Still Speaking to the Nations

The importance of BBC Longwave Broadcasts in the Twenty-First Century

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Contents

1. Introduction

2025 marks the centenary of BBC Longwave broadcasts beginning at Daventry. The year also begins just months after the ninetieth anniversary of those broadcasts being transferred to the national transmitter at Droitwich, in September 1934, from where BBC Radio 4 Longwave is still broadcast to the nation today. Yet the BBC has announced plans, in this same year, to switch off its three longwave transmitters, bringing to an end a century of broadcasting history.[1]

However, there is growing pressure on the BBC to abandon these plans and retain the national longwave signal, and not just for reasons of heritage and nostalgia. Even in an age of advanced digital technologies, longwave radio remains the only means of broadcasting to the entire nation from a single transmitter, free from the security vulnerabilities that online and digital platforms are subject to. At a time of increasing international tension, in particular between Western Europe and Russia, it seems foolhardy to abandon a resilient, reliable means of mass communication. Furthermore, there remain individuals and communities across the UK and beyond who continue to use the longwave broadcast or even to depend upon it for critical news and weather updates.

Contrary to claims in the media,[2] longwave radio is not 'energy-intensive': as the analysis in Chapter 2 of this report will demonstrate, longwave is in fact potentially the most energy-efficient means of broadcasting to the entire nation, and could be a vital tool in the struggle to reduce greenhouse gas emissions in the broadcasting sector. Nor is this an out-dated and redundant technology: the old-fashioned valves currently used in the transmitter could straightforwardly be replaced by modern Solid State equipment to enable longwave broadcasts to continue indefinitely. All of these arguments will be explored in more detail in the chapters to come.

The BBC has outlined four main reasons for the proposed curtailment of longwave broadcasts. These are:

1. That the technology is out-dated and 'coming to the end of its life'[3]
2. That it is expensive to maintain or refurbish the transmitter[4]
3. That broadcasting on longwave is energy-intensive and therefore bad for the environment[5]
4. That listenership on longwave is small anyway, and declining[6]

All of these are important points and worth careful consideration. It does not make sense to rely on technology that is genuinely out-dated and vulnerable to failure just for the sake of nostalgia. Under tight financial constraints, the BBC cannot afford to spend money on superfluous services used by very few. Moreover, today we are living at a time of environmental crisis in which every effort must

[1] BBC News. *Customers face Heating Problems if Meters Not Replaced.* 3rd October 2024. https://www.bbc.co.uk/news/articles/cx2402zzwg1o (accessed 23rd January 2025)
[2] See, for example, Brignal, Mattie. BBC Switch-Off to force 600,000 households on to smart meters. *The Telegraph*. 16th January 2025. https://www.telegraph.co.uk/money/bills/energy/600000-households-forced-smart-meters/ (accessed 23rd January 2025)
[3] BBC Help Centre. *Changes to Radio 4*. https://www.bbc.co.uk/reception/help-guides/everything-else/changes-to-radio-4 (accessed 23rd January 2025)
[4] BBC News. *Long wave radio fans mourn fading frequencies*. 5th September 2023. https://www.bbc.co.uk/news/business-66644709 (accessed 23rd January 2025)
[5] Ibid.
[6] BBC Media Centre. *BBC Radio 4 begins information campaign to transition listeners from Long Wave*. 29th May 2023. https://www.bbc.co.uk/mediacentre/articles/2023/bbc-radio-4-long-wave-transition (accessed 23rd January 2025)

be made to reduce greenhouse gas emissions and avert dangerous climate change. Already in 2025, the world has seen extremes of weather that have likely been worsened by a failure of humanity to take this issue seriously, and lives have been lost as a result.[7]

However, as this report shows, all of the above reasons for shutting down longwave broadcasts are either false or misjudged. In Chapter 2, we shall see that longwave radio is in fact the most energy-efficient way of broadcasting to the entire nation, possibly rivalled by DAB Digital Radio, except that DAB does not provide the same universal coverage as longwave and a significant number of people cannot receive DAB reliably. Shutting down longwave would in fact make very little difference to the BBC's energy requirements. Chapter 3 demonstrates why a relatively small initial investment in refurbishing the transmitter is a very much justified use of the BBC's budget, given the importance of longwave for the UK's national security. Chapter 4 explores the continued importance of longwave for listeners who struggle to access radio signals by other means, especially in rural areas and at sea. Whilst Chapter 5 shows the historical importance of the longwave signal and its heritage value today, Chapter 6 demonstrates the wealth of popular support that still exists for this stalwart national treasure: a listenership that is neither small nor declining.

Finally, the report ends with a summary of its findings, and concludes that, far from being ready to be consigned to history, longwave broadcasts should be maintained for the twenty-first century – not only to preserve the past, but to help encourage a new generation of listeners to BBC radio for the future.

[7] McGrath, Matt. Climate 'whiplash' linked to raging LA fires. *BBC News*. 9th January 2025. https://www.bbc.co.uk/news/articles/c0ewe4p9128o (accessed 23rd January 2025)

2. Energy Efficiency of Longwave Broadcasts

Summary

- Radio 4 Longwave contributes just 4 per cent of the BBC's analogue radio *output* power
- Much more energy would be saved from the transmission side by switching off one of the BBC's four national FM networks
- Much more energy would be saved from the reception side by switching off radio through digital television (DTV) and/or discouraging the use of 'smart-speakers'
- Because analogue radios use much less energy than digital radios and especially 'smart-speakers', energy use may increase if longwave is switched off

The proposed closure of Radio 4 Longwave has been presented as an energy-saving measure. However, in media reports and BBC statements regarding the move, no actual figures have been provided for how much energy would supposedly be saved by switching off longwave alone. This chapter will use publically available figures to show what the actual energy savings – and costs – of switching off longwave would be.

There are two main energy costs associated with any form of radio – the costs of broadcasting and the costs of listening. In traditional national radio broadcasts, these comprise the total energy required to radiate electromagnetic waves of a particular frequency or group of frequencies across the entire country, and the total energy consumed by the radios that receive these signals. For internet radio (such as BBC Sounds), there is no 'broadcasting' as such; rather, programmes are sent to an internet server and retrieved on an individual basis by individual internet-connected computers. This means that the 'broadcast' cost is essentially the cost of running the servers required, and the 'listening' cost is that of running the computer or other device that the listener uses to connect to the internet.

Broadcast Costs

We shall consider first the energy costs associated with broadcasting. AM radio (longwave, medium-wave and shortwave) uses low-frequency electromagnetic waves with high wavelengths, which can carry only a modest amount of information but which travel large distances. These transmissions have the disadvantage that they produce lower sound quality, but the advantage that very few transmitters are needed to cover a large area. FM and DAB uses high-frequency waves with very small wavelengths, which can carry more information but cannot travel as far. This means that to cover the entire country, hundreds of transmitters need to be installed.

In terms of energy-efficiency, therefore, longwave radio – which has the longest wavelength and therefore travels the furthest – is by far the most efficient means of broadcasting information. Indeed, only three transmitters are required to produce 100 per cent coverage for the UK and Ireland, and the signal travels as far west as Canada in good weather, as far East as Finland and as far south as Italy. FM coverage, meanwhile, reaches 98 per cent of the population within the UK itself, and this requires 214 transmitters to achieve. Therefore, one might expect FM national coverage to require far more energy than longwave national coverage, an hypothesis that we shall now explore.

For this report, we have used publically available information to compare quantitatively, as far as possible, the costs associated with longwave (LW), medium-wave (MW) and FM broadcasts of national BBC radio stations in the United Kingdom. The BBC does not currently employ shortwave

(SW) within the UK. The data come from Ofcom licenses for BBC transmitters, and concern the power *output* of transmitters.[8] Ideally, we would compare the power *input*, as this is a more direct measure of the energy *costs* associated with running the transmitters. However, this data is not publically available. We assume, however, that the power input is roughly proportional to the power output of the transmitters, and use the one as a proxy for the other.

It could be argued that longwave transmitting equipment, which currently relies upon old-fashioned valves, is older and therefore less efficient than FM equipment. However, more modern longwave transmitters do exist (such as that used until recently at RTE Radio 1 in the Republic of Ireland) and the valves could be replaced by this more efficient technology. In any case, this report concerns the comparative power output of LW, MW and FM transmitters in principle, not the efficiency of the particular transmitters the BBC uses at present. This is therefore a comparison of the *theoretical* power requirements of the different broadcast platforms.

The Ofcom data were first used to compute the total power output for all 214 BBC Radio 4 FM transmitters in the United Kingdom, and to compare this to the total power output across the three LW transmitters used to achieve even better coverage. The FM power output was 3.41 Mega-Watts, and the LW power output was 0.6 Mega-Watts. Hence, FM accounts for 85 per cent of the BBC Radio 4 analogue power output, where LW accounts for just 15 per cent. Figure 1 shows this graphically.

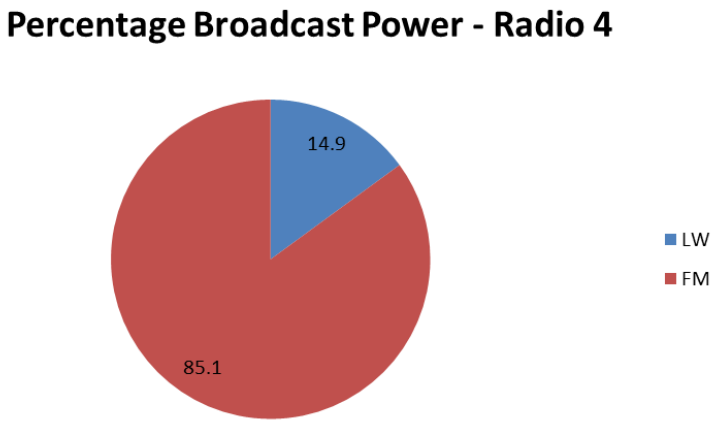

Figure 1: Percentage of the total BBC Radio 4 analogue output power that is attributable to longwave (blue) and FM (red) broadcasts.

The complete dataset is reproduced in the Appendix. Next, the same dataset was used to compute what percentage of total BBC analogue radio power output was attributable to Radio 4 LW. In this case, Radios 1-5 were all accounted for. It was assumed that Radios 1, 2 and 3 had the same power output on FM as Radio 4 on FM (we acknowledge that Radio 3 is not broadcast on FM in some parts of Wales, but this was considered too small an effect to take into account here). Figures for Radio 5, which broadcasts on MW, were obtained from a separate Ofcom license for Radio 5, and are reproduced in the Appendix. Figure 2 shows the results.

[8] Ofcom. *BBC Radio Licenses*. 20th December 2016, updated 16th March 2023. https://www.ofcom.org.uk/tv-radio-and-on-demand/analogue-radio/bbc-radio-licences/ (accessed 10th January 2025)

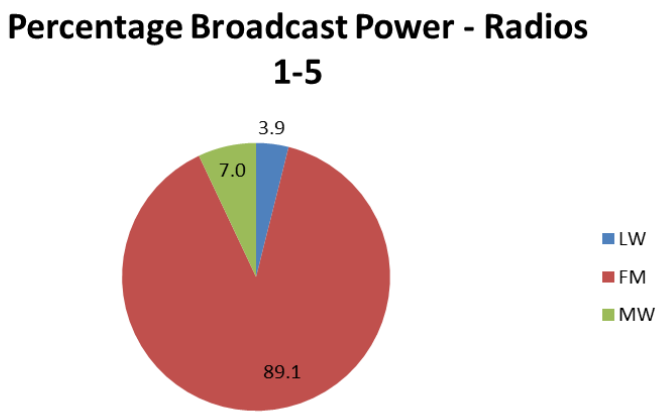

Figure 2: Percentage of the total BBC national analogue output power that is attributable to longwave (blue), FM (red) and medium-wave (green) broadcasts. This differs from Figure 1 in that it accounts for all 5 BBC national stations available on analogue.

This analysis shows that, overall, longwave broadcasts account for just under 4 per cent of the output power of BBC analogue transmitters. Medium-wave accounts for 7 per cent, where FM accounts for 89 per cent.

All of this demonstrates that longwave is a much more energy-efficient means of broadcasting to the entirety of the UK than either FM or medium-wave. Figure 1 shows that most of the energy required to broadcast Radio 4 via analogue radio is attributable to FM. Figure 2 shows that, were LW to be switched off, the BBC would only save around 4 per cent of the energy costs associated with broadcasting nationally on analogue radio.

From an energy-saving point of view, therefore, it would be much more fruitful for the BBC to switch off one of its four national FM networks than to switch off longwave – indeed, this would save up to six times as much energy as would switching off Radio 4 longwave. If taking Radio 4 off FM were to be an unpopular move, a similar saving could likely be achieved by making, for example, Radio 1 digital-only. Certainly, though, our analysis shows that removing Radio 4 Longwave would have a very small effect on the overall energy use of BBC radio broadcasts. Given the numerous reasons for retaining Radio 4 Longwave outlined elsewhere in this Report, energy saving alone would not seem to be a justifiable cause for shutting down this nationally dependable service.

We have not here considered the energy costs of digital radio broadcasts or internet servers. If these were taken into account, the proportion of energy used to broadcast Radio 4 Longwave would of course comprise an even smaller percentage of the whole. Both of these transmission methods have, however, a relatively small energy cost, with most of the energy cost associated with listening rather than broadcasting, as we shall explore below. For internet radio especially, a recent BBC report found that the costs associated with transmission were very small compared to the cost of reception.

Digital radio uses a ‘multiplexing’ technique whereby several BBC stations can share essentially the same digital signal. This means that it is difficult to isolate the energy cost associated with broadcasting BBC Radio 4 alone. As a rough estimate, one might expect this single BBC multiplex to have the same power output as two BBC FM stations. In that case, it is evident that FM transmissions are exceedingly inefficient as compared to DAB, as 4 or 5 stations could be broadcast with the same power requirements as a single FM station. That would make the required DAB transmission output

power per station roughly double that of Radio 4 Longwave – but with slightly lower coverage (DAB covers 98 per cent of the UK population[9]).

This section has shown that if any of the methods currently employed to broadcast radio by the BBC are inefficient, it is certainly FM: digital radio and longwave radio both offer a vastly superior efficiency. From an energy-saving point of view, it would therefore be far more advantageous to switch off one or more FM networks than to switch off Radio 4 longwave. This conclusion is compounded by the fact that FM and DAB are essentially duplicates of one another – both provide short-range transmissions of high quality audio best suited to music radio. Longwave provides something different: a national signal broadcast from very few locations, and able to reliably provide the BBC to the entire nation and beyond with a quality that is more than ample for speech-based programmes.

Listening costs

It is much more difficult to quantify the costs associated with radio listening, because there is a very wide variety of radio receivers and internet-connected devices in operation across the UK today. For the purposes of this Report, no independent analysis of energy use by radio receivers has been carried out. Therefore, we shall discuss this fact in light of the BBC's own attempts to quantify transmission and reception costs associated with its radio output.

In 2020, the BBC published the white paper *The energy footprint of BBC radio services: now and in the future*. This paper modelled the energy required for both distribution (transmission masts, internet servers etc. used to provide audio content) and consumption (radios, computers and other devices) for several different ways of listening to BBC Radio content. The report showed that AM radio (which includes longwave) was associated with by far the lowest overall energy consumption, compared to FM, DAB, DTV (radio through digital television) and internet listening in 2018. In accordance with our findings above, their graph (Figure 3) shows that by far the biggest energy saving would come from switching off FM, not AM.

However, the report went on to claim that the energy use *per listener hour* on AM radio was much higher than on most of the other platforms. This was because it was assumed that AM listenership was much lower than that on other platforms, on the basis of RAJAR listening figures. Hence, there might be a big energy saving by getting the few AM listeners to migrate to other ways of listening to the radio and switching off the few AM transmitters.

There are flaws, though in this analysis. In the BBC paper, because RAJAR does not distinguish between AM and FM listeners, the LW listenership for BBC Radio 4 was arbitrarily assumed to be 10 per cent of Radio 4's overall analogue listenership – i.e. FM and LW. No justification was given for this figure. Given that RAJAR does not survey listeners in areas that depend most upon longwave – the countryside and areas with poor reception – it is unlikely that this represents the true number of longwave listeners. Furthermore, many people still listen to Radio 5 on medium-wave sets. No thorough analysis has been made of the number of listeners to AM radio. If there are more listeners to AM radio at present than was assumed in the report, the energy cost per listener-hour will be lower.

[9] Clifton, Kieran. *BBC national digital radio transmitter network expands*. BBC Media Centre, 8th December 2017. https://www.bbc.co.uk/mediacentre/latestnews/2017/digital-radio-transmitter (accessed 13th March 2025)

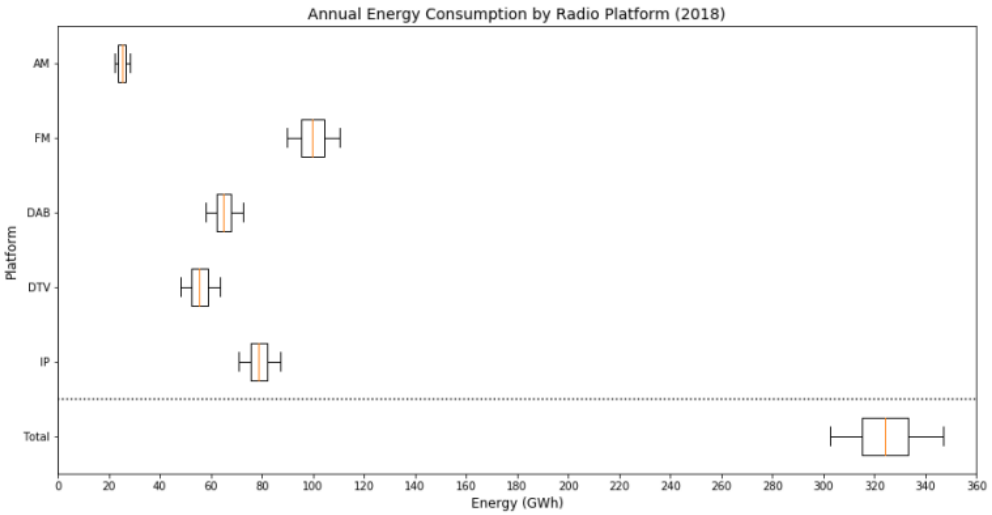

Figure 2: Estimated energy used to prepare, distribute and consume BBC radio in 2018 per platform and in total

Figure 3: Reproduced from *The energy footprint of BBC radio services: now and in the future*.[10] The total energy costs of BBC broadcasts on AM, FM, DAB, Digital Television (DTV) and Internet (IP) are compared.

Another caveat with the BBC report – admitted during the discussion – is that the estimate for the energy used by AM radio sets was not robust. Indeed, the report makes out that, collectively, FM and AM radio receivers used *more* energy than DAB, televisions used for radio, and internet radios in 2018. This is partly because of the high listenership of especially FM radio, but assumptions are also made about the power and especially standby-power of analogue radios that do not stand up to scrutiny. As the authors admit, 'the on and standby power values for all radio sets were based on measurements from a small sample size, and had high uncertainty.'

Unlike computers, televisions, almost all DAB radios and essentially all 'smart speakers', which are designed to be kept on 'standby' mode all the time, very few analogue radios have a standby feature at all. Given that it was estimated that nearly 40% of the energy use associated with radio listening could be attributed to devices on standby, this is extremely significant. If everyone switched to analogue radios with no standby mode, this energy would be saved overnight. Furthermore, even when switched on, AM receivers use substantially less energy than most digital ones. Anecdotally, a portable longwave radio can run for months of frequent use using a single battery, where DAB radios with their more complicated technology require frequent recharging. Internet-connected devices, and especially 'smart speakers', use even more energy. The BBC report itself admits that most internet-connected devices use more energy than analogue radios, even whilst vastly overestimating the energy requirements of these radios. The paper states that EU regulations require a standby power of no more than 0.5 Watts for non-internet-connected devices, but that this limit is as high as 3 to 12 Watts for internet-connected ones.

It is therefore safe to conclude that much of electricity associated with AM radio listening goes into the AM transmitters, not the receivers. This is in contrast to the overall message of the report, which finds that for BBC radio as a whole the majority of energy use is in the consumption rather than the

[10] Fletcher, Chloe & Chandaria, Jigna. *The Energy Footprint of BBC Radio Services: Now and In the Future*. October 2020. https://downloads.bbc.co.uk/rd/pubs/whp/whp-pdf-files/WHP393.pdf (accessed 5th December 2024)

distribution stage. This is because of the high energy requirements of internet-connected devices, DAB radios and digital televisions used to listen to the radio. AM radios, including longwave receivers, may be an outlier in this regard, in that the total power consumption across all listening devices is similar to or less than the energy used by the transmitters.

This is not to say, though, that switching off AM transmitters would therefore be good for the planet. On the contrary, it would mean that all those AM receivers using very little electricity would have to be replaced by digital or internet receivers, which use a lot of energy. It is our contention that the very small energy savings from switching off the three national longwave transmitters would be vastly outweighed by the large energy costs of listeners switching to other forms of radio receiver. The most energy-efficient option would in fact be for everyone to listen to BBC Radios 4 and 5 on low-power analogue receivers. This would not be possible if longwave was shut down.

Switch-off Scenarios

In the BBC report, four different 'scenarios' are put forward for the future, and the energy costs of each compared. 'Scenario 0', or 'business as usual', saw all current radio platforms maintained. This has a current energy cost of around 27 Gigawatt-hours per month, and would be projected to barely change by 2037, the end of the forecast period. Compared to this, 'Scenario 1' in which AM and FM only were switched off made barely any difference to begin with to energy consumption, since the energy savings of switching off the transmitters were used up by increased energy consumption from internet-connected devices. Indeed, there was only a drop in energy consumption at all by 2037 because the energy-efficiency of radio through digital television (DTV) was projected to increase (see figure below).

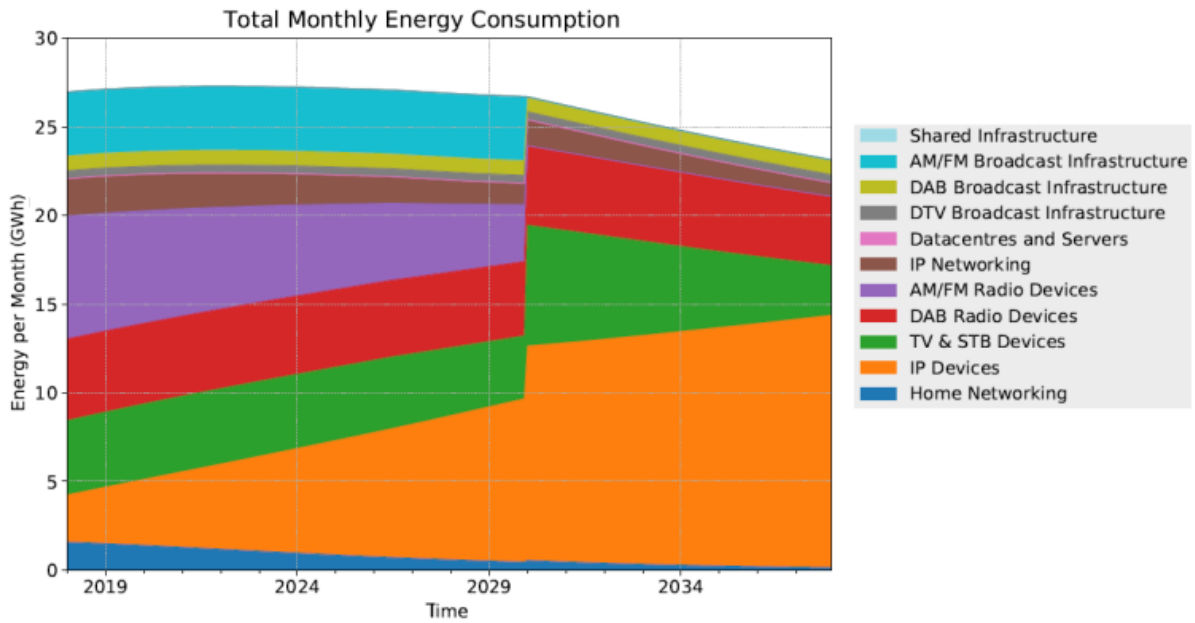

Figure 8: Estimated energy per month to prepare, distribute and consume BBC radio from 2018 to 2037 for Scenario 1

Figure 4: Reproduced from *The energy footprint of BBC radio services: now and in the future.*[11]

[11] Fletcher, Chloe & Chandaria, Jigna. *The Energy Footprint of BBC Radio Services*

Hence, switching off analogue radio makes practically no energy saving overall, according to the BBC's own report. This includes the assumptions we have critiqued above regarding the energy use of analogue radios and the listening figures for AM radio. If both of these were taken into account, it is likely that simply switching off analogue radio would *increase* carbon emissions because the orange 'IP devices' (internet-connected devices) energy consumption would be even higher, whilst the purple 'AM/FM audio devices' contribution would be less.

Scenario 2 explored the effect of switching off both analogue radio and radio through digital television (DTV). Here, there is a marked gain in energy savings, as can be seen below.

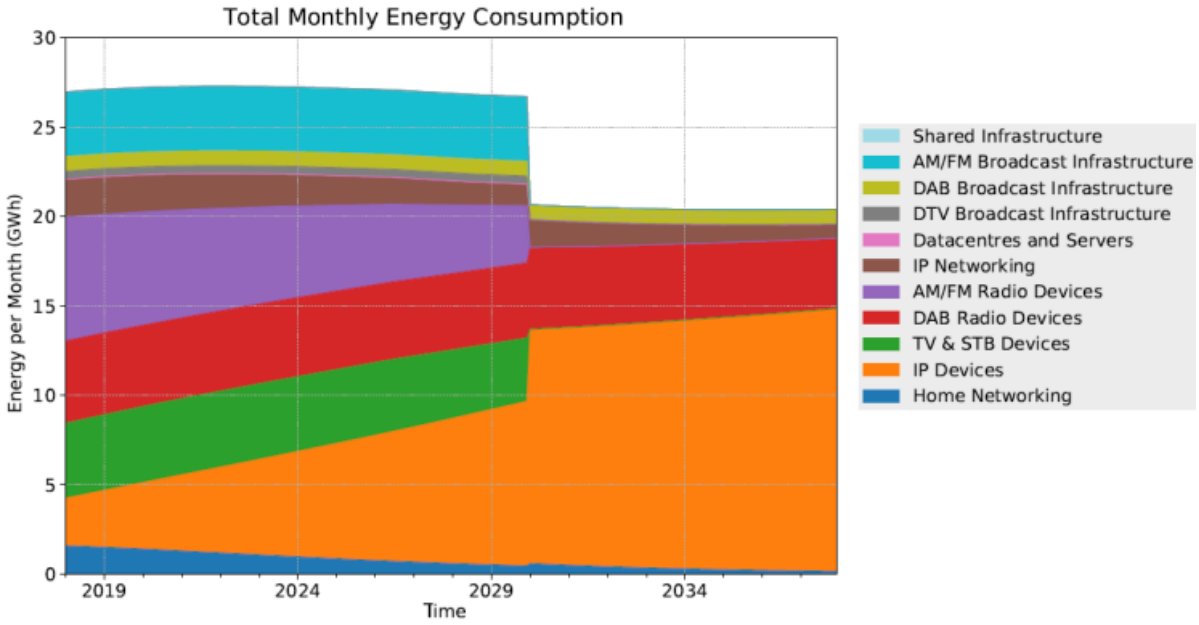

Figure 9: Estimated energy per month to prepare, distribute and consume BBC radio from 2018 to 2037 for Scenario 2

Figure 5: Reproduced from *The energy footprint of BBC radio services: now and in the future.*[12]

The obvious conclusion from these two figures in combination is that switching off radio through digital television (DTV) would produce significant energy savings, whereas switching off analogue radio would not. A very small proportion of listeners use the DTV radio service, and it has a disproportionately large energy cost. Indeed, even recent RAJAR figures – limited as they are regarding coverage of areas with poor reception – suggest that only 3.3 per cent of radio listening takes place via DTV, compared to 36.2 per cent for analogue radio.[13] Unfortunately, the BBC paper did not model the effect of switching off DTV alone, but this conclusion is inescapable from a comparison of the two figures.

Interestingly, Scenario 3, where DAB was also switched off, showed only a very small decrease in energy consumption compared to 'business-as usual', showing that an internet-only BBC would be significantly more energy-intensive than one that includes DAB – and, we argue, analogue radio.

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[12] Fletcher, Chloe & Chandaria, Jigna. *The Energy Footprint of BBC Radio Services*

[13] RAJAR. *RAJAR Data Release Q3 2024*. October 24th 2024. https://www.rajar.co.uk/docs/2024_09/Q3%202024%20Chart%204%20-%20BBC%20Comm%20Platform%20Share.pdf (accessed 5th December 2024)

Conclusion

This section has shown that switching off Radio 4 Longwave would not yield significant energy savings, and might even have the opposite effect. We have seen that LW accounts for only 4 per cent of BBC radio's power output, and that much more energy would be saved by switching off one of the BBC's four national FM networks than from shutting down LW. Furthermore, LW radios use significantly less power on average than digital radios, and certainly than computers and 'smart-speakers'. The latter are especially wasteful of energy, being designed to be kept on 'stand by' mode until called upon to play an internet stream of speech or music.

Indeed, we have also seen that the BBC's own report shows that switching off analogue radio alone would not lead to significant energy savings; only switching off radio via digital television made a significant difference to overall energy use, given that switching off 'smart-speakers' was not considered in that report. If the BBC wants to reduce energy use, therefore, it should encourage the use of low-power analogue radios, including longwave, and should discourage the use of smart speakers. Its current policy seems to be exactly the opposite, which will inevitably lead to an increase in energy use and carbon dioxide emissions.

3. Longwave Radio and National Security

Summary

- At a time of heightened geopolitical tension, including war in Europe, an impartial, accessible and reliable source of news is especially important
- Longwave broadcasts provide this from a single transmitter (and two boosters) to the entirety of Great Britain, Ireland, Northern Europe and the North Atlantic
- Other sources of international news dissemination rely upon the internet, which is subject to hacking and requires an electricity supply to access
- The BBC's voice is easier to hear via offline means than on the internet, where it runs the risk of being drowned out by less reliable sources of information
- Longwave broadcasts therefore constitute a critical piece of national infrastructure and to switch them off in an era of misinformation and cyber warfare would be foolish

The BBC has broadcast longwave radio from Droitwich since 1934. For over ninety years, this signal has reached across not only the entirety of the British Isles (with booster transmitters to improve reception in parts of Scotland) but also Northern Europe and the North Atlantic. This is the only signal capable of reaching into foreign nations broadcast directly from the UK mainland. It provides a vital, reliable service both inside and outside Britain, that anyone can access at any time at the flick of a switch. In this Chapter, we shall explore the advantages of retaining longwave transmissions as a critical piece of national infrastructure at a time of national crisis, such as war or natural disaster, and in more 'normal' conditions.

The importance of long-range radio in times of crisis

The recent war in Ukraine has illustrated how important analogue signals such as this can be at a time of national crisis. In 2022, the BBC resumed AM shortwave transmissions to the country so as to provide a reliable source of news in the wake of Russian interference with internet communications. There were four main advantages of the shortwave signal:[14]

1. The signal could be broadcast from outside the conflict zone, from a neutral country where the transmitter could not be tampered with, because shortwave (like longwave) travels large distances
2. AM receivers are very difficult to trace (sending out a very weak signal 455 kHz above the frequency they are tuned to), unlike internet-connected devices which require a two-way conversation with the server
3. Anyone within the range of transmission could receive the signal if they had a receiver, as it is very difficult to block analogue radio signals
4. AM receivers use very little power and can last for many weeks or months on a single battery, unlike internet-connected devices which require a reliable source of power and require charging after a few hours of use

These same advantages also apply to longwave radio. From a single transmitter it can cover a huge area, allowing vital information to be relayed into a conflict zone on the European Continent or the fringes of the British Isles, for example. At a time of natural disaster, so long as this transmitter was

[14] Grieg, Paul. Shortwave radio in Ukraine: why revisiting old-school technology makes sense in a war. *The Conversation* 9th March 2022. https://theconversation.com/shortwave-radio-in-ukraine-why-revisiting-old-school-technology-makes-sense-in-a-war-178575 (accessed 10th March 2025)

not affected, the signal could continue to reach areas that may have lost electricity and internet connectivity. The signal could be heard across Northern Europe as a vital backup source of information if the internet was shut down by an aggressive power, using easy-to-use and low-energy equipment. As well as BBC Radio 4 during the daytime, the 198 kHz transmission carries the BBC World Service to the continent of Europe between 01:00 and 05:00 UK time. This continues to be a much-valued service in many European countries, as the comments in Chapter 6 of this report will show.

Although no war or natural disaster has occurred close enough to Britain to necessitate the use of the longwave signal in this way for eighty years, the current geopolitical situation hardly seems to be an astute time to end this reliable service. Tensions with Russia remain palpable, and the Russian state has already proved itself capable of carrying out cyber-attacks to shut down the internet and disseminate false information. Meanwhile, US foreign policy is causing friction in Europe and elsewhere. The use of social media has been associated with a deluge of 'misinformation' in recent years, and the BBC remains a source of impartial, reliable information. With an online-only presence, the BBC would be just one amongst many voices, so that even if its message was not blocked by hostile powers it might easily be drowned out by other, less reliable outlets. By contrast, the BBC is the only broadcaster using longwave in Europe, and therefore remains unmistakable on that platform.

Longwave transmissions from Droitwich have already shown their usefulness during times of crisis, most notably during the Second World War when the longwave frequency was used to broadcast the European Service across the north of the Continent. As the experience in Ukraine shows, the general public have not lost access to analogue radios capable of receiving longwave transmissions – receivers which are in any case cheap and easy to build and distribute in time of need. In a future wartime scenario, the UK may be thankful to have retained the infrastructure required to broadcast to the nation and beyond over distances of hundreds of miles.

Critical Infrastructure in 'normal' conditions

Longwave radio also plays an important role even outside of the sort of crisis that could bring down internet or digital communications. Longwave remains the only way of reaching the entire nation at once, and provides a vital backup in areas of poor reception, such as very rural areas (as we shall explore in Chapter 4). Although it may no longer be required to supply the Radio Teleswitching Service (RTS) if the rollout of 'smart meters' is successfully completed, Radio 4 longwave nonetheless provides a regular, reliable time signal that can be depended upon to be accurate. This is in contrast to digital and internet broadcasts, which are delayed by at least several seconds due to digital encoding, and can lag behind the live speech and events that they relay by up to a minute. To switch off longwave would be to deprive the UK of this unifying signal.

As in times of war, so in times of peace the BBC's presence on longwave serves as a source of reliable information that could be lost behind competing voices on other platforms. Especially on the internet, there are various media outlets of questionable accuracy and various forms of social media that allow unmoderated and often unreliable information to disseminate widely. A so-called 'information disorder' has been labelled 'one of the defining challenges of the information age',

polluting the 'information environment' with misleading content.[15] Historical and scientific facts are being denied or reinterpreted contrary to the evidence, and rumours are spread with no basis in truth. Social media has become a 'powerful source for fake news', such as the glut of misinformation propagated around the time of the COVID-19 pandemic when ineffectual and sometimes dangerous cures were recommended online with no basis in medical fact.[16]

As the established national broadcaster, paid for by the public but not under governmental control, the BBC plays a key role in countering this 'fake news' through well-informed, considerate and impartial reporting that remains well trusted by the British populace. Indeed, the BBC was found to be one of the most trusted news outlets in a YouGov survey of 2023.[17] Whilst at the moment the BBC's output is relatively easy to access, any move to a digital-only BBC could threaten this dominance and make it harder to reach the general public with unbiased and accurate reporting. This is because, in contrast to the BBC's near-monopoly over national analogue broadcasts, the digital world is populated by a plethora of alternative sources of information. This is especially true of the internet.

Presently, the BBC reaches the public offline via channels on digital television, digital radio, FM, MW and LW. Increasingly, internet streaming is supplanting digital television, making the BBC just one amongst numerous content providers. In radio, it is important that non-internet means of broadcast are kept open if the BBC is to maintain its current dominance. As Chapter 2 of this report has shown, FM transmissions costs are high and it is unlikely that the BBC will continue to broadcast both digital and FM signals indefinitely, since these have a very similar coverage area to one another and essentially serve the same purpose – high quality but short-distance transmissions. Therefore, for the purposes of maintaining a nationally available, reliable, accessible offline voice, it makes sense for longwave transmissions by the BBC to continue. These broadcasts to the UK and beyond are becoming increasingly vital in a world where the truth is so often hidden behind falsehood and the BBC's impartial approach is increasingly rare and precious. To switch them off at this juncture would be very foolhardy indeed.

[15] Gatewood, Cooper. *INSIGHT: Understanding toxic misinformation to stop the spread.* 13th January 2025. https://www.bbc.co.uk/mediaaction/insight-and-impact/insightblog/understanding-misinfo (accessed 13th March 2025)

[16] Aïmeur, Esma; Amri, Sabrine & Brassard, Gilles. Fake news, disinformation and misinformation in social media: a review. *Social Network Analysis and Minining* vol.13 no.30. 2023. https://pmc.ncbi.nlm.nih.gov/articles/PMC9910783/pdf/13278_2023_Article_1028.pdf (accessed 13th March 2025)

[17] Smith, Matthew. *Which media outlets do Britons trust in 2023?* YouGov, 25th May 2023. https://yougov.co.uk/politics/articles/45744-which-media-outlets-do-britons-trust-2023?redirect_from=%2Ftopics%2Fpolitics%2Farticles-reports%2F2023%2F05%2F25%2Fwhich-media-outlets-do-britons-trust-2023 (accessed 13th March 2025)

4. Importance of Longwave for Rural and Seafaring Communities

Summary

- Longwave is most frequently used in areas of poor FM, digital and 'phone reception
- Without longwave, these areas, which could have a cumulative population of up to 1.5 million people, would lose access to the radio altogether
- Claims that LW listenership is 'small' or declining are currently unsubstantiated, as surveys of rural and isolated communities have not been carried out
- Longwave is the only medium capable of carrying the *Shipping Forecast* and other news far out to sea

Although it is true that many listeners to Radio 4 within the UK have switched to using digital or internet radio over recent decades (with associated energy costs, as outlined in Chapter 2), Radio 4 Longwave remains especially important in those parts of the country with poor coverage from other signals – especially rural areas. Longwave is also the only radio transmission that can travel far out to sea, providing news, information and the Shipping Forecast to maritime listeners throughout the past century. FM, digital radio and mobile signals cannot extend more than a few miles off-land, whereas Radio 4 Longwave can be picked up from as far away as eastern North America.

Rural Listeners

Although FM and DAB digital radio coverage now extends on paper to ninety-eight per cent of the UK population,[18] the remaining two per cent should not be forgotten: assuming a national population of 65 million this amounts to 1.3 million people, or one in every fifty. Even in areas where digital and FM coverage technically exists, it may be subject to glitching and hissing because of weak signals, especially for those listening on portable radios who cannot set up an aerial in the right place to receive a reliable signal. In areas of no reception or poor reception, therefore, longwave – which reaches the entire country – is a much-appreciated means of listening to the radio.

The voices of rural communities may be more difficult to hear than those of city-dwellers, but the BBC is entrusted to serve everyone in the country. It is therefore not right to deprive some areas of radio reception, especially since these areas are also likely to be those with poor internet connectivity and mobile 'phone coverage. Radio 4 Longwave is quick and easy to access, using a low-cost radio with very low power requirements, and is perfect both for those who live in rural areas and for those who travel through them, the signal being much more consistent than any alternative. Even in areas where there is digital radio coverage, many people are reluctant to have to replace their longwave radio with a more expensive digital one that has a much shorter battery life and is subject to a less consistent signal.

Furthermore, even in areas of nominally good coverage, individuals may become aware of the importance of longwave signals when local, rather than national, conditions render other sources of news unavailable. It is quite possible for a power outage to last for several days, especially in rural spots, and mobile 'phones and digital radios will soon run out of charge, whilst domestic internet connections almost always require mains power. Nearby 'phone masts and radio transmitters are sometimes also affected during power cuts. In this situation, without longwave radio communities

[18] Clifton. *BBC national digital radio transmitter network expands*.

may become cut off from news of the outside world. Keeping Radio 4 Longwave is therefore a case of resilience, even in areas where transmissions on FM and digital radio are usually available.

It is stated by the BBC that longwave listenership is 'small' and there is a perception that it is declining.[19] Yet the BBC does not seem to have carried out any surveys in rural areas specifically with poor FM, 'phone and digital reception to test this claim. In those areas, longwave listenership may well remain high, as communities struggle to access the radio by other means. RAJAR publishes overall estimates for listening figures, but this is based on surveys taken in more representative areas and which therefore fail to capture precisely those areas where longwave listening would be strongest. Unlike with internet streaming, it is impossible to know who or how many people are listening to an analogue radio broadcast. Without carrying out surveys in areas where there is poor reception, the BBC cannot be certain what the listenership is to longwave radio, and its statement that the listenership is 'small' and declining is entirely unsubstantiated. The BBC therefore has a duty to its more isolated listeners to carry out such a survey before proposing any shutdown of the longwave transmission.

Longwave at Sea

In 2025 the BBC celebrates 100 years of broadcasting the Shipping Forecast all across the ocean surrounding the British Isles, a feat that would have been impossible without longwave radio technology. Whilst the BBC stations using the longwave band have varied (National Programme, Radio 2, Radio 4), the Shipping Forecast has remained a feature throughout the past century because no other type of radio wave is capable of reaching so far beyond the shores of the UK. Whilst for admirers of its poetic quality there are other ways of listening to this Forecast inland via FM, DAB and the internet, for seafarers who actually need it out on the water these are not an option. That is because all these rely upon short-distance radio waves that fade to nothing within a few miles of the shore.

It is impossible to estimate the number of lives that have been saved by this longwave signal over the past century. Claims that it is out-dated or 'nearing the end of its life' are misguided, as many fishermen and other seafarers still use it when other sources of vital weather information fail. Furthermore, longwave is not daunted by storms, waves and local conditions at sea. Facing life-and-death situations, it is surely imperative that the longwave Shipping Forecast therefore remains an option open to sailors.

Again, there is very little solid data on this and the BBC does not seem to have carried out a comprehensive survey of the views of the seafaring community or assessed the importance of longwave listenership at sea. It is therefore imperative that at the least such an assessment be made before longwave is switched off, withdrawing what could be a vital source of weather information.

Listener Comments

Amongst the thousands of people who have signed a petition to keep Radio 4 Longwave,[20] tens of comments have been left on the petition page that relate to importance of the longwave signal in rural

[19] BBC Media Centre. *BBC Radio 4 begins information campaign to transition listeners from Long Wave*
[20] Change.org. *Keep BBC Radio 4 Longwave*. https://www.change.org/p/keep-bbc-radio-4-longwave/ (accessed 13th March 2025)

communities, and the sense of loss that could result from its withdrawal. A sample of these comments most relevant here, alongside some from the campaign website,[21] is given below.

> When internet access and mobile networks go down, longwave is still there. Help keep Britain and the world informed and on-time no matter what befalls us. – *Timothy*

> I live in an area where the DAB signal is non exisitant. I have a collection of vintage , and greatly enjoy listening to radio 4 on LONG WAVE . I shall be deprived of the cricket and morning service. – *Richard*

> I believe it is foolish to abandon long wave. Particularly for the unsatisfactory alternative of digital. Can we not have the foresight to keep this excellent service, for surely not a huge price? Especially as cyber crime increases year on year and the unknown catastrophe of digital breakdown looms ever closer. To give our children the opportunity of choice to use a technology far more sophisticated in its simplicity than the digital monotony. For those of us in rural spots (yes, thankfully they still exist) to tune in far more clearly than the supposed (and promised) reliability of digital. Foolish and narrow minded to loose long wave. Please can we not rely solely on digital. Can we not be more open minded, varied and sophisticated than that? – *Anna*

> I remember driving around the coast in north Cornwall and Long and Medium Waves were they only thing I could listen to, as VHF was in and out and as for DAB glitch, glitch glitch…… - *Frank*

> MUST be kept, for National Emergencies etc. I didn't receive the government's recent test via phone text message, because my phone didn't receive the signal. Long Wave radio is the only RELIABLE option. Also when in the mountain country, in Wales or Scotland, sometimes LW is the ONLY signal that can be received. – *Fred*

> I live in Glenridding, in the lakes. We had 3 days of nothing, no power, no internet, no phones. Storm Desmond. LW was there. nothing else as all other radio was blocked by the hills. - *Graeme*

[21] Keep Longwave. https://www.keeplongwave.co.uk

5. Heritage Value

Summary

- Longwave radio has been continually broadcast by the BBC since 1925
- The service should be celebrated in its centenary year, not shut down
- Calls have been made for the Droitwich transmitter to be listed by Historic England
- A growth in the analogue movement as people seek to take a break from the internet makes longwave an attractive option
- By investing in and publicising longwave radio, the BBC could build popularity for radio listening amongst younger generations, helping to secure the future of BBC radio

The preceding chapters have demonstrated that BBC Radio 4 Longwave remains a well-used and appreciated service for many listeners, and is by no means redundant; the primary impetus behind retaining it is the critical role that it continues to play. However, this is not to say that the heritage value of the longwave service should be entirely discounted. This section will explore the historic status of in particular the Droitwich transmitter, plans for it to be listed as a national monument, and the heritage attraction of longwave radio today.

A Radio Icon

The BBC's domestic longwave service has a strong claim to being the longest-running broadcast in the world. This year – 2025 – marks 100 years since broadcasts first began from Daventry longwave transmitter on 1925. In 1934, broadcasts were transferred to Droitwich, a central location from which the signal would be able to reach essentially the entirety of the UK – with supplementary transmitters in Scotland to improve the signal quality there. At the time, this was the most powerful transmitter in Europe, and the first to be able to reach the whole country at once. Since that time, the transmitters have been upgraded, and the station carried has switched, with Radio 4 taking the longwave slot since 1978.[22] From requiring a team of engineers on each site, the transmitting stations now run essentially automatically. Yet the same reliable signal continues to serve the UK and beyond.

In 1984, celebrations were held to mark 50 years of the Droitwich transmitter. At that time, it was still a highly valued and respected asset for the BBC, which put on a special banquet to mark the occasion, inviting 110 dignitaries, and set up an exhibition at the site.[23] The contrast is stark between this and the transmitter's 90th anniversary, 2024, when the BBC stopped separate longwave programmes, threatened to switch off longwave entirely, and withdrew all mention of '198 longwave' from its continuity announcements. BBC Longwave is an important part of not only the BBC's history, but that of radio broadcasting as a whole. It is bizarre that the BBC has chosen the 100th anniversary of its beginning to moot its permanent closure.

Listing

Support for longwave broadcasts from the Droitwich transmitter has been vocal from authorities in the local area. The local MP has called the signal 'iconic' and pressed for its retention, whilst

[22] Philips, John. *Droitwich Calling*. 2006. https://www.bbceng.info/Operations/transmitter_ops/Reminiscences/Droitwich/droitwich_calling.htm (accessed 25th March 2025)
[23] Ibid.

Wychavon Council has supported a move to have the transmitter listed by Historic England. This move is also supported nationally by the Twentieth Century Society.[24] A consultation process has since been carried out by Historic England, the results of which are yet to be announced at the time of writing. Listing would ensure that the Droitwich transmitter site must continue to be maintained and preserved in good order, regardless of whether broadcasts are taking place from the site.

Heritage Value

Regardless of the supposed advantages and disadvantages of various ways of accessing the media in the modern age, the fact remains that a significant number of radio listeners continue to use equipment that has served them well for years, or in some cases decades. Some of this equipment is itself of historical importance, and is incapable of receiving digital or even FM signals, meaning that longwave and medium-wave are the only broadcasts accessible to these listeners. In such cases, switching off longwave would not likely result in a migration to listening to the BBC via other means, but rather to those listeners ceasing to listen at all. Of course, this category does not apply to all longwave listeners – some of whom listen because they live in areas where other radio reception is non-existent, and others of whom use longwave alongside other forms of listening. Yet this group should not be ignored simply because somebody else has decided that their equipment is 'obsolete'.

Nor are all longwave listeners of an older age-group wedded to old equipment, or likely to 'die out' in the coming years if longwave broadcasts are retained. By contrast, and aside from those who cannot access FM, digital or the internet for geographic reasons, there is a potential for longwave listening to be increasingly attractive to parts of a younger generation who are becoming disenchanted with the all-pervasive dominance of the internet. The British Antique Dealers' Association reports a surge in interest amongst younger demographics in antiques, partly as a result of the urge to live more sustainably and to use technologies that are more 'real' as opposed to digital;[25] this would include analogue radios. Having plummeted during the 1990s, sales of vinyl records are now soaring, analogue cameras are becoming more popular, and even analogue synthesisers are seeing a reusrgencce.[26]

Furthermore, from LPs to AM radio, it is well attested that sound quality is better on analogue devices than digital ones, because of what is lost when a signal is converted into digital bits of information – leading to the increased popularity of analogue music in recent years.[27] The same applies to both speech and music radio: FM and AM have the advantage over digital radio and internet streaming that they provide a richer, more authentic sound. Whilst FM suffers from hiss in many areas, especially when listening on the move, longwave provides a reliable, high-quality signal to the entirety of the UK, and it is very difficult to argue that there is any better sound quality for BBC Radio 4 than listening on longwave using an old-fashioned receiver designed for this purpose. If the longwave signal is switched off, this option will be removed, and the next generation of radio listeners, who may not even be aware of its existence, now that longwave is not mentioned on-air by the BBC at all,

[24] Twentieth Century Society. *C20 Calls for Droitwich transmitter masts listing*. 7th January 2025. https://c20society.org.uk/news/c20-calls-for-droitwich-transmitter-masts-listing (accessed 25th March 2025)
[25] BBC. *You and Yours*. 25th March 2025. https://www.bbc.co.uk/programmes/m00298nr
[26] Beverland, Michael & Eckhardt, Giana. 'Analogue technology can be frustrating – is that part of the appeal?'. *BBC Future*, 28th April 2024. https://www.bbc.co.uk/future/article/20240426-why-we-continue-to-embrace-analogue-tech (accessed 25th March 2025)
[27] Kessler, Ken. 'Listening Old School: The Analogue Revival'. *Oracle Time*, 28th September 2018. https://oracleoftime.com/listening-old-school-the-analogue-revival/ (accessed 25th March 2025)

will be denied the opportunity to listen on analogue. This may mean that those who seek out analogue sound may cease listening altogether.

By contrast, if the BBC invests in, publicises and encourages listenership to longwave radio, it may find not only a receptive younger audience but the opportunity to build a new listener base in an age when so much information is conveyed via the internet. There are many websites and streaming services competing for attention on the internet; there is only one channel broadcasting on longwave in the UK – BBC Radio 4.

The historic value of longwave radio does not mean that it is a thing of the past, an out-dated technology with no place in the modern world. Rather, longwave has the capacity to be a stalwart service for the future, a critical part of the survival and flourishing of BBC radio listening amongst generations to come.

6. Popular Support for Longwave Radio Today

Summary

- Longwave radio retains many listeners both in the UK and overseas
- Many people in the UK value its quality, reliability and ease of access
- Many people overseas value its wide transmission range, and the availability of a well-trusted source of information that is unlikely to be blocked
- Longwave listeners are from both younger and older generations

As has been stated already in this report, neither the BBC nor any other media organisation has carried out conclusive research into the current listenership of BBC Radio 4 Longwave. Given that many of those who rely on it live in rural areas with poor digital, FM and internet reception, it is unlikely that many of its listeners will be captured by general listener surveys such as that carried out by RAJAR. Many others who choose to listen to longwave may not want to, or be able to, use the internet, where most communication with the BBC takes place and where news of its potential demise has been most widely circulated. They may not therefore be aware of the potential closure, or in a position to voice their concerns.

It has not been possible for the purposes of this report to carry out any such survey, though we urge those with the resources to do so – such as the BBC – to carry out such a comprehensive survey before going ahead with any change to the longwave platform. However, the *Campaign to Keep Longwave* has launched an online petition calling for the retention of BBC Radio 4 Longwave, which at the time of writing has amassed 4424 signatures.[28] The vast majority of these are from across the UK, although a sizeable number of listeners abroad have also signed the petition, and tens of signatories have left comments expressing why they wish Radio 4 Longwave to be kept. Furthermore, supporters have donated £1653 so far at the time of writing towards having the petition shared more widely. This gives at least a flavour of the level of support that exists for longwave amongst internet users who have sought out or been told about the petition online.

Of course, the majority of people in the UK – and probably the majority of longwave's listeners – are probably unaware of the petition, and may well support it were they to know of its existence. It is very difficult to reach those living in areas most dependent upon longwave, and those with no internet connection, to inform them of the threat to Radio 4 Longwave or to garner their views. The number of signatures on the petition could therefore be indicative of a great deal of wider support for the platform.

Listener Comments

In addition to those quoted at the end of Chapter 4 relating to rural listening, a number of longwave listeners have left comments supporting the Campaign to Keep Longwave for other reasons. A small sample is given below.

> For over 25 years on summer camping trips around Europe it's always a pleasure to listen to Radio 4 Long Wave and keep up with daily news. No Internet, WiFi or expensive data available or required, just good old fashioned and free to access basic radio.

[28] Change.org. *Keep BBC Radio 4 Longwave.* https://www.change.org/p/keep-bbc-radio-4-longwave (accessed 25th March 2025)

Notwithstanding that we all contribute to the cost of the service being provided via our TV Licence fee. – *Paul*

The total national coverage of R4 LW must be saved in case of an unforeseen national emergency – *David*

I'm WELL outside the 'target area' (I'm in North America) but still regularly try for and enjoy receiving BBC on Longwave. The 'soft power' diplomacy that this service provides is invaluable and to try to put a 'accounting' analysis to something with such intangible benefits will never completely take those values into consideration. Don't be 'penny wise and pound foolish' and decide to ditch a service that provides FAR MORE 'intangible' benefits than you can ever account for! Keep LW going. - *KV*

The switch for Electricity Meters is also controlled by this signal, otherwise Economy 7 meters will not work and one has to acquire a smart meter which a lot of people don't want. – *Patricia*

It's the only transmission the can be received anywhere in Britain – *Robert*

Apart from the obvious nostalgia there are many reasons to keep the LW service going. It is reliable and really the only one transmission the can be received anywhere in Britain - *Chris*

I love tuning to the station on LW 198kHz from Malta

Many thanks for your efforts! I am listening frequently the BBC on 198kHz in south Germany. – *Ulrich*

To me, BBC on longwave means news. Factual reporting. Around the clock. On a car radio receiver in central Sweden. Longwave is unbeatable when it comes to covering larger areas. – *Torlief*

I am in Belgium and I listen to bbc lw for the quality of the news.In the past I was listener of bbc world service on 648 am. Now 648 am is used by radio Caroline. I did not find another frequency for bbc world service so keep long wave 198 – *Lahaise*

Please keep BBC 198 Droitwich on longwave on the air. In wintertime during long cold nights when there is little atmospheric static I can hear this station all the way across the Atlantic Ocean from my home in Central Canada! Your longwave signal covers all of the UK, even outlying islands where other radio signals don't reach. When I was travelling around Eurtope a few months ago I could get Longwave fro the BBC almost everywhere. In an emergency when the power is out and the cell towers are down, you will be glad you kept this backup alive. – *Thomas*

As a Brit living in the Republic of Ireland longwave radio 4 is my daily contact with UK news, current affairs, arts & links to all things British. Please don't turn off this transmitter. Question to be asked of the BBC: What is the real reason for this transmitter switch-off, is it because Arqiva who own the site are being sued by the BBC because of a

fire at another site used by the BBC & failure to address contract responsbilities as reported on by The Telegraph? – *Julia*

Long wave kept me from feeling homesick/ depression when I first moved to France - it was a lifeline for me in the days before the Internet. – *Petra*

A.M. Broadcasts are still valuable to many people across the country, the seas around the UK and ex pats in the EU. It's short sighted to close such a valuable service, that in times of national emergency can even be received on equipment requiring no power at all. Longwave is probably the most reliable and dependable radio medium available. I'm actually surprised there arn't more stations using it. I know the transmitter is elderly, but I think an upgrade is essential to our main nation's broadcaster. I would probably consider discontinuing the FM broadcasts in favour of Longwave as FM is far better suited to small scale local stations with its small footprint. Probably save about 2 mhz of clutter on an overcrowded band. Tim in Warwickshire. – *Tim*

Longwave is great, why not use the old RTE TX that was shut last year, its more efficient than the valve equipment and it will be more reliable. Mike from Arqiva – *Mike*

Hello there, I listen on Long Wave (except when Droitwich is distorted and they need to give it a kick !) Keep Long Wave, It has that warm feel, especially the shipping forecast when it is windy outside and and you are tucked up in a warm bud, snuggled under the covers, with a simple cheap radio. Keep Long Wave, I remember driving around the coast in north Cornwall and Long and Medium Waves were they only thing I could listen to, as VHF was in and out and as for DAB glitch, glitch glitch…… Keep Log Wave, With Putin sabre ratling, do we really want to rely on DAB, the amount of times it goes off, due to GPS antenna issues or Sat Dish problems, or BT Fibre issues, its a complete laugh. Keep Long Wave, One TX to cover the entire UK, Now we don't have interferers on the same channel. Keep Long Wave! – *Frank*

The properties of longwave is such that I've heard Medi 1, 171khz in South Australia which is roughly a distance of 16,502km as the crow (radio wave) flies. It's shortsighted to get rid of longwave and put all your eggs in the digital basket. AM radio is the most portable medium. Even it gets noisy, you can still hear it. On the move it's not always imperative to have a Hi Fi experience. Just good clean information… - *Charles*

In Hungary, the broadcast can be heard day and night on 198 khz. I recently visited the Canary Islands, I took the pocket-sized Belka V3 receiver with me, and on the islands you can also receive BBC 4 broadcasts from the same transmitter. Wonderful thing. I visited Iceland 2 years ago, the broadcast can be heard there as well. They also broadcast on long wave in Iceland, we drove around a quarter of the island with the rented car. The FM broadcast was regularly interrupted, but it always sounded stable on the long wave. – *Adam*

I do think AM broadcasting (both MW & LW) still have their place in the modern world, and this is coming from someone in their early 30's.. Internet services may be handy, but can't replace a proper broadcast. The ability to broadcast over long distances and across borders could be vital in the years going forward. The Internet infrastucture could easily

come crashing down for many different reasons. Also, Russia have said they could target satelittes in thir conflict. If that were to happen, the loss of GPS would bring the whole digital world crashing down quite quickly. You never know if we need to be broadcasting into Europe again like we did during WWII. Plus, with digital platforms, the content you are delivered is decided by algroythms, so what one person is delivered will differ from another person. We still need actual broadcasts where everyone hears the same thing. – *Matt*

Long wave transmission is a tried and tested means of conveying entertainment and news to the public which has been the case for over several decades. The move to a digital means of transmission, which now seems to be the replacement for the older types, has its benefits but herein lies its Achilles heel in the fact that it is complex right down to the end user's means of receiving equipment. My argument for maintaining long wave transmission is its simplicity and reliability and far reaching signal capabilities should the country find itself in a state of conflict or civil emergency where authorities needs to disseminate information which could be pivotal to survival. When all other means may have failed, long wave continues to punch its way through being received on a small, simple battery powered receiver. – *Jason*

The internet goes down frequently here in France - especially the hurriedly installed fibre network, which seems to be held up with string and sellotape. The robustness and reliability of the LW transmission is very valuable. - *Desmond*

7. Conclusion

In this report, we have explored five key reasons for which longwave broadcasting remains important today. We have seen that it remains the most energy-efficient means of communicating information to the entirety of the UK and beyond. We have shown how longwave forms a key piece of national infrastructure that would be resilient against attacks or outages affecting the internet, how this would be of great importance during a national emergency, and that longwave provides a vital source of reliable news to Europe. We have found that, far from being redundant, longwave continues to be the means by which many people access BBC radio, especially in some rural areas where digital radio, FM and mobile 'phone signals do not reach. We have determined that longwave radio is an historic part of British broadcasting history, and that many people wish to see it preserved for this reason alone. Finally, we have demonstrated that popular support for longwave radio remains high, with thousands of people signing a petition to keep Radio 4 Longwave and dozens sending in their comments.

A summary of the main findings of this report is as follows:

- **Little energy would be saved by switching off radio 4 longwave**; it constitutes a much smaller portion of the BBC's overall transmitter power than even one FM channel or DAB multiplex, and longwave *receivers* use much less energy than internet-connected and digital ones
- **More energy would be saved by discouraging the use of 'smart speakers' and radio through digital television**: according to the BBC's own 2020 report, these methods of energy listening use vastly more energy than analogue radio listening
- **Longwave is critical national infrastructure** that remains crucial in a time of national crisis or cyber attack, and analogue radio has proven more important than ever to disseminate reliable information at this time of renewed war in Europe
- **Longwave is still relied upon in rural and seafaring communities**: FM and DAB cover technically 98% of the population, which would leave 1.5 million people without access, and even outside these areas reception is often poor and glitch on these channels, not on LW
- **Keeping Longwave on-air maintains the resilience of the radio network**, so that BBC radio is still accessible during power cuts and other outages
- **There is no solid evidence that longwave listenership is small or declining**: no studies have been carried out specifically into longwave listenership, and RAJAR data does not separate it from FM and MW listening
- **2025 is the centenary year** of BBC broadcasts on longwave, a time to celebrate the platform and not to shut it down
- **Longwave analogue broadcasts could be a way of finding a new audience for BBC Radio** as younger generations seek alternatives to the internet-saturated world in which we live
- **Nearly 5000 people had signed a petition** to keep BBC Radio 4 Longwave as of the end of March 2025

The publication of this report has been timed to coincide with the anniversary of the end of separate longwave programmes for BBC Radio 4 at the end of March 2024. For all the reasons given above, this need not mark the beginning of the end of longwave broadcasting. A small investment by the BBC and government to maintain and/or upgrade the three longwave transmitters – or even just the main transmitter in Droitwich – would be an investment not only in the preservation of radio heritage, but also in the future of radio in the United Kingdom.

In an age of unreliable information, huge competition for attention on the internet, and increased societal vulnerability because of our dependence upon the World Wide Web, BBC Radio 4 Longwave remains a jewel in the crown of the BBC: a flagship station that can be received by anyone, anywhere in the British Isles and well beyond it. To cast aside this jewel at this moment when it is needed as much as ever, and exactly 100 years since BBC longwave broadcasts began, would be an international tragedy, and a great loss to the British public. May BBC longwave broadcasts continue loud and clear, not only for 2025, but for the decades to come.

References

Aïmeur, Esma; Amri, Sabrine & Brassard, Gilles. Fake news, disinformation and misinformation in social media: a review. *Social Network Analysis and Minining* vol.13 no.30. 2023. https://pmc.ncbi.nlm.nih.gov/articles/PMC9910783/pdf/13278_2023_Article_1028.pdf (accessed 13th March 2025)

BBC. *You and Yours*. 25th March 2025. https://www.bbc.co.uk/programmes/m00298nr

BBC News. *Customers face Heating Problems if Meters Not Replaced*. 3rd October 2024. https://www.bbc.co.uk/news/articles/cx2402zzwg1o (accessed 23rd January 2025)

BBC Help Centre. *Changes to Radio 4*. https://www.bbc.co.uk/reception/help-guides/everything-else/changes-to-radio-4 (accessed 23rd January 2025)

BBC News. *Long wave radio fans mourn fading frequencies*. 5th September 2023. https://www.bbc.co.uk/news/business-66644709 (accessed 23rd January 2025)

BBC Media Centre. *BBC Radio 4 begins information campaign to transition listeners from Long Wave*. 29th May 2023. https://www.bbc.co.uk/mediacentre/articles/2023/bbc-radio-4-long-wave-transition (accessed 23rd January 2025)

Beverland, Michael & Eckhardt, Giana. 'Analogue technology can be frustrating – is that part of the appeal?'. *BBC Future*, 28th April 2024. https://www.bbc.co.uk/future/article/20240426-why-we-continue-to-embrace-analogue-tech (accessed 25th March 2025)

Brignal, Mattie. BBC Switch-Off to force 600,000 households on to smart meters. *The Telegraph*. 16th January 2025. https://www.telegraph.co.uk/money/bills/energy/600000-households-forced-smart-meters/ (accessed 23rd January 2025)

Change.org. *Keep BBC Radio 4 Longwave*. https://www.change.org/p/keep-bbc-radio-4-longwave/ (accessed 25th March 2025)

Clifton, Kieran. *BBC national digital radio transmitter network expands*. BBC Media Centre, 8th December 2017. https://www.bbc.co.uk/mediacentre/latestnews/2017/digital-radio-transmitter (accessed 13th March 2025)

Fletcher, Chloe & Chandaria, Jigna. *The Energy Footprint of BBC Radio Services: Now and In the Future*. October 2020. https://downloads.bbc.co.uk/rd/pubs/whp/whp-pdf-files/WHP393.pdf (accessed 5th December 2024)

Gatewood, Cooper. *INSIGHT: Understanding toxic misinformation to stop the spread.* 13th January 2025. https://www.bbc.co.uk/mediaaction/insight-and-impact/insightblog/understanding-misinfo (accessed 13th March 2025)

Grieg, Paul. Shortwave radio in Ukraine: why revisiting old-school technology makes sense in a war. *The Conversation* 9th March 2022. https://theconversation.com/shortwave-radio-in-ukraine-why-revisiting-old-school-technology-makes-sense-in-a-war-178575 (accessed 10th March 2025)

Kessler, Ken. 'Listening Old School: The Analogue Revival'. *Oracle Time*, 28th September 2018. https://oracleoftime.com/listening-old-school-the-analogue-revival/ (accessed 25th March 2025)

McGrath, Matt. Climate 'whiplash' linked to raging LA fires. *BBC News*. 9th January 2025. https://www.bbc.co.uk/news/articles/c0ewe4p9128o (accessed 23rd January 2025)

Ofcom. *BBC Radio Licenses*. 20th December 2016, updated 16th March 2023. https://www.ofcom.org.uk/tv-radio-and-on-demand/analogue-radio/bbc-radio-licences/ (accessed 10th January 2025)

Philips, John. *Droitwich Calling*. 2006. https://www.bbceng.info/Operations/transmitter_ops/Reminiscences/Droitwich/droitwich_calling.htm (accessed 25th March 2025)

RAJAR. *RAJAR Data Release Q3 2024*. October 24th 2024. https://www.rajar.co.uk/docs/2024_09/Q3%202024%20Chart%204%20-%20BBC%20Comm%20Platform%20Share.pdf (accessed 5th December 2024)

Smith, Matthew. *Which media outlets do Britons trust in 2023?* YouGov, 25th May 2023. https://yougov.co.uk/politics/articles/45744-which-media-outlets-do-britons-trust-

2023?redirect_from=%2Ftopics%2Fpolitics%2Farticles-reports%2F2023%2F05%2F25%2Fwhich-media-outlets-do-britons-trust-2023 (accessed 13th March 2025)

Twentieth Century Society. *C20 Calls for Droitwich transmitter masts listing*. 7th January 2025. https://c20society.org.uk/news/c20-calls-for-droitwich-transmitter-masts-listing (accessed 25th March 2025)

About the Author

Dr Tobias Thornes studied physics & astronomy at University College, Durham, before obtaining a doctorate in atmospheric physics from Oriel College, Oxford, in 2019. Born in 1992, he has lived for most of his life in rural Worcestershire and writes and campaigns on issues relating to the environment and rural affairs. He is currently in training for ministry in the Church of England.

Appendix: Output Power Data, BBC National Analogue Radio

FM Transmitters for BBC Radio 4 (x214)

Location	Power (W)	Location	Power (W)
Aberdare	42	Chippenham	9
Abergavenny	36	Churchdown Hill	72
Abertillery	10	Cirencester	10
Ardgour	55	Clettravel	1000
Ashkirk	50000	Clyro	10
Axe Valley	80	Combe Martin	4
Ballaculish	30	Conway	50
Baileycastle	100	Comholme	20
Barnoldswick	20	Creteway Down	100
Barnstaple	1000	Crieff	125
Basingstoke	20	Croeserw	10
Bath	82	Crystal Palace	4000
Beacon Hill North	1000	Cwmafan	10
Beecroft Hill	200	Daliburgh	1000
Belmont	14350	Darvel	10000
Ben Gullipen	1000	Darwen	10
Berwick-Upon-Tweed	50	Deiniolen	50
Betws-y-Coed	50	Divis	125000
Bexhill	100	Doigellau	50
Bilsdale	5000	Douglas	11400
Blackhill	200000	Durris	2100
Blaen Plwyf	250000	Ebbw Vale	30
Blaenavon	10	Egford Hill	60
Blunsdon	200	Eitshal	2000
Bow Brickhill	10000	Exeter	55
Bowmore	61	Eyemouth	100
Brecon	20	Fenham	42
Bressay	50000	Ferndale	10
Bridport	200	Ffestiniog	190
Brougher Mountain	10000	Forfar	20000
Buxton	100	Fort Augustus	1000
Calne	32	Fort William	4000
Cambret Hill	130	Girvan	100
Camlough	4000	Glengorm	5000
Campbeltown	400	Gogwell	300
Carmarthen	20	Grantham	50
Carmel	3200	Grantown	720
Cammoney Hill	20	Guildford	4000
Caterham	15	Haslingden	100
Chalford	100	Hastings	500
Chard	50	Haverfordwest	20000
Chatton	5500	Hebden Bridge	25
Chesterfield	400	Herndean	1000

Location	Power (W)
High Wycombe	50
Holcombe Down	100
Holme Moss	250000
Hutton	40
Idle	20
Ilchester Crescent	1300
Innerleithen	22
Iscles of Scilly	60
Ivybrige	50
Keelylang Hill	41000
Keighley	1000
Kendal	100
Kenley	25
Keswick Forest	60
Kilkeel	200
Kilvey Hill	1000
Kingswear	5
Kingussie	100
Kinlochleven	10
Kirkconnel	40
Kirkton Mailer	1000
Knockmore	2000
Lame	100
Les Platons	16000
Lethanhill	220
Limvady	3400
Llanddona	21000
Llandecwyn	100
Llandinam	40
Llandrindod Wells	2700
Llandyfriog	100
Llanfyllin	10
Llangeinor	10
Llangolien	15600
Llanidloes	50
Llanrhaeadr ym Mochnant	50
Llwyn Onn	250
Llyswen	10
Londonderry	10000
Long Mountain	48
Luddenden	84
Ludlow 10	
Lyme Regis	50
Machinyleth	120
Madingley	260
Mallaig	40
Manningtree	5000

Location	Power (W)
Marlborough	100
Meidrum	150000
Melvaig	50000
Membury	125
Mickleham	25
Millburn Muir	50
Minehead	10
Morecambe Bay	10000
Mynydd Pencarreg	400
Nailsworth	100
Ness of Lewis	162
Newbury	100
Newhaven	100
Newton	100
North Hessay Tor	160000
Northampton	123
Oban	5000
Ogmore Vale	10
Okehampton	50
Olivers Mount	250
Oxford	50000
Peebles	40
Penaligan Down	200
Pendle Forest	1000
Penicuik	132
Penifiler	10
Penmaen Rhos	100
Penar	5
Peterborough	40000
Pitlochry	500
Plympton	40
Pontop Pike	135000
Pontypool	50
Port Ellen	65
Porth	10
Redruth	17600
Rheoia	10
Rhymney	20
Ridge Hill	10000
Rosemarkie	20000
Rosemount	32
Rosneath	50
Rostrevor Forest	40
Rothesay	570
Rowridge	250000
Rumster Forest	10000
Saddleworth	100

Location	Power (W)	Location	Power (W)
Salcombe	250	Walsden South	10
Salisbury	20	Weardale	180
Sandale	250000	Wensleydale	100
Sheffield	320	Wenvoe	250000
Skriaig	30000	West Kilbride	50
South Knapdale	2200	Westwood	50
Stantor Moor	1200	Weymouth	100
Strachur	20	Whalley	10
Stranraer	31	Wharfedale	40
Sutton Coldfield	250000	Whitby	108
Swingate	11000	Whitehaven	130
Tacolneston	250000	Whitehawk Hill	500
Todmorden	100	Windermere	64
Ton Pentre	6	Winter Hill	4000
Tullich	50	Woolmoor	5000
Ullapool	50	Wrotham	250000
Varteg Hill	48	**Total (FM)**	**3413395**
Ventnor	50		

Longwave Transmitters for BBC Radio 4 (x3)

Location	Power (W)
Burghead	50000
Droitwich	500000
Westerglen	50000
Total (LW)	**600000**

Medium wave transmitters for BBC Radio 5 (x24)

Location	Power (W)	Location	Power (W)
Barrow	600	Lisnagarvey	5000
Bexhill	45	Londonderry	280
Brighton	600	Moorside Edge	400000
Brookman's Park	200000	Postwick	15000
Burghead	25000	Redmoss	800
Clevedon	75000	Redruth	400
Dartford	4	Stagshaw	50000
Droitwich	150000	Start Point	80000
Enniskillen	400	Tywyn	400
Exeter	200	Westerglen	70000
Fareham	800	Whitehaven	400
Fern Barrow	400	**Total (MW)**	**1075729**
Folkestone	400		

Source: Ofcom. *BBC Radio Licenses*. 20th December 2016, updated 16th March 2023. https://www.ofcom.org.uk/tv-radio-and-on-demand/analogue-radio/bbc-radio-licences/ (accessed 10th January 2025)