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September 2023

The Dynamics of the UN Voluntary Local Review using Causal Mapping within and across the Sustainable Development Goals: a case study of Bath and North East Somerset

Charlotte Matthews, Will Airey, Fiona Remnant, Aurelie Charles and James Copestake

Centre for Development Studies, University of Bath

Causal Map Ltd

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The Centre for Development Studies at the University of Bath is an interdisciplinary collaborative research centre critically engaging with international development policy and practice.

The Dynamics of the UN Voluntary Local Review using Causal Mapping within and across the Sustainable Development Goals: a case study of Bath and North East Somerset*

Charlotte Matthews, Will Airey, Fiona Remnant, Aurelie Charles and James Copestake

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Summary

Since 2018 when New York City pioneered a "Voluntary Local Review" (VLR) of the UN Sustainable Development Goals (SDGs), more than 60 localities worldwide have compiled a VLR to assess the progress of the SDGs locally. For local governments, it remains however difficult to see the points of leverage and priorities that would trigger positive change, within and across the SDGs. In effect, critiques of the SDGs have already pointed the potential problems of synergies and trade-offs within and across the SDGs, which makes it difficult to identify the links between local initiatives, local actors and SDG outcomes. To alleviate this problem, the report compiled here provides a Voluntary Local Review of the SDGs in Bath and North East Somerset (B&NES) in 2023 augmented with the causal maps of the SDGs, both within and across the SDGs. Such methodology allows us (1) to identify the leverage points for positive actions towards the SDGs, and (2) to identify the key stakeholders enabling that process. In the case of B&NES, successes have been in terms of community engagement with local priorities and values, B&NES Environmental Project with the Clean Air Zone, Waste treatment and CO2 reductions; and B&NES Housing Project with its commitment to affordable housing and environmentally friendly infrastructure. Many challenges remain notably in terms of addressing inequalities by, for example, improving access to all the SDG-related leverage points.

* The data collection and mapping of the SDGs has been compiled by Charlotte Matthews, Research Assistant at the Centre for Development Studies, University of Bath, from August 2022 to March 2023, under the supervision of Dr Aurelie Charles and with the support of Frances Kelsey from Bath and North East Somerset Council. Will Airey mapped the local SDGs using the Causal Map methodology under the supervision of Fiona Remnant.

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Introduction

Since 2018 when New York City pioneered a "Voluntary Local Review" (VLR) of the UN Sustainable Development Goals, more than 60 localities worldwide have compiled a VLR to assess the progress of the SDGs locally. For local and national governments, it remains however difficult to identify the points of leverage and the priorities that would enhance positive change towards the SDGs. In effect, by design, the SDGs embed synergies and trade-offs, both within and across, which makes it challenging to identify the action links between local initiatives and actors, and the way they feed into SDG outcomes[1].

To enhance this effort of SDG applicability at the local level, the report compiled here provides a Voluntary Local Review of the SDGs in 2023 for Bath and North East Somerset (B&NES) based on publically available secondary data. Each SDG is then augmented with a causal map based on the Causal Map application[2]. Such methodology allows us to identify the leverage points for positive actions towards the SDGs. Causal mapping helps to gather the evidence around the causal processes at work across different domains – in this case what evidence there is of the drivers of change across each of the SDGs. The evidence researched for this report was coded using a form of causal qualitative data analysis, identifying 'influence' and 'consequence' factors. Thus, the SDG maps give a snapshot of the positive drivers of change towards each SDG, while the stakeholder maps for SDG17 highlights the leverage points to exploit the existing synergies between SDGs that each stakeholder is currently working on.

In the case of B&NES, we show that successes have been in terms of community engagement with local priorities and values, B&NES Environmental Project with the Clean Air Zone, Waste treatment and CO2 reductions; and B&NES Housing Project with its commitment to affordable housing and environmentally friendly infrastructure. Many challenges remain however, notably in terms of addressing inequalities by, for example, improving access to all the SDG-related leverage points. In effect, a longstanding issue in B&NES is around sharp geographic inequality and unequal access to equal opportunities by income groups. Further local investment at this level is required to accelerate the momentum towards the SDGs. Finally, and most importantly, the report presented here is part of an ongoing and collaborative learning process which aims at pushing for further transparency on SDG action across local stakeholders, and to enhance the current synergies that could accelerate the SDG momentum with further collaboration and investment.

Methodology

This report provides a useful resource that aims to benefit the wider agenda of progression towards completion of the SDGs, through a better understanding of 'where we are', 'what is being done', 'who is doing it', and 'by when' the pledges made should be completed. Based on the VLR compiled by neighbouring Bristol in 2019[3], the review presents the most recent statistics publically available for each of the SDGs, and the current progress that is being made by both B&NES Council and local stakeholders to strive towards these goals. The information was sourced first through the Council website and related policy documents and then snowballing to any companies, organisations, projects, or schemes that were mentioned – and similarly for the files encountered in this snowball sampling. More specific information and data was then gathered through available online sources (e.g. Office for National Statistics). The main challenge faced throughout the data collection pertained to the difficulties in obtaining secondary data, both due to lack of optimal and contradictory information. Additionally, information was vague at times and weblinks were no longer in use – which means that further detail could not be clarified. All the data collected is from open-access sources, as referenced at the end of the report.

Then, based on the descriptive review and the "what is being done?" sections in particular, Causal Maps[2] were created for each SDG, and for each stakeholder whose impact spans across several SDGs. We use a process called 'causal mapping' to collate and present the information visually. Causal mapping helps to assemble all the evidence for the causal processes at work across different domains. Here, we sought for

evidence that there are drivers of change across each of the SDGs. The evidence was coded using a form of causal qualitative data analysis, identifying 'influence' and 'consequence' factors. These factors are linked by arrows and can form longer chains if one consequence goes on to influence another.

Causal mapping helps to visualise the current activities contributing towards each SDG. An advantage of coding using the Causal Map application is that further evidence can be added to the dataset overtime. As such, the reliability and quality of causal claims can improve over time. Given that our analysis was interested in the contribution of interventions to the SDGs, and their associated causal chains, the maps featured throughout this report are the product of coding the "what is being done?" section of each chapter. The analyst did not return to the original sources used to produce these sections, but rather they coded the text contained in the report itself. Descriptive statistics in the "current trend" sections were not coded as they did not describe a causal claim.

Three challenges were faced when undertaking the process of coding this report. Firstly, as seen in the maps, the "chains" tend to be short, consisting of two factors which say that Intervention X led to Outcome Y. The analysis would be improved with evidence of why interventions were implemented, particular if the SDG agenda was a contributing factor for any. Understanding the impact of Outcome Y on the lives of recipients of services would also add to the quality of the causal maps. Secondly, although a given project may well contribute to multiple SDGs, the analysis only coded explicit claims, as difficulties arise when causal links are made based on the analyst's own understanding. Finally, the report contained a combination of actual evidence of impact and planned (or aspirational) consequences, such as aims to reach net zero by a given year. It was therefore important to distinguish between these categories so as to not misrepresent the level of current progress towards the SDGs.

SDG1 – No Poverty

Bath and North East Somerset is one of the least deprived authorities in the country, ranking 247 out of 326 English authorities, and 9th out of the 149 local authorities[45]. Despite this, 9% of children and young people in B&NES (3000 aged 0 to 15) were estimated to be living in relative poverty (before housing costs) in 2020/21; and, after housing costs, 20% in 2019/20 (6,500 aged 0 to 15)[6]. Whilst this is less than the national average of 27% (2020/21, 4.2 million children), 1 in every 5 children is a large proportion to be in poverty considering B&NES average income and productivity is above the national average, and mean house prices are £496,207, compared with the UK average of £290,000 in September 2022[7 8 9 10 11]. The most deprived areas are *Twerton West* and *Whiteway*, both of which are ranked in the bottom 10% of most deprived areas in the country[12]. Twerton in particular has a child poverty rate of 35% (before housing costs) and 17% (after housing costs)[13]. It is not only the younger generation that is affected but also people of pension age, where almost 1 in 5 live in poverty (2019/20)[3].

Between February 2020 and March 2022, the number of people claiming Universal Credit in B&NES rose by 61% from 7,435 to 11,982[14]. Although this is a steep rise, the claimant rate is still lower in the South West (12%) than in England (14%)[3]. However, the minimum 5-week wait for Universal Credit detrimentally impacts on claimants – a significant proportion of whom are families with children[15]. By stalling the receipt of funds, households with low or no savings must either rely on social networks and food banks, or take an advance on their first payment. Thus, many claimants are indebted for multiple months whilst they repay this advance, which in turn increase the need for charitable sector provision to compensate for the lack of income stream. As a result, nearly half of the households receiving Universal Credit payments experienced food insecurity in the 6 months prior – with those with disabilities being disproportionally affected[1,3]. Consequently, if the national estimates of the *Resolution Foundation* are accurate and representative, nearly 4,000 more people in B&NES are likely to fall into *absolute* poverty in 2023, including 1,500 children[3].

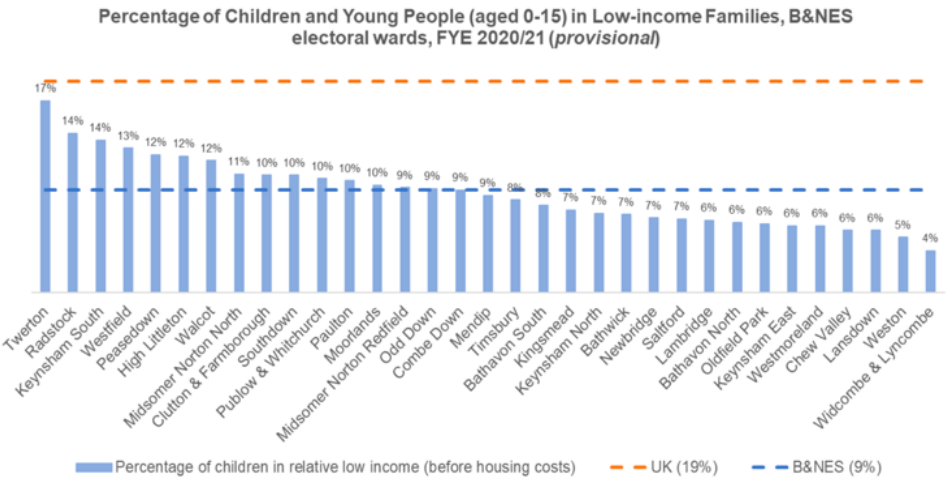


Figure 1 – Child Poverty by Ward (Source: B&NES 2022)[3]

What is being done?

Healthy Start Vouchers and Free School Meals

To tackle the issue of food insecurity, specifically with regards to children, healthy start vouchers (HSV) and free school meals (FSM) are being implemented, and the uptake for 2019 was 40-55% and 79%, respectively[12]. To increase the use of HSV, they have increased from £3.10 to £4.25 in 2020[12]. With the eligibility threshold based on an annual income of £7,4000, households who earn slightly more but are still classed as living in relative poverty, are not able to benefit from this service. 367 FSM claims were rejected between June 2020 and April 2021[12,16].

Local Help

The *Community Wellbeing Hub* is a central body, originally organised by the local Council as a response to Covid-19, and which provides a range of information – including financial advice, housing assistance, employability and access to low cost food – to direct people towards the correct service or organisation. Although it is helpful to have a central point of contact, providing evidence multiple times to multiple agencies can feel demeaning for those requiring the support, as they may not feel entitled to the support or feel uncomfortable trying to 'prove' their situation[17]. This is why the *Warm Space Initiative* provides their facility without questions or judgement for people to enjoy a social space, to keep warm, avoiding having to pay for soaring energy prices [18]. Additionally, *MercyInAction* is a non-profit that provides care and shelter for pregnant young women or those with children under 3, as well as a food pantry for the local community, and clothing for children aged 5-16[19]. This proved to be valuable source of support in addition to the numerous food banks operational throughout B&NES, including *FoodCycle*[20].

Homelessness

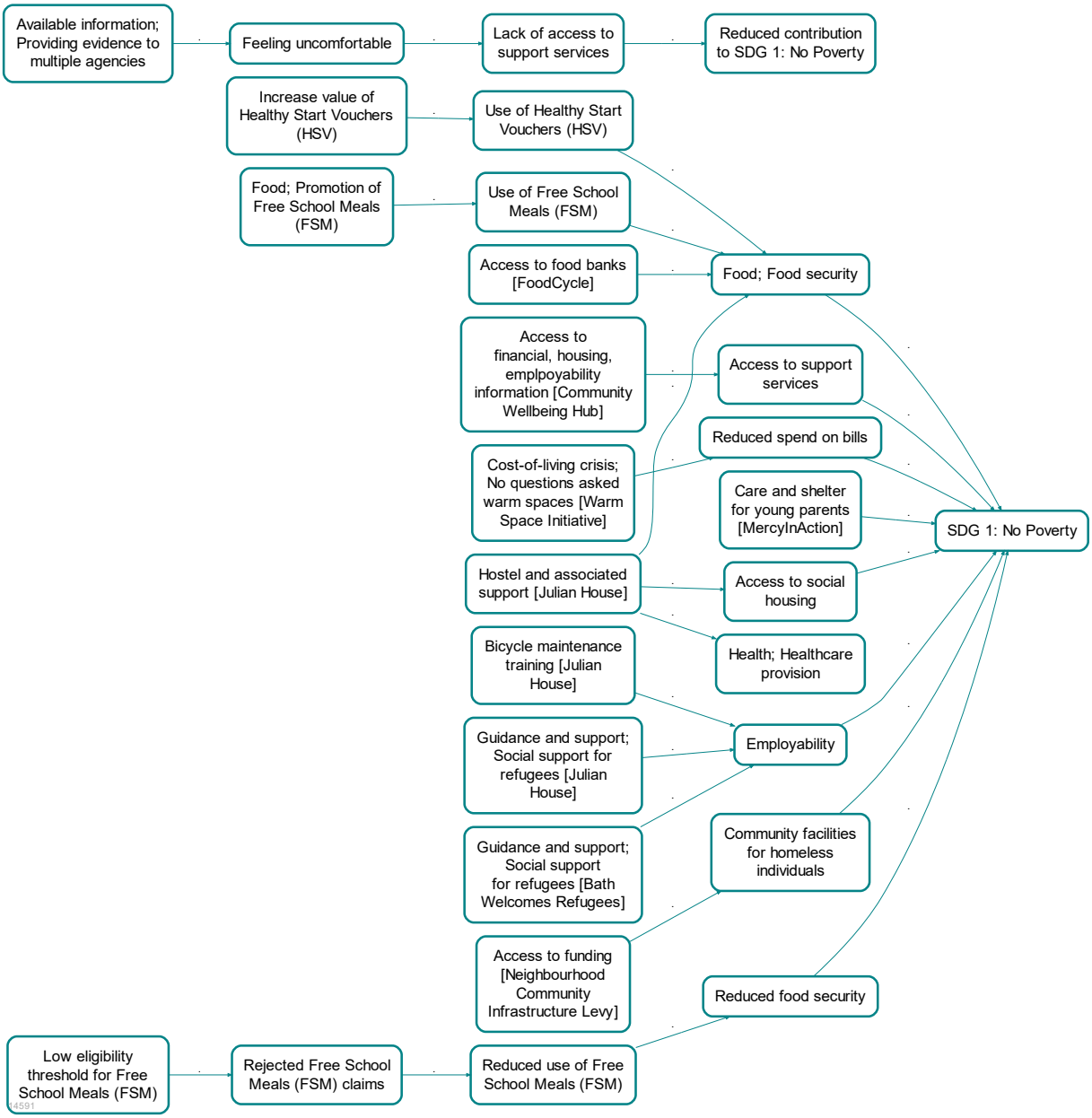
For those who unfortunately find themselves homeless, *Julian House* provides a 20-bed hostel with 24-hour support[21]. They assist with food, healthcare, substance misuse services and onward social housing. An employment and training programme in bicycle maintenance and repair can also be arranged to help those with a history of homelessness to escape poverty. Additionally, in January 2023, £26,122 was allocated from the *Neighbourhood Community Infrastructure Levy* to improve community facilities for homeless people in Kingsmead[22].

Refugee Support

Both *Julian House* (commissioned by B&NES Council for VPRS) and *Bath Welcomes Refugees* (a community sponsorship group) offer social support to refugees[23 24]. Whilst waiting for their applications to be processed, refugees are extremely vulnerable as they have less than £6 a day and are forbidden from seeking employment[25]. These organisations integrate refugees into society through setting up bank accounts,

benefit applications, utilities, education, language courses, healthcare, employment & training, housing and befriending.

Causal Map of SDG1



SDG2 – No Hunger

Current Trend

In the UK, with a rising cost of living, inflationary pressure, supply shortages and increasing uncertainty, more and more people are struggling with access to and affordability of food. In 2019/20, more than 5 million people in the UK were in households experiencing food insecurity[9]. As of January 2023, 17.7% of households experienced moderate or severe food insecurity (compared to 7.6% pre-Covid)[26]. This affects different segments of the population in different ways. For example, 49% of households on Universal Credit reported food insecurity against 15.3% of those who are not. People limited by disability are also affected more so than those without disability (41.8% vs. 13.4% in December 2022). Moreover, access to healthy is a major issue: 57% of food insecure households cut back on fruit to save money compared to just 11% of food secure households.

In B&NES, the main drivers include low wages, inflation, insecure employment, health issues and problems resulting from or related to the benefits system[9]. The areas most affected are Whiteway, Whiteway West, Twerton West, Twerton and Fox Hill North, as calculated by the *University of Southampton Food Insecurity Tool*[27]. In January 2021, 7.1% of adults in B&NES experienced hunger, 11.2% struggled to access food, and 15.6% worried about not having enough food[28].

The number of children in B&NES eligible for free school meals (FSM) rose by 20.97% between May 2020 (13.54%) and March 2022 (16.38%), depicting lower household income and thus higher food insecurity[11]. Whilst it is still below the national average of 17.2% (for April 2022), the knock-on effects of poor nutrition in children have health and educational implications. In 2018/19, 74% of children in B&NES achieved a 'good' level of development, yet only 46% of children eligible for FSM achieved this same level[3].

Within B&NES, a lack of detailed mapping of the gaps within community food provision, both socioeconomically and geographically proves to be an obstacle in coordinating a local response[12]. Additionally, there are issues with inaccessibility due to (a) the need for referrals, (b) difficulty / affordability of travel to the food bank – especially from rural areas with poor / infrequent / unreliable connections, (c) opening hours (usually in the daytime when users may be working)[9]. Shame and stigma of accepting help is also a consequent psychological barrier[9].

Prior to the most recent cost of living crisis, the *Trussell Trust* had reported a decrease in the number of food parcels being distributed in B&NES (from 4,433 in 2019 to 3,158 in 2021)[11]. This was thought to be resultant from the increase in Universal Credit payments (£20 uplift) and government support schemes (such as furlough, or affordable food projects). However, since the termination of these initiatives, the number of food insecure people has risen from 7.3% in July 2021 (the lowest it had been since the start of the pandemic – 15.6% - to its peak of 18.4% in September 2022)[23].

Finally, occupational inequality is also a major issue: 24.9% of people working in the NHS and social care sector are likely to be experiencing food insecurity compared with 17.7% for the average population. To attempt to cope with such hardships, more than half of NHS trusts and health boards deliver food bank provision for their staff[29].

What is being done?

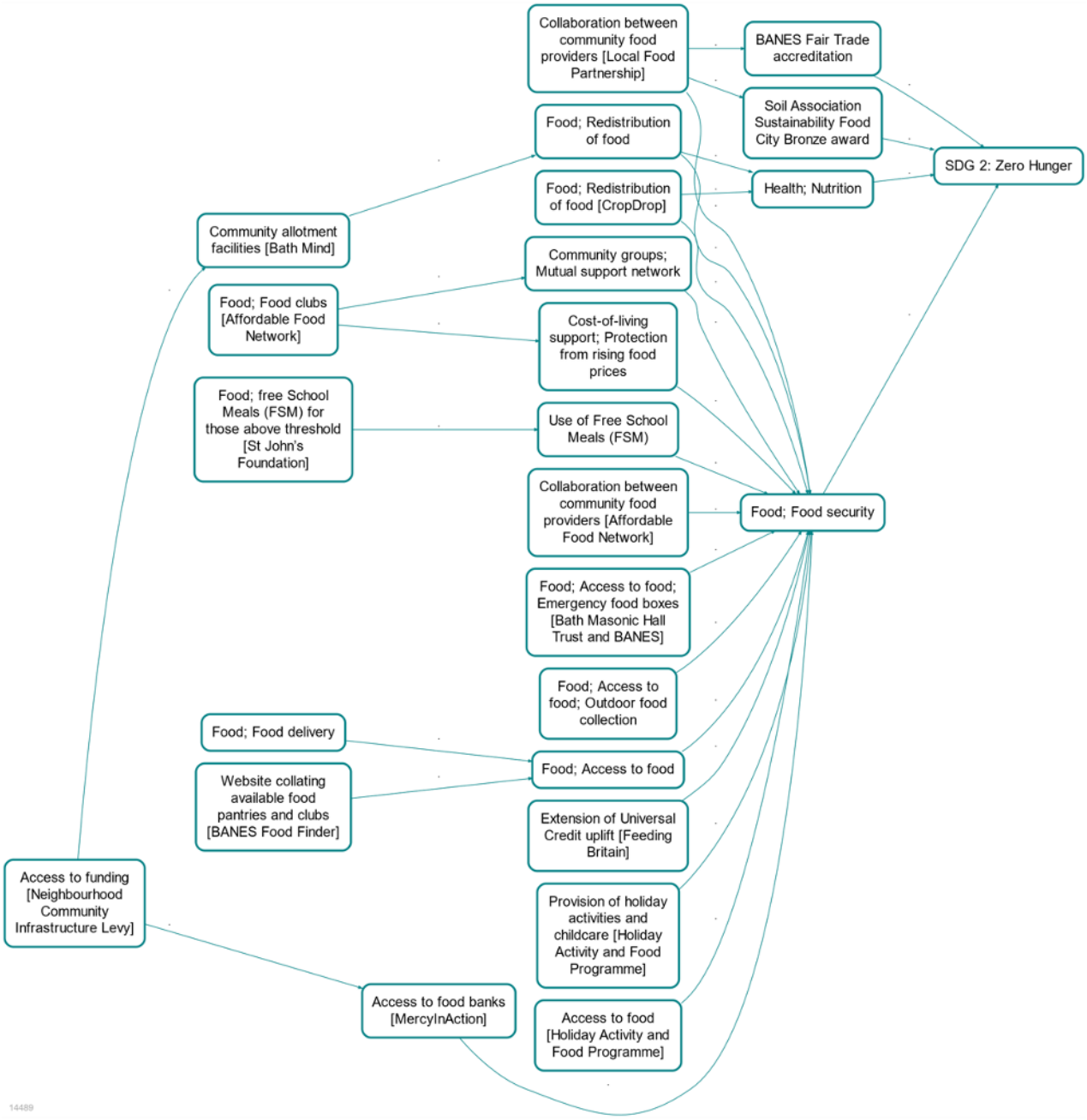
Many third sector organisations offer food provision. *B&NES Fair Food Alliance* is a multi-agency group consisting of three subdivisions: the Affordable Food Network (monthly meeting of community food providers), the Income Maximisation Group (offers financial support/advice) and Hear My Voice (real experiences guiding policy/initiatives). Additionally, the *Local Food Partnership* brings together 80 local stakeholders to increase the provision and accessibility of fresh, healthy, local food in order to reap both

healthy and environmental benefits[30]. They have assisted in the *Fair Trade* reaccreditation of B&NES and accreditation by the Soil Association Sustainable Food City Bronze award.

A centralised website *B&NES Food Finder* collates the food pantries and clubs available for greater user awareness. Funding from the Neighbourhood Community Infrastructure Levy saw £20,000 be invested into *Mercy in Action*: a community food pantry facility in Twerton[19]. Moreover, £47,596 was allocated to Bath Mind for community allotment facilities at Monksdale Road in Moorlands. Allotment products are then redistributed to those in need, which allows for a better array of fresh food than food banks are often able to cater for (due to normally supplying long shelf-life products). In a similar vein, The CropDrop Project also redistributes abundant allotment produce to projects within the Affordable Food Network[31]. For every £1 spent on generating local food[27], there is a local economic return of £3.

The *Holiday Activity and Food Programme* offers a range of holiday activities to children aged 4-16 in receipt of FSM (and 15% of the allocated funding is committed for those who are slightly over the threshold but the Council believes will benefit)[32]. The initiative provides a minimum of 4 hours of childcare and a free hot meal. Additionally, within term time, St John's Foundation is providing FSM within several schools for any children who just miss out on the threshold (until July 2024). Two of these schools are less than a mile from each other, in Twerton. Lastly, food clubs organised by the *affordable food network*, allow members to pay an annual fee of £1 and a weekly fee of £3.50 to secure roughly £15 - £20 of fresh food (as well as cookery lessons). This provides protection from rising food prices and the development of a mutual support network between users. Members must live in the area around each children's centre where the food club is.

Causal Map of SDG2


Collaboration between community food providers [Local Food Partnership]
BANES Fair Trade accreditation
Soil Association Sustainability Food City Bronze award
SDG 2: Zero Hunger
Food; Redistribution of food
Food; Redistribution of food [CropDrop]
Health; Nutrition
Community allotment facilities [Bath Mind]
Community groups; Mutual support network
Food; Food clubs [Affordable Food Network]
Cost-of-living support; Protection from rising food prices
Food; free School Meals (FSM) for those above threshold [St John's Foundation]
Use of Free School Meals (FSM)
Collaboration between community food providers [Affordable Food Network]
Food; Food security
Food; Access to food; Emergency food boxes [Bath Masonic Hall Trust and BANES]
Food; Access to food; Outdoor food collection
Food; Food delivery
Food; Access to food
Website collating available food pantries and clubs [BANES Food Finder]
Extension of Universal Credit uplift [Feeding Britain]
Access to funding [Neighbourhood Community Infrastructure Levy]
Provision of holiday activities and childcare [Holiday Activity and Food Programme]
Access to food banks [MercyInAction]
Access to food [Holiday Activity and Food Programme]
14489

SDG3 – Good Health & Wellbeing

Current Trend

General Health

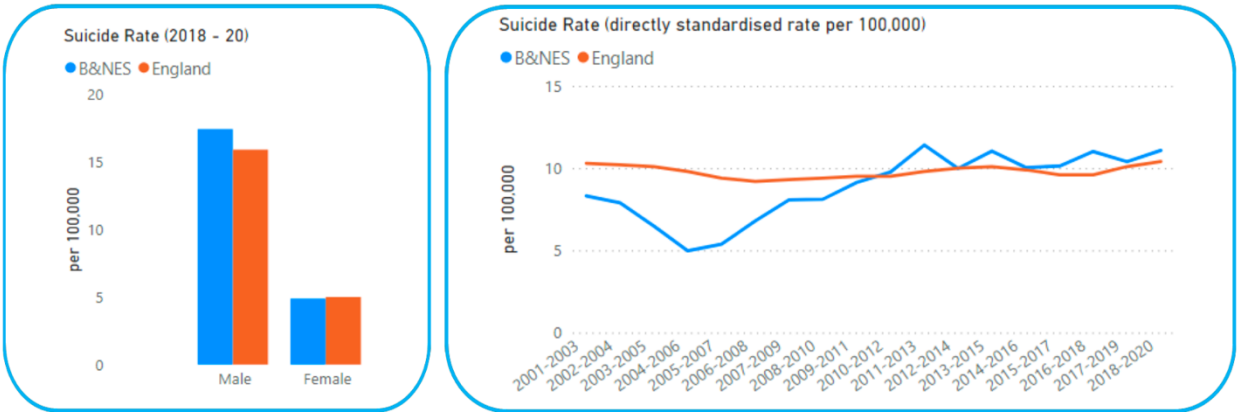
B&NES has fared well overall compared with the UK average for a range of health indicators. Life expectancy is above the average for England with women living to an average age of 84.7 and 80.8 for men, compared to a national average of 83.2 and 79.7, respectively[33]. This is also true for the healthy life expectancy, i.e. free from diseases, where both men (65.38 years) and women (67.48 years) in B&NES have higher expectancies than the national level (62.9 and 63.3, respectively)[34]. Furthermore, the infant mortality rate and stillbirth rate (2.3 per 1000 births) are the lowest in the Southwest, and approximately half the rate of England[3]. Vaccine uptake was higher than the national average in 2020/21, with the MMR booster increasing from 71% uptake in Q1 2017/18 to 100% in Q3 2018/19 – perhaps due to targeted projects in areas of previously low uptake, such as Twerton. Smoking rates of under 18-year olds were at 12.4% vs. 14.5% for England (2018/19)[35].

Obesity rates for B&NES were much lower than the national average of 62%, yet more than half of residents (51%) are still classed as obese[32]. Healthier lifestyle includes healthy eating habits, but to maintain the Government-recommended *Eatwell Guide* diet, the poorest quintile would have to spend 40% of their disposable income on food, which is an unrealistic and unsustainable figure[36]. In effect, healthy food is three times more expensive per calorie.

Mental Health

Depression levels are slightly lower than in England, but still growing overall[3]. In 2020/21, over 2,000 people in B&NES were diagnosed with depression for the first time, making a total of 18,681 people recorded. Although the 10 to 24 years old have almost twice the self-harm rates than older adults nationally, the local rate of admissions for the 10 to 24 years old has been higher than the national average since 2011, with 240 admissions in 2020/21[37]. The suicide rate in B&NES is slightly above the England average, as is the rate for men, as shown in Figure 2, and anxiety levels are slightly above the national average too.

Figure 2. Comparable suicide rates (Source: B&NES 2022)[3] –



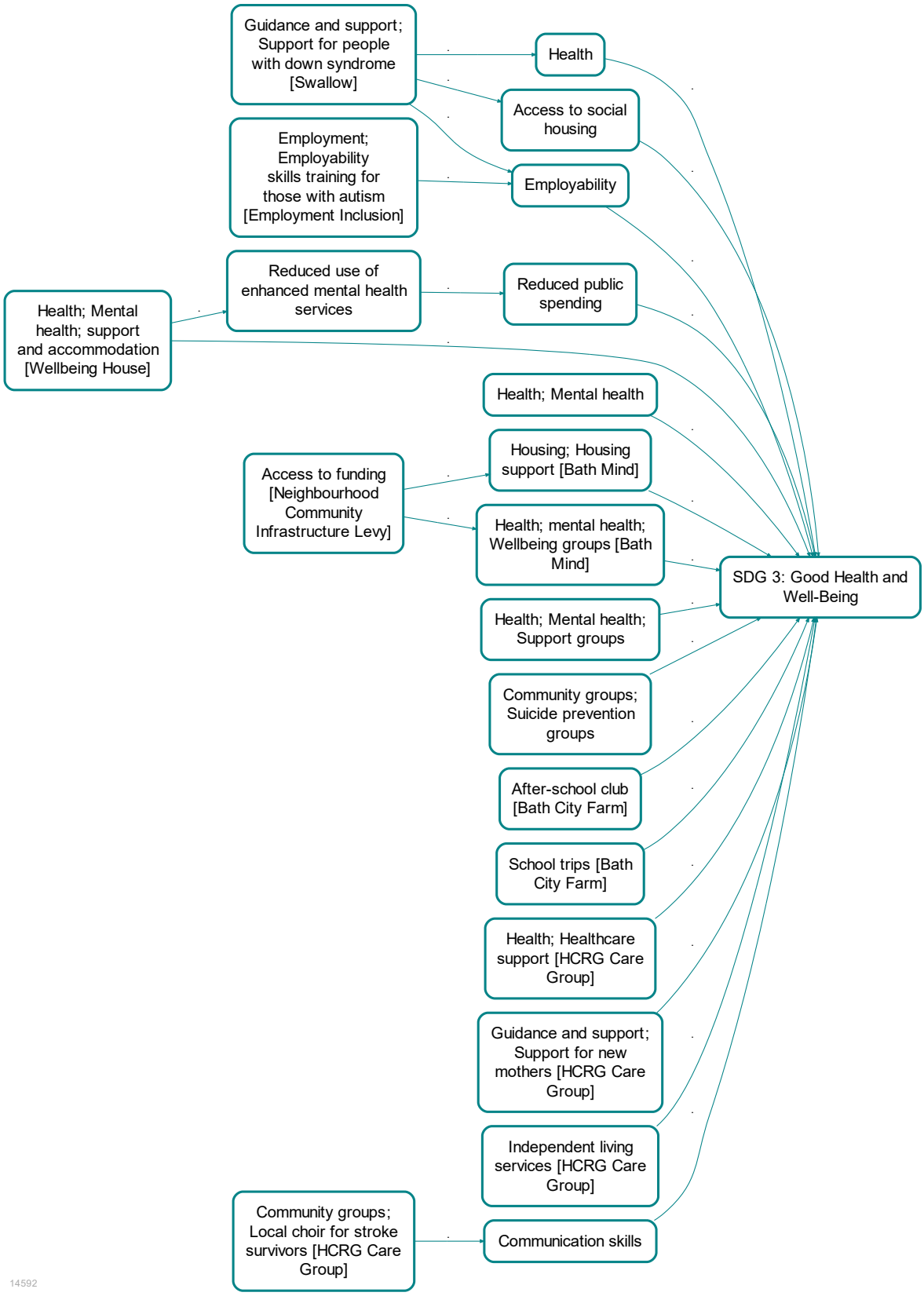
What is being done?

To mitigate against the adverse effects of healthcare inequality, the *Community Wellbeing Hub* supports those in need and signposts them to the correct agencies, working closely with *Bath Mind.* Another interesting initiative for mental health is the *Wellbeing House*, which supports more than 240 people annually[38]. It provides a free 5-day stay, with the idea that someone can be self-referred, and can reset and stabilise without the need of enhanced mental health services. Not only is this beneficial to its users, but it saves public money. Hospital beds cost an average of £3000 per week, but every £1 invested into this house

saves £5 of public funds, which represents over £228,000 annually. *Bath Mind*, on the other hand, offers both formal and informal support, supported housing and wellbeing groups. The Neighbourhood Community Infrastructure Levy allocated £47,596 to facilitate the creation of community allotments[19]. Other mental health and suicide prevention groups include: *Bluebell, School nursing, DHI, Schools,* and *Adult Support Services*.

Bath City Farm supports adults with mental health or learning difficulties with a range of roles from office jobs, or servers in the café to walking the goats. They also support adults who have been unemployed for more than 6 months to develop people skills and confidence. Finally, for children in Twerton, Whiteway and Southside there is an after-school and Saturday club as well as school trips organised throughout the year[39]. *Swallow* is a charity catering to people with down syndrome through user-led support. They assist more than 150 teenagers and adults and provide a range of services from supported housing and independent living facilities to work skills and courses, to fitness activities and social events. *Employment inclusion* is a team of job coaches who support those with autism or learning difficulties to move into full time paid jobs, and support in keeping their jobs[40]. *HCRG Care Group* is a joint venture between B&NES Council and the NHS trust. It provides a range of support from diabetic nurses and physiotherapy to assistance for new mothers and independent living services. They have also funded a local choir to help stroke survivors in rebuilding their communication skills.

Causal Map of SDG3



SDG4 – Quality Education

Current Trend

Quality education is a strength of Bath, with two Universities as well as a number of primary, secondary and further education institutions. Bath College is the 6th (out of 172) most successful further education colleges in England, with 80% of 16 to 18-year-olds going onto employment or higher education, and 52% of adult learners in receipt of benefits gaining employment[41]. One of the two Universities, Bath Spa University, is in the UK top six University for creative industries. It is also highly ranked for its regional engagement with employers. The other University, the University of Bath, is a top UK university with outstanding research and teaching performance (ranked 7th in 2023 by the *Guardian*). 49.4% of people in Bath are educated to degree level or higher compared to 39.7% in the UK[3]. Overall, girls perform consistently better than boys throughout school (from the foundation stage to GCSE, where 82% of girls attaining grades 4-9 vs. 75% for boys).

The number of pupils that attend independent schools in B&NES is noticeably higher than the national average (14.01% compared to 6.39% respectively, as of January 2021)[3]. Whilst this is an indicator of a higher quality of education, it also illustrates the stark inequalities present within B&NES. For example, the average for A-Level Grades A*- C in England is 82.7% in 2022, which Somerset is exactly matching[42]. However, an independent school in Bath, *Prior Park College* [43] achieves 92%. Moreover, when comparing *Prior Park College* with the average for grades A*- A in England, there is even a larger gap with 49% vs. 36.1%, respectively. Yet, on the other end of the spectrum, from early years through to GCSE, there is a persistent attainment gap between those in receipt of Free School Meals (FSM) and those who aren't – which is among the lowest for all local authorities[44]. In 2019, only 46% of FSM children achieved the Good Level of Development compared to 78% of all other children. Pupils in the younger years, especially in Reception to Year Two, are furthest away from where we would expect them to be. The FSM gap is the 13th worst in the country[3].

At the Higher Education level, different wards within Bath have different university participation levels. For example, Bath Avon North & South score within the top quintile for a range of indicators, including the number of 18-year-olds enrolled in higher education and adults with a higher education qualification[45]. However, Twerton scores in the bottom quintile for the same indicators.

In addition to the attainment gap, B&NES has the highest rate of suspension for FSM pupils and second highest for mixed-race pupils[3]. Aside from the negative impact on their education, suspensions and exclusions are known to put children at higher risk of exposure to exploitation[46]. Finally, 4.2% of pupils have a Statement or Education Health Care Plan, which is higher than the rate in England (3.6%) and in the South West (3.8%), and third highest using the *'Near Neighbours Comparison 2020/21'*[3].

What is being done?

Attainment

In 2020, *St John's Foundation* launched a 10-year strategy which is focusing on closing the attainment gap amongst key-stage 2 students[47]. The Foundation began by engaging with the seven most deprived schools in B&NES, which means the schools with the highest number of lowest performing children; two of which are in Twerton, and 2 others in Keynsham.

Additionally, the University of Bath offers an outreach programme which helps widen the participation of students from backgrounds and areas that would be less likely to participate in higher education. For example, a student from a low higher education participation area may be able to partake in *Pathway to Bath*, *Discover Bath* or *Find Your Way*. These are educational and mentoring programmes which, if completed, may result in a reduced offer for the student, not to mention a better understanding of the

University and its network to assist in their decision-making process. On top of this, both Universities offer bursaries for those whose household income is under a specific threshold.

Language for Life is a project delivered by *St John's Foundation, Early Years Services* and *Speech and Language Therapy* to employ a toolkit identifying any children that may need additional support. The project also provides immediate interventions in order to close the 'word gap' of young children and mitigate against any later-education impacts[48].

Sustainability

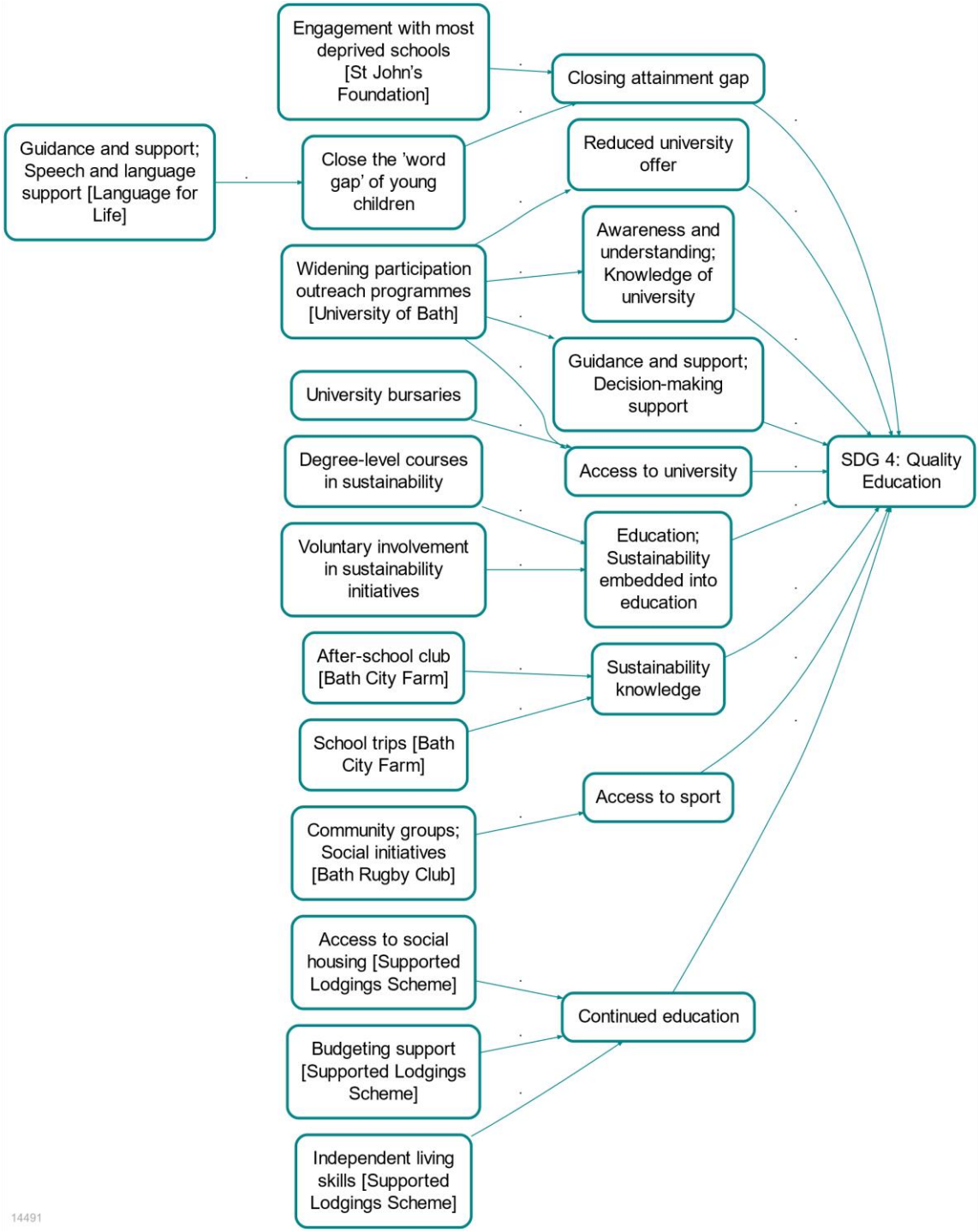
To support the transition towards sustainable ways of living, both the University of Bath and Bath Spa University endeavour to embed sustainability education into student's lives. For example, both Universities offer degree-level courses as well as active projects that which can involves students and the local community (e.g. Volunteering at Vegmead Community Garden). Furthermore, local farms, such as Bath City Farm, offer educational days out and after-school clubs for children to learn about animals, nature and healthy eating[36]. The farm was also recently allotted £9,645 for a new workshop for older volunteers to use, in partnership with the Bath Shed Group[19].

Gender and Youth

Bath Rugby Club has many social initiatives that they coordinate, with one being the growth of children/females within the sport[49].

The *Supported Lodgings Scheme* is run by B&NES Council and provides a clean and comfortable room in a safe, secure, and supportive household for young people aged 16 to 25 for between 9 and 24 months[50]. The scheme also provides support in budgeting, learning practical skills for living independently (e.g. cooking, cleaning), and encouraging young people to continue their education.

Causal Map of SDG4



SDG5 – Gender Equality

Current Trend

In terms of criminal offences against women, in December 2022 alone, there were 75 violent or sexual offences in Bath city centre, with 1,069 being reported throughout the year, which represents 28% of all crime[51]. In the three-year period from 2020 to 2022, 2469 offences were carried out. Looking at Bath City West, there were 2,181 violent or sexual crimes committed in the same three-year period, with 818 happening in 2022. Overall, taking these two areas into account only, there were 120 occurrences in December 2022, 1,887 throughout 2022 (which is more than 5 a day) and 4,650 between February 2020 and December 2022.

Improvements in terms of gender inequality in B&NES exist however, specifically when looking at the gender pay gap. From September 2020 to March 2021, the mean gender pay gap decreased from 50.52% to 39.67%, with the hourly female rate improving from £19.76 to £21.66 and the male rate falling from £39.92 to £35.50[52].In terms of employment inequality, within B&NES Council, 60.7% of the workforce are female, however many are in lower-paid positions[53]. Out of the 59 Council members, 34% are women[54i]. Also, despite men only comprising of 38% of the total Council workforce, they constitute 70% of the top 20 highest earners within the Council.

What is being done?

B&NES Council

The Council has successfully supported initiatives, such as the *Springboard Development Plus - Senior Women's Development Programme*, to assist women in achieving senior positions within the Council. Similarly, they have facilitated and encouraged the implementation of menopause awareness within the workplace. Furthermore, in 2019, they committed 50,000 for period poverty[55].

Sexual Abuse & Domestic Violence

Bath Women's Fund is a giving circle that pools funds from a group of members and awards them as grants to local organisations[56]. In 2022, they raised and awarded £15,000 to *SARSAS* and another £4,000 each for *Voices*, a domestic abuse charity, and *Creativity Works*, an organisation that promotes growth, development in self-esteem and wellbeing through various art forms and expressive tools[57]. *SARSAS* is a local charity that provides information, resources and a helpline to people who have suffered sexual abuse or domestic violence[58].

Southside delivers outreach support to anyone who has been affected by domestic violence[59]. Through a triage system, they assess the needs of the person and identify the most appropriate response, including safeguarding for the victims and their children, advocacy through any subsequent criminal or family court proceedings, and signposting to other agencies if beneficial for the victim's specific circumstance. Furthermore, their team brings awareness to the signs of domestic violence and trains clinicians. Additionally, they provide 'hub groups': creative activities for the children; a free family meal; advice on cooking, budgeting, first aid, work, education, training, etc. This works as a middle ground for families to access assistance but also to transition out of the structured support.

Motherhood

There are many support services for women suffering with any mental health or wellbeing issues following birth. *Make a Move* offers therapeutic sessions that create a safe space for mothers to discuss any feelings of anxiety, low mood or depression, and create healthy coping mechanisms[60]. 90% of mothers report improved mood, enhanced coping strategies and less isolation, and 95% of mothers report strengthened relationships with their children.

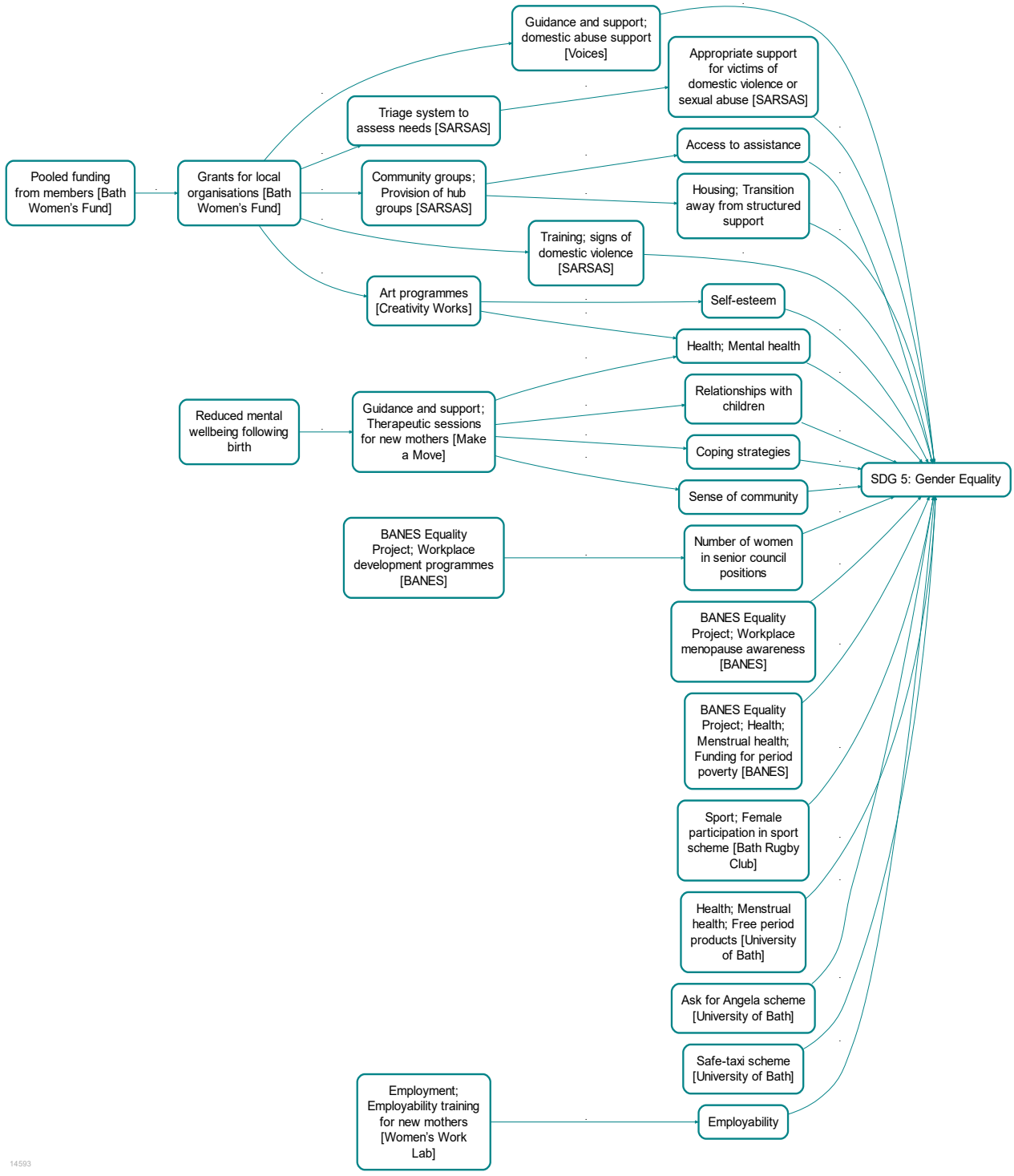
Other interventions

Bath Rugby Club runs a special scheme to encourage female participation in the sport and empower the younger generation of females to participate[61]. It is open to all abilities over several locations in order to drive involvement.

Women's Work Lab is a regional charity that originated from Bath[62]. Its purpose is to support women who have recently had children to get back into the workforce through training and upskilling. In the year of its conception, it assisted 60 mothers across Bath and Bristol, 60% of which found employment. In 2023, they support 45 more women across B&NES.

The University of Bath offers free (vegan, no-waste, cotton) period products in their toilets for women in need[63]. Additionally, the University of Bath and Students Union support both the "ask for Angela" scheme and a safe-taxi scheme[64]. The latter offers a safe journey home between the hours of 10pm and 5am without need for immediate payment.

Causal map of SDG5



SDG6 – Clean Water and Sanitation

What is being done?

Wessex Water

One of the focus points of *Wessex Water* is on reducing water poverty. Working alongside the *Consumer Council for Water*, Wessex Water ensures that bills do not exceed more than 5% of a household's disposable income, and it offers personalised support packages such as social tariffs for those on lower incomes[65]. Moreover, it is upgrading its sewerage system, creating a larger capacity to cope with more households and any extreme weather events, which will minimise flooding. Between 2015 and 2020, *Wessex Water* reduced sewerage flooding incidents by 25%.

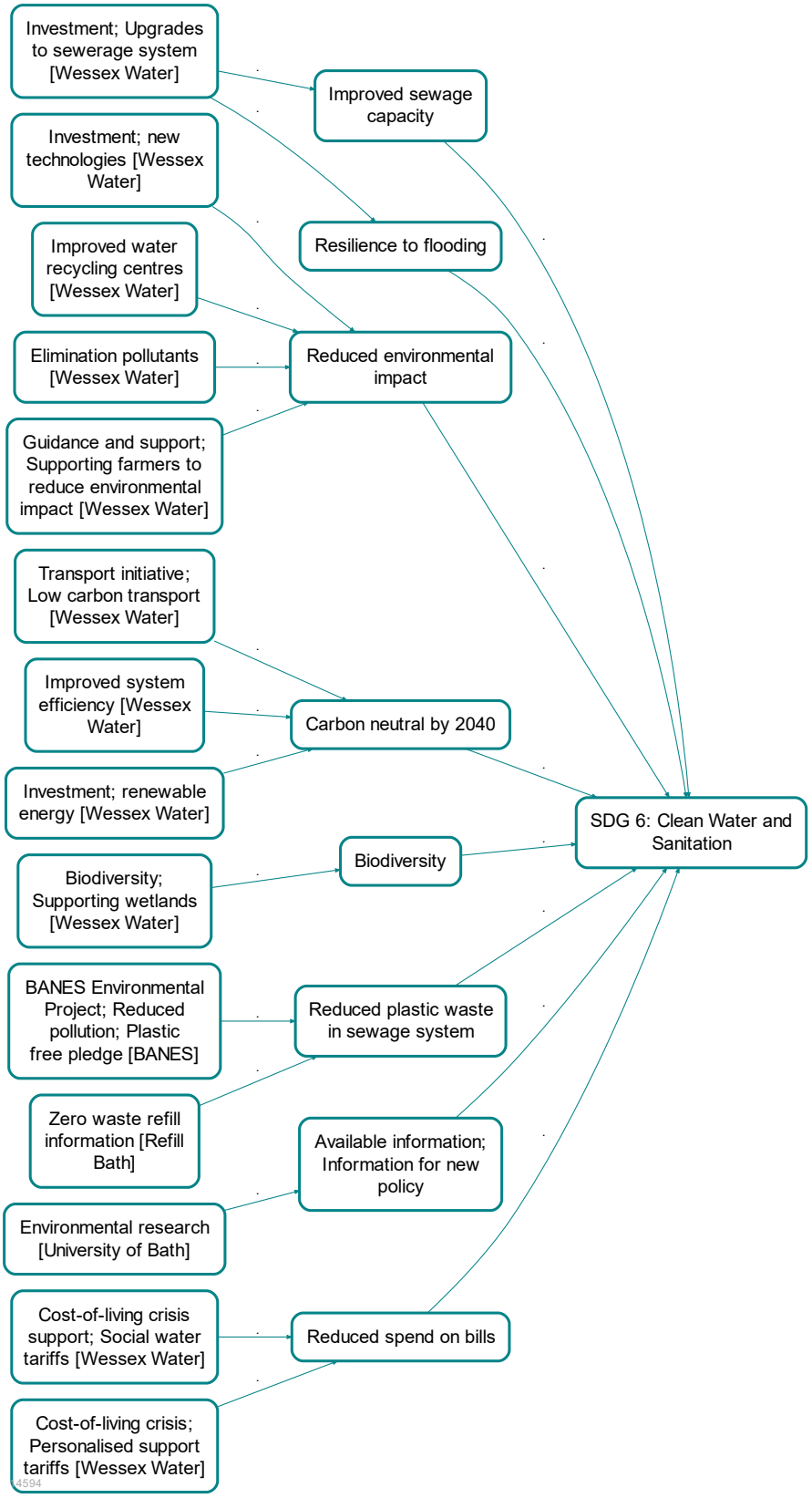
Regarding its interventions for environmental protection, *Wessex Water* is trying to ensure that no harm is done to the water environment from which water is extracted. Therefore, *Wessex Water* has invested £230 million on environmental protection in the last decade in order to reduce the amount of water extracted, by 25 million litres a day. Furthermore, it plans also to renew its commitment to healthy water quality by reducing its operational impact by using new technologies, improving water recycling centres, eliminating pollutants and working alongside farmers to support them in reducing their environmental impact. The aim is to be carbon neutral by 2040[66]. Finally, through nature-based solutions such as wetlands instead of grey infrastructure, *Wessex Water* aims to double its contribution to the region's biodiversity[62]. At Tucking Mill for example, *Wessex Water* has already supported 401 invertebrate species using its 1.5ha grasslands, 7% of which are species of key conservation importance[67].

Other Initiatives

To tackle plastic waste ending up in sewage systems, B&NES Council has created a Plastic pledge, encouraging local businesses to participate in[68]. Through this, Bath Spa University has eliminated plastic bags, plastic drinking cups, plastic straws and stirrers, and also provided free reusable bottles for their sports team - for which there are 34 reusable water stations around their campus. Also, shops such as *Café Au Lait, Cascara, Widcombe Acorns, Atlus* and *Alice Park Café*, to name a few, have all minimised their waste and single-use plastic cups, straws, and cutlery. *Refill Bath* helps to locate where people can refill their reusable bottles rather than buying single-use ones[69].

A PhD study carried out by *the University of Bath*'s Psychology department found that when people are aware of how their water usage compares with others, they are more likely to adjust their behaviour and subsequent usage[70]. Therefore, initiatives to increase awareness may be beneficial. Other projects conducted by the University of Bath include ways to decontaminate polluted landscapes whilst producing small amounts of energy[71].

Causal Map of SDG6



SDG7 – Affordable and Clean Energy

Current trend

Stopping fossil fuel dependence and making way for cleaner energy is a priority at the global level, and the trend for a change in that direction is noticeable within B&NES. Between 2005 and 2020, the mean domestic consumption of energy fell by 11.34% from 4763 to 4223 kwh per meter[72]. As of March 2022, 96.75% of new dwellings in B&NES had an EPC band of C or above and the median score for new dwellings' energy efficiency rating is 84 (band B)[73]. However, many of the existing dwellings are older in build which inevitably coincides with poorer insulation, resulting in energy efficiency rating at 63 (band D). Poor insulation leads to higher energy costs and with the current cost of living crisis, more and more households are living in fuel poverty. Although less than the average for England (13.4%), there was a rise in fuel poverty from 9.1% in 2018 to 11.2% in 2020[74]. [iii]. It was estimated that cold homes cost the NHS an estimated £3.8 million annually, and it also affects mental health and physical wellbeing[27,75].

What is being done?

Grants

B&NES has introduced a range of schemes and grants[76] that can assist with fuel poverty and retrofitting costs such as B&NES *Green Affordable Warmth Grant*, which covers certain costs such as insulation, repairs to windows and heating for households with an income of less than £30,000 annually and less than £30,000 in savings. The *Bright Green Homes* scheme, which is part of the Government's Home Upgrade Grant, provides funding for energy saving measures including insulation, solar panels, heat pumps, glazing and doors. Recipients must have an annual income of less than £30,000, an EPC Rating of D or below and no gas central heating.

Retrofitting

B&NES Council have also set the goal of retrofitting 65,000 properties by 2030[77]. It is important to be considerate of Bath's heritage buildings in any plans of energy efficiency improvements, as they have different requirements. As of February 2022, B&NES Council website has included more information and guidance surrounding retrofitting and clean energy improvements.

Renewable Energy

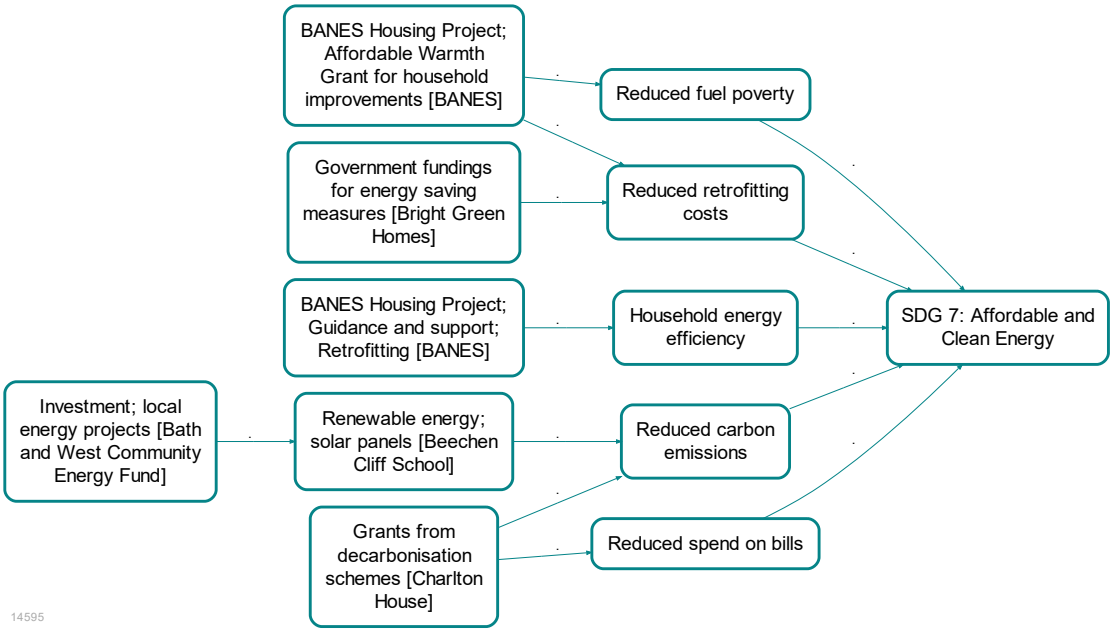
Additionally, B&NES aims to be carbon neutral by 2030[78]. The goal was to produce 110 MWe of renewable electric and 165 MWth of renewable heat energy by 2026[79,80]. However, as Table 1 shows, in order to have still been on track in 2022 for the 2026 targets (based on the 2018 levels), B&NES would have needed to have produced 65.5 MW of renewable electric energy[76]. Yet, as of 2021, there was only an installed capacity of 22.5 MW, up from 21 MW in 2018. The target year has now been pushed back to 2036 to accommodate these shortcomings.

Table 1. Levels of renewable energy generation necessary to meet Council' targets[81]

Year	Renewable Electric (MW)	Renewable Heat (MW)
2015 (actual level)	15.3	5.35
2018 (actual level)	21 (19% of target)	7.5 (4% of target)
2018 (to have been on track)	30 (27% of target)	45 (27% of target)
2022 (to be on course)	65.5 (11.13 per year from 2018-2022)	86.25 (19.69 per year from 2018-2022)
2026 Targets	**110**	**165**

The *Bath & West Community Energy Fund* supported the increase of community-owned energy by investing in local projects. Between April and November 2022, their renewable energy projects generated 10,328 MWh (1.5% above target)[82]. One example project is the instalment of solar panels on the roof of Beechen Cliff School[83]. The Fund fitted the solar panels for free and now manages the energy produced, selling it back to the school at a reduced rate, thus saving 52 tonnes of carbon emissions per year. Another example of clean energy is *Charlton House* care home in Keynsham that received a grant from the decarbonisation scheme which, in the long-term, will reduce their carbon emissions by 57.51 tonnes and save £14,287 annually in energy costs[84].

Causal Map of SDG7



SDG8 – Decent Work and Economic Growth

Current trend

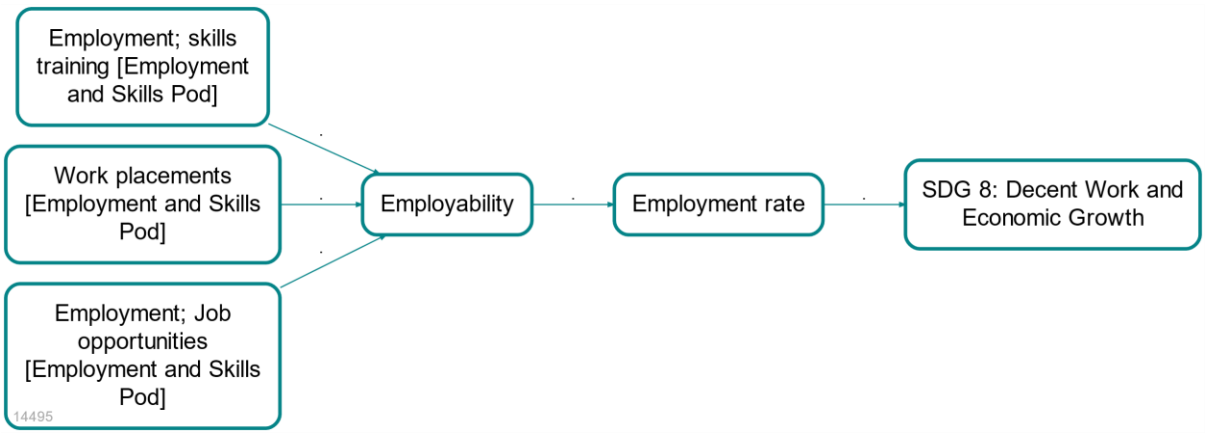
Bath's World Heritage site status, beautiful architecture and history, and considerable shopping facilities make it a popular tourist destination and in 2019, it was the 11th most visited city in the UK by international visitors with more than £450 million to show for it[85]. Over 110,000 jobs feed into the city's economy with an employment rate (aged 16-64) of 74.8%, as of September 2022[86]. There is a slight decrease from December 2021, where employment rates were 79% compared to the average for England of 75%[3]. The 2022 claimant count was 2.2%, lower than the UK rate of 4%[87]. In 2021, median weekly earnings for full-time workers is £587, less than the UK average of £611, likely due to the abundance of lower paid retail and hospitality jobs that contribute to the tourism sector together with sharp income inequality. In effect, the lack of affordable housing leads to a labour shortage of low-paid labour force which tend to be performed by commuters from neighbouring towns and cities.

Despite the magnitude of lower paid occupations, 57.1% of employees in B&NES are in high-skilled occupations, compared to 52.5% nationally[10]. Bath's NHS sector and the two Universities together generate more than one in five local jobs, directly and indirectly[37]. 37% of Bath's total employment is in Health, Education and other predominantly public sector activities compared to a national figure of 26%. Households have an annual average disposable income of £22,625 per person (7.2% higher than the UK average) and productivity is £36.80 per hour worked (5.2% higher than the UK average).

What is being done?

In the *2014 Economic Strategy review,* the Council set out various targets to grow the local economy[88]. These included promotion of B&NES for inward investment demonstrating competitive identity, and ensuring better opportunities with the neighbouring Councils through coordination. Improvements to the workforce's skills with schemes such as the Employment and Skills Pod – a free service which finds upskilling courses, work placements and job opportunities – ensured they have stayed on track to prevent worklessness and increase participation.

Causal Map of SDG8



SDG9 – Industry, Innovation and Infrastructure

Current Trend

Between 2010 and 2021, there has been a 22% rise in the number of businesses in B&NES, with a total of 8,640 in 2021, which is lower than the UK average increase of 32%[3i]. The 'Social Work Activities' sector has increased its Gross Value Added from £15 million in 1998 to £53 million in 2018[89]. Meanwhile, the 'manufacturing' sector has fallen from £322 million to £166 million over the same period. One of the booming sectors has been in the 'Real Estate' industry which grew by £392 million over the same 20 years. Despite being the largest industry contributing to B&NES' Gross Value Added, in terms of the capital generated, 'Real Estate' has less than 400 enterprises as of 2021[3]. The sector with the largest number of businesses is 'Professional, Scientific and Technical activities', which accounted for 21% of all enterprises (1,830 businesses)[3].

Infrastructure in and around Bath is constantly improving. Since 2016, the number of people commuting to work via bus has steadily increased[3]. Meanwhile, the use of cars as commuter transport has steadily declined since 2011, falling from around 52% to just over 45% of people using this mode of transport. This can likely be recognised as the result of both better advertisement on the benefits and ease of car-alternatives, as well as the improvement of bus routes and schemes. Compared to similar sized cities, Bath has a much smaller commuter uptake for buses (9% compared to, say, Oxford who has 17%)[78]. However, 75% of people driving to work in Bath do so from outside the city[90].

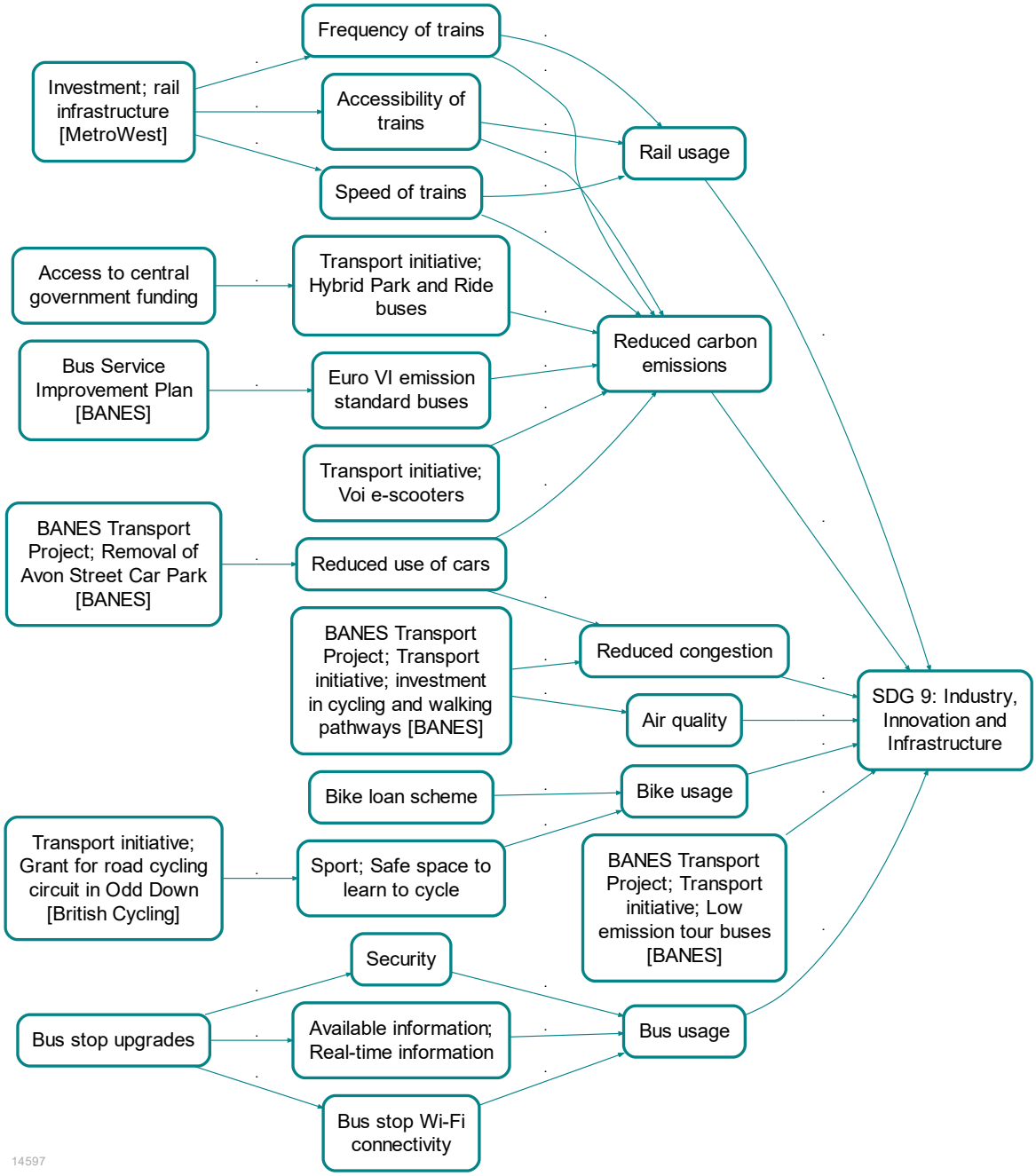
What is being done?

Local infrastructure to improve cycling and walking pathways have had backing from the West of England Combined Authority[78]. Between 2020 and 2036, a total figure of £411 million has been proposed to improve the local high streets and cycle routes within Bath. Whilst there are several different projects designed, an example is the *A4 Bristol Corridor* which will allow for an end-to-end cycle route and faster bus services[91 xciv]. This is beneficial to congestion problems and air quality improvements since 50% of the route has air quality issues.

The loan bike scheme allows people to trial the use of a bike for commuting for 2 to 4 weeks in the hopes that it encourages the permanent swap[78]. As of the latest survey, 42% of customers said they would switch (and buy) a bike as a result. Similarly, *Voi electric scooters* around the city reduce the need for car services for short journeys. Per kilometre the average carbon emissions from vehicular transport is significantly higher than that of *Voi*s (ranging from 102.3 grams of CO2 for the local bus, 170.5g for a petrol car and 208.3g for a taxi, compared with only 29g for a *Voi*)[92,93]. Furthermore, thanks to a £600,000 grant from *'British Cycling'*, a 1.5km closed road cycling circuit in Odd Down was developed in 2013 to enable people to learn and train without having to navigate Bath's busy roads. It is 1 of only 17 specific closed road cycling circuits in England[94]. Tour buses in B&NES were replaced with low emission vehicles following a period of over-provision that produced a sizeable amount of CO2[91].

Finally, the Bus Service Improvement Plan (BSIP), if realised, would mean that by the end of 2023 all buses would meet Euro VI emission standards and by 2035 (at the latest) all buses would be zero-emission[95 ic]. As of December 2022, thanks to direct investment from *Greater Bristol Bus Network*, there are 179 buses that meet Euro VI emission standards across the West of England (excluding Bristol itself)[92]. There are, however, 360 buses throughout the BSIP region that do not meet Euro VI standards yet.

Causal Map of SDG9



SDG10 – Reduced Inequalities

Current Trend

Twerton West and Whiteway are the two most deprived areas, and they are also in the bottom 10% most deprived areas nationally. Twerton has a child poverty rate of 35% compared to 19% in the local authority as a whole. The GINI coefficient of employment in B&NES is 0.36, ranking as the 34th most unequal district in the UK[96]. In terms of the mean hourly ethnicity pay gap was 6.7% in 2022[97]. Finally, deprivation is a significant factor in the level of obese children, especially among children in Year 6 aged, and even more so for boys[3].

What is being done?

The Council developed a Single Equality Scheme that combines the NHS and Council's separate equality schemes into one: the *Single Equality Scheme for Race, Disability, Gender, Age, Religion or Belief and Sexual Orientation*. This allows for a more strategic approach to all equality issues. The Council also uses an *Independent Equalities Advisory Group* (IEAG) to ensure fairness[98].

The *Black Families Education Support Group* runs weekly 2-hour sessions with a curriculum rooted in BAME culture, heritage and identity. It includes educational activities for young people[99], as well as advice and advocacy services for parents, such as school admissions appeals and race equality & education.

Bath Mind has a plethora of information, advice and services on offer[100]. It ranges from support with stress, resulting from the cost-of-living crisis to advice about legal rights and LGBTQ+ resources. For example, they operate a phone service called "switchboard" which is open from 10am to 10pm everyday to support anyone with LGBTQ+ related problems or questions. They offer other wellbeing activities too such as *wellbeing walks* and *safe space groups*. Lastly, *Mind* makes active conscious efforts to be an anti-racist charity[101]. Working towards such an essential and 'should have already happened' goal should be easy, yet the deep-rooted structural inequalities and racism of our society mean that many look for mental health support outside of the mental health system "because the system doesn't work for them".

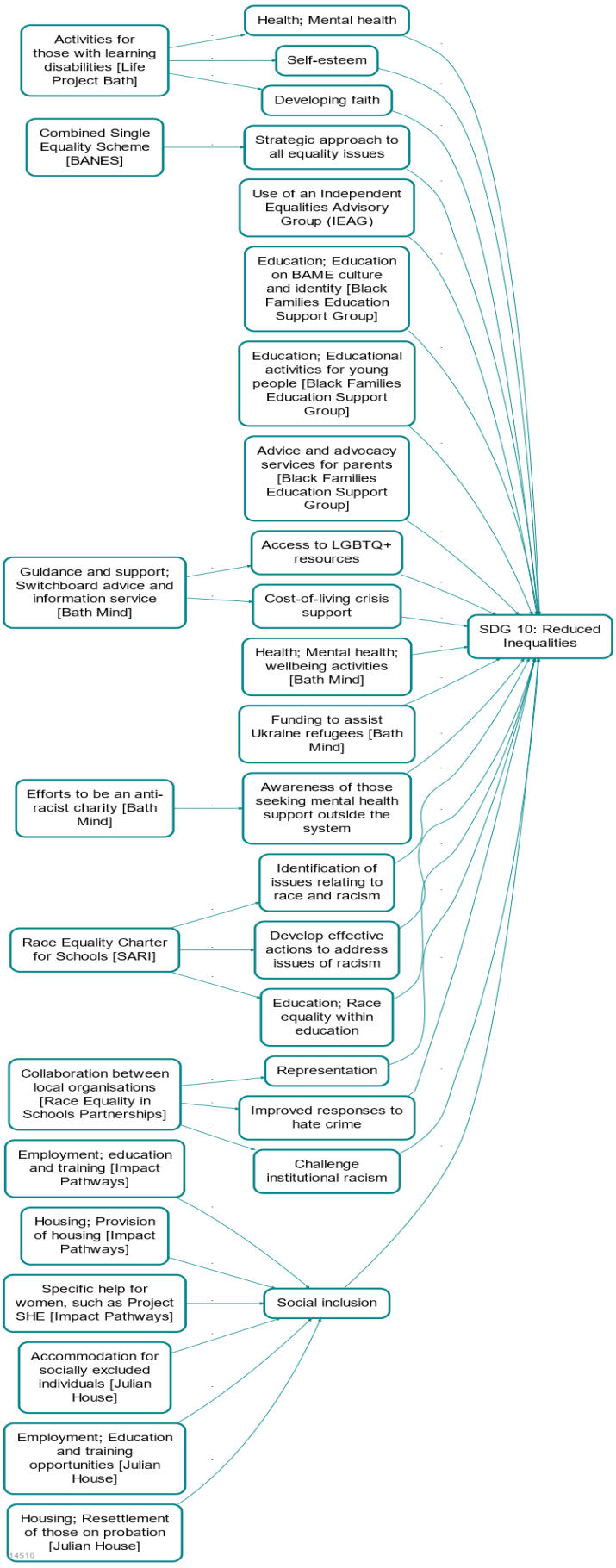
The *Life Project Bath* runs daytime activities for people with learning disabilities[102]. Their aim is to value everyone's holistic needs and well-being, whilst nurturing healthy relationships and providing a space for people to express their uniqueness. There is opportunity for those who want to develop their faith, too.

To tackle hate crime, charities such as *SARI* provide support for people in need[103]. In 2021-2022, there were 56 hate crimes reported – a 19% rise from the previous year. SARI also worked alongside B&NES Council to create the *Race Equality Charter for Schools* which is a framework seeking to identify issues relating to race and racism, develop effective actions to address these, and achieve race equality within the education system[104]. The *Race Equality in Schools Partnership* is made up of several local organisations that aim to achieve race equality[105].

Impact Pathways is a charity that supports those who have been, and remain trapped within in a cycle of, social exclusion for reasons such as alcohol & drug abuse, prior criminal offences and learning differences[106]. They provide assistance in education & training, housing and changing attitude & behaviour. They also provide distinguished help for women, such as *Project SHE*[107].

Julian House supports domestic abuse victims, people who find themselves homeless, refugees and prison leavers with accommodation, education and training opportunities[18ii]. In 2022, they helped 179 people on probation to resettle (avoiding homelessness and reoffending).

Causal Map of SDG10



SDG11 – Sustainable Cities and Communities

Current Trend

Housing

B&NES is a wealthy area with World Heritage Site status and higher-than-average house prices, which all contribute to it being joint third in a list of least affordable cities in 2021 in the UK[3]. The average house price in B&NES is 1.58 times higher than the UK average in 2022[108,109]. Furthermore, the average private market rent for a 4-bedroom dwelling in B&NES[110] is £2,390 compared to the national average for England of £1,705. Local Housing Benefit (LHB) is below the median private rent in B&NES. For example, a 2-bedroom dwelling would cost around £1,000 monthly whereas LHB is £847.69 a month[111]. In 2022, the benefits cap applied to 209 households in B&NES, with 20 households being capped between £300 and £400[112]. The average wait for a 2-bedroom social housing property for those who urgently need to be housed due to a serious risk to health, safety, wellbeing or a specific statutory requirement (Group A) was 37 weeks[3].

Climate and Transport

Plans for the reduction in carbon emissions and an overall improvement to air quality and greenery is a major priority within B&NES. Many schemes either include or are entirely created to facilitate these improvements. Despite Bath's topography exacerbating the levels of pollution since the main congested area lies at the footwell of hills which trap pollutants, monitoring sites have shown that $PM_{2.5}$ and PO_{10} levels are below that of the annual average objective[3]. NO_2 levels, however, were above the annual mean objective on 5 occasions but, overall have fallen in a monthly downward trend since 2017.

Homelessness

B&NES has a greater level of successful outcomes for households that are at risk of homelessness (70% during 2020/21) compared to the South-West (58%) and England (59%)[3]. The government's *'Everyone In'* initiative helped in the fall of relief duties, from 39% in 2018/19 to 28% in 2020/21. 8.8% of households become homeless as a result of an end to their social rented tenancy compared to 3.6% in the South West and 3.1% in England. Moreover, domestic abuse is the second main cause of homelessness in B&NES (19%). Since 2017, the number of rough sleepers has fallen from 37 per 100,000 to 17 per 100,000 in 2021. These figures are still higher than the UK average for both years (8 per 100,000 to 4 per 100,000, respectively). In 2021 there were an estimated 14 rough sleepers at any given time.

What is being done?

Homelessness

B&NES Council has set the target to eliminate homelessness by the end of the 2023/2024 financial year[3]. The government allocated £1,377,977 to B&NES Council under the *Rough Sleeper Initiative*, to reduce the number of rough sleepers to 0 by the end of March 2024.

Affordable Housing & Liveable Neighbourhoods

The majority of housing growth (93%) will be from single person households and couples aged over 65[3]. To accommodate for this, reduce the wait time for social housing, meet the homelessness eradication target and generally just provide more affordable housing, B&NES Council has made it a pre-requisite that 30-40% of the buildings on 'large' new development sites are ringfenced as affordable housing[80]. 25% of these affordable homes per new build scheme should be *First Homes*, which are to be sold to first-time buyers earning less than £80,000 annually[113]. The maximum price after discount will be £250,000, and this discount will be passed on at each subsequent sale.

Additionally, community engagement is prominent in B&NES. *Liveable Neighbourhoods* are a worldwide scheme to encourage less vehicular travel whilst also creating pleasant community outdoor areas[114]. A close working relationship between providers and the communities themselves means funding is less likely to be wasted and the real issues felt by residents can be addressed. Some interventions are physical (such as

parking restrictions, cycle lanes, charging spaces for hybrid/electric cars), whereas others are behavioural (such as 'walking school buses' or car share clubs). Within B&NES, there are 15 liveable neighbourhoods and, based on active community engagement and feedback, drafts have already been made and public response is due in 2023[111]. Additionally, B&NES has implemented a *'You said, We did'* initiative which is displayed as a transparent space for any complaints made. They are posted by the Council and show how a situation was dealt with. However, this initiative is not overly used. Overall, the local authority's focus around community-say is apparent, and an engagement approach creates a space for enhanced efficiency. However, better advertisement of its existence may be crucial to helping improve its effectiveness.

Climate, Clean Air Zone & Transition Bath

B&NES has several new plans to improve public transport and reduce the need for vehicles. The introduction of the *Clean Air Zone (CAZ)* which charges any incompatible vehicles to reduce through-traffic and minimise pollution levels, and other green infrastructure projects will allow B&NES to be a more sustainable and pleasant place to live, whilst also improving accessibility and inclusive economic growth. Some example projects include the *Bus Service Improvement Plan* which aims to have 95% of services running on time whilst also implementing zero-emissions buses[115]. Also, B&NES advocates an *Anti-Idling Campaign* to further reduce carbon emissions in and around the city[116]. Finally, *Transition Bath* is a community run group that aim to establish a more sustainable supply of energy through locally grown, processed and sold food as well as carbon neutral and resource efficient local transport system[117].

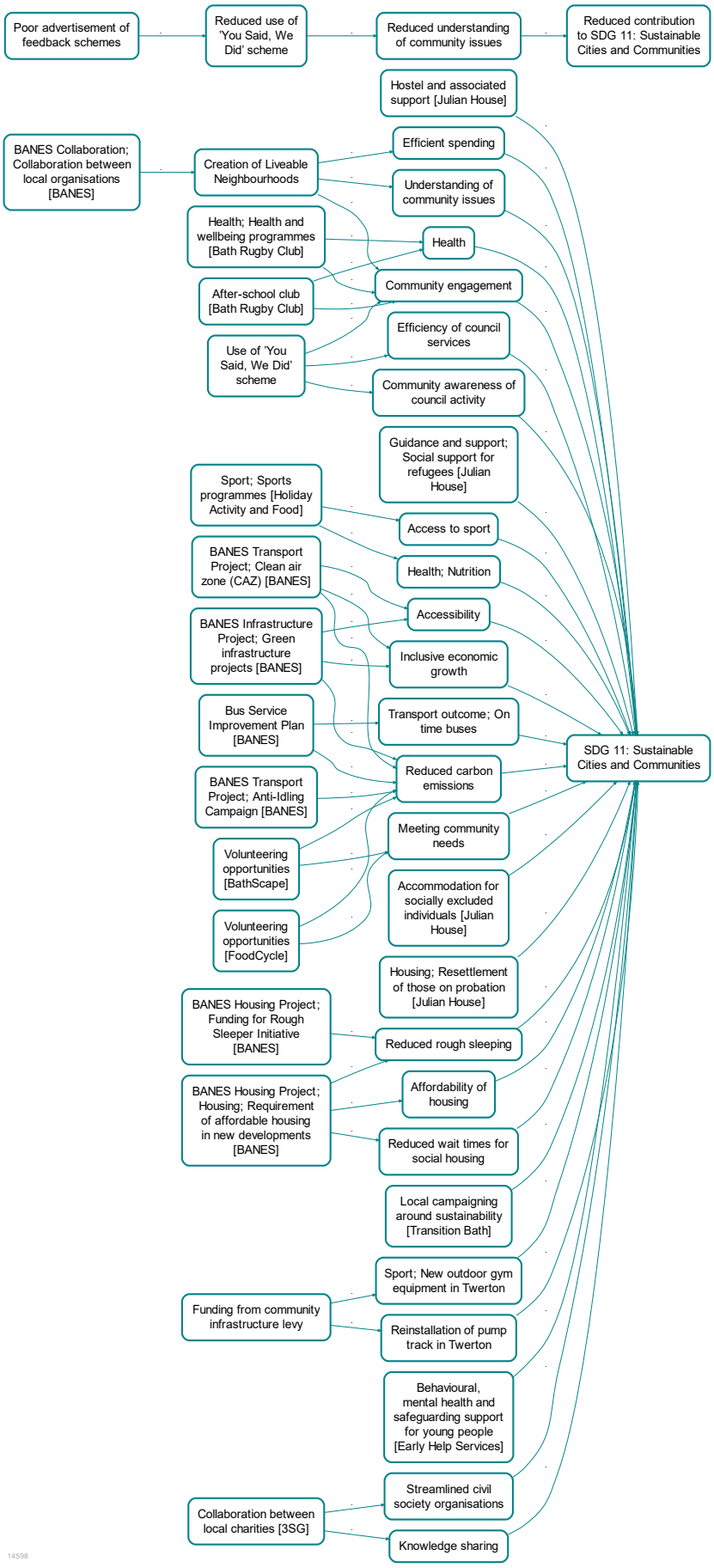
Other interventions

B&NES Council pays a high attention to the facilities provided for exercise – including cycle routes, footpaths or sporting centres. For example, the C*ommunity infrastructure levy* allocated £37,000 to reinstate the pump track and install new outdoor gym equipment in Twerton[118]. In parallel, *Bath Rugby Club* run multiple health and wellbeing programmes for anyone to get involved including the programmes *On Your Feet*, *Move with Bath* and *Walking Rugby[119]*. This encourages healthier choices through community-engagement. The club also further embraces community outreach by hosting several half-term and after school clubs. *Early Help Services* provide support to children, young people and their families with a variety of needs such as behavioural, mental health, safeguarding, parenting or speech issues[120].

3SG is a membership network in B&NES for over 200 local charities. Members are able to share news, events, knowledge and network. This is a unique service that streamlines civil society organisations and benefits from sharing information[121].

Finally, many other civil society organisations promote volunteering activities. For example, *BathScape* make use of local people who can lead walks, partake in public engagement, carry out research etc[122]. Food banks such as *FoodCycle* allow for a variety of volunteering opportunities[17]. This structure allows people to get involved in any way they can, without feeling too restrained, which encourages participation.

Causal Map of SDG11



SDG12 – Responsible Consumption and Production

Current Trend

B&NES has a rigorous recycling infrastructure with weekly collections of recyclables but only bi-weekly collections of general waste (to encourage less waste). In 2005, the local authority agreed to a waste strategy that would see zero waste by 2020, however, this has now been pushed back to 2030. As of 2022, 59% of household waste was recycled or composted[123]. The Council is currently proposing to increase recycling to 68% by 2030[124]. Between 2014/15 and 2020/21, there was a rise from 7.15% to 30.56% in the amount of waste sent away for energy recovery[125]. The opposite trend can be found in the amount ending up in landfill. It fell to only 3% in 2020/21 from 19.18% in 2015/16. Overall, this means that 95% of all waste is either reused, recycled, composted or treated (energy), resulting in only 3% ending up in landfill[119]. In 2020/21 in B&NES, 100% of the 7,970 tons of food waste was recycled to produce biogas and biofertiliser for use on brown field sites[126]. Furthermore, 100% of the 7,668 tons of garden waste was locally composted to produce nutrient-rich compost for local farms, and 100% of the 6,997 tons of glass, bottles and jars was turned into new products.

What is being done?

B&NES Council has put a lot of attention into educational recycling campaigns to improve compliance, such as school talks, leaflets, the delivery of roadshows, community events and residents groups[127]. Various food distribution projects attempt to alleviate food waste by redistributing to those who may need it more. For example, *Crop Drop* goes right from food to fork[128]. Any excess crops that are grown by allotment users are picked and left in a collection box where they are then collected and redistributed to those experiencing food poverty. Another similar concept of a no waste circular economy can be seen with *Too Good To Go* where businesses are able to upload their leftover products from the day, and the public is able to come and collect these at a discounted price.

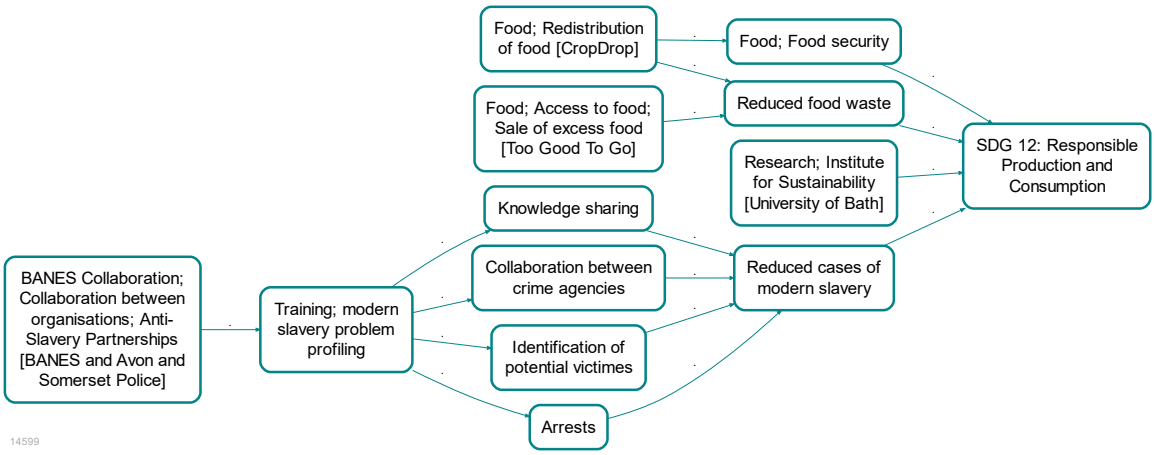
Research

The University of Bath houses a Research Facility originally called *Centre for sustainable and Circular Technologies* (now named *Institute for Sustainability*), whose research drive is circularity[129]. Some topics explored include waste valorisation & recycling, clean energy and sustainable materials. Since its creation in 2008, the centre has been provided with £50 million worth of funding, and generated £14 million of grant income and £12 million of investment.

Tackling Modern Day Slavery

B&NES Community Safety Partnership and *Avon and Somerset Office of the Police and Crime Commissioner* joined together to create a safety plan which highlights the importance of preventing modern slavery[130]. Regional coordination for the South West is managed by the *Anti-Slavery Partnership* (ASP) which Avon and Somerset joined in 2009[131]. Each local ASP oversees training and ensures agencies are working as best they can to, for example, organise visits to potential modern slavery sites. The agency has supported the identification of potential victims, arrested those responsible and facilitated information sharing between the relevant partners.

Causal Map of SDG12



SDG13 – Climate Action

Current Trend

The B&NES Environmental Sustainability Partnership (ESP) is a leadership and coordination body for environmental sustainability and climate change work. They hold annual meetings to discuss progress and action and comprise of the sub-groups: Local Food Partnership, ESP Sustainability Network and Community Energy Forum[27]. In 2010, the ESP created the first *Environmental Sustainability & Climate Change Strategy* and has since been working towards the UK's 2050 goal of reducing carbon emissions by 80% of the 1990 levels. Their own personal goal was to reduce carbon pollution by 45% by 2029 (and be carbon neutral by 2030)[27,132]. From 2009 to 2019, there was a 26.9% reduction in carbon levels so, if progress continues at this pace, by 2026 the target should be met[81]. As of 2020, CO2 emissions were below the average for the South West, with B&NES emitting 250.8 kilotons of domestic CO2 emissions compared with an average of 265.2kt for Southwest local authorities[133]. Per capita emissions were below the South West's average of 4 tonnes, falling from 6.4 tonnes to 3 tonnes between 2005 and 2020, i.e. a 53% reduction[134].

What is being done?

The Clean Air Zone (CAZ)

12,000 people across B&NES suffer from asthma, with 74% occurring in urban areas[135]. B&NES Council created a Clean Air Zone following the Government's *2017 UK Air Quality Plan for NO_2*, which was implemented in March 2021. The purpose of the CAZ is to deter non-compliant HGVs and LGVs from driving through Bath's inner streets which, in turn, leads to less pollution. Average NO_2 concentrations have fallen by 21% from 2019 to 2021, despite traffic returning to a pre-pandemic level[136]. Furthermore, the percentage of chargeable non-compliant vehicles entering the CAZ each week reduced from 6% in the launch week to an average of 1% by the end of 2021. General traffic flows within the CAZ was down 8.9% and 8.3% in the wider B&NES, compared to 2018 levels[137].

Construction

B&NES drafted an ambitious zero carbon planning policy for new buildings. It stated that, as of March 2019, all new housing developments must be carbon neutral or carbon positive[138]. In March 2022, 97.75% of new dwellings had an energy efficiency rating of C or above. By 2035 all buildings must have an energy efficiency of C or above. Therefore, old buildings must be retrofitted to reflect these improvements. Between 2021 and 2022 the total number retrofitted rose from 26% to 27.64%[139]. To reach the 2035 target, an annual increase of 5.57% will be necessary. It is worth mentioning that 56.05% of social housing renting has a C rating or above compared with 27.82% and 22.47% of privately-rented and privately-owned

accommodation respectively. Additionally, B&NES has converted 4,000 street lights to LEDs, saving £50,000 on maintenance and £200,000 on electricity annually [27]. This reduces the Councils' carbon emissions by 3%, and an annual energy saving of 64%[140]. Community-owned energy has increased in recent years, providing more investment into clean technologies. *Bath and West Community Energy* reduced carbon emissions by 2,180 Tonnes of CO2, whilst also tackling fuel poverty[81].

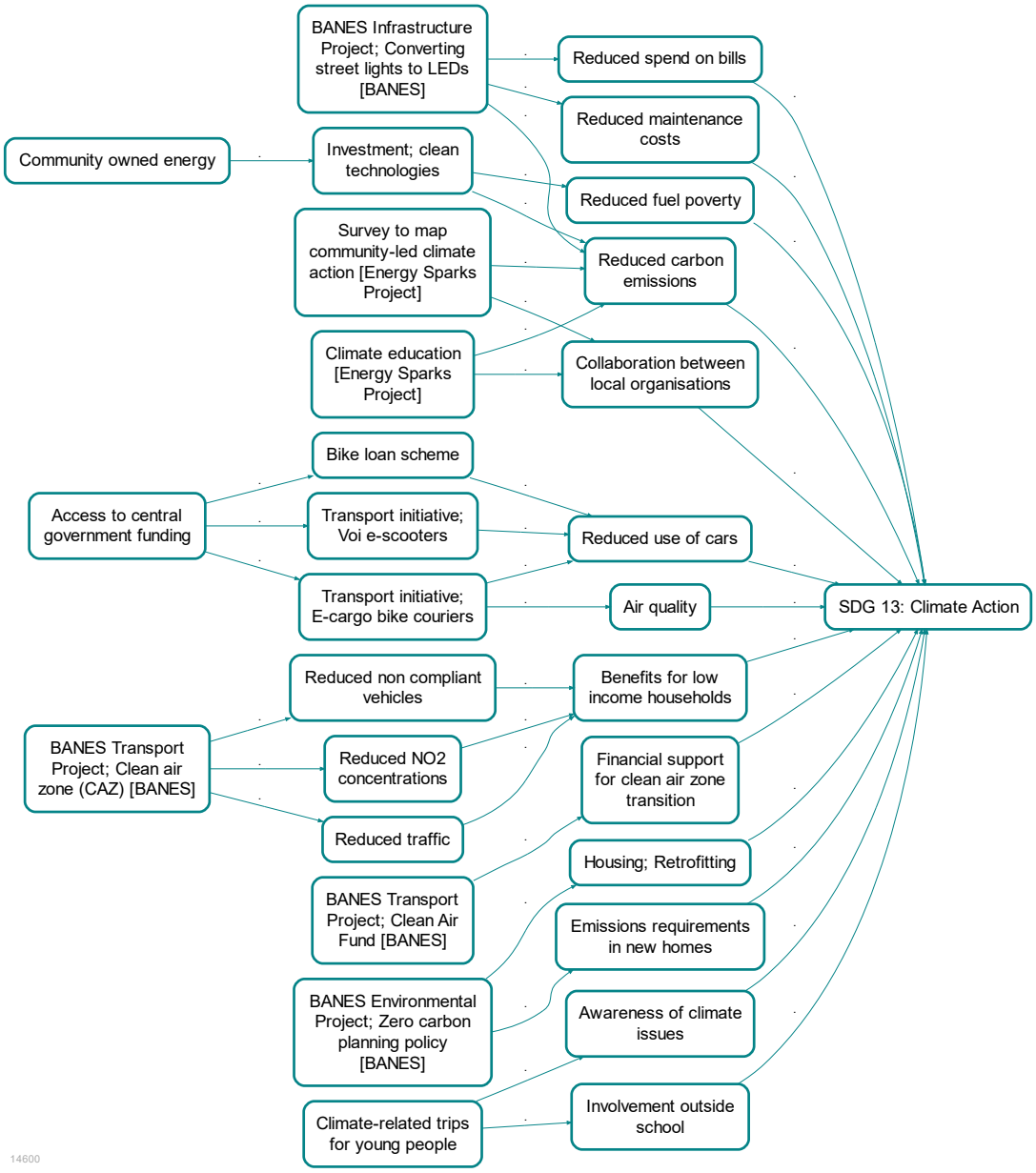
Education

Spreading awareness of and education surrounding climate initiatives is for sustainable development and the implementation of the SDGs. The *Energy Sparks Project* is a charity that promotes tools, services and programmes to reduce carbon emissions. They have launched a survey to map community-led climate action, encouraging collaboration among local organisations[137]. Many other organisations are involved in the provision of climate-related trips that allow children to become more involved in nature, an example being *Bath City Farm* [36]. Finally, B&NES Council is working alongside a team of travel advisors who promote sustainable travel and behavioural change[133].

Subsidies and Grants

B&NES provides subsidies and grants that support climate action. For example, the *e-cargo bike delivery* scheme, funded by the UK government, offers businesses free trials of e-cargo bike couriers to reduce the number of fossil-fuelled vehicles on the road and improve air quality[141 cli]. Additionally, the loan bike scheme allows for people to trial both standard and electric bikes before purchasing, and the e-scooter hire scheme allows individuals to hop-on and hop-off of scooters around the city to reduce car usage.

Causal Map of SDG13



SDG14 – Life Below Water

Current Trend

The River Avon extends for a distance of 30km, from the point of entry in the east of Bath in Dundas to the West of Keynsham meandering through 570km sq. of B&NES. This includes key bodies of water such as the Chew Valley Lake, which is designated as a *Special Protection Area* and a *Site of Special Scientific Interest*[142]. It is one of Britain's most important sites for wintering wildfowl including the Shoveler. According to the National Trust, wildlife is declining faster in fresh water than in sea water or on land due to pollution and years of river modification[143]. Thus, the need for river restoration is a sustainable method that can support water health. 60% of the world's wild animals have been lost since 1970, including 83% of wildlife in freshwater rivers and lakes[144]. Wetlands alongside river flood plains benefit biodiversity, climate regulation

and water quality, providing natural flood management[140]. Moreover, removal of in-stream barriers such as weirs would help to facilitate migration and population growth of endangered species.

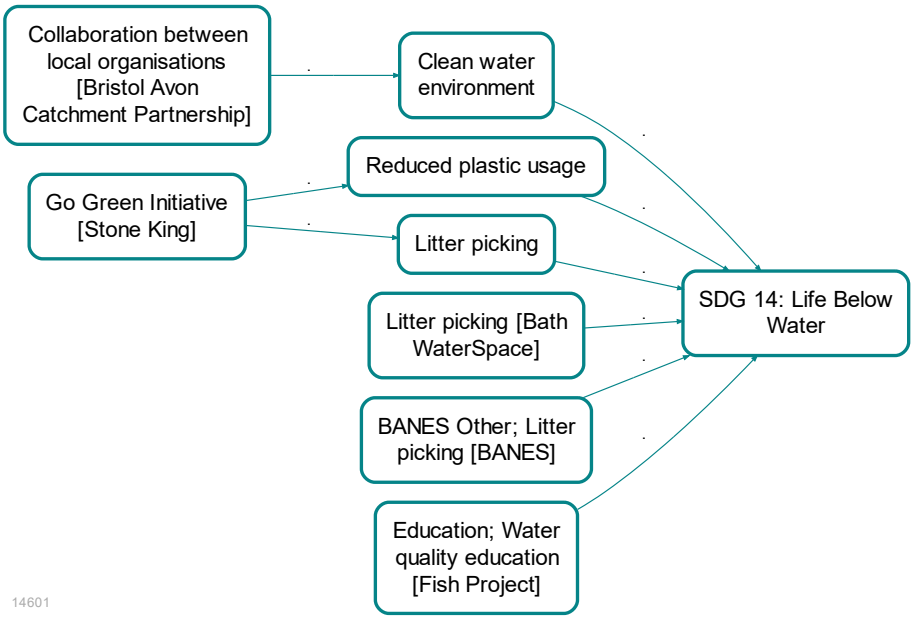
Land management and urban development are important factors in phosphate failings due to contaminants from urban run-off and pollutants from sewage and private properties[139]. The ecological status of water quality in North East Bath is 'good' and 'moderate' in the rest of the district. Radstock and Midsomer Norton rivers are identified as being 'poor'[139]. Only 24% of the Bristol Avon catchment is classified as having 'good ecological status' and 76% fails to meet the targets due to factors including physical modification, phosphate levels, sediment load and low fish populations[145].

What is being done?

The Bristol Avon Catchment Partnership (BACP) was formed in 2012, bringing together a range of organisations and local communities who work together using the *Catchment Based Approach* to improve the water environment and provide wider benefits for people and nature at a catchment scale[146] [cxlix].

A local law firm, Stone King, works hard to eliminate their single-plastic use and encourages their staff to come up with innovative ideas that the firm can implement to further minimise their impact on nature [lxviii]. As part of this *Go Green* initiative, the firm organised a city-wide litter picking event in 2019 for local businesses. Other litter picking plans are often arranged by Bath *WaterSpace*. After the event, the Council will collect any rubbish bags[147] . B&NES Council also provide daily litter picking services in the city centre through Council employees, as well as litter picking equipment free of charge to anyone who wishes volunteer to[148]. Litter and dog bins are also provided along the riverside. The *Yellow Fish Project* is a campaign to bring awareness of the link between storm drains and water quality. They are stencilled with the words "only rain down the drain"[142].

Causal Map of SDG14



SDG15 – Life on Land

Current Trend

The *Environment Agency's Natural Capital Tool* estimates that woodland in the West of England is worth £717 million in carbon sequestration, air quality improvements and hazard regulation[149]. For each additional hectare of woodland planted in B&NES, an estimated 7.5kg of PM2.5 is removed annually, with a health benefit value of £17,123. Summer cooling of businesses by trees and greenspace is worth at least £3.63 million for the West of England, and can lower energy use by 10%.

The two Universities are mindful of the nature and biodiversity thriving on their campuses. The University of Bath plants new trees for any that are disrupted due to the building of lecture halls. It also implements rockeries, stumperies, the cultivation of certain plants and performs continual maintenance of the entire site to ensure that biodiversity can thrive[150]. They are conscious to manage existing species rather than trying to introduce others that could ultimately unsettle the existing habitats. Bath Spa University has a similar commitment to biodiversity on their campus. As a registered park and garden, they manage their Estate to ensure the provision of bat and bird boxes, green roofs, the rewilding of scrub and grassland, and allowing deteriorating trees to remain in order to provide a good environment for insects and fungi to thrive.

What is being done?

Greenery and Environment

Investment into greenery around B&NES is large. A key action from the 25 Year Plan the Government is bringing forward through the Environment Bill is a mandatory approach to Biodiversity Net Gain. *Your Park Bristol and Bath* received £80,714 to support the delivery of the *Bath Parks Activator Programme*, creating and maintaining natural habitats in 18 parks across Bath. For improvements to Broad Street Place Community Garden in Kingsmead, £45,000 was allocated. In 2019, B&NES Council committed to planting 100,000 trees by May 2023. As of summer 2022, they had planted around 64,000 trees. Also, £67,443 was assigned towards 10 new community-based tree nurseries.

Regional organisations, such as the *West of England Nature Recovery Network* are significant in ensuring that biodiversity links outside of the B&NES constituency[151]. They work in partnership with B&NES Council as well as Bristol City, North Somerset and South Gloucestershire to guide the safeguarding and upkeep of biodiversity. For example, *The Forest of Avon Plan*[152] sets out a structure to: identify local timber demands, understand climate change's effect on trees and woodlands, and bring about better connectivity of trees and woodlands[153]. Additionally, they help deliver localised action plans as well as supporting pre-existing local plans such as B&NES *Tree and Woodland Plan* in order to deliver the most responsive outcomes.

Bats

The Bath and Avon River corridor is home to 12 out of the 18 species of bats found in the UK[154]. A regeneration of the area, by redeveloping derelict and industrial land, will allow for their safeguarding. As each species has different requirements, intensive bat surveys, citizen science projects and reviews of best practice will be used to determine the best strategies for each species[155]. As horseshoe bats have relatively weak echolocation, they tend to follow linear features such as hedgerows, tree lines and the edge of rivers so a plan to use green infrastructure to connect bat habitats (eg. fields, gardens, parks, mines and farms) will allow them to move freely and easily between green spaces.

Bees

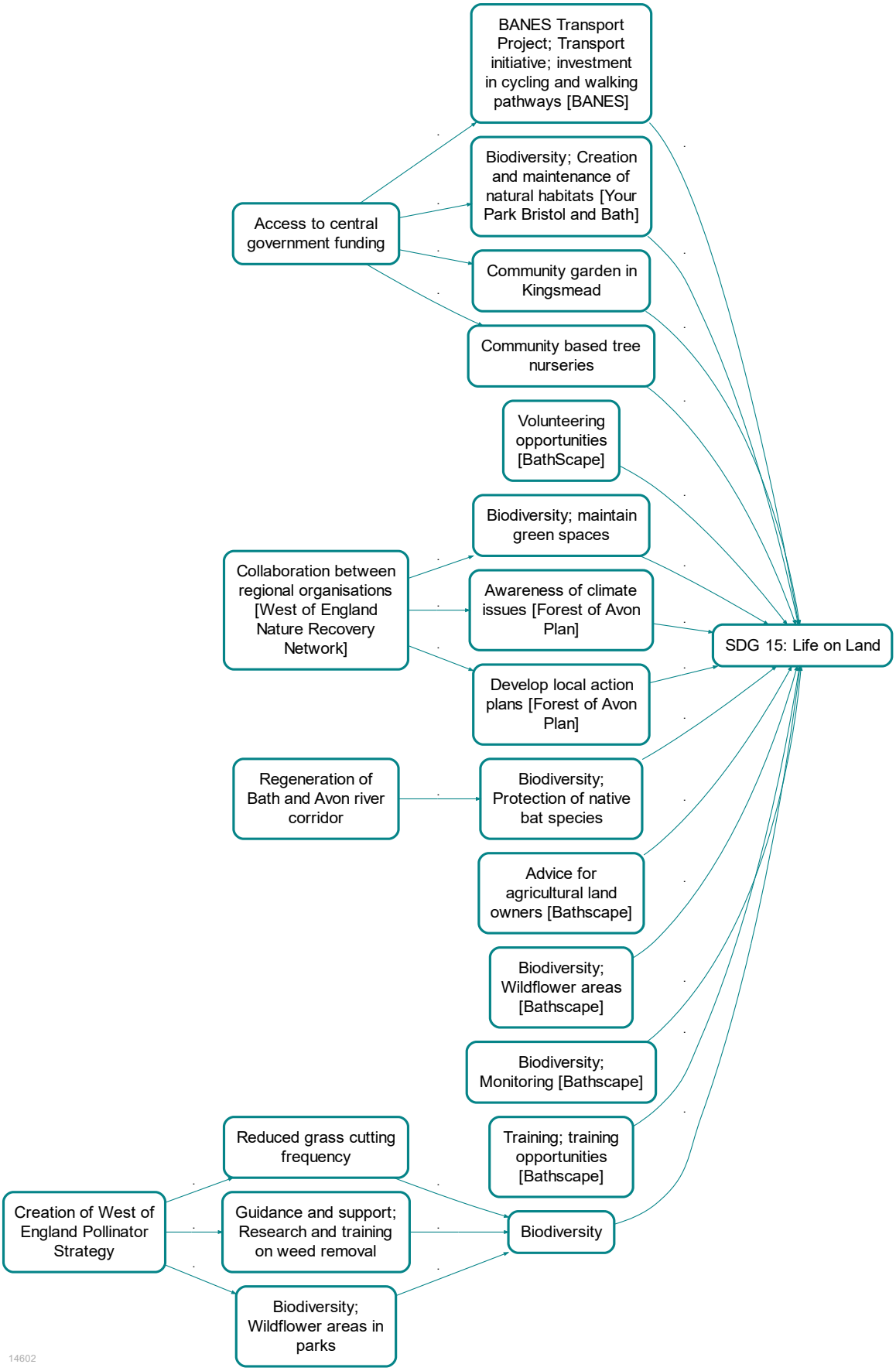
The *West of England Pollinator Strategy* endeavours to create an environment for pollinators to thrive[156]. Bees are crucial to our environment as they are responsible for the pollination of over 66% of the world's crop species which contributes to a third of the entire food supply for humans[157]. However, England has experienced the worst fall in wild bees across Europe over the past few years. It is estimated that the national cost of replacing the bee's provisions for pollination annually would be over £1.8 billion. Hence,

initiatives to protect pollinators are vital and include reducing the grass cutting frequency, improving research and training on weed removal, and the creation of wildflower-rich grassland in parks.

Bathscape

Between 2019 and 2023, *Bathscape* and its 25 projects received funding of £2.2 million to cover themes of exploring, restoring and learning from Nature. Activities include creating 12 wildflower meadows, increasing the amount of late nectar sources, and monitoring butterflies, bees, and other pollinators. The projects care for 80 hectares of woodland, 100 grasslands and 30 important viewpoints using 800 local volunteers and 600 training opportunities, from practical conservation to habitat management, and they offer free advice to agricultural land owners.

Causal Map of SDG15



SDG16 – Peace, Justice and Strong Institutions

Current Trend

Crime

Bath is the safest major city in Somerset. However, as of 2022, there were 72 crimes per 1000 people compared with 65 crimes per 1000 in in the wider Somerset[158]. As of 2023, the crime rate in Bath is 11% higher than in Somerset, 17% higher than the South West average, and 13% lower than the overall figure for England, Wales and Northern Ireland. In Bath City Centre, there were 3756 crimes between March 2022 and February 2023[48]. The most frequent of all the crimes was 'violent and sexual offences' which amounted to 28.4% of total cases. Overall, in 2022, there were 2,839 violent or sexual offences in Bath. Twerton, Central Bath, and Lansdown were the only areas that surpassed the national average of 35.87 crimes per 1000 people for anti-social behaviour[155]. The number of youths held in custody for the duration of their trial and sentencing was at a rate of 0.06 per 1000 young people as of April 2019 to March 2020[159]. The number of cautions and court sentences given out in B&NES to those aged 10 to 17 years-old, between April 2020 and March 2021, was 45 (2.7 per 1000) and the number of proven offences was 116 (6.9 per 1000)[160]. This is not too dissimilar from regional averages (South West) which were 3.3 and 6.5 per 1000 respectively. The number of youth offenders that participate in violent crimes are not only getting younger (under 24) but also the number of females involved is increasing[3].

Quality of Life

A quality of life survey has not been carried out within Bath, however a close indicator could be the 'ONS4' carried out in 2018 which is a survey with a set of 4 questions measuring personal wellbeing of residents. The results are measured out of 10 and are as follows: Happy 7.28 (high), Worthwhile 7.57 (high), Life satisfaction 7.29 (high), Anxiety 3.48 (low to medium)[161]. Overall, these scores are slightly higher than that of nearby cities. For example, Bristol's comparative scores are: Happy 6.99 (medium to high), Worthwhile 7.47 (high), Life satisfaction 7.15 (high), Anxiety 3.61 (low to medium).

Inclusive Governance

In 2022, and using the *Thriving Places Index*, B&NES was rated 7.83 out of 10 for people participation – a rise from 5.17 in 2018[162]. Looking at B&NES' two core policies around the climate, and around giving people a bigger say, they fair well in terms of at inclusive governance. Residents are able to contribute to the planning and development of their local communities and 'liveable neighbourhoods'[111]. Additionally, they have a forum called "you said, we did", where residents can raise any issues they have and the Council will respond with transparency. Furthermore, publication of meeting minutes and information hubs allow for accountability.

What is being done?

Inclusivity

B&NES Council have implemented a 'have your say' project that allows members of the public to have more power in local decision making. For example, during the development of the Local plan, residents were encouraged to contact their community representatives, such as their town, parish or ward Councillor with any local information or issues they feel needs considering[163].

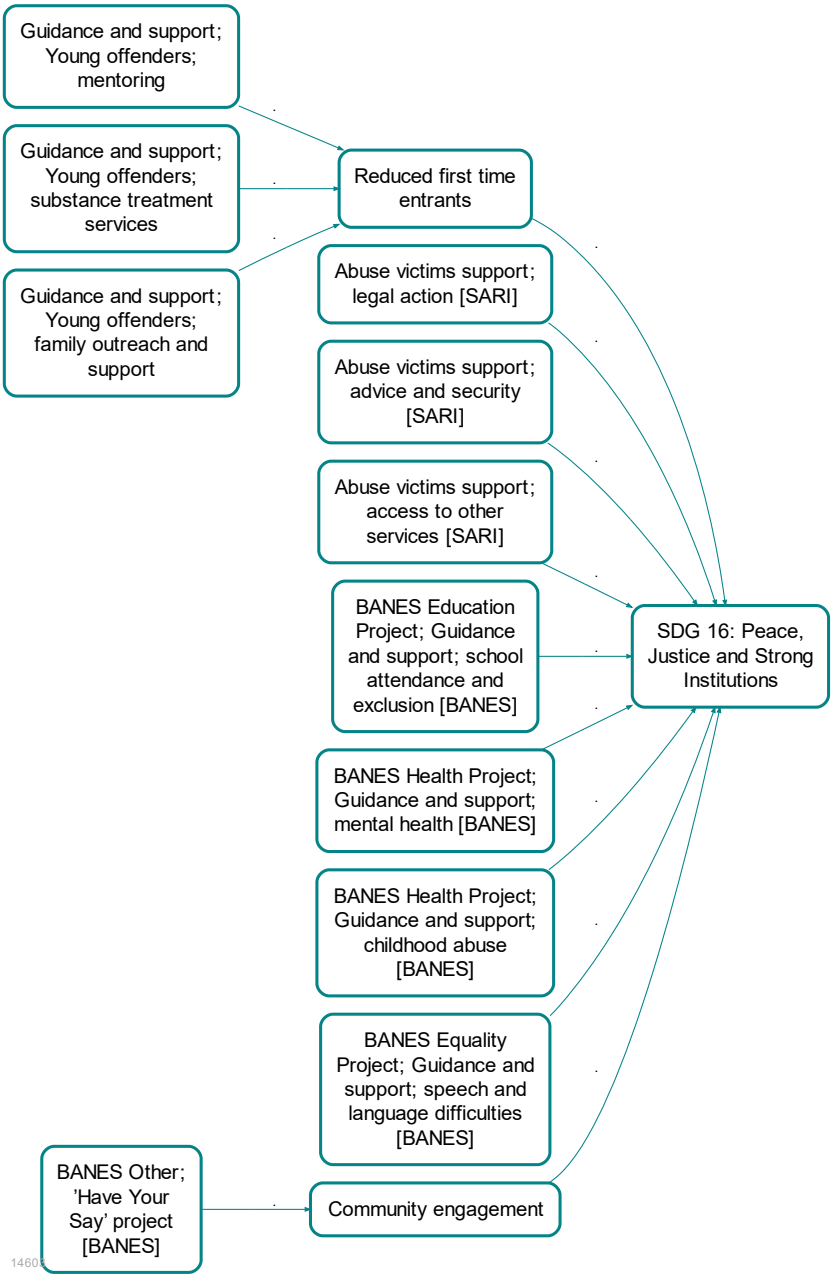
Crime

B&NES Council offers many services to support young offenders (aged 8 to 17 years) to get back onto the 'right track' through mentoring programmes and substance treatment services, as well as supporting the family of anyone harmed or affected by a criminal offence[164]. As a consequence, the number of first-time entrants (aged 10 to 17 years-old) has fallen in recent years, illustrating the benefits to specific youth crime diversion and prevention services[157].

Abuse & Inclusion

Though this is discussed in much more detail within SDG5, there are multiple civil society organisations that operate within B&NES to cater for victims of all types of abuse, such as domestic violence or racial abuse. For example, *SARI* provides support to victims and helps them to receive the assistance they need, such as legal support where necessary, encouraging relevant organisations to step in, and provide advice and security[100]. In 2021-2022, *SARI* received 56 hate crime referrals in B&NES, of which 41 were race related and 8 were homophobic hate crimes[100].

Causal Map of SDG16



SDG17 – Partnerships for the Goals

What is being done?

B&NES Council's *Strategic Evidence Base Report* is a concise and easy-to-follow document that collates key data ranging from poverty rates to educational attainment to the housing situation. It is an umbrella document that includes a wide array of topics relevant to city planning and monitoring (at the surface level). It includes plans that the Council is supporting or implementing to improve sustainability, general health and wellbeing, educational attainment, transport systems, crime rates, fuel poverty and so on. It also assists any third parties by providing the information that allows them to carry forward their positive visions.

Also, as mentioned throughout this report, the community wellbeing hub was an important foundation and lifeline to many. Creating a space that housed links to services for key agencies, providing information on how to access help and support and advice, was a crucial and extremely successful partnership – especially for the most vulnerable[165]. This drew o, and then developed, previous partnerships with *Virgin Care*, Clinical Commissioning Groups and Third Sector Groups.

Another important initiative is the B&NES Employment and Skills pod, which brings together engagement services, such as *Citizens advice*, *Bath College*, *Women's Work Lab*, the *Salvation Army* and others to create a free service for those hoping to change their careers or find employment through upskilling and training. They offer advice on both the individual and business level. Other agencies working alongside B&NES Council include: *Avon and Somerset Police, Curo, Royal United Hospital Bath, Off The Record*, *Children's Trust, Economic Partnership, Environmental Sustainability and Climate Change Partnership* and *Health and Wellbeing Board.*

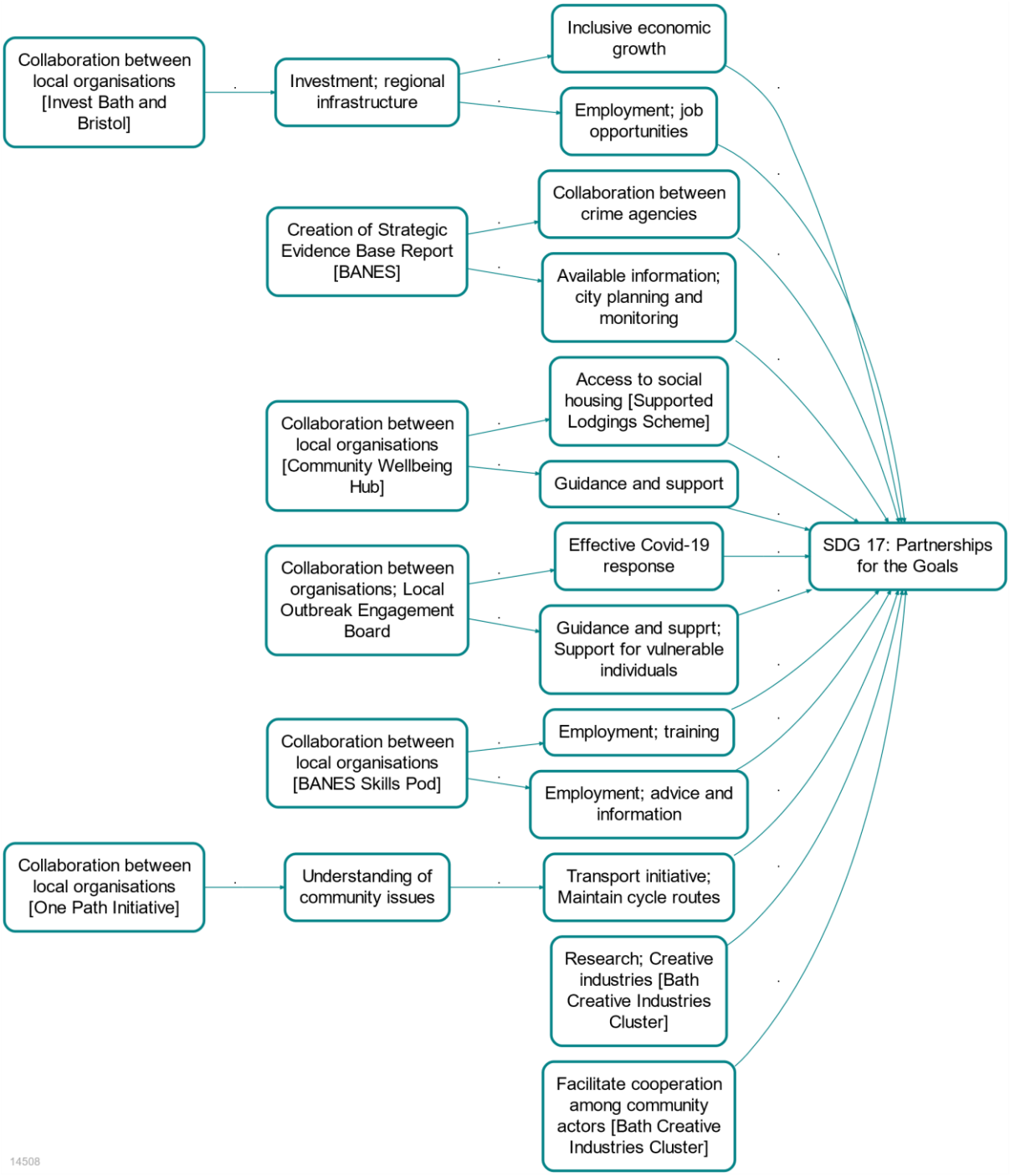
The One Path Initiative between Bath and Bristol is a perfect demonstration of one of the many strong partnerships that B&NES has[166] [clxxx]. This is organised by *Sustrans*, the custodians of the National Cycle Network. They ensure the needs of the path users are met and minimise conflict by working to understand the purpose of the path and how best to signpost it, 'decorate' it (with plants) and allow a safe path for all.

Invest Bath + Bristol is a partnership that encourages investment into the region and improves the local economy by doing so. For example, in recent years, *Netflix* productions in the South West have generated 1000 jobs, supported 500 local businesses and created £132 million for the economy[167].

The Bristol and Bath Creative Industries Cluster collates research from the Universities of *Bath, Bath Spa, Bristol, the West of England* and a host of companies working across design, broadcast, technology etc. to improve the performance of the creative industries in and around the region[168] [clxxxii].

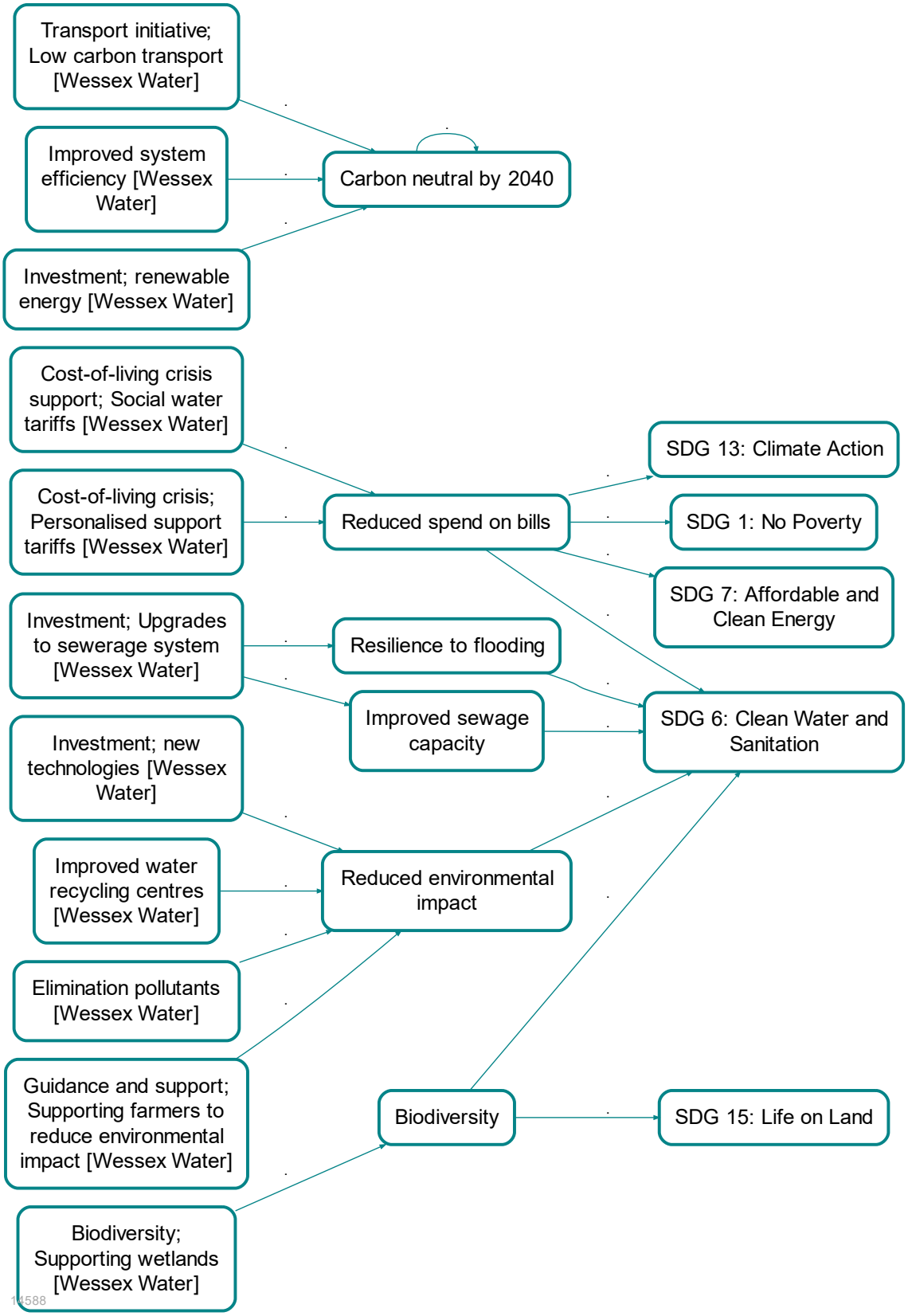
Finally, *3SG* is a third sector member group that collates any news, job opportunities, events and support relating to the third sector within B&NES[118]. They offer 1-1 support and facilitate cooperation between community actors.

Causal maps of SDG17

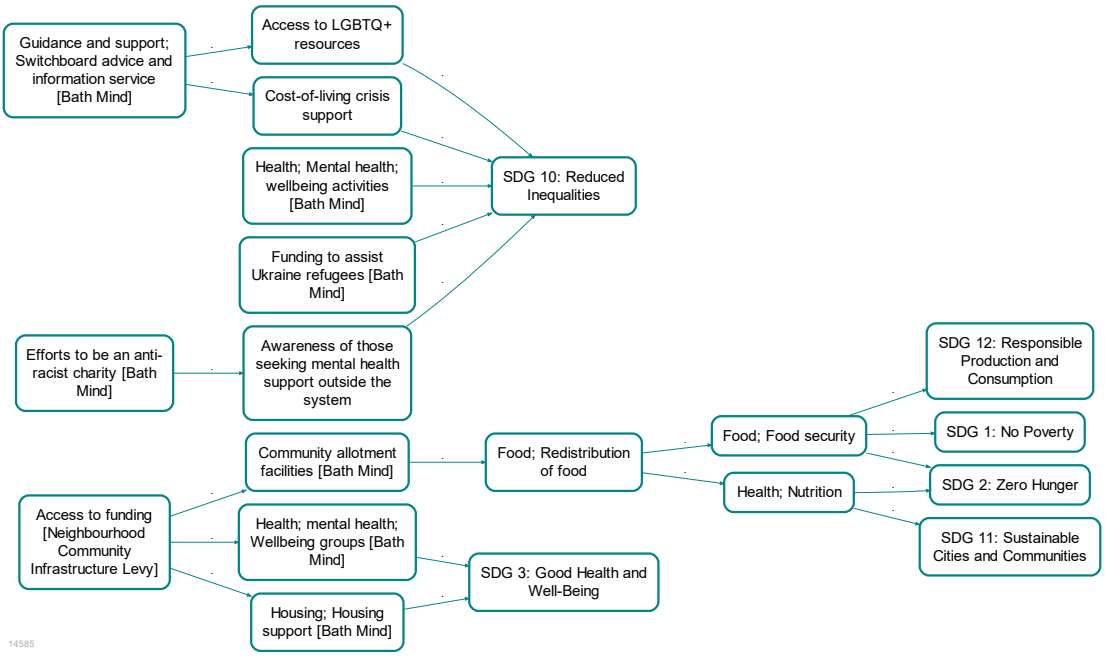


Stakeholders' impact across the SDGs

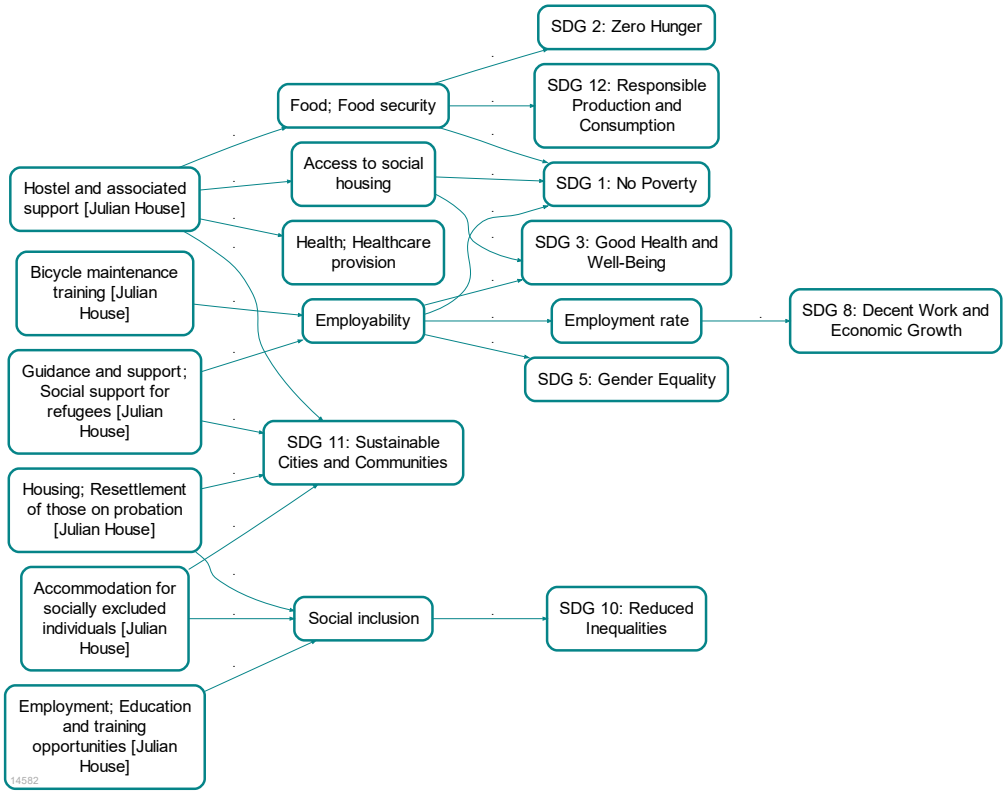
Wessex Water

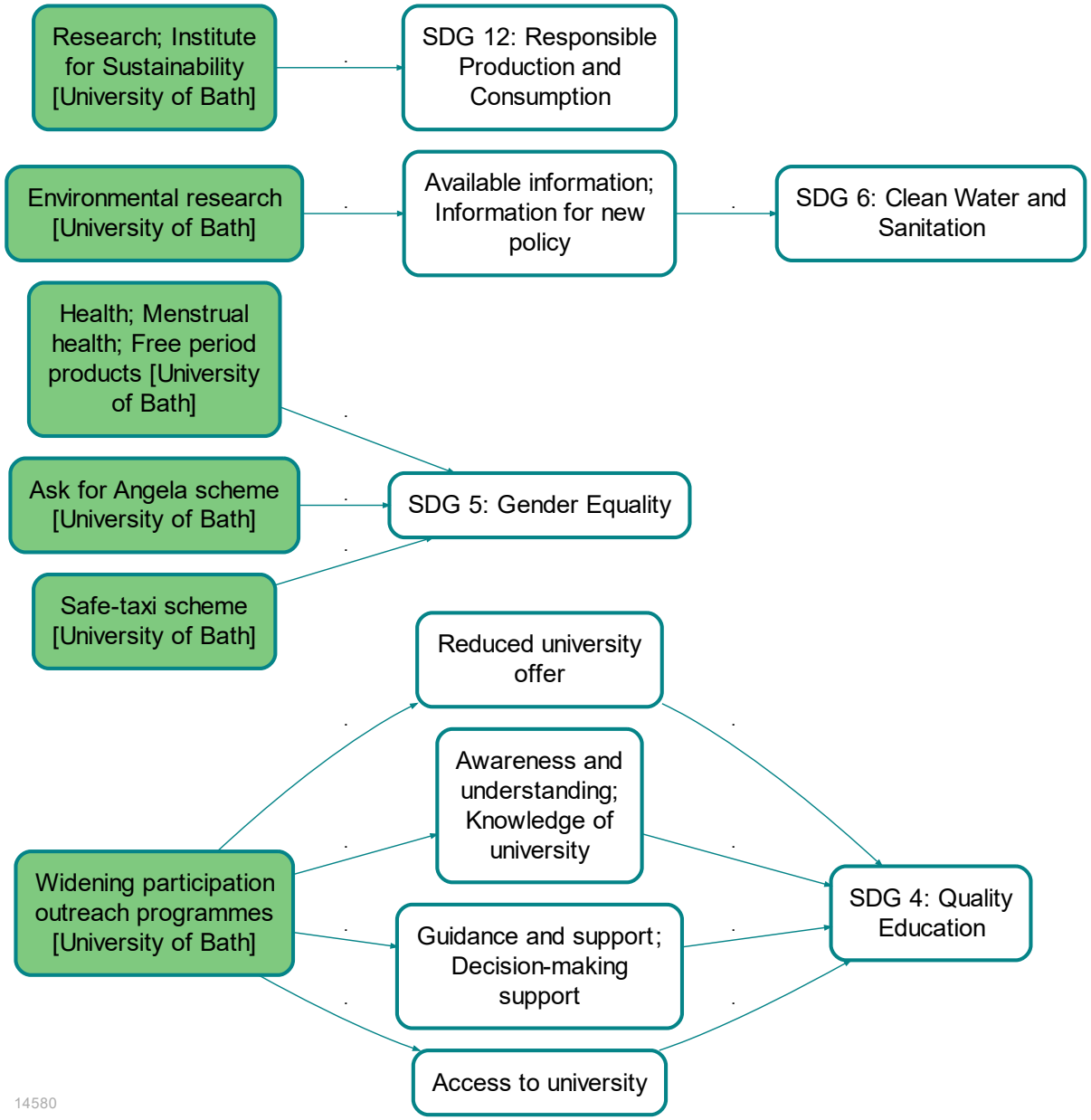


Bath Mind



Julian House




Research; Institute for Sustainability [University of Bath]
SDG 12: Responsible Production and Consumption
Environmental research [University of Bath]
Available information; Information for new policy
SDG 6: Clean Water and Sanitation
Health; Menstrual health; Free period products [University of Bath]
Ask for Angela scheme [University of Bath]
SDG 5: Gender Equality
Safe-taxi scheme [University of Bath]
Reduced university offer
Awareness and understanding; Knowledge of university
Widening participation outreach programmes [University of Bath]
SDG 4: Quality Education
Guidance and support; Decision-making support
Access to university
14580

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