require significant behaviour change from the industry. It would require production managers and production sourcing to actively support the reuse network that would be set up. In addition, it would require behaviour change from production department leads to seek opportunities for assets to be saved and reused. This could be done slowly through a series of awareness raising and engagement.

Outcomes

	Improved environmental impact	This would reduce the waste carbon footprint of productions. It would also reduce the supply chain of productions as they are sourcing used materials.
	Support for existing Welsh climate objectives	The Welsh Government released its Beyond Recycling strategy[1] in 2019. This supports going beyond just recycling and getting to a zero-waste Wales.
	Community benefits	There are opportunities for businesses to grow to support this new infrastructure.
	Future proofing	This is essential for future proofing the industry, especially in Wales which has ambitious legislation on the issue.

4.3c Create the space and infrastructure for reuse

Screen New Deal Transformation Plan

Case study: Asset storage

CAMA[1] provides storage for props and production assets as well as supporting the reuse of these assets.

The organisation collects sets, props and costumes and catalogues every item on its bespoke platform – Assetflow – which gives complete visibility on the inventory and a range of sustainable options for storage, hiring out, sharing and repurposing.

CAMA provides detailed life cycle analysis and sustainability reports at the end of each reuse job and calculates the carbon emissions avoided each time the item is reused.

For items that cannot be reused, CAMA facilitates their donation to good causes.

Storage warehouse Unsplash

Case study: All for Reuse

All for Reuse[2] is an initiative to develop a network of building professionals committed to the reusing of commercial building materials. Building material reuse is an overlooked solution to carbon reduction and local economic development.

Each year in the US, more than 2.5 billion square feet of commercial floor space is renovated. Commercial interior renovation projects in the US send around 32 million tonnes of materials to landfills every year[2]. A lot of this is often in a like-new condition. All for Reuse can replace those materials with similar ones, further drawing on resource extraction, manufacture and transport to the building.

Building construction accounts for at least 11% of total CO_2 emissions, and likely much more.[2] Widespread reuse of commercial materials in the US could yield 20 megatonnes of CO_2e reductions by 2050.[2]

These like-new building materials could be put to good use by deconstructing, warehousing, and redistributing them to new projects that specify them. All for Reuse's requirements are:

- ALL projects will be evaluated as opportunities FOR REUSE
- ALL designers and builders will understand the process FOR REUSE
- ALL owners will commit to procurement FOR REUSE

Reduce Waste & Emissions

Foster New Circular Businesses

Accelerate the Rate of Change

4.3c Create the space and infrastructure for reuse

Screen New Deal Transformation Plan

Implementation timeline

Action	Description	Implementation timeline	Stakeholder
Identify typical reuse assets	Engage with the production community in Wales to identify the common types of assets that can be reused.	Now	• Industry-wide
Fund innovation in material separation and preservation	Identify assets (e.g., sets) that need to be separated before they are reused. Fund innovation to develop disassembly techniques to enable sets to be dismantled effectively.	Now	• Innovation funding
Create inventory of assets for reuse	Create a digital centralised platform that is an inventory for all assets, props and costumes that are entered into this reuse system. This will facilitate maintenance, reuse and repurposing.	Near	• Industry-wide
Provide space for storage and management of assets	Procure physical space to provide storage for these assets, accompanied by an industry-informed assessment of the most appropriate location/s for this.	Near	• Industry-wide

Technical spotlight: Circular economy

Amsterdam: a 100% circular city by 2050

In 2020, Amsterdam[1] became the first city in the world to commit to becoming a 100% circular economy by 2050. With interim targets of halving its use of new raw materials by 2030, and all the city's public procurement to be circular by 2025, Amsterdam's ambitions focus on three key sectors: food and organic waste streams; consumer goods; and the built environment.

A sharing economy action plan

One of Amsterdam's actions toward a circular economy was to develop a 'sharing economy action plan' in 2016. The 'sharing economy' generates opportunities to make better use of materials and resources. It has led to multiple innovations such as sharing household items, space, modes of transport, and even food. A well-developed sharing economy offers many advantages to the city and its residents - it makes use of public and private assets that would otherwise be underused, it creates new business opportunities and revenue streams, and it can create connections between residents and visitors.

Highlights

- Buiksloterham, a neighbourhood in the district of Amsterdam-Noord, will be based entirely on circular principles. 80% of materials in public space will be circular; a digital inventory of available materials enables architects to incorporate them into their designs.
- The city is developing a toolbox for circular construction on the city's online knowledge sharing platform.
- The 'circular scan' of the city's manufacturing provides insight into the circularity of a product or service and the economic potential of a circular revenue model.

4.3d Adopt a circular productions toolkit

Screen New Deal Transformation Plan

Description

There is circular economy guidance and information available for the film and HETV industry (e.g., the SND[1]). However, currently this information is disparate and challenging for studios and productions to access. The industry needs tailored, specific guidance on how circular principles should be applied. This technical guidance could be provided in a stand-alone tool or integrated into existing tools that the industry already utilises and is familiar with. A circular productions toolkit would enable productions to plan, implement, measure and report on circularity processes.

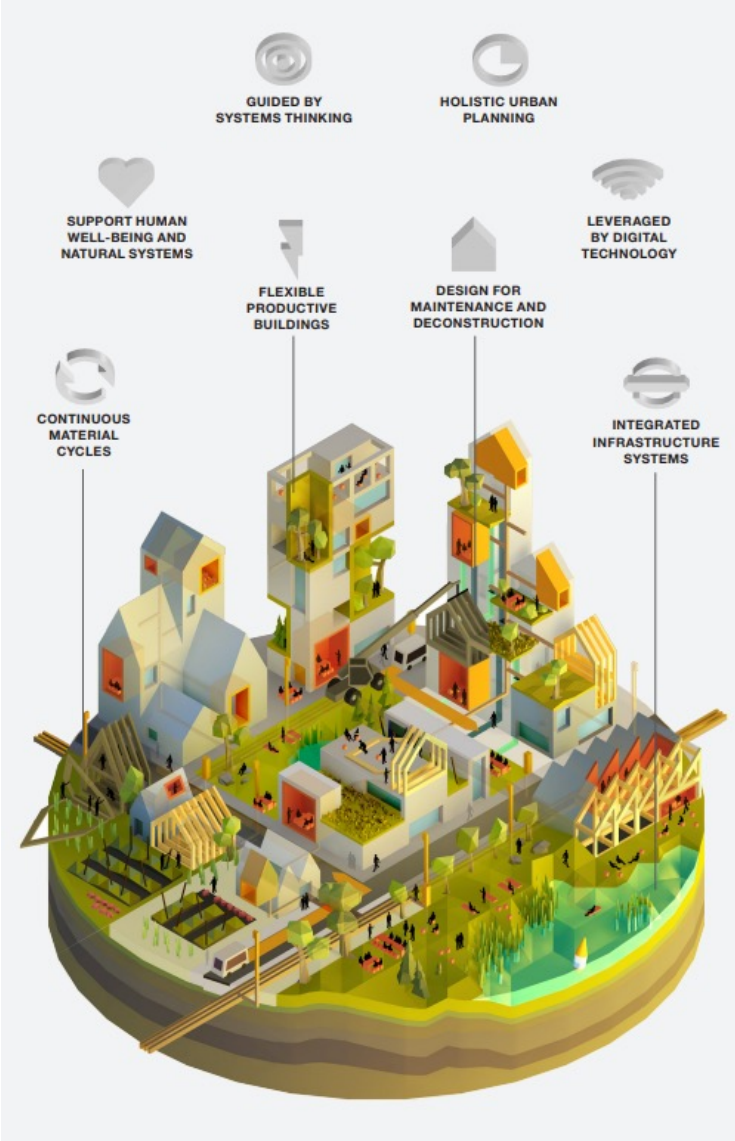


Figure: A vision for a circular built environment. Source: Arup[2]

This diagram shows the elements for a functioning circular built environment. This could be applied to the film and HETV industry which exists within the built environment.

Enablers

Data	Productions will need to collect and input data into a toolkit to enable effective planning and implementation.
Funding	Funding would be required for the development of the toolkit and to support productions to implement it effectively.
Skills	Awareness of circularity will be needed to effectively develop the toolkit. A certain amount of education will be needed within productions so the toolkit can be implemented independently on an ongoing basis.
Behaviour change	Circularity is going to be a challenge to implement in the industry due to the practices and systems that already exist. There needs to be a concerted effort by all stakeholders to embrace the change that is needed. Individuals will have to take responsibility to embrace change and consciously change current ways of working.

Outcomes

	Improved environmental impact	Improved circularity will have a number of positive environmental impacts. Firstly, by reducing the carbon intensity of productions. Secondly, by significantly reducing the amount of waste generated and lost in the production life cycle. Thirdly, by regenerating nature and supporting natural processes, there will be more room for nature to thrive.
	Support for existing Welsh climate objectives	This recommendation supports the Welsh Government's Beyond Recycling strategy.[3]
	Community benefits	The regenerative qualities of circularity will also benefit communities by reducing environmental impacts and waste management costs whilst enhancing resilience and efficiency.
	Future proofing	This will help the industry become sustainable in the long term by reducing the single-use culture that currently exists within it.

4.3d Adopt a circular productions toolkit

Screen New Deal Transformation Plan

Case study: The Circular Buildings Toolkit[1]

Arup and the Ellen Macarthur Foundation (EMF) have developed the Circular Buildings Toolkit. This is an open-source tool that is available online for developers, engineers and asset owners to manage circularity throughout the whole life cycle of their buildings. The tool allows users to input information about their project, from material sourcing, design, construction and operation through to end of life. It then provides a series of detailed interventions and strategies that will improve the circularity across each of these areas. This framework is based on relevant international best practices and policies. The strategies are also aligned with circular economy recommendations from the World Green Building Council.[2]

The tool enables sharing of its analysis so it can be benchmarked against others, which shares lessons and progress.

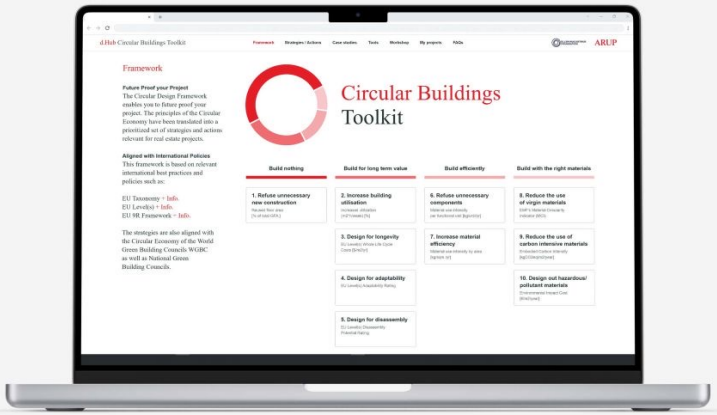


Figure (left): Landing page for the Arup/EMF Circular Buildings Toolkit

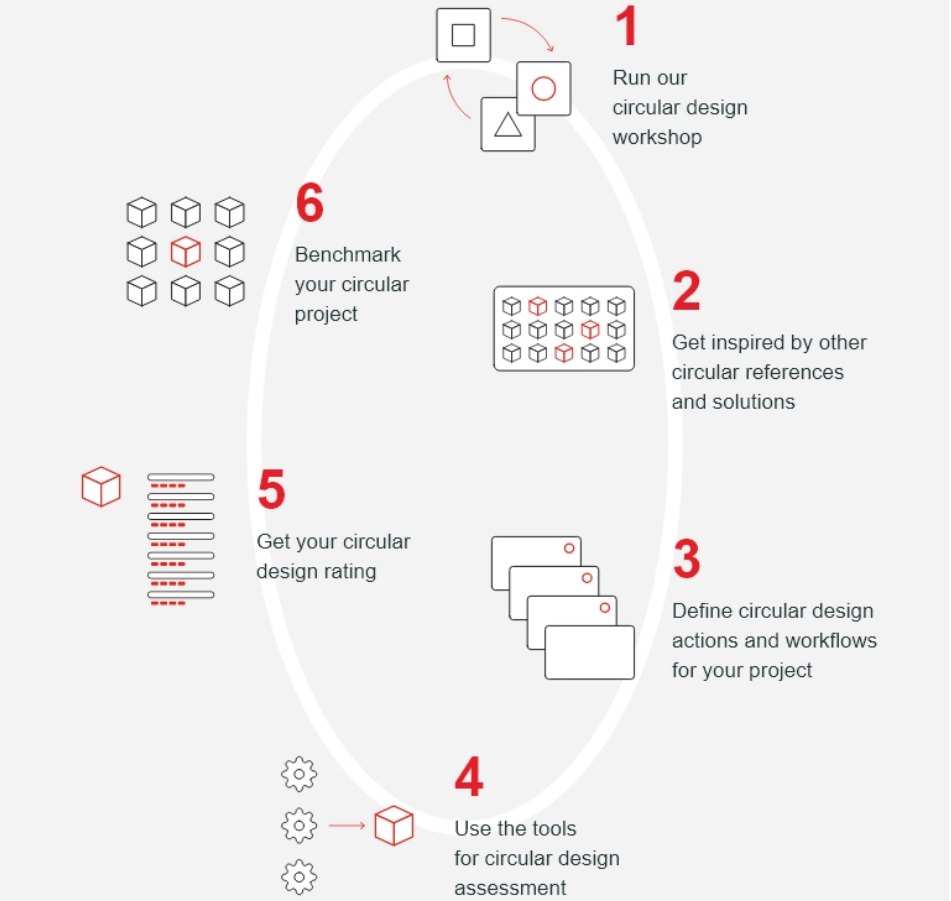


Figure (right): Process for using the Arup/EMF Circular Buildings Toolkit

4.3d Adopt a circular productions toolkit

Screen New Deal Transformation Plan

Implementation timeline

Action	Description	Implementation timeline	Stakeholder
Map production life cycle	To create the foundations for the circular tool, first the lifecycle stages of a production should be defined. This will form the skeleton structure for the toolkit.	Now	• Industry-wide • Productions
Identify opportunities for circularity	Using the Circular Buildings Toolkit and any relevant legislation and guidance, create the circularity technical content for the toolkit. Users will be able to review and select from these for their individual projects.	Now	• Technical expert • Industry-wide
Develop the circular production toolkit (further develop existing tool)	Once the material is compiled, work can begin to create the publishable Circular Productions Toolkit. Alternatively, these opportunities and circular economy (CE) recommendations could be integrated into an existing production tool.	Now	• Technical expert
Disseminate and provide support for uptake of the toolkit	Pilot the toolkit on a small number of productions and edit the final version accordingly. Once it is complete, publish the toolkit and actively engage and support productions to use it.	Near	• Production managers

4.4 Information creation and dissemination

Core recommendations

4.4a Experts on the ground
4.4b Conduct asset life cycle assessments (LCAs)
4.4c Provide supplier sustainability support

4.4a Experts on the ground

Case study: Earth Angel

An organisation based in Hollywood called Earth Angel provides a sustainability training service called the Eco Rep Training Program which aims to upskill individuals who want to forge a career in film production sustainability. The initiative ensures they can get experience through different levels of responsibility and seniority within a production's eco department. This enables individuals to create a career within film and HETV that focusses on sustainability.

The programme prepares trainees for full-time work as an eco rep, while educating them more broadly on the climate crisis and public health.

Their responsibilities include waste, water, donations, education and metrics.

Earth Angel's eco training syllabus[1]

Production

Impact of entertainment production

Green filmmaking movement

Impact by department

Set etiquette

Set health and safety

Sustainability

Carbon literacy

Systems thinking

The Sustainable Development Goals

Circular economy

Intersectional environmentalism

Eco rep role

Zero waste logistics

Food recovery

Effective education

Eco rep equipment

Data collection

Sanitation and disinfecting

Nature image Unsplash

4.4a Experts on the ground

Screen New Deal Transformation Plan

Description

In order to achieve net zero, the film and HETV industry needs to take production sustainability seriously.

To enact real change and push forward progress in the film and HETV industry, there needs to be a higher level of influence when it comes to sustainability. Currently, the responsibility to deliver sustainability objectives varies depending on production. In most cases, responsibility for sustainability falls to production management – already struggling with a demanding workload. Occasionally, responsibility is given to junior green runners or sustainability stewards who lack authority and an ability to influence important, potentially challenging decisions within the production.

A solution is to establish and fund a scalable (depending on the complexity of the production) eco department with a team of skilled sustainability professionals dedicated to actioning sustainability objectives across the production. This department would include an experienced sustainability lead, and / or a sustainability manager and / or a sustainability coordinator, depending on the size of the production. They would have the responsibility to prioritise materially impactful actions and monitor progress, for example by using the albert sustainable production toolkit. This would help define clear sustainability objectives across energy, waste, material procurement and use, food and transport. An eco department must also be backed up with new budget lines to pay for interventions to ensure sustainability objectives can be achieved. This is being called for by HOP's4Climate – a working group of senior film and HETV heads of production who are lobbying for a new approach to sustainability.

In addition, these skilled environmental professionals would take responsibility for reporting and disclosing quality environmental data. This is essential to accurately record and manage the environmental impact of productions. This would also enable productions to provide performance data to studios, which can utilise it to manage their own environmental impact.

Enablers

Data	Data needs to be collected on the green skills gap that currently exists within the industry to then develop strong training support.
Funding	Funding will need to be made available to support the skills programme development and to support these new roles within productions.
Skills	This requires a large process of upskilling. Training will need to be available for individuals to become sustainability champions within productions.
Behaviour change	Productions need to accept and integrate these new roles into their productions. There also needs to be greater importance placed on the implementation of activities to meet sustainability objectives by these professionals.

Outcomes

	Improved environmental impact	This change will fundamentally improve the environmental impact of productions and studios. Sustainability actions will be prioritised in a much more impactful way than they currently are in the industry.
	Support for existing Welsh climate objectives	This action will help support multiple Welsh climate and carbon objectives set out in recent government strategy and legislation.
	Community benefits	Sustainability roles within productions could provide new skills and career opportunities for people in Wales. In addition, people in these roles will be able to foster strong relationships with suppliers within the community.
	Future proofing	This change will fundamentally change the industry, integrating sustainability across the entire decision-making hierarchy.

4.4a Experts on the ground

Screen New Deal Transformation Plan

Implementation timeline

Action	Description	Implementation timeline	Stakeholder
Define the expertise and skills required	Engage with both productions and sustainability experts to define the skills gap that currently exists. Define the skills that are needed in productions to improve sustainability.	Now	• albert
Fund a skills programme	Support private organisations to provide these training services. Organisations that train sustainability professionals in other industries may be best-placed to supply this service to the film and HETV industry.	Near	• Industry-wide • Welsh Government
Work with productions to support integration of new roles	A certain amount of awareness-raising will be required with productions in order for them to appreciate the benefits of having skilled sustainability professionals embedded in their productions.	Near	• Industry-wide • Production managers • Heads of department

4.4b Conduct asset lifecycle assessments (LCAs)

Screen New Deal Transformation Plan

Description

A lifecycle assessment (LCA) is defined as[1] the systematic analysis of the potential environmental impacts of products or services during their entire lifecycle.

During an LCA, the following areas are evaluated: upstream (e.g., suppliers), downstream (e.g., waste management, use, end of life) and production (e.g., manufacturing energy and resources, waste creation, water and resource input). An LCA covers all relevant inputs from the environment (e.g., ores and crude oil, water, land use) as well as emissions into air, water and soil (e.g., carbon dioxide and nitrogen oxides). It also reports the environmental impact across many factors, including CO_2 emissions, land use change and ozone depletion.

LCAs are powerful tools for unlocking insight and understanding on the environmental impact of assets and services. Once users can appreciate the environmental impact of production assets, decisions can be made on which ones should be purchased and used. Whilst there are too many props, materials and costumes to conduct an LCA on every single one, a select group of commonly used assets could be identified. Potential high impact assets could include timber, steel elements, food packaging solutions and SFX makeup containing latex, rubber and foam props. The results of these should be published across the industry for use in decision-making within productions.

Enablers

Data	For LCAs, data is required that corresponds to every life cycle stage of the product.
Funding	Funding would be needed to conduct the LCAs for the pilot group of assets.
Skills	LCAs could be outsourced to be undertaken by professionals already working in this area.
Behaviour change	Once the LCAs have been conducted and the results have been disseminated across the industry, production staff members who are responsible for sourcing will need to use them in their purchasing decisions.

Outcomes

	Improved environmental impact	LCAs not only quantify the carbon emissions, they also report across a number of different environmental impact categories, including land use change and ozone depletion. If individuals make sourcing decisions based on the results of LCAs it could reduce the overall carbon emissions associated with a production.
	Support for existing Welsh climate objectives	This helps support the Welsh Government's Net Zero Strategic Plan.
	Community benefits	This will have far reaching impacts on local communities by reducing the environmental impacts of productions.
	Future proofing	This will provide future proofing by supporting the industry to reduce its environmental impact.

4.4b Conduct asset lifecycle assessments (LCAs)

Screen New Deal Transformation Plan

Implementation timeline

Action	Description	Implementation timeline	Stakeholder
Select pilot group of assets	Select a number of assets that would be suitable for a benchmark LCA. These would be commonly used assets that occur in most productions.	Now	• albert
Conduct LCA for these assets	Using LCA software (such as Simapro), LCAs should be conducted for these assets. A typical lifecycle should be used for the assessment (e.g., where it is generally sourced, its distribution journey to Wales, its typical end of life) and to calculate the environmental impact of the whole lifecycle.	Near	• albert • Technical expert
Publish results to industry	Provide consolidated, engaging output from the LCA software to industry. This will articulate the environmental impact of selecting and using these assets and will drive behaviour change.	Near	• Industry-wide • Productions

4.4c Provide supplier sustainability support

Screen New Deal Transformation Plan

Description

One of the largest challenges when tackling the environmental impact of film and HETV production is reducing emissions across the supply chain. The impact of the supply chain is significant and so needs to be prioritised when trying to reduce the overall environmental impact. There is currently limited data available on suppliers' environmental impacts, which means it is not possible to accurately calculate their Scope 3 emissions (which generally account for over 90% of any company's emissions).[1] An initial first step will be to gather data on the impact of the supply chain.

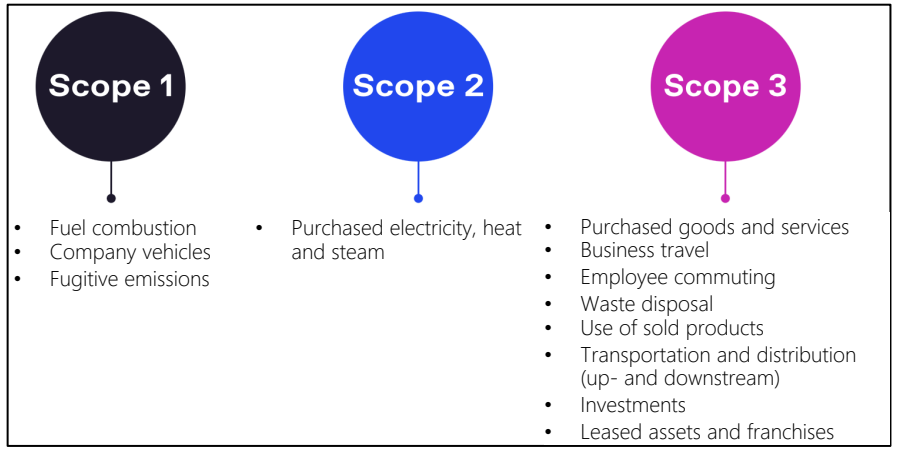


Figure: Emissions categories (Scope 1, 2 and 3) with associated emission sources.

Whilst the issue of data collection is pressing, this should not delay the secondary issue of engaging and supporting suppliers to address their environmental impact. The film and HETV industry has responsibility to support its suppliers and lead a concerted effort to encourage them to address their emissions. Suppliers should be supported to:
Appreciate their role in the industry's sustainability journey.

- Understand the urgency to reduce their environmental impact and upskill accordingly to act.
- Quantify their carbon footprint and develop decarbonisation trajectories.
- Understand their wider sustainability objectives outside of just carbon (for example potential impacts on nature and biodiversity).
- Adopt sustainability procurement strategies.

Trade bodies and industry-wide organisations have a role to play in the development of guidance to support suppliers in a coordinated way as they undertake their sustainability journey and support the industry in its decarbonisation efforts.

Enablers

Data	To develop this sector guidance data is needed on supplier performance and supplier maturity when it comes to sustainability.
Funding	Funding will be needed for the development of the supplier sustainability guidance.
Skills	Suppliers will need support in developing skills around sustainability strategies, Environmental, Social, and Governance (ESG) and decarbonisation.
Behaviour change	This intervention will require behaviour change amongst suppliers. There will need to be active engagement from them with the guidance and a willingness to implement the subsequent actions.

Outcomes

	Improved environmental impact	Supporting suppliers to improve their environmental performance will have a huge impact on the film and HETV industry's Scope 3 emissions and overall sustainability performance.
	Support for existing Welsh climate objectives	Welsh Government has legislation[2] dictating the ethical performance within industries' supply chain. This will support the ethical and conscious management of the film and HETV industry's supply chain.
	Community Benefits	This will improve the behaviour and impact of suppliers in Wales which will directly benefit the communities they exist and work in.
	Future proofing	This change will enable the supply chain to change and adapt before legislation[2] enforces it, which could bring sudden and drastic change.

4.4c Provide supplier sustainability support

Screen New Deal Transformation Plan

Case Study: ABHI sustainability report and framework for action for NHS suppliers[1]

This report and framework was developed by ABHI to support NHS suppliers in developing their own sustainability strategies and taking actionable steps to improve their environmental impact. The NHS launched ambitious decarbonisation targets, which in turn is meaning suppliers are being asked to measure, report and reduce their own emissions. In some cases, these suppliers have been undertaking this task already and therefore are well placed to provide their emissions and reduction targets to the NHS. In other cases, suppliers have not even begun this journey.

This framework aims to support all suppliers no matter their maturity or progress in terms of sustainability. The framework breaks down common topics such as emissions accounting, setting decarbonisation targets, sustainability strategies, ESG reporting and circular economy to make sure each topic is clear and digestible. In addition, it provides guidance on how to start making an impact across these topics.

The framework includes 'how-to guides', toolkits and case studies to help suppliers apply it in their contexts.

The ABHI report includes:

- The framework of suggested actions for ABHI members set across a timeline.
- Consolidated research outcomes on sustainability themes that underpin and influence the HealthTech industry in the UK.
- Insight into ABHI members, specifically, their environmental maturity, drivers and requirements

Key guidance and tools to support the suggested actions covers the following topics:

- NHS supplier environmental requirements
- Consistency across Healthcare Systems across the UK and further afield
- Sustainability strategy development
- Circularity principles in HealthTech

www.abhi.org.uk/what-we-do/sustainability/sustainability-framework/

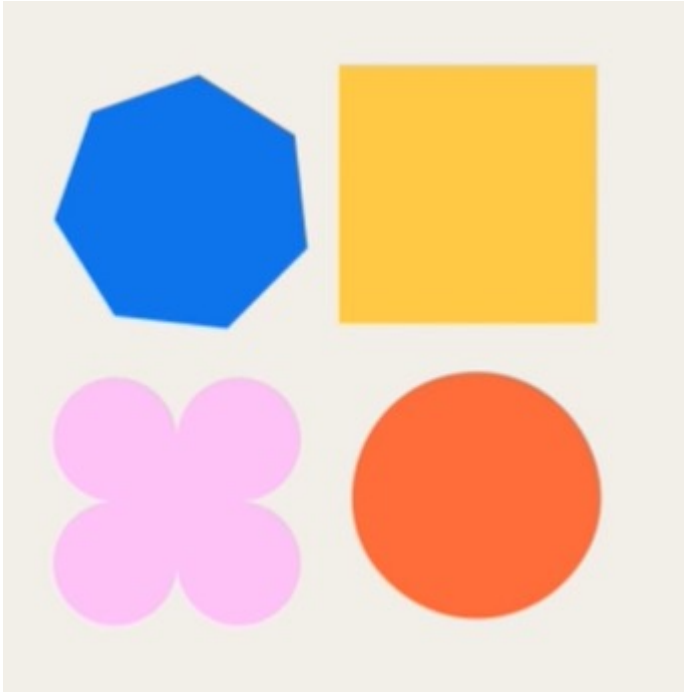
Doctor Unsplash

4.4c Provide supplier sustainability support

Screen New Deal Transformation Plan

Implementation timeline

Action	Description	Implementation timeline	Stakeholder
Engage with supplier community	Conduct a stakeholder engagement exercise to map the supplier community and understand their sustainability maturity and objectives. Create supplier typology (e.g. SME, Small Welsh Supplier, Large Welsh Supplier, National Supplier etc) to tailor guidance based on specific needs of each type.	Now	• Industry-wide • Technical specialist • Suppliers
Develop framework for supplier sustainability guidance	Define the guidance suppliers need to improve their environmental sustainability plans. Create guidance that describes processes step-by-step. Include 'how-to's' and toolkits that suppliers can lift and use independently. Describe how suppliers can create, gather and report data on their environmental performance that can then be used in sector wide Scope 3 emissions accounting.	Now	• Industry-wide • Technical specialist • Suppliers
Publish guidance framework to industry	Publish the framework across the supplier community. Support suppliers, particularly engaged enthusiastic ones, to start working with the framework.	Now	• Industry-wide • Suppliers



Screen New Deal
Transformation
Plan

5. Re-imagining the film and HETV industry

5.1 Re-imagining the film and HETV industry

Screen New Deal Transformation Plan

In addition to the core recommendations made within this routemap, broader change within the film and HETV industry in Wales is required to overcome the challenges and barriers presented on slide 19 and to achieve the required emissions reductions by 2030. Recognising that there is no 'one-size-fits-all' solution is key; the responsibility for achieving change lies with everyone to work towards a sustainable future. Six underlying changes must be made now within the industry:

1. Creating carbon budgets at commissioning / greenlighting level should be mandatory and be implemented immediately. Productions must produce carbon budgets as soon as they are commissioned to make team members aware of the impact of their work and the need to implement change. Additionally, tracking progress throughout production can allow more impactful solutions to be implemented over time if targets are not being met. This could be supported by the provision of a template which productions can tailor to their needs.

2. All team members (cast and crew) must recognise and take responsibility for implementing and promoting sustainable practices in studios and during productions. Making it known that it is the responsibility of everyone, whilst also equipping people with the knowledge and skills required to implement change, will be key first steps in encouraging change.

3. New sustainability roles must be defined at all levels. To ensure accountability, dedicated sustainability professionals should be defined within production teams. These individuals will implement appropriate measures and track progress. These roles should not just be held by runners; sustainability managers are required to ensure behaviour change can be achieved at all levels. To achieve this, dedicated funding is required to ensure new roles are established in all production teams. Furthermore, appropriate training, such as ScreenSkills and albert's Introduction to Sustainability in the Screen Industry, should be recommended. Other relevant training should also be sought.

4. Talent must be encouraged to embrace change. Leading cast members can have a large impact on the implementation of sustainability initiatives. Setting standards within the industry to require that sustainability is considered during travel and filming, for example, could have large benefits. Albert's Green Rider or the Equity Green Rider agreement should be mandated on all productions to encourage this change. This is an agreement that encourages artists to be ambitious and creative in their demands for a better future and empowers artists to negotiate for better practices.

5. The role and influence of creatives should be promoted and used for good. Creative teams and individuals have significant influence over productions, from the materials that are used on set, to costume and location requirements. Requiring that these production team members consider sustainability could have a huge influence on key outcomes. This could begin with the inclusion of green storylines within scripts as a way of raising awareness about sustainability issues. The Rocky Mountain Institute and the Green Production Guide have developed a guide[1] detailing how to integrate clean energy ideas and themes into on-screen content. Developing characters, storylines and visual imagery that more accurately represent clean energy and their audiences make this concept more relatable and spoken about[1]. Encouraging this to become the new norm may make sustainable practices more widely accepted.

6. Develop an industry-wide (film and HETV) sustainability standard over time that productions can adopt and implement. Having an industry-wide policy will demonstrate that the film and HETV industry is serious about tackling these challenges. This may attract more funding and opportunities for change and could influence other creative industries to do the same. Financial penalties or consequences could be developed for inaction.

5.2 Stakeholder roles

Screen New Deal Transformation Plan

The film and HETV industry contains a considerable number of stakeholders across different levels and parts of the industry. The changes proposed in this routemap will require everyone to act. Key stakeholders and their roles are detailed below.

Studio managers – As decision-makers for studios, studio managers should mandate productions to adopt sustainable measures to film at their studio. They should facilitate sustainable transportation opportunities, waste reduction and use of renewable energy. They should collaborate with sustainable, locally-based (where possible) vendors, educate the production team on sustainability measures and promote efficient resource use. Studio managers should hire an on-site environmental / sustainability champion to promote the studio's sustainability initiatives during productions. Studio managers should develop their own, site-specific sustainability requirements that productions must adhere to whilst filming.

Production managers – As key decision-makers for productions, production managers should ensure that studio sustainability requirements are met, which may require integrating sustainability measures through every aspect of a production. They can promote key measures including the use of sustainable (or reduced) transport, reducing waste, introducing renewable energy and energy efficient equipment. Production managers should employ a team of sustainability champions to ensure key measures are being implemented throughout the production by all team members (from runners to cast).

Production team / crew – Production teams have the responsibility of implementing the sustainability measures defined by the studio / production manager.

Cast – Members of the cast should be made aware of studio and production sustainability targets and requirements and promote the Equity Green Rider. They should actively avoid unsustainable practices where possible.

Broadcasters – To encourage the implementation of sustainable practices, broadcasters could impose sustainability requirements and financial incentives for implementing sustainable measures. Fines could be imposed for those who do not adhere to the requirements.

Industry bodies – Industry bodies should support, through the provision of tools and information, the education of key stakeholders in relation to sustainability targets and requirements. In the future, industry bodies should require that studios and productions share sustainability targets with them to allow spot-checks / audits to be undertaken to ensure appropriate measures are being adopted.

Commissioners and funding bodies – Commissioners and funding bodies are responsible for funding and overseeing the development of film and HETV productions. They should prioritise projects that promote sustainability, introduce sustainability criteria for their funding to encourage relevant actions to be prioritised, and require that appropriate reporting is undertaken to reflect these requirements. Additionally, when sustainability measures are incorporated as a pre-condition, funding could be affected where sustainability targets are not met. Ffilm Cymru Wales now mandates that sustainability plans are prepared for feature films and offers additional finance to cover the cost of an environmental coordinator. Initiatives such as this could be invaluable for supporting change in the industry.

Training providers – Key training providers can ensure that appropriate courses and training are made available throughout the industry. These need to be applicable to the range of relevant roles within the industry.

Heads of department – Heads of department within a production are key decision-makers in relation to working approaches and the selection of service providers. They have a key role to play in selecting and engaging appropriate, sustainable alternatives.

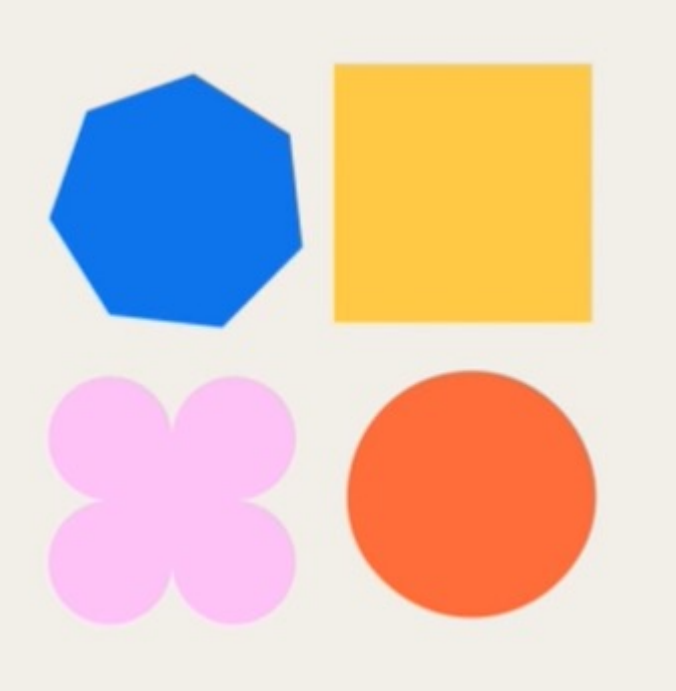
5.3 Monitoring

Several core recommendations and appropriate implementation plans are detailed in the following sections. All the recommendations within this routemap will require monitoring and improvements to data capture to ensure they are effective, are targeting the right areas, and that progress is being made.

Monitoring the impact of these interventions will also allow the film and HETV industry in Wales to lead by example, producing case studies that show how it can be done. A robust monitoring system will be required, which incorporates key performance indicators (KPIs) for the industry that are relevant to waste reduction, emissions reduction and energy consumption, for example.

To understand the impact over time, setting a baseline will be required. In line with Theme 4 (information creation and dissemination), studios, productions and key stakeholders should collate relevant information to understand the state of the industry today. Regular analysis of datasets should be undertaken to allow progress, or otherwise, to be identified.

In addition to quantitative monitoring, a qualitative analysis, including interviews, should be undertaken with industry professionals, production crews and other stakeholders. This will allow for a broader assessment of the implementation. The appropriateness and ease of implementation of specific interventions will help unlock action on the right solution for the right situation.

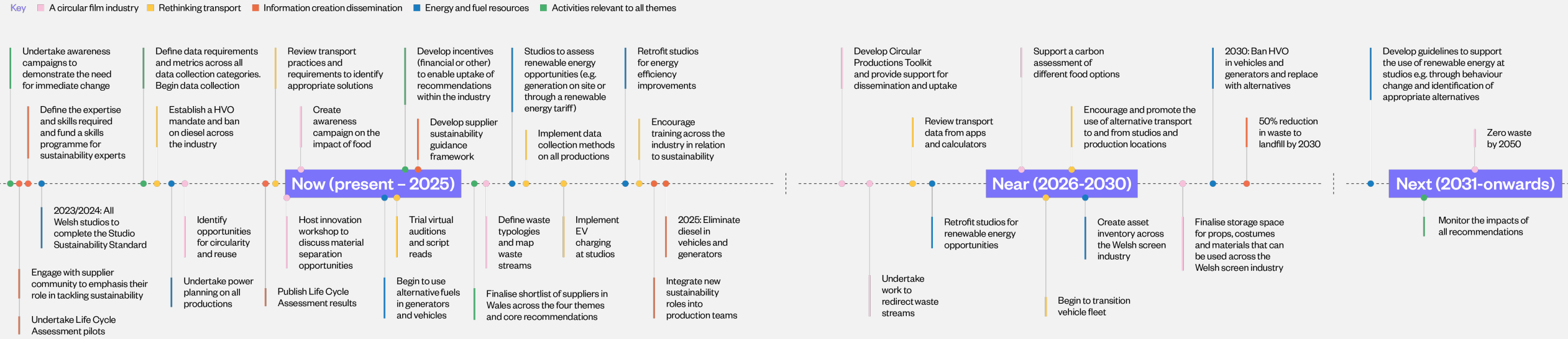


6. Recommendations routemap

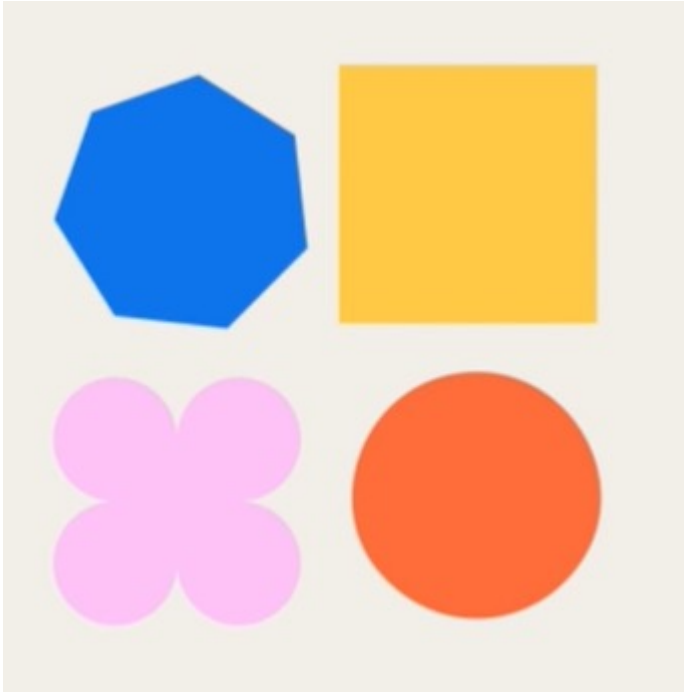
Recommendations routemap

Screen New Deal Transformation Plan

This routemap has been developed to bring together the actions and targets identified within the transformation plan. The key actions are colour-coded by theme and are placed on a timeline to 2031 and beyond. Some actions relate to multiple themes. Key stakeholders are listed in the implementation actions within this report.



ARUP BAFTA ALBERT BFI THE NATIONAL LOTTERY Cymru Greadigol Creative Wales media cymru ffilm CYMRU WALES



7. Appendices

Appendix 1: Phase 3: Next steps

Screen New Deal Transformation Plan

Phase 3 has not been undertaken as part of this work. It will commence following the delivery of this transformation plan. This work will include the following:

- albert will work closely with stakeholders to roll-out the transformation plan for the cluster as scoped out in phase 1 and 2.
- The cluster forum, supported by albert / BFI, needs to stay convened in successive years to ensure the roll-out of the transformation plan as scoped out in Phase 1 and 2.
- Cluster to continue to collect data to track progress on an annual basis until target of zero carbon, zero waste is met

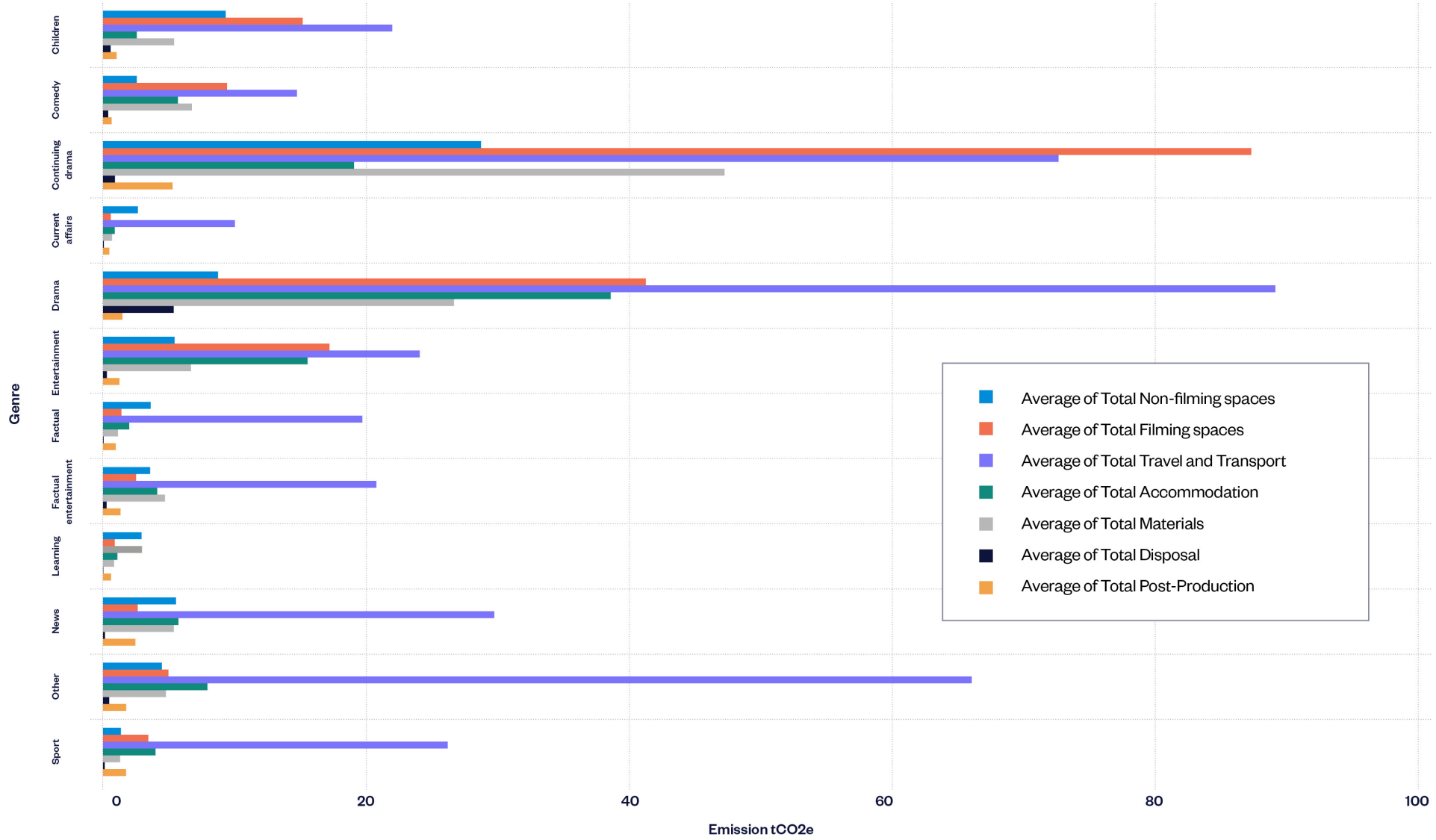
To achieve this, the following steps will be taken:

- Deploy transformation plan routemap through creating new film and HETV forums in the cluster, consisting of all stakeholders
- Continual analysis, review and improvement will be required by all stakeholders.

Appendix 2: Supplementary data

Screen New Deal Transformation Plan

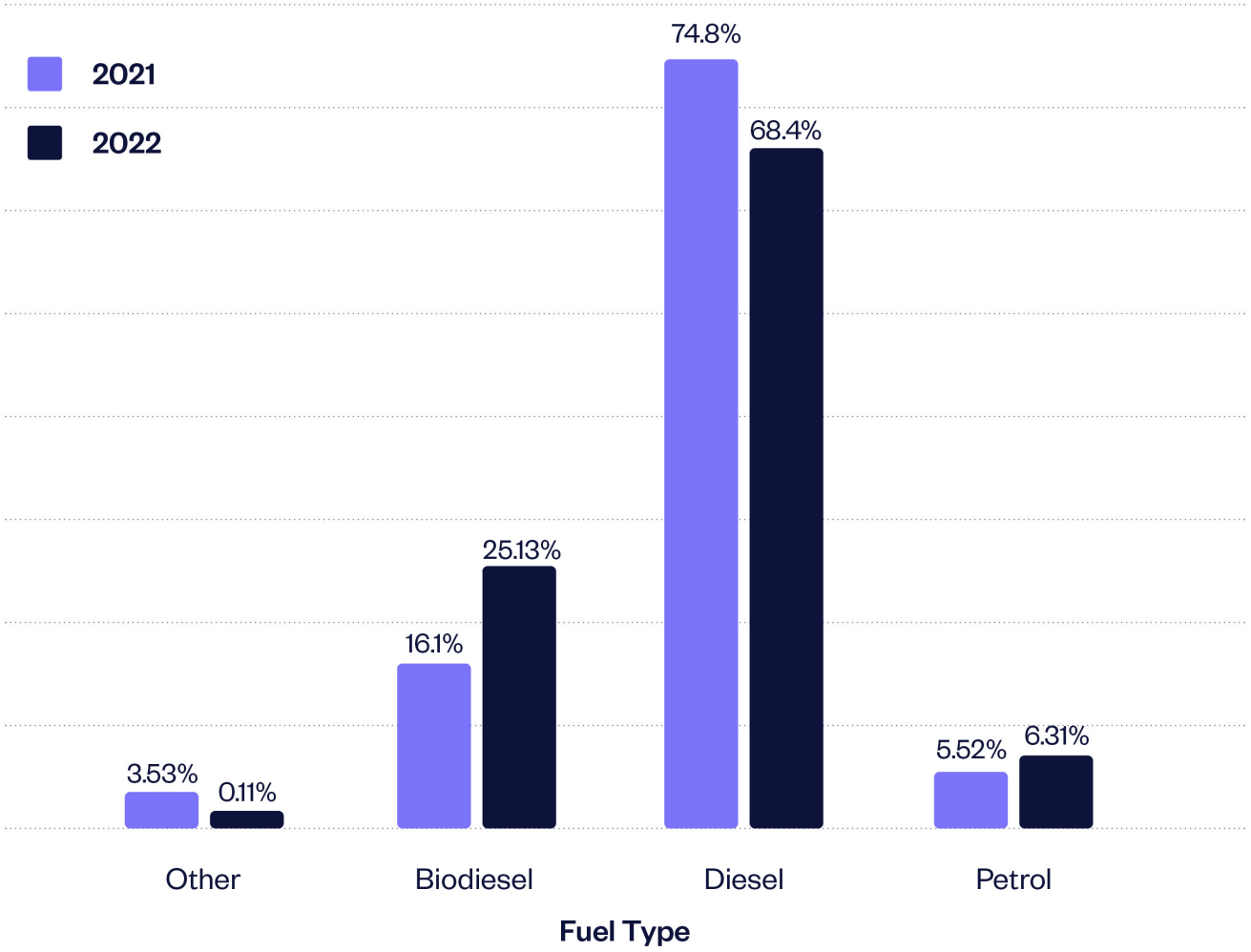
Average carbon emissions by genre across all UK productions (including film and HETV) analysing data from 2,546 productions (Source: albert footprint data 2022)



Appendix 2: Supplementary data

Screen New Deal Transformation Plan

Production energy fuel types (Source: albert footprint data 2022)



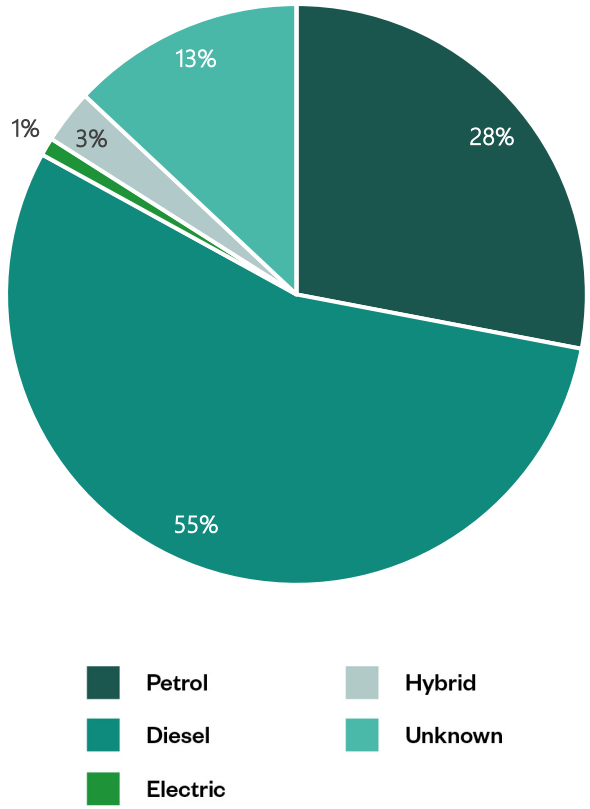
Biodiesel includes HVO. Other includes LPG, hydrogen, bioethanol.

Appendix 2: Supplementary data

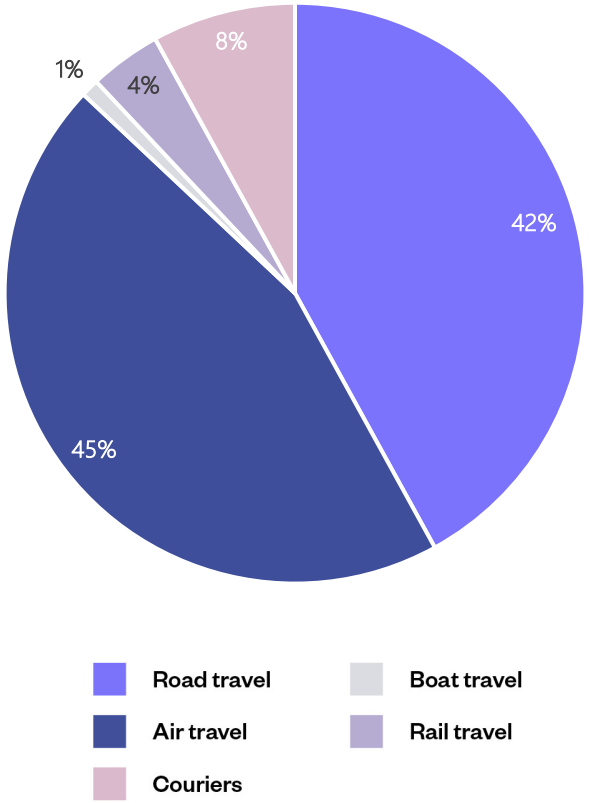
Screen New Deal Transformation Plan

Production transport carbon emissions across all UK productions (including film and HETV) analysing data from 2,546 productions (Source: albert footprint data 2022)

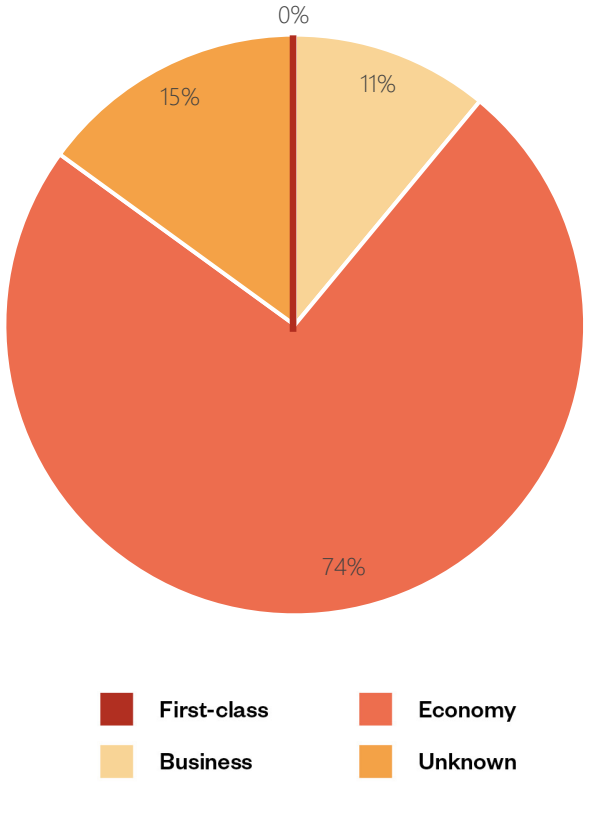
Emissions breakdown by vehicle fuel types



Emissions breakdown by transport type

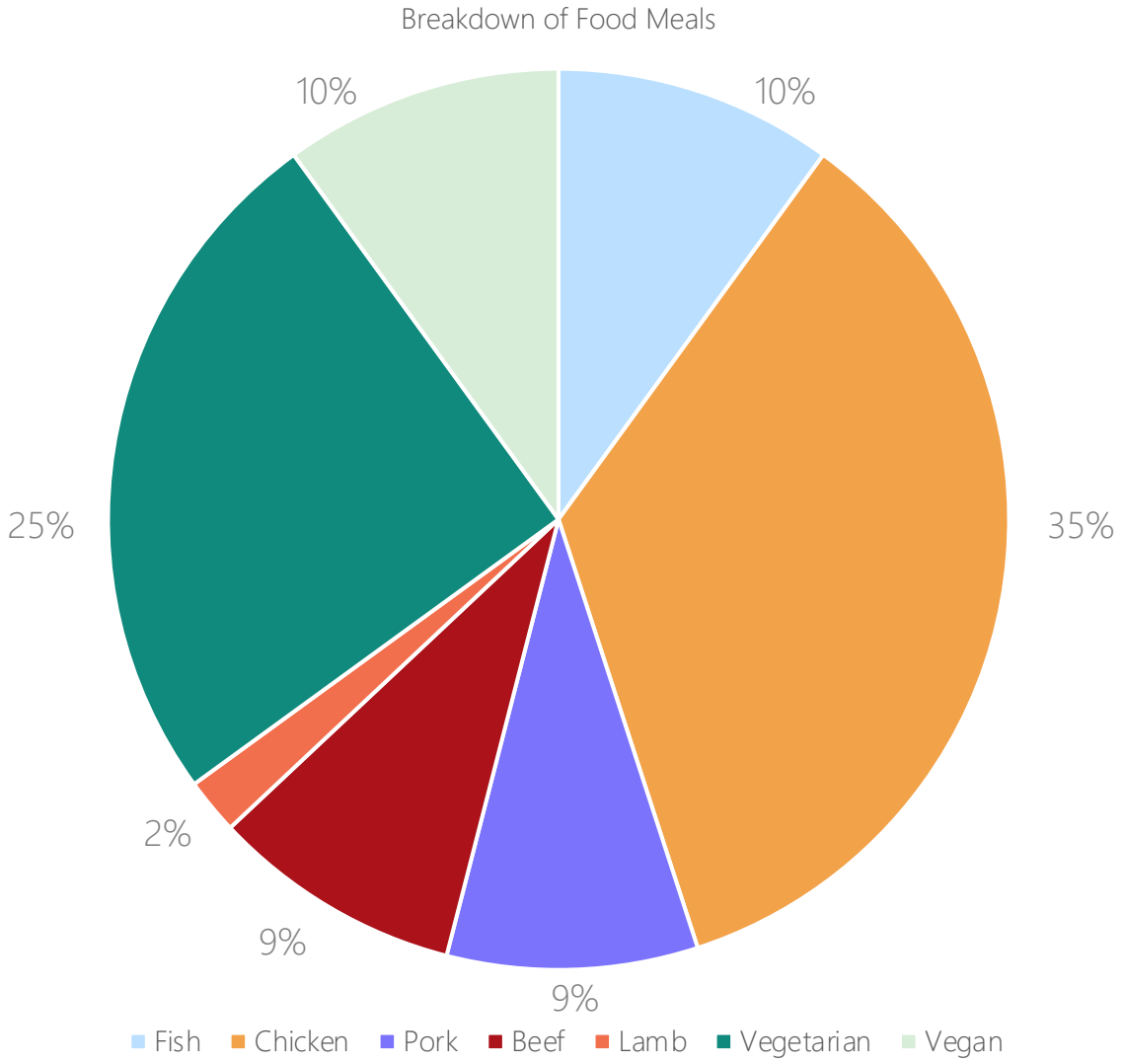


Emissions by flight class



Appendix 2: Supplementary data

Production food choices across all UK productions (including film and HETV) analysing data from 2,546 productions (Source: albert footprint data 2022)



Appendix 3: Stakeholder engagement

Screen New Deal Transformation Plan

Stakeholder engagement

We would like to thank the following individuals who were consulted during the production of this routemap:

- Kate Amos, Plus Zero Hydrogen
- Bill Anderson, FERA, Federation of European Screen Directors
- Dom Aronin, E-Vis
- Charlotte Ashby, Carnival Films
- Tilly Ashton, Sustainability Manager, Several Productions
- Jamie Ashton, Business Analytics and Data Consultant
- Adam Barker, Green Voltage
- Angela Ballesteros, Sustainability, Sony Pictures Studios Entertainment
- Yosien Burke, Sustainable Business Development, CAMA
- Christopher Buxton, Director
- Florian Cassel-Delavois, Line Producer, Lost Boys & Fairies
- Mandy Cayford, Responsible Production Lead, Sky Studios
- Linzi Chellew, ADF Facilities
- Sion Clwyd Roberts, Commercial Director, Aria Film Studios
- Jeff Colins, Great Point Seren Studios
- Stephen Corcoran, Nifty Bins
- Mike Dando, Anton Bauer
- Dr James Davies, Research Fellow, Media Cymru, University of South Wales
- Rebecca Davies, Studio Manager, Urban Myth Studios
- Suzanne Dolan, BBC Studios
- Allison Dowzell, Screen Alliance Wales
- David Dyce, Vegware
- Equity for a Green New Deal
- Geoff Fawkes, Business Development Director, Sunbelt Rentals Ltd
- Chris Gilmour, Vectar Sets
- Jacob Gough, Exec Director, GALWAD
- Crispin Hardy, Location One
- Nida Harwood, Green Wing App, Little Bird Films
- Henry Hazell, GD Environmental
- Andrew Hearne, Dragon Fire & Water Services
- Tom Henderson, Vectar Sets
- Phil Holdgate, ITV
- Heulwen Hudson, Circular Economy Manager, the Welsh Government
- Andrew Hutton, Anton Bauer
- Mark Irving, Plus Zero Hydrogen
- Lee Jackson, Wolf Studios
- Sue Jeffries, Managing Director, Sgil Cymru Iddon Jones, Studio Executive, Aria Film Studios
- Robert Jones, Cardiff and Vale College
- Ged Kennedy UK Sales Manager, GBF Ltd
- Jung-Min Kim, Data Analyst, albert
- Tara van de Lagemaat, Skoon Energy
- Sally Lisk-Lewis, Skills Partnership Manager, Faculty of Business and Creative Industries, Media Cymru
- Robert Long, Zenobe Energy
- Euros Lyn, Director

Appendix 3: Stakeholder engagement

Screen New Deal Transformation Plan

Stakeholder engagement cont.

We would like to thank the following individuals who were consulted during the production of this routemap:

- Lesley Marr, Business Development & Sustainability Director, BPS
- Carly Mckay, Location One
- Simon Michaels, Sustainability and Impacts Manager, Galwad
- Rich Moss, MD, Gorilla Post-Production
- Flemming Mouridsen, Founder, Stofl
- Dafydd Munro, Transport Decarbonisation, Dept for Economy and Infrastructure, the Welsh Government
- Matthew O'Hara, Senior Sustainable Applications Manager, Sunbelt Rentals Ltd
- Emma Peddie, BBC
- Dan Pratt, Greener Power Solutions
- Greg Provan, Cranc Cyf
- Hannah Raybould, Operations Manager, Wolf Studios
- Marc Rees, Lead Artist, GALWAD
- Ross Robertson, Technical Sales Manager, Geo Pura
- Graeme Robson, Environmental Protection Division, the Welsh Government
- Joelle Rumbelow, Production Designer, Set Decorator, Art Director co-founder of Set the Story
- James Scorey Vice Principle, Cardiff and Vale College
- Gareth Skelding, Dragon Studios
- Linda Stefanutti & Callum Speet, Olio
- Ruth Stringer, Sustainability and Impacts Manager, Galwad
- Steve Summers, Depot Manager, Power Electrics
- Ed Talfan, Severn Screen
- Sebastien Thomas, Commercial Director, TripShift
- Suzi Topp, E-Vis
- Dr Gary Walpole, Circular, Economy Innovation Communities, Swansea University
- Kate Watts, Compass Travel Management
- Emily Williams, Doing Good Catering
- Judith Winnan, Head of NFTS Cymru Wales
- Individuals from Wolf Studios (Production Coordinator, Production Design Team, Costume Design, Operations)
- 4wood team members

Appendix 4: Production and supplier surveys

Screen New Deal Transformation Plan

Production and supplier surveys
The surveys shared as part of this work are linked below.

Suppliers
https://forms.office.com/r/p2bh7EFvzi

Productions
https://forms.office.com/r/29CMmMiteJ

Appendix 5: Sustainability priorities

Screen New Deal Transformation Plan

Creative Wales Sustainability Priorities

Creative Wales is prioritising the development of a content production sector by:

1. Creating opportunities for people in the industry by supporting skills and talent initiatives
2. Funding projects that boost infrastructure and creative businesses
3. Providing specialist advice and actively promoting sustainability, diversity and equality for all across the creative sectors.

Funding is targeted at companies that are implementing the latest practices in sustainable production and have the well-being of cast, crew and employees at the forefront (whether freelancer, contractors or permanent).

Economic Contracts are agreed with businesses and organisations that the Welsh Government works with and supports, reflecting our Programme for Government priorities and the vision for Wales set out in the Well-being of Future Generations Act.

Businesses applying for funding are asked to make long-term commitments in economic strength and adaptability, fair work and the promotion of well-being plus low-carbon and climate resilience.

Ffilm Cymru Wales Sustainability Priorities

Ffilm Cymru Wales is dedicated to advancing a sustainable film sector which is inclusive, innovative and green. Informed by the Well-being of Future Generations framework, our forthcoming strategic plan for 2024-2030 shines spotlights on six pillars of sustainability: equality, creativity, skills, entrepreneurialism, well-being and green.

Our Green Cymru programme looks to support a film sector in Wales that is not only better equipped to combat emerging challenges from climate change and other environmental issues but also continues to grow sustainably. We will achieve this with funding, training, research and development to discover new ways of working sustainably in Wales' screen industry.

Our initiatives are delivered through the programme's four identified activity strands:

- Research: To understand the current situation and barriers in the film industry in Wales and gather a true measure of its environmental impact to make change
- Innovation and collaboration: To deliver research, development and innovation solutions to green challenges, whilst also engaging and collaborating with individuals, organisations and networks
- Support: To support the Welsh film/screen industry and promote existing training, tools and initiatives that will help all to be more sustainable
- Improve: To improve our organisation's environmental performance and encourage others to as well

Read more here:
https://ffilmcymruwales.com/funding-and-training/environmental-policy

Appendix 5: Sustainability priorities

Screen New Deal Transformation Plan

Media Cymru Sustainability priorities

Media Cymru's vision is to make Wales a green, fair and economically sustainable hub for media production and innovation, where research and development (R&D) is embedded into the thriving media sector.

One of our goals is to significantly reduce the negative environmental impact of the media sector and to help Wales become a leader in green media production. We aim to spur innovative ideas, products and services for greenhouse gas emission reduction, positive environmental impact and resilience for climate change.

Media Cymru will:

- Fund and enable the R&D of innovative solutions which aim to achieve net zero emissions and protect our environment. We will support projects which have environmentally sustainable objectives and outcomes via the Innovation Pipeline, and, with Ffilm Cymru Wales, deliver the Greening the Screen challenge-driven innovation fund to encourage the development of innovative green products and services.
- Fund and enable the R&D necessary to develop the kind of innovative storytelling which can inform people about the climate crisis and influence behaviour change towards a sustainable future.
- Collaborate with other organisations, businesses and individuals to create a cross sector 'green' focused media community in the Cardiff Capital Region, to develop and inspire partnerships founded on environmental sustainability.

We will:

- Continue to work with BAFTA albert and Creative Wales on the Screen New Deal: Wales Transformation Plan, whose findings will inform our RD&I strategy and approach, with a view to real world, measurable reductions in the sector's carbon footprint.
- Encourage and enable an innovative ecosystem of sustainability within the media sector, during and beyond the course of Media Cymru.
- Share new knowledge and conduct research and evaluation to underpin all green activity within Media Cymru.
- Expand on the learnings from the Clwstwr programme, funded projects and the Green Cymru Challenge Fund

Appendix 6: Transport sustainability

Screen New Deal Transformation Plan

Ffilm Cymru Wales
Transport in South Wales screen sector

Ffilm Cymru Wales has been delivering the Foot in the Door film and TV skills development programme since 2017. The core objective of the Foot in the Door approach is to work with communities and existing organisations in a longitudinal and sustainable way to increase access to film and training careers in Wales.

One of the biggest barriers to sustaining work across the six-year period has been ensuring that there is career progression for new entrants, and that they are positioned to feasibly travel to locations, studios and sets across Wales to avail of work opportunities. Whilst travel bursaries are important, they act as a short-term solution to deep-rooted structural, socio economic and environmental challenges in Wales, which speaks to poor infrastructure and a lack of focus on new entrant needs at a production level.

As part of their UK Community Renewal Fund (UKCRF) Foot in the Door project in Newport in 2022, University of South Wales was commissioned to conduct a feasibility study that focused on transport in South Wales screen sector (Davies JR, 2023). This important work sits at the intersection of challenges around environmental sustainability and workforce and skills development in Wales, as well as the well-being and mental health of sector workers. The report highlights that:

'Sustainability is often only related to environmental impact, and very little attention is given to how the sector can be sustainable not only from an environmental standpoint, but also from a socio-cultural and economic one'.

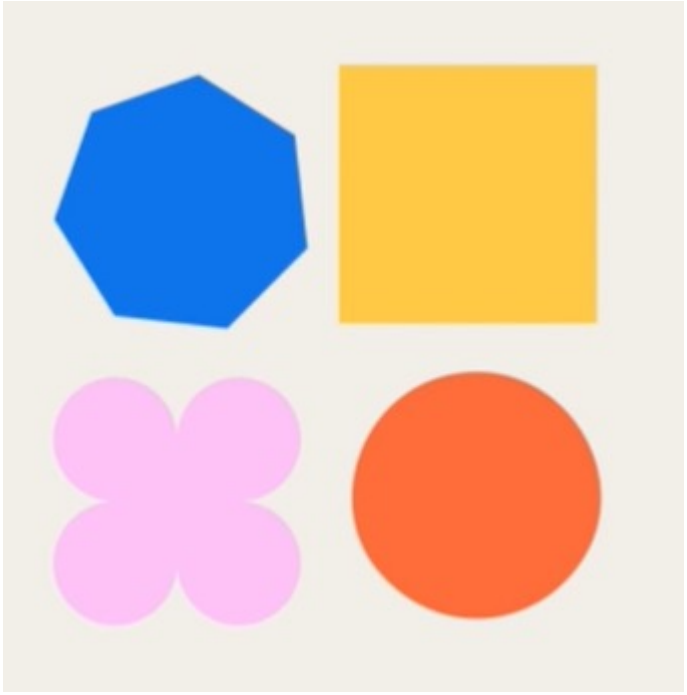
In Wales, we have the ground-breaking Well-being of Future Generations (Wales) 2015 Act, which gives us the ambition, permission and legal obligation to improve our social, cultural, environmental and economic well-being. Progress is measured across seven well-being goals and five ways of working.

The *Transport in South Wales screen sector* report (publication Autumn 2023) drew data from a range of perspectives, including trainees, Transport for Wales, studios, producers, heads of department and transport leads on film sets. The report demonstrates that:

'Transport is a massive sustainability problem area, as transport is 50% of a production's carbon footprint. Increasingly, sustainability coordinators are being employed on major HETV productions, responsible for mapping the entire carbon footprint of a production, including mapping all the data of anything bought and paid for. In terms of transport, this includes fuel for crew and cast, and for any crew who don't drive, any logged taxi miles also go into the carbon footprint. To keep a production's carbon footprint down, a move towards public transport infrastructure would help massively.'

This important report finds that lack of transport is a socio-economic barrier and a well-being issue. Acknowledging and addressing that is now critical. It finds that:

- Mobility is a 'social resource' that is unequally distributed, it allows some to thrive and others to flounder. An acknowledgement of this as a socio-economic barrier, and that a reliance on driving is a form of social exclusion, is essential.
- *"It's an issue that needs a lot of work, for many reasons, for logistical reasons, but also for the mental health of anyone working in film and TV industry that has value."* Darren, Trainee



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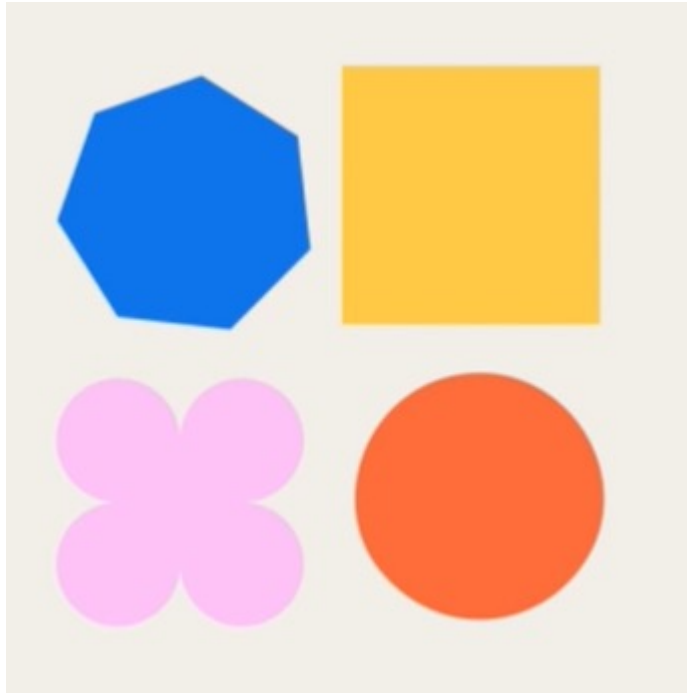

Screen New Deal: Transformation Plan for Wales

ARUP BAFTA ALBERT BFI THE NATIONAL LOTTERY Cymru Greadigol Creative Wales media cymru ffilm CYMRU WALES