



Carbon Tax Conference Summary 2022

Bournemouth University

Thursday 9th June 2022

Dr. Tahani | | Dr. Festus | | Mr. Brooksby

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Primary Objectives

- To conduct research and primary data on select focus groups (Organisations, Charities, Sustainable Households) surveying the acceptability and plausibility of a Carbon Tax.
- To communicate and build early relationships between BU and the environmental community on a local (Dorset) level for future collaborative efforts against the Climate Crisis.
- To educate and drive broader environmental thinking through a variety of esteemed presentations with varying academic opinions and data sources.

Event Summary

Recent agreements following Cop26 have opened up several avenues for environmental research. Offsetting the Climate Crisis through fiscal policy such as a Carbon Tax may be a viable approach; however such policies can only be achieved successfully when considering the impact on all enterprises involved.

In continuing this Research on a local level [Dorset], relationships can be built between SME's, the Local Council, Charities, and Research Institutions that aim to answer questions on Sustainability, Consumption, Production, etc. and to direct forward-thinking climate action on a regional scale.

Additionally, in aiming to communicate and work alongside Households/Individuals, this Event aimed to highlight the challenges these households face within a Cost of Living Crisis, heavily induced by the rising prices of emission heavy Oil and Gas. Furthermore, the following research will be somewhat focused on Inequality in the UK, propagated by the Climate and Cost of Living Crises, and what leaders on a local and national scale can do to mitigate short and long-term difficulties.

Host Contacts

Host: Tmohamed@bournemouth.ac.uk (Dr. Tahani Mohamed –Lecturer at the Department of Accounting, Finance and Economics)

Host: fadedoyin@bournemouth.ac.uk (Dr. Festus Adedoyin – Lecturer at the Department of Technology and informatics)

Host: s5205209@bournemouth.ac.uk (Thomas Brooksby - Research Assistant/Writer)

Guest Speakers

Dr Alan Kirkpatrick - Professor
Eleanor Wills – BU Sustainability
Tanya Bellows – Food Champion & Researcher
Mrs. & Mr. West – Word Forest Charity
Dr. Martin Rodger – Climate Activist
Robert Pearce – Dorset Equality Group Representative

Student Volunteers

Moyo Adebayo
Ogochukwu Ijezie
Hobby Simuchile
Lawrence Damilare Oyeniyi

“Climate Crisis and Environmental Impact”

Presented by Dr. Festus Adedoyin

Outline: Festus utilised existing empirical data and literature to great effect, expressing that calls for Carbon Regulation are motivated by urbanisation, globalisation, and the rise in global consumption.

Solutions

- *Households* can change their consumption patterns, recycling and reusing, slowing down fast fashion and unnecessary purchases, and purchase of sustainable goods and tech (electric cars).
- *Companies* can slow deforestation, reduce production levels, use materials and technology that is recyclable and dispose of waste carefully.
- *Governments* regulate and change behaviour through policy (Subsidy and Tax), punishments and fines for circumventing environmental laws.
- *Charities* can raise awareness and funds, direct public behaviour, and encourage governmental change.

Energy Tax Revenue is forecasted to be incredibly high even with a relatively small marginal tax rate. The Revenue from a Carbon Tax must therefore be spent carefully... Should it be spent within the same industry? Should it be spent to shield households from the tax incidence that falls upon consumers? Should Governments be held accountable for where/how efficiently they spend Carbon Tax Revenue?

Government has a responsibility to change behaviour and to set in place regulation and laws, however how effective is a Carbon Tax in policy to encourage a change in behaviour? What form should Energy Taxes take? The Inelasticity of Demand means that a Carbon Tax may not change behaviour and may only be a form of revenue generation – driving prices up and inflating the cost of energy further to the detriment of Consumer and Producer Welfare.

Energy Tax was found in empirical study to have a small aggregate impact across all countries in reducing environmental emissions (to 99% confidence level) however this data would require more careful examination as separating countries where the impact is much greater, such as in Nordic countries, would show a far differing result. It can be concluded however that globally it would still be significantly effective and would not have an adverse effect.

Model

- The Carbon Function for the empirical analysis is specified as:

$$CO_2 = RGDP, EU, ET, TaxD, EU * TaxD \quad (1)$$

Variables

- CO_2 = Carbon emission
- $RGDP$ = Real GDP per capita
- EU = Energy use
- ET = Energy tax
- $TaxD$ = Energy tax dummy, and
- $EU * TaxD$ = interaction between the energy use and energy tax dummy.
- Data is made up of 27 EU countries (without the UK) covering 1995 to 2019

Estimation Results

VARIABLES	Model without energy tax	Full Model	Model without energy tax	Full Model
	Pooled OLS Model		Fixed Effect Model	
Log Real GDP	0.883*** (0.0230)	1.193*** (0.0671)	0.0458 (0.111)	0.214* (0.114)
Log (Energy Use)	-0.516*** (0.0550)	-0.460*** (0.0542)	0.981*** (0.117)	0.954*** (0.108)
Log (Energy Tax)		-0.324*** (0.0658)		-0.0977*** (0.0336)
Log (Energy Tax Dummy)	0.520*** (0.112)	0.517*** (0.0943)	0.0443* (0.0219)	0.0363** (0.0164)
Log (Energy Use * Tax Dummy)		0.0658 (0.0594)		
Constant	10.45*** (0.426)	10.72*** (0.414)	2.861*** (0.920)	2.913*** (0.874)
Observations	529	529	529	529
R-squared	0.868	0.873	0.722	0.757

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

“Carbon Tax Regressivity and Income Inequality”

Presented by Dr. Tahani Mohamed



Outline: Despite being viewed as an efficient mechanism for CO2 reduction, Carbon Tax is broadly unpopular and has a negative impact on households due to the incidence of the Tax on the producer being mostly offset onto the consumer (Inelasticity of Demand for Electricity/Heating). A supportive study (*Andersson and Atkinson, 2020*) found that in countries experiencing increasing levels of inequality the implementation of a Carbon Tax was deemed more **regressive** due to the tax impacting necessities which only those on lower incomes would struggle to afford if increasingly priced. Opposingly, the carbon tax on luxury good was more **progressive** due to this rising inequality, suggesting a “double-edged sword” of policy impact between wealthier and poorer households.

Necessity or Luxury?

- *Transport Emissions:* Necessity in higher income countries whilst opposite can be said in lower income countries.
- *Electricity and Heating:* Necessity in higher income countries and somewhat proportional in lower income countries.
- *Food:* Products including Red Meat are highly carbon intensive however food as a whole is undoubtable a necessity. Red Meat however is still considered a luxury in most countries therefore households should look to alternatives to reduce their carbon footprint... Taxing Red Meat may therefore be a possible solution.

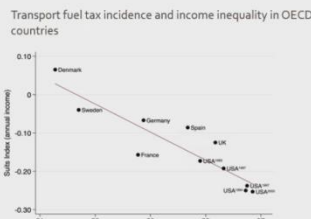
It is concluded that the “type” of good that is taxed is highly important in regards to what it is categorised as and whether there are suitable alternatives that households might choose. The level of income inequality also affects the impact of a Carbon Tax, and reducing inequality may lead to increase acceptability of the policy.

Context April 2022: Ofgem’s Tariff Cap increased by 54% or £700 a year for average households. This figure is expected to increase by another £800 by October. This increase disproportionately impacts lower income households spending a greater proportion of income on energy and possibly lacking the disposable income to afford record levels of inflation. Average CPI inflation rates are predicted to be more like 14% for the poorest UK households compared to 8% for the wealthiest.





Empirical Evidence Across High-Income Countries

- The higher the level of **inequality**, the more **regressive** are transport fuel taxes.



Source: Andersson and Atkinson (2020)




The determinants of the carbon taxes incidence

The variation in the carbon tax burden across countries and time can be determined by **two variables**:

1. The level of income inequality and;
2. The income elasticity of demand for the taxed goods (Andersson and Atkinson, 2020).

The study finds that rising inequality increases the regressivity of a carbon tax on necessities.

Similarly, rising inequality increases the progressivity of a carbon tax on luxuries.



Source: Pictures: iStockphoto, Pictures: iStockphoto

“BU Sustainability and Future Collaborative Projects”

Presented by Eleanor Wills

Outline: Operational and Academic harmony as a core component of BU Sustainability, having a combination between what lecturers teach to the next generation and the University practising what it preaches. BU sees itself as a catalyst for sustainability, able to unite and host environmental reform and development with the local and regional communities.

BU STATISTICS

- 1st in the UK for SDG13: Climate Action (15th in the world)
- 4th in the world for SDG12: Responsible Consumption & Production
- Total emissions reduced by 53% since 2005 till present.
- 88% of BU Programs align with 1 or more UN SDG's whilst 64% of BU programmes address the climate or ecological crisis.
- [CARBON TAX] BU exceeded target minimum of Carbon so are offsetting this with a Carbon Pricing of £19.96/tonne and re-investing that into research projects and local sustainability... Self-taxing the University for exceeding emissions goals.

Campus Features

- 2000 Solar Panels
- Solar Thermal
- Biomass Boiler
- Rainwater Harvesting
- Fairtrade
- Ground Source Heat Pumps
- CAST [Climate Action Student Team] + Sustainability Challenge + SUBU Involvement



BU CECAP has 5 themes to reach a “Net Zero” as soon as feasibly possible. **Leading by example** allows governance to mitigate and adapt to crises as well as encourage local change. **Rapid Emissions reduction** and **Ecosystem appreciation** are necessary to replace energy consumption with carbon neutral alternatives and to protect nature/ecosystems existing around Bournemouth and Poole. **Academic opportunities** and **Community Action** marry the ideals of university students and staff with the local community that new creative and collaborative solutions can be found to improve sustainability and reach Net Zero. BU Aims to be at Net Zero in Direct, Indirect, and Secondary Indirect carbon production, such as understanding transport costs and environmental damages from firms that supply the university.

In a fuel crisis, BU are deciding presently (June 2022) whether to invest in renewable technology on site or to purchase renewable energy from a supplier; which is more cost effective short/long term VS the cost of living crisis affecting fuel imports for the University?

Ways forward

- Heat decarbonisation
- Embed Curriculum
- Renewable technology installation
- Business Travel and Shipping

- More Collaborative projects beyond work already with University Hospitals Dorset and the Nature Health Network. Ambition to work further with the BCP/Dorset Council for regional policy.

“Sustainable Agriculture and Regulatory Failings”

Presented by Tanya Bellows

[Background on Presenter] – Tanya has been a climate activist and enthusiast for many years, working alongside SUBU as a Food Champion for the Reducetarian Society as well as a leading member of the CAST [Climate Action Student Team] as she graduated from BU in Environmental Science. Tanya is a certified Carbon Literate Researcher and has worked with the Southampton council on regional sustainability projects.

Agricultural Challenges/Data: 50% of habitable land is used for agriculture and 77% of this ½ is used for livestock. Livestock only contributes to 18% of global calories and 37% of protein, bringing forward a question as to its inefficiency as a food source. It is suggested that 2 football fields of an average American diet feed 1 person a year adverse to the same sized land feeding 14 people a year on a plant-based diet. 50% of global grain is fed to livestock, that grain alone able to feed 3.5 billion people which overwhelms the statistic of 800 million in conditions of starvation worldwide. The data clearly shows a need for agricultural reform and within this problem is the environmental cost of **Red Meat** in particular: Beans produce the same protein as Beef but 46% less GHG's to bring to the supermarket.

Supportive environmental reports such as those from the IPCC and the UN encourage the reduction of livestock favouring a plant-based farming style to suit a growing global population facing ecological destruction due to agricultural/farming damages.

Agricultural Independence – Is a solution that resolves food security and threats from globalisation and over-reliance on international trade. Brexit, Post Covid, and international War from key food suppliers have left the country vulnerable to supply-side shocks that could be avoided with more sustainable agriculture.

Legal limitations - Tanya exemplifies that lack of action from authoritative sources of policy, noting the UK Environmental Bill of 2021 for example as a strategy that is undefined in its time-scope and therefore lacks any and all necessary urgency particularly within ecological crisis.

Tanya proposes the following solutions to agricultural/legal environmental issues currently faced:

- 3-step strategy by Helen Harwatt from **(1)** Acknowledgement of Peak Livestock, **(2)** Worst-First Approach cutting down on the biggest offenders such as Red Meat first, **(3)** Best Available Food to prioritise the quality of the goods that the consumers receive.
- Cohesive frameworks including time-frames within policy that express urgency and requirement of action for present governments and future.
- Alternative Crops, what can be grown in this country efficiently and reasonably on the land that we have available? Does the Land need to be rejuvenated to suit different crops? Will climate change and global warming ruin certain crop yields and possible harvests within the UK?

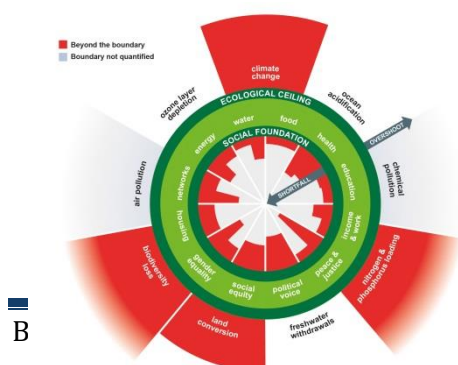


Figure 1 - Donut Economics: Illustrates the challenges of meeting societal needs within ecological limitations of planet earth. Social and economic survival is therefore dependant on the 'Ecological Ceiling'.

Since 1970 the UK has lost 60% of wildlife widely due to agriculture. UK GOV reports 14/20 UN biodiversity targets are failed to be met.

Paris agreement aims to limit warming to 1.5C globally whilst current forecasts risk 3.7C.

“The Word Forest Organisation and Tree Preservation”

Presented by Tracey West and Simon West

[Background on Presenter] – Tracey and Simon founded The Word Forest Organisation in... as a reforestation charity primarily operating in and around Kenya, linking climate action with regional enrichment and gender equality. In the UK, the charity participates in a number of fundraisers and awareness campaigns, with their primary message centred on the efficient capture of global carbon emissions.

Primary Objectives:

- A)** Preservation, conservation, and protection of the Environment and its scarce resources.
- B)** The relief of poverty and improvement of conditions in socially and economically disadvantaged regions.

#TreesAreTheKey

“Plant Trees, Build Schools, Facilitate Education, and Empower Women”

- Trees planted in the Tropics grow up to 10x faster than anywhere else on the planet, thereby incentivising the tactical placement of environmental efforts in regions of the world where they have the most impact.
- Important for charities and communities not to simply plant trees and leave them alone! Word Forest stress that large world record breaking tree plant movements from governments particularly will simply place the trees and then leave them to face ecological conditions without care and nurture. A large proportion of those planted trees will die within the year, making the entire process wasteful and simply virtue signalling. *(11 Million Trees in one day in Turkey through Government Campaign... 90% of trees died within 6 months due to lack of aftercare.)*

Word Forest deem a Carbon Tax as currently misdirected in its spending and subsidy, and that Green-Washing is a huge issue even within central government. They also believe that from the opinions of the public are that the government should step in to intervene in the current environmental/economic climate of 2022.

However, Simon accentuates that a Carbon Tax particularly on businesses should be imposed, and that regulation and legal imposition prevents non-mandatory measures being taken by businesses who will contribute only up until they are covered from media judgement.

- The **‘external carbon footprint’** needs to be understood by the consumer. Purchasing a Smartphone from Korea for example, involves factories for each piece in a globalized manufacturing process as well as the air-shipping, which are all incurred due to the demand of the consumer. A Carbon Tax may encourage a change in behaviour in this case, such as a move to plant-based diets. +Individuals GUIDE what firms are able to sell to us, and by preferring greener goods we can fix things from the source.
- Biodiversity cannot be measured as easily as carbon (which is already contentious), however visibly has been declining for centuries and must be remedied in policy rather than preaching.

Conclusively: The Humanitarian element draws in the work that environmental organisations must do, and socially/educationally empowering local communities and reinvesting in their sustainable growth is fundamental to putting in place practise that can be iterated for generations to come...

“The Mismatch of Science and Politics”

Presented by Dr. Martin Rodger

[Background on Presenter] – Dr. Martin Rodger has been working in climate action movements such as Poole Agenda 21 for thirty years, also campaigning with the Green Liberal Democrats to align the political sphere with the serious threat of climate disaster. He has closely studied and been observing the Climatology space for about twenty years since. Martin, who often goes by Al Rodger, lives very locally to the University in Wallisdown.

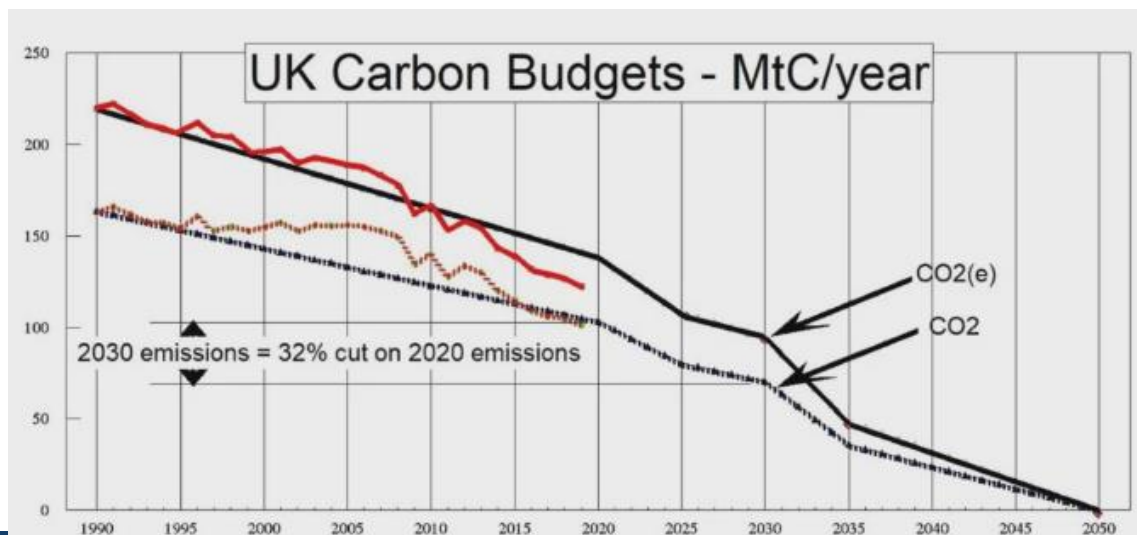
Data: From an IPCC Summary Report, Martin highlights Carbon Dioxide emissions and predicted global temperature levels between 2000 and 2050. We have a predicted **450** Giga Tonnes of remaining Co2 emissions allowances to avoid a 1.5 degree temperature rise; however we burn through about **40GT** a year. To reach targets by 2050, CO2 must be extracted from the atmosphere ‘physically’ to return to pre-2016 levels of CO2 production... This is equivalent to every forest cut down in 250 years or every bit of coal burned in the history of mankind, begging the question of if this is even possible?

-Highlights the difference between Carbon Dioxide and Co2 equivalents which must be measured differently for concise data accuracy.

-Stresses that we are currently measuring CO2 equivalents AND CO2 for our total government targets, however that when only factoring Carbon Dioxide we are infact underperforming as western economies. This additionally creates data confusion.

-Imported Woodchip is classified as renewable energy in many graphical representations; however this does not factor in the external carbon footprint from globalized trade and movement of resources.

Conclusive Message: If we cover over the science with political confusion and data that is not accurately portrayed to the British public, we will have no cross-party nor international cohesion on the correct way to tackle climate change. It is therefore prudent that data collection and more importantly data reporting is accurate and precise as best possible.



“A Message from the Dorset Equality Group”

Presented by Robert Pearce

[Background on Presenter] – The Dorset Equality Group is a local campaigning community raising awareness of inequality, promoting social justice, and pushing for policy to end poverty and poor living standards in Dorset. Politically unaligned; the group are highly concerned with the current cost-of-living crisis and its perpetuation by fossil fuel overreliance. They brought an encouraging message of a brighter society where people and planet meet together and the growing rates of inequality are halted before they reach further unprecedented heights.

Outline: Planet and People Economics combine Equity and Equality both, however on many sides it is the planet that must come first as a foundation for all functioning society.

Accelerating climate change and unpredictable seasons/weather allow for

**** Climate Tax** domestically and internationally will not fix climate disaster however may reinforce principles that **“The Polluter Pays”** regardless of industrial, commercial, or domestic; whether public or private. A Tax must also encourage behaviour; however this should be secondary only to education that encourages individuals and businesses away from Carbon in the first place.

3 Global Issues of Equality and Environment Both:

- Physical and Mental Wellbeing of the Planets People.
- Planets Health.
- Unregulated Capitalism causing economic emergency and largely propagated by environmental disaster.

Robert and the Dorset Equality Group believe strongly in the uplifting of the living wage and minimum standards for pay, whilst restricting rampant and unfair growth of wages for the wealthiest 1%. Additionally, proposes welfare systems and Universal Basic Income to meet one another in renewed government policy efforts in equality for all.

Crisis, such as the growing recession, may be troublesome but is a perfect opportunity for an adjustment of local, regional, and government objectives and policy to meet with an entirely new society that may not match policies set in place even before many voters were born.

An economy dangerously addicted to fossil fuels must be realigned towards self-sustainability and the curbing in of extravagant consumption of luxuries we simply do not need.

Final Guest Agenda

Event Date: Thursday 09/06/2022

Location: Bournemouth University Talbot Campus

Event Hosts	Dr Tahani Mohamed, Dr Festus Adedoyin (Assisted by Thomas Brooksby)
Meeting Objective	Environmentally Conscious Research and Development - Climate Action and Responsible Consumption in the Local Community.
Timing	9:30 Doors Open. 10:00am – 13:00pm (3h)

Attendees: Businesses, Local Council, BU Sustainability
Representatives, Charities, Students, Households.

Speakers: BU Sustainability, Word Forest Organisation, Tanya
Bellows, Dr Martin Alistair Rodger, Dorset Equality Group

Building/Room: Fusion Building - Inspire Lecture Theatre
(Ground Floor)

Agenda Items

Topic	Presenter	Time allotted
<input type="checkbox"/> 10:00am Opening Remarks/Introductions: Welcome to BU – Importance of the Event, Collaborative Community Activism/Networking, and Environmental Efforts.	BU Representative, Dr Tahani & Dr Festus	15 Minutes
<input type="checkbox"/> Host Presentations: <i>Dr Festus</i> [Climate Crisis and Environmental Impact] <i>Dr Alan Kirkpatrick</i> [Carbon Taxes: Reviewing Theoretical Bases and Evidence], <i>Dr Tahani</i> [Household Inequality and Tax] [15 Mins]	Dr Festus, Dr Alan, and Dr Tahani	30 Minutes
<input type="checkbox"/> Research Objectives: Assisting in R&D regarding Carbon Tax – providing opinions and surveyed answers.	None	15 Minutes
<input type="checkbox"/> Coffee Break: Opportunity in Main Theatre for Coffee and Conversation. (11:00-11:10)	None	10 Minutes
<input type="checkbox"/> External Speakers 1: BU Sustainability (11:10) Tanya Bellows (11:25) Word Forest [Virtual] (11:40)	<u>Event Speakers:</u> Eleanor Wills (BU) Tanya Bellows Tracey & Simon West	45 Minutes (3x15m)
<input type="checkbox"/> Lunch Break: Quality Lunch provided through University Catering.	None	20 Minutes
<input type="checkbox"/> External Speakers 2: Dr Martin Rodger (12:20) Dorset Equality Group (12:35) Group Solutions ++	<u>Event Speakers:</u> Dr Martin Rodger Dorset Equality Group Dr Tahani & Dr Festus	30 Minutes (1x15m) (1x5m) 10 Minutes +

13:00pm Event Close: Thanks to all speakers and guests + resource distribution.

5 Minutes to Close

TOTAL: 3h

Event Photography (WIP)



Post-Event Objectives/Actions

- Finalise this Event Summary for Academic Distribution
- Continue communication with local groups expressing desire to attend else whom already attended the first instance of this event.
- Distribute Research Surveys to as many focus groups as possible to raise number of responses and increase accuracy of data collected.
- Work with BU Media/Comms Teams to establish a Web-page or Post of the Events highlights, including images, edited video/podcast clips of each speaker's presentation, and a link to the Research Survey. This will also greatly encourage interest in possible future iterations of the Event.

Possible Improvements If Iterated

- Increase attendee quantity with greater advertising alongside now established local connections + get more of a **student interest** as youthful turnout and education in climate change is a priority. Possibly set a later time than early morning and make the Event Title/Leaflet more 'public friendly'.
- Work closer with **local businesses** as the producers of newly demanded sustainable goods... hear from the community on if they could afford a Carbon Tax if imposed on their small/family run shops.
- Now that the event is founded, try and push for local **council engagement** and collaboration as an assured starting point.
- Only provide Vegan/Vegetarian options for food to drive forward a sustainable message especially considering the environmental cost of Red Meat.
- Run for a longer time to allow guest speakers and hosts more of an opportunity to truly dive into what they are presenting without rush AND to allow for questions/engagement from the audience.
- A small fee (Only £1) for entry was an idea to ensure that attendees definitely wanted to attend and would show on the day. This £1 would be advertised and directly 100% towards a small local charity of the Event Hosts choice OR could be voted on during the surveys distributed to audience members.
- Consider hosting the Event Open to Virtual Attendees (Virtual and Physical Tickets) so that individuals outside of the Dorset Area could attend/listen in online.