Canal & River Trust | STEM

Part 1: **Canals and rivers in England and Wales**

In this section:

- A map of the canal network and the role of the Canal & River Trust
- Historical purpose and the network's importance for wellbeing and wildlife today
- The differences between canals and rivers and how they can work together
- The social value and economic impact of the waterways
- The role of canals, including visitor numbers and reasons for visits

Canal & River Trust

The Canal & River Trust is the UK's largest waterways charity, looking after 2,000 miles of canals and rivers across England and Wales. Its role is to protect and revitalise these 250-year-old waterways, to help nature, wildlife and people thrive. The network includes the canals, embankments, culverts and reservoirs as well as bridges, locks and towpaths and their vital ecosystems.

A network for people

Canals and rivers are free, open, and accessible spaces for everyone. They flow across countryside, past homes and offices, and into the heart of towns and cities. Nine million people live within a ten-minute walk of the waterways and many millions more visit each year to relax, travel, exercise, or fish. Spending time in or around water can improve mental health.

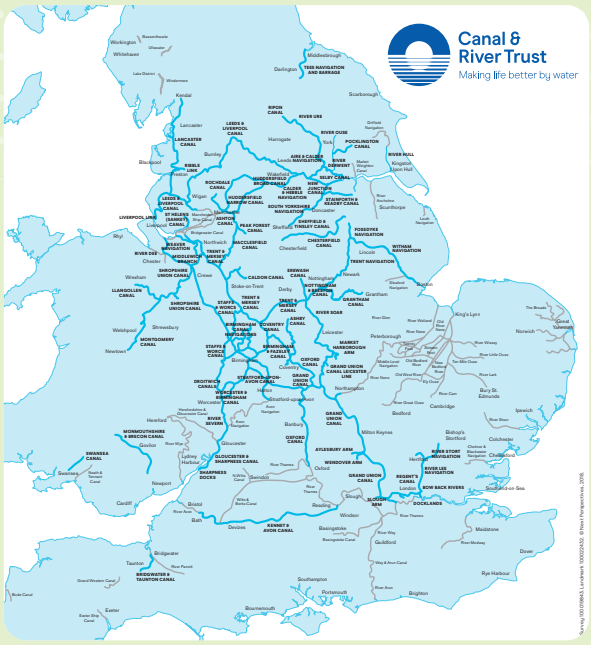
A network for nature

Canals and rivers are rich in wildlife. They provide a variety of habitats, from woodland and hedgerows through to grassland, fringe, and open water. Canals act as corridors for nature, joining up habitats to help wildlife thrive, and attract unique biodiversity. Herons, dragonflies, water voles, otters and bats are just some of the species living there. 1,000 sites along the network are recognised for their value to nature.

A network to preserve our heritage

Canals are places for everyone to connect with our past. Many of the canals, aqueducts, reservoirs, and lock are hundreds of years old. The waterways encompass thousands of listed buildings and structures, as well as historic parks and gardens, battlefields, scheduled monuments, and World Heritage Sites.

The network in England & Wales



The network in numbers

1,588 miles of canals
465 miles of rivers/feeders
71 reservoirs
1,710 miles of towpaths
279 Aqueducts
2,949 Bridges
55 tunnels
1,582 locks
795 weirs
2,706 listed buildings
46 ancient monuments
69 Pumping stations
6 Historic battlefields
4 World Heritage Sites
63 Sites of Special Scientific Interest (SSSI)
1,600 employees

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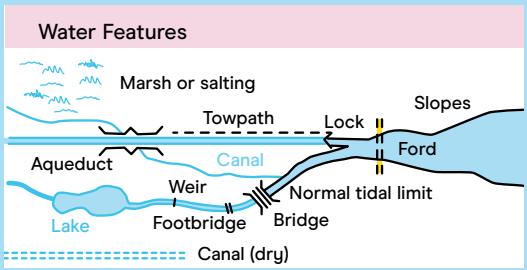
The differences between canals and rivers

Rivers are formed naturally and choose their own path. They grow from a source, such as a natural spring or glacier, flow downhill and increase in size. The upper course is made up of small streams (tributaries) that flow slowly due to friction with the riverbed. In the middle course water gains energy and moves more quickly. The lower course has most water, which flows faster because less of the water is in contact with the riverbed. Rivers have strong currents and are not always navigable. Navigable means water is deep, wide and safe enough for a boat. Rivers are susceptible to extreme weather and can suffer from droughts and floods.

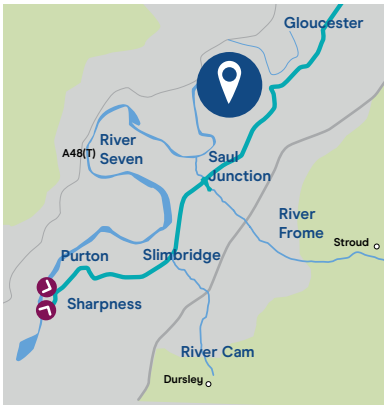
In contrast, canals are man-made waterways that can be carefully planned. You can choose where to build canals and introduce locks and lifts to help move boats uphill. Canals are designed to be navigated and to fit the boats that use them. They usually have weak currents, except near locks, and water levels can be regulated so they are less likely to flood.

Suggested activities using PowerPoint slides and data

- Identify social, economic and environmental benefits
- Use the interactive map to identify canals and rivers near you. The + and – buttons allow you to zoom in/out, the compass sign helps find your location
- Grid reference work using OS map example



Canals and rivers working together



Many canals rely on nearby rivers and streams (known as 'feeders'), that are redirected to fill the canal. In some places, huge reservoirs store water for the canals. Water can also be pumped from underground. Pumping stations are used at key sites to pump water back up lock flights.

Suggested activities using PowerPoint slides

- Study photographs to identify canals and rivers
- Correctly identify statements describing canals and rivers
- Study map to understand relationship between canals and rivers

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The evolution of canals - a brief history

Canals were originally built to join up the most important places for industry, to deliver coal and other goods more quickly as Britain became industrialised. They were dug manually, by unskilled labourers known as Navvies, whilst engineers addressed challenges such as moving boats uphill and across valleys.

Innovative solutions included inclined planes, tunnels cut through a hill, embankments, aqueducts, locks and boat lifts. The Bridgewater Canal was completed in 1759. Many more followed, eventually creating a network connecting the four main rivers of England and allowing boats to travel from the north to the south and east to west.

The growth of the railways and, later, the road transport industry, led to a rapid decline in canal transport. The move from coal to North Sea gas in the 1960s and 70s effectively marked the end of the canal transport industry. Canals were nationalised in 1948 but received very little funding and much of the network fell into disrepair, until the Transport Act of 1968 recognised the leisure value of canals.

Money was invested to support recreational use of the waterways, leading to brown-field developments and canal side buildings given new uses.

Canals over the years

Courtesy of National Waterways Archive, Canal & River Trust

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Photo © Roger D Kidd (cc-by-sa/2.0)

The role of canals today

Canals are peaceful spaces for people to enjoy and where nature can thrive. Large areas of the network have been regenerated, towpaths improved and habitats restored to support biodiversity and to help more people travel, get close to nature, improve physical and mental health, and connect with our heritage.

Today's canals are navigated by a wide range of boats, from working vessels to leisure craft that depend on a canal and river network in good repair. It is estimated that there are more boats using the 2,000-mile network of canals and rivers today than at the height of the Industrial Revolution!

An increasing number of these 34,000 boats are liveaboard permanent homes.

Number of visits to waterways 2019-2024

2019/2020	677 million
2020/2021	743 million
2021/2022	786 million
2022/2023	888 million
2023/2024	900 million (estimate)

Number of regular visits each fortnight (from surveys)

2018/2019	4.1 million
2019/2020	9.2 million
2020/2021	8.3 million
2021/2022	9.1 million
2022/2023	10.3 million
2023/2024	10.4 million (target)

Use of network by activity: 2022/23

Use of network by activity type 2019/20

Reason for visit	Visits/year	% of visits
Boat with engine	30.6m	5%
Boat without engine	17.2m	3%
Visited attraction	47.9m	7%
Fishing	13.9m	2%
Communting	128.6m	19%
Cycling	55.3m	8%
Jogging	66.4m	10%
Walking with a dog	111m	16%
Walking without a dog	114.8m	17%
Other	91.1m	13%

Suggested activities using PowerPoint slides

- Data analysis and presentation
- Interpretating data presented as graphs and infographics

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Social value and economic impact of the waterways

Boating businesses and tourism on the network support over 80,000 jobs and contribute £1.5bn to national, regional, and local economies. The canal network also provides support for waterside development and hosting telecommunications and other utilities. 1,576km of electricity cables, 1,302 km of gas mains and 659km of telecoms cables run under the towpaths.

The welfare benefit from active use of canals and rivers, is estimated at over £4bn. People using the network have improved physical health, which is calculated to save the NHS £1.1bn a year.

Value associated with improvements to mental health, such as increased happiness, life satisfaction and self-worth, plus reduced anxiety, is estimated at £2.9 billion.

The benefits of spending time by water are recognised by GPs and wellbeing specialists. Health workers are beginning to refer patients to take part in activities along the waterways as part of social prescribing schemes to help people tackle mental and physical health problems.

Suggested activities using PowerPoint slides

- Explain why canals are important both socially and economically. Give evidence for your answer.

Active

Happiness

Regeneration: community