

# **The Second State of Natural Resources Report (SoNaRR2020)**

## **SoNaRR2020 Register urban evidence**

Natural Resources Wales

Final Report

# About Natural Resources Wales

Natural Resources Wales's purpose is to pursue sustainable management of natural resources. This means looking after air, land, water, wildlife, plants and soil to improve Wales's well-being, and provide a better future for everyone.

## Evidence at Natural Resources Wales

Natural Resources Wales is an evidence-informed organisation. We seek to ensure that our strategy, decisions, operations and advice to Welsh Government and others are underpinned by sound and quality-assured evidence. We recognise that it is critically important to have a good understanding of our changing environment.

We will realise this vision by:

- Maintaining and developing the technical specialist skills of our staff;
- Securing our data and information;
- Having a well resourced proactive programme of evidence work;
- Continuing to review and add to our evidence to ensure it is fit for the challenges facing us; and
- Communicating our evidence in an open and transparent way.

Title: **SoNaRR2020 Register urban evidence**

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Restrictions: None

# The Second State of Natural Resources Report (SoNaRR2020)

## contents

This document is one of a group of products that make up the second State of Natural Resources Report (SoNaRR2020). The full suite of products are:

**Executive Summary.** Foreword, Introduction, Summary and Conclusions. Published as a series of webpages in December 2020

**The Natural Resource Registers.** Drivers, Pressures, Impacts and Opportunities for Action for eight Broad Ecosystems. Published as a series of PDF documents and as an interactive infographic in December 2020

**Assessments against the four Aims of SMNR.** Published as a series of PDF documents in December 2020:

SoNaRR2020 Aim 1. Stocks of Natural Resources are Safeguarded and Enhanced

SoNaRR2020 Aim 2. Ecosystems are Resilient to Expected and Unforeseen Change

SoNaRR2020 Aim 3. Wales has Healthy Places for People, Protected from Environmental Risks

SoNaRR2020 Aim 4. Contributing to a Regenerative Economy, Achieving Sustainable Levels of Production and Consumption

**The SoNaRR2020 Assessment of Biodiversity.** Published in March 2021

**Assessments by Broad Ecosystem..** Published as a series of PDF documents in March 2021:

Assessment of the Achievement of SMNR: Coastal Margins

Assessment of the Achievement of SMNR: Enclosed Farmland

Assessment of the Achievement of SMNR: Freshwater

Assessment of the Achievement of SMNR: Marine

Assessment of the Achievement of SMNR: Mountains, Moorlands and Heaths

Assessment of the Achievement of SMNR: Woodlands

Assessment of the Achievement of SMNR: Urban

Assessment of the Achievement of SMNR: Semi-Natural Grassland

**Assessments by Cross-cutting theme.** Published as a series of PDF documents in March 2021:

Assessment of the Achievement of SMNR: Air Quality

Assessment of the Achievement of SMNR: Climate Change

Assessment of the Achievement of SMNR: Energy Efficiency

Assessment of the Achievement of SMNR: Invasive Non-native Species

Assessment of the Achievement of SMNR: Land use and Soils

Assessment of the Achievement of SMNR: Waste

Assessment of the Achievement of SMNR: Water Efficiency

**Updated SoNaRR evidence needs.** Published in March 2021

**Acronyms and Glossary of terms.** Published in December 2020 and updated in March 2021

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# Urban Natural Resource Register Evidence List

SoNaRR2020

The evidence below has been extracted from the urban chapter unless otherwise stated.

If the original piece of evidence is not cited within this document then it can be found in the urban chapter or associated chapters, which will be published in March 2021. At that point this document will be superseded.

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## Evidence List: Drivers, Pressures and Impacts Table

### Climate Change

#### 1. Changing Weather Patterns

### 1.1. **Leading to people being put at risk**

Urban areas currently deal with significant environmental issues such as noise and air pollution. Climate change is predicted to create additional challenges, such as higher temperatures and weather extremes such as flooding and prolonged dry periods resulting in reduced water availability ~~scarcity~~ (ASC 2016).

In addition, the likelihood of heat waves, and associated with this the risk of overheating, is expected to increase.

The people most vulnerable to the urban heat island and flooding effects of climate change are in South Wales, especially the urban centres (Cardiff, Swansea, Newport, Neath Port Talbot) and the Valleys (Blaenau Gwent, Rhondda Cynon Taf, Merthyr Tydfil) (Kazmierczak et al 2016).

#### Evidence from Climate Change Chapter

Climate change will reduce the risks from cold weather, but higher temperatures will have a significant impact on human health and well-being, including heat stress and an increased need for cooling. The number of heat-related deaths in the UK are projected to increase by over 250% by the 2050s (Hajat et al., 2014). The percentage increase in Wales is expected to be slightly greater than the UK average. Overheating of buildings particularly affects urban areas. Climate change is likely to exacerbate urban heat islands which could lead to buildings overheating in the summer, particularly during heatwaves (Kovats and Osborn, 2016). Hotter summers are likely to exacerbate ozone pollution episodes that can have significant impacts on human health and the environment.

### 1.2. **Increase the risk of flooding in Wales**

Urban areas currently deal with significant environmental issues such as noise and air pollution. Climate change is predicted to create additional challenges, such as higher temperatures, flooding and reduced water supplies ~~scarcity~~ (ASC 2016).

Flooding is already a significant issue across Wales, with 245,000 buildings currently estimated to be at risk (extrapolated from Flood Risk Assessment Wales).

It is anticipated that this risk will increase due to climate change, which is expected to result in more intense and frequent rainfall and sea level rise. In addition, the likelihood of heat waves, and associated with the risk of overheating, is expected to increase.

The people most vulnerable to the urban heat island and flooding effects of climate change are in South Wales, especially the urban centres (Cardiff, Swansea, Newport, Neath Port Talbot) and the Valleys (Blaenau Gwent, Rhondda Cynon Taf, Merthyr Tydfil) (Kazmierczak et al 2016).

However, 90% of the 2050 housing stock has already been built (Green et al 2018), so it is likely that installing SUDS on all new developments will leave the majority of urban areas untouched.

Evidence from Climate Change Chapter

More intense rainfall and rising sea levels will increase the risk of flooding in Wales (high confidence). The risk to the population will be particularly great in urban areas [LINK TO URBAN CHAPTER]. Managing the risk from flooding is a priority for the Welsh Government and current estimates show over 245,000 properties in Wales are at risk from all sources of flooding (Welsh Government, 2019a). Flooding has a wide range of impacts on communities, including loss of homes, income and negative effects on mental health and well-being over long periods of time. As well as the impact on urban areas, flooding could damage valuable farmland (Keay, 2020). [Link to Enclosed Farmland Chapter] and cause detriment to water quality and subsequently impact on biodiversity and ecosystem resilience.

## 2. Sea Level Rise

### 2.1. Increase the risk of flooding in Wales

See evidence provided in 1.2

## Pollution

### 3. Air Pollution

#### 3.1. Harm to Human Health

Air pollution is discussed elsewhere in SoNaRR but it is likely that gaseous air pollutants produced by road traffic will continue to decline as internal combustion engines are phased out and replaced by electric vehicles. This transition will take some time and air pollution from internal combustion engines will remain a threat to human health, as will emissions generated through the burning of fuels such as coal and wet wood . (Link to air pollution chapter)

Particulate air pollution will represent a greater proportion of total air pollution as gaseous pollutants decline and we will need to safeguard people from breathing in fine dust from brakes, tyres and road surfaces. This dust will still be produced by electric vehicles. Real time air pollution data collected by children wearing portable monitoring equipment demonstrates the importance of avoiding busy roads in favour of quiet streets or parks where air pollution may be filtered-out by trees (Varaden et al 2019) or other green infrastructure (see Abhijith et al 2017). However, the best solution is to prevent air pollution before it is released: in 2015 over five times as much PM2.5 was emitted in the UK than was removed by vegetation (ONS 2018).

Urban air quality may have improved significantly since the 1990s but it still presents major management problems, especially in “hot-spots” such as Hafodyrnynys where oxides of nitrogen breached the hourly limits on NO2 on more than the 18 permitted number of occasions. (Ricardo Energy & Environment 2018).

Evidence from Air Quality Chapter

Non-exhaust road transport emissions, domestic and industrial emissions contribute to the local peaks in urban areas. Domestic wood & coal burning also

make a significant contribution along the north coast and in urban areas, including for the large urban populations in Swansea and Cardiff. Natural irreducible sources (sea salt, natural rural and urban dusts and biogenic secondary organic aerosols) do however account for around a third of 1/3 of the WHO standard for PM2.5 (10 µg/m<sup>3</sup>) over areas of South Wales.

Evidence from Air Quality Chapter

PAHs are a large group of toxic and carcinogenic compounds. The main sources of PAH emissions to air are industrial sources and the domestic burning of coal and wood. Benzo[a]pyrene is one of the more toxic PAHs and is monitored as a 'marker' for the group.

## 4. Land Pollution

### 4.1. **Decrease water quality. Increase risk of ill health**

Polluted run-off from urban areas can contain pathogens which can cause illness if ingested by recreational water users (Ellis 2004)

### 4.2. **Land contamination leading to harming animals and plant life**

Illegal waste deposits or pollution incidents from permitted sites, as well as contamination by past uses may harm the health of both people and plants. (Planning Guidance in Relation to Ground Contamination: Guidance Note for Applicants, Developers, Land Owners and Consultants Version 6.00 Manchester City Council September 2016)

Under Part 2A EPA 1990, Local Authorities in Wales have undertaken detailed inspections of 800 potentially contaminated sites. From these inspections, 111 sites were subsequently determined as Contaminated Land, with 97 sites being fully remediated and risks addressed at a cost of £4.9 million<sup>65</sup>. It is estimated by Local Authorities that 9,330 sites are yet to undergo detailed inspection, and of these at least 414 sites are considered to be high priority.

### 4.3. **Lowers the value of land and tourism decline**

Polluting land by, for example, fly-tipping waste makes the area less desirable to visit or live in and makes it unattractive for inward investment.

<https://www.zerowastescotland.org.uk/litter-flytipping/impacts>

### 4.4. **Community well-being decline**

Visual pollution can be detrimental to mental well-being in addition to the other harms to human health caused by contaminated land. Fly-tipping can increase in pest infestations like flies and

rats. <https://www.zerowastescotland.org.uk/litter-flytipping/impacts>

## 5. Noise Pollution

### 5.1. **Increases the risk of ill health and premature death**

Urban transport contributes to carbon emissions, air and water pollution, noise pollution, and the social and economic effects of congestion or lack of transport opportunities. As most people in Wales live in urban areas, most transport emissions are related to urban areas.

Urban areas concentrate people in a small area and whilst this provides opportunities for resource efficiency it also creates impacts such as noise. Loud noise in an appropriate setting is experienced as exciting, but noise in an inappropriate setting is annoying. Undesirable noise affects more people in urban areas, and exposure to high noise levels seriously increases the risk of ill health and premature death.

## 6. Water Pollution

### 6.1. Point Source pollution leading to harm to aquatic ecosystems and risk to human health.

### 6.2. Diffuse pollution leading to harm to aquatic ecosystems and risk to human health.

Rainwater washes pollution from roads and other surfaces into local water courses via road drains. This pollution includes many kinds of bacteria from pets and birds which may be harmful to human health (John Bryan Ellis (2004) Bacterial sources, pathways and management strategies for urban runoff, Journal of Environmental Planning and Management, 47:6, 943-958, DOI: 10.1080/0964056042000284910). Runoff from urban areas also includes micro-plastics from tyres and synthetic fibres (Parker-Jurd, F. N. F. Napper, I. E. Abbott, G. D. Hann, S. Wright, S. L. Thompson, R. C. (2019). Investigating the sources and pathways of synthetic fibre and vehicle tyre wear contamination into the marine environment. Report prepared for the Department for Environment Food and Rural Affairs (project code ME5435)). Sustainable Drainage Systems (SUDS) can reduce pollutant discharges from rainwater runoff by 20% to 80% (Water Research Volume 57, 15 June 2014, Pages 234-246 Efficiency of source control systems for reducing runoff pollutant loads: Feedback on experimental catchments within Paris conurbation Adèle Bressy. Marie-Christine Gromaire. Catherine Lorgeoux. Mohamed Saad. Florent Leroy. Ghassan Chebbo).

### 6.3. Increased costs and carbon footprint due to increase in water treatment needs

The UK produces more than 16 billion litres of wastewater and sewage each day, which requires extensive treatment prior to being returned to the environment to meet regulatory standards for inland waterways and bathing waters. If less water is taken up, less energy will be required for treatment and costs will be reduced.

## Land Use Change

### 7. Built Development and Infrastructure

#### 7.1. Increases carbon footprint

One of the main pressures affecting the urban ecosystem is the need for new development. It is estimated that between 6,700 and 9,700 additional housing units will be required each year during the period of 2018-19 to 2022-23 (Welsh Government 3. 2019)

It is estimated that the built environment contributes around 40% of the UK's total carbon footprint, with the energy used in buildings and transport making up the bulk of this (UKGBC 2019). The largest carbon emission sources from land use and land use change are from grassland conversion to cropland 27%, existing cropland 24%, grassland conversion to settlements 21% and existing settlements 17%

(Welsh Government. 2019. Prosperity for All: A Low Carbon Wales. Available from: [https://gov.wales/sites/default/files/publications/2019-06/low-carbon-delivery-plan\\_1.pdf](https://gov.wales/sites/default/files/publications/2019-06/low-carbon-delivery-plan_1.pdf))

Developing new housing also produces significant amounts of greenhouse gasses which occurs in two stages if not done in a sustainable manner: firstly emissions associated with the building's product and construction, and secondly emissions associated with the building's operational energy. (UKGBC, 2019). For example, building a cottage produces around 80 tonnes of CO<sub>2</sub> (Berners-Lee 2010).

## 7.2. Consumes more natural resources

Evidence to be provided

## 7.3. Leads to the loss of ecosystems and soil sealing

Garden sizes in new developments are becoming smaller and small gardens cannot normally hold the same number of wildlife habitats such as trees, ponds and hedges. Therefore, new developments may be expected to hold less biodiversity than existing urban areas (Thompson & Head, undated).

Evidence from Land Use and Soil Chapter

A recent study into the loss of soils by sealing to urbanisation in Wales from 1939 to present day found 29,000ha (13%) of a total predicted 226,000ha of the best and most versatile (BMV) agricultural land has been urbanised. These areas are most versatile for agricultural activity and most suitable for horticultural cropping.

- High Quality Land Loss: 29,000ha (ALC Grades 1, 2 & 3a)
- Moderate Quality Agricultural Land Loss: 35,000ha (ALC Grade 3b)
- Poor & Very Poor Agricultural Land Loss: 21,000ha (ALC Grades 4 & 5)

Meat Promotion Wales 2020. Industry Statistics. Available from:

<https://meatpromotion.wales/en/industry-statistics>

Evidence from Land Use and Soil Chapter

Land use change in the form of urbanisation leading to soil sealing can lead to even more dramatic reductions in levels of soil biodiversity (Welsh Government. 2019. Farming Facts & Figures Wales 2019. Available from: <https://gov.wales/farming-facts-and-figures-2019>)

IPBES (2016): The methodological assessment report on scenarios and models of biodiversity and ecosystem services. Available from <https://doi.org/10.5281/zenodo.3235428>

Evidence from Land Use and Soil Chapter

SoNaRR2016 identified the trend of paving over our gardens has increased the

impermeable areas and soil sealing. A study of an area in Cardiff showed that from 1984 to 2009 the impermeable area had increased by 20% through home extensions, conservatories and paving of gardens. Due to these changes, and the increasing rainfall intensity and run-off predicted from our changing climate, sewer flows in Wales are projected to increase by over 1% a year. The original drainage was not designed to deal with both the increased run-off and the increased storminess. (NRW, undated).

Evidence from Land Use and Soil Chapter

Soil Sealing Predictions. Further predictive modelling shows that the expansion of urban areas will have minimal impact on future agricultural productivity in Wales. Overall, the area of BMV land in Wales is projected to decline by 0.40% by 2065 under a high urban growth scenario. This represents a cumulative estimated loss of 6,746 hectares over the period 2018 to 2065 (approximately 125 hectares, on average, per annum)

ASC. 2016. *UK Climate Change Risk Assessment 2017 Evidence Report – Summary for Wales*. Adaptation Sub-Committee of the Committee on Climate Change, London. Available from: <https://www.theccc.org.uk/wp-content/uploads/2016/07/UK-CCRA-2017-Wales-National-Summary.pdf>

There is potential for BMV land loss in areas close to urban fringes which could be impacted by unexpected spikes in population.

#### 7.4. **Contributes to landfill and waste**

The construction industry is the single largest consumer of natural resources in the UK and in 2012, it was estimated that 639,000 tonnes of waste generated by the Construction & Demolition sector in Wales was landfilled (NRW 2012)..

The UK Green Building Council estimates that 13% of products delivered to construction sites are sent directly to landfill without being used (UKGBC 2019).

## **INNS, Pests and Disease**

### **8. INNS**

#### **8.1. Impacts on built structures, human health and environmental systems**

Evidence From INNS Chapter

The INNS of interest to Wales that primarily impact urban ecosystems do so by damaging structures and housing by taking advantage of weaknesses in structures (Carlsson 2017, Fennell et al 2018, Booy et al 2017). INNS can reduce the value of property due to the difficulty and cost involved in their control (Williams et al 2010).

Evidence From INNS Chapter

INNS can affect wellbeing by causing direct health impacts (i.e. allergic reactions, photosensitivity, rashes and blistering) and they can act as a vector for diseases (Netwig et al 2017, Bullock et al 2012, Rabitsch 2017, Schindler et al 2015) INNS can act as a pest species by interfering with waste and invading homes, damaging infrastructure and cause nuisance through fouling and noise (Newman et al 2004, Pruett-Jones & Tarvin 1998, Gehrt 2004).

#### Evidence From INNS Chapter

INNS can reduce amenity value and access to green spaces and can reduce the public's enjoyment of green spaces (Kuffefer & Kull 2017, Conover & Chasko 1985, Williams et al 2010),

#### Evidence From INNS Chapter

INNS can cause increased erosion of river banks and can clog up waterways which may lead to localised flooding (Catford 2017, Calder 2001, Charles & Dukes 2007, Strayer 2010, Stromberh et al 2007, Blight and Paterson 2014)

The INNS of interest to Wales that primarily impact urban ecosystems do so by damaging structures and housing by taking advantage of weaknesses in structures. INNS can reduce the value of property due to the difficulty and cost involved in their control. INNS can affect wellbeing by causing direct health impacts (i.e. photosensitivity, rashes and blistering) and they can act as a vector for diseases. INNS can act as a pest species by interfering with waste and invading homes, cause nuisance through fouling and noise and reduce amenity value and access to green spaces.

## Over Exploitation

Urban ecosystems are not over-exploited in the same sense as tropical rainforests or ocean fisheries. However, as most people live in urban areas they are the main source of demand for goods and services from other ecosystems.

#### Evidence from Land Use and Soil Chapter

**Over-tourism** - Snowdonia has seen a 15% rise in visitor numbers over 5 years (2015-2020) and across all our National Parks the visitor economy generated over £1.2 billion in 2018. With increasing visitor numbers come economic and health benefits but risks of 'over-tourism' in certain locations can have a negative impact on biodiversity and requires careful management and investment to respond to the pressure.

NRW. 2016. The State of Natural Resources Report (SoNaRR): Assessment of the Sustainable Management of Natural Resources. Chapter 3. Summary of extent, condition and trends of natural resources and ecosystems in Wales. Available from: <https://cdn.naturalresources.wales/media/684348/chapter-3-state-and-trends-final-for-publication.pdf>

## Evidence List: Opportunities for Action

### Aim 1: Stocks of Natural Resources are Safeguarded and Enhanced

#### Low carbon, energy efficient housing

Building and homes which consider net zero carbon in construction and operational energy. UKGBC (2019) Net Zero Carbon Buildings : A Framework Definition.

<https://www.ukgbc.org/wp-content/uploads/2019/04/Net-Zero-Carbon-Buildings-A-framework-definition.pdf>

### **Protect large trees in urban areas and promote the planting of street trees.**

Retaining mature trees and planting additional trees of the right kind in the right places would enhance biodiversity, reduce pollution, regulate temperature, store carbon, and manage stormwater. (O'Sullivan et al 2017).

### **Increase the rate of new woodland creation and plant more trees.**

Retaining mature trees and planting additional trees of the right kind in the right places would enhance biodiversity, reduce pollution, regulate temperature, store carbon, and manage stormwater. (O'Sullivan et al 2017).

Trees in our towns and villages can significantly help society adapt to the predicted impacts of our changing climate through shade, cooling and air quality improvements. Woodland creation on suitable derelict brownfield sites which are not already hosts to threatened species such as the Shril Carder Bee can bring them back into beneficial use e.g. Spirit of the Llyfni

SoNaRR2016 identified that planting 'the right tree in the right place' can provide multiple benefits for SMNR and well-being. There are opportunities for natural catchment management to reduce flood and drought risk to slow down surface water flow by creating or restoring riparian and/or floodplain woodlands, providing land for upstream winter overflow and improving riparian habitats throughout water catchments to collectively reduce the risk of flooding and drought to downstream communities. Trees in our towns and villages can significantly help society adapt to the predicted impacts of our changing climate through shade, cooling and air quality improvements. Woodland creation on suitable derelict brownfield sites can bring them back into beneficial use e.g. Spirit of the Llyfni (see case study

<https://naturalresources.wales/days-out/places-to-visit/south-east-wales/spirit-of-llyfni-woodland-near-bridgend/?lang=en>)

## **Aim 2: Resilient Ecosystems**

### **SUDS in existing developments**

Green Infrastructure (GI) like SUDS can significantly improve biodiversity over conventional infrastructure equivalents, and in some cases has comparable measures of biodiversity to natural counterparts (Filazzola et al 2019). However, neither green infrastructure nor engineering solutions will ever totally eliminate flood risk.

**Innovative deployment of renewables** (such as, solar roof tiles, wind integration with agriculture and forestry can reduce land use pressures, as well as avoid landscape disturbances caused by fossil fuels and nuclear energy)

Lovins, 2011

From Water Efficiency Chapter

### **Water efficiency measures**

Water efficiency measures such as rainwater harvesting and grey water recycling (as standard in new builds) will reduce both the amount of water used and carbon footprint required to heat, pump and treat water. Reducing the amount of water used reduces the need for an increase in abstraction and thereby further loss of water from the environment.

## **Aim 3: Healthy Places for People**

### **Convert lawns around public buildings to biodiverse meadows**

Lawns can be managed in similar ways to road verges to create flowering meadows which are attractive to pollinators and people (Welsh Government 2013) (NRW undated). This saves money on mowing and there is significant evidence that increased amounts of well-managed green space can reduce aggressive behavior in urban-dwelling adolescents (Younan et al 2016).

## **Aim 4: A Regenerative Economy**

### **Increase energy efficiency of housing stock**

UKCCC recommends Green Infrastructure Retrofit Strategy (pg14) (UKCCC 2019) UK Housing: Fit for the Future.

<https://www.theccc.org.uk/wp-content/uploads/2019/02/UK-housing-Fit-for-the-future-CCC-2019.pdf>

**Promote ‘Covid-proof’ travel to make it safer and easier to get around towns, as well as to promote public transport following the lockdown. The aim is to capitalise on the change to sustainable travel behaviours and reallocate road space in town centres to active travel.**

Welsh Government 2020

## **Evidence List: Assessment of SMNR**

### **Aim 1: Stocks of Natural Resources are Safeguarded and Enhanced**

#### **Aim 1: Progress towards meeting the aim**

- 1.1 Action Plan for Pollinators in Wales (Welsh Government 2013) promotes pollinator friendly management of road verges and urban green spaces including close mown grass around public buildings.
- 1.2 Evidence to be provided

#### **Aim 1: Obstacles remaining to meeting the aim:**

- 1.3 7,000 mature trees were lost from urban areas between 2006 and 2013 (NRW 2016). In 2020 Wales has an ageing population of urban trees which is not being replenished (NRW 2020). There is a lack of diversity of urban tree species: in Cardiff two species make up 20% of the population (Hand 2018). 42% of Wrexham’s trees feature only 3 species with only 10 species forming 70% of the total population (Rumble 2015).

- 1.4 Bird surveys show that the majority of Swifts nest in buildings in urban areas and their population has declined by 69% since 1995. Starlings often roost in urban areas and have declined by 68% since 1995. (BTO 2018)

## **Aim 2: Resilient Ecosystems**

### **Aim 2: Progress towards meeting the aim**

- 2.1 In January 2019 it became mandatory for most new development in Wales to use Sustainable Drainage Systems (SUDS) (Welsh Government 2. 2019).

The Welsh Government has implemented a number of initiatives to improve the efficiency of the Welsh housing stock and the percentage of dwellings with adequate energy performance<sup>1</sup> increased from 11% to 47% between 2008 and 2018 (Welsh Government 5, 2019).

Evidence from Water Efficiency Chapter

In Wales water supply to new builds are mandated to meet standard of 110 litres per person per day, retro fitting of existing builds, 125 litres per person per day. Building Regs 2018 Part G.

### **Aim 2: Obstacles remaining to meeting the aim**

- 2.4 Only properties applying for planning permission after 4 January 2020 are mandated to use SUDS (Welsh Government 2. 2019), but 90% of the 2050 housing stock has already been built (Green et al 2018), so it is likely that installing SUDS on all new developments will leave the majority of urban areas with no new capacity to counteract climate change or accommodate biodiversity. The Greener Grangetown Project has demonstrated how SUDS can be “retrofitted” to one of Cardiff’s most densely populated areas, but this is one of only a handful of schemes to be implemented across Wales.
- 2.6 Local government manage the bulk of urban green spaces including parks and it has been reported that their budgets for this area of work have suffered disproportionate reductions (APSE 2019, HLF 2016). These reports conclude that if the resources devoted to parks and green spaces decline to the historical extent described in the Urban Green Spaces Taskforce report then their condition will also return to that described in the report. (Urban Green Spaces Taskforce 2002, APSE 2019, HLF 2016)

## **Aim 3: Healthy Places for People**

### **Aim 3: Progress towards meeting the aim**

- 3.1 The Welsh Government has implemented a number of initiatives to improve the efficiency of the Welsh housing stock and the percentage of dwellings with adequate

energy performance<sup>1</sup> increased from 11% to 47% between 2008 and 2018 (Welsh Government 5, 2019).

- 3.2 The Welsh Audit Report shows that the number of households estimated to be in fuel poverty has fallen by over a half in ten years - from 332,000 in 2008 to 155,000 in 2018. Welsh Audit Office (WAO 2019): Fewer Households in Fuel Poverty but Welsh Government Misses Target. <https://www.audit.wales/news/fewer-households-fuel-poverty-welsh-government-misses-targets>

### **Aim 3: Obstacles remaining to meeting the aim**

- 3.4 Wales has some of the oldest and least thermally efficient housing stock in Europe. Only 10% of Welsh housing stock was built in the last 18 years, after more stringent energy performance requirements were introduced. Because demolition rates are low, it is anticipated that 90% of the 2050 housing stock has already been built. (Green et al, 2018)
- 3.5 The Welsh Government set itself ambitious targets to eradicate fuel poverty among all vulnerable groups by 2010, in social housing by 2012 and in the general population by 2018. These targets have not been met (WAO, 2019) thus Welsh Government has now sought to work with other bodies and has coordinated its own departments to address the wider causes of fuel poverty. This includes investing in wider programmes, such as work to achieve the Welsh Housing Quality Standard across social housing (WAO, 2019).

### **Aim 4: A Regenerative Economy**

#### **Aim 4: Progress towards meeting the aim**

- 4.1 Consumption of energy has decreased, particularly for electricity and renewables are on the rise with coal on record low (WG, 2019) (Welsh Government Energy Generation in Wales 2018 <https://gov.wales/sites/default/files/publications/2019-10/energy-generation-wales-2018.pdf> ) which has partly supplemented by increase in renewables and natural gas. Transport and heat sectors remain a challenge. WG has targets in place for both electricity and heat (WG, 2020)(Welsh Government Policy Statement: Local Ownership of Generation of Energy Generation in Wales – Benefiting Wales Today and for the Future Generation. <https://gov.wales/sites/default/files/publications/2020-02/policy-statement-local-ownership-of-energy-generation-in-wales.pdf> )
- 4.4 Rail passenger journeys in Wales increased by 29.9% between 2008 and 2018 (Stats Wales 2020)
- 4.5 By 2030 emissions from buildings have a target to be 40% lower than emissions in 1990. In 2016 emissions from buildings were 31% lower than 1990. (Wales low carbon delivery plan, 2019).

## Aim 4: Obstacles remaining to meeting the aim

4.9 Evidence provided in Assessment for SMNR

4.10 Evidence provided in Assessment for SMNR

4.11 Evidence provided in Assessment for SMNR

4.12 UKCCC (2019) UK Housing: Fit for the Future. <https://www.theccc.org.uk/wp-content/uploads/2019/02/UK-housing-Fit-for-the-future-CCC-2019.pdf>  
<https://www.theccc.org.uk/2019/02/21/uk-homes-unfit-for-the-challenges-of-climate-change-ccc-says/>

Wales currently has 56 MW of heat pumps producing 108 GWh of heat, the equivalent of only 0.6% of estimated domestic heat demand in Wales (Ramboll 2020).

In Wales only 3.8% households have installed solar photovoltaic panels (Solar PV)

4.13 Reference – note this is for UK housing not all buildings but still applies.  
UKCCC (2019) UK Housing: Fit for the Future.  
<https://www.theccc.org.uk/wp-content/uploads/2019/02/UK-housing-Fit-for-the-future-CCC-2019.pdf>  
<https://www.theccc.org.uk/2019/02/21/uk-homes-unfit-for-the-challenges-of-climate-change-ccc-says/>