

AM Radio in Other Countries

AM radio in England, Scotland, Wales and Northern Ireland is in slow decline and is likely to be discontinued during the 2020s. In some countries, AM radio has closed down already, whereas in others, it is still popular. This article first examines some of the technical and operational differences between how AM radio has been implemented in different countries. It then discusses some individual countries in more detail.

Technical Differences

The International Telecommunications Union (ITU) divides the world into three regions. Region 1 comprises Europe, Africa, the former Soviet Union and the Middle East. Region 2 is North and South America. Region 3 is South and East Asia, Australia and Oceania.

In Regions 1 and 3, channels are multiples of 9 kHz, whereas in Region 2, multiples of 10 kHz are used. Furthermore, Region 1 uses both the long wave (153–279 kHz) and medium wave (531–1602 kHz) bands for broadcasting, whereas the other regions (apart from Mongolia) only use medium wave. A few countries have extended the medium wave band to 1700 kHz. Lower frequencies enable ground waves to propagate further. Thus, longer-range transmission is enabled in Region 1, albeit with a limited number of channels available. However, only a limited number of long-wave compatible receivers are now available.

A key difference between Region 1 and the other regions is bandwidth. Region 1 is much more densely populated with the result that the AM bands were much more heavily used until recently. Consequently, the bandwidths are low to minimise adjacent channel interference. The maximum audio bandwidth transmitted in Europe is 6.3 kHz. However, the higher frequencies are attenuated and receivers typically filter down to 3–4 kHz to limit adjacent channel interference, particularly at night. In Regions 2 and 3, there is typically less interference, so higher bandwidth are used (e.g., 10.2 kHz in the USA), though a wideband receiver is needed to benefit from this.

Australia, Canada, Japan and the USA all introduced AM stereo in the 1980s. Development in the USA was hampered by multiple competing standards, while the other countries standardised on the C-QUAM system. However, AM stereo declined after the 1990s as most music programming moved to FM.

The short wave bands are generally used for international broadcasting, though this has declined sharply in the 21st century as the internet has taken over with only broadcasts to less developed countries remaining. A few countries also use short wave for domestic broadcasting. In sparsely populated countries short wave enables large areas to be covered relatively cheaply. In tropical zones, medium wave signals are subject to high levels of interference, so the 2300–2495 kHz, 3200–3400 kHz and 4750–5060 kHz bands have been used instead (though most of these stations have now moved to FM).

Operational Differences

Most countries initially used FM to simulcast their AM programming, gradually introducing separate programming as FM became more popular. From the 1970s, most European countries had a mixture of AM-only, FM-only and simulcast stations. Almost every classical music station in the world has been FM only from launch (BBC Radio 3 being a notable exception). In general, AM has declined the most in countries where all programmes were simulcast on FM and declined the least in countries with no simulcasting.

Another difference is networking. Some countries transmit mostly national programming and others mostly separate stations. In Europe, particularly England, Scotland, Wales and Northern Ireland, single frequency networks are often used with multiple transmitters carrying the same programmes on the same frequency. This maximises use of radio spectrum but increases co-channel interference, particularly at night.

In Europe and some other countries, medium wave has also been used for international broadcasting after dark, when signals travel further. However, this has now largely ceased in Europe (see the separate article on international broadcasting on Europe on medium and long wave).

France

From the 1950s until 1975, France broadcast two public networks on AM and FM, one with regional programming, one on AM only, mainly long wave, and one on FM only. From the 1960s, the regional network and the AM only network shared some programmes. French public broadcasting was reorganised in 1975, with the AM transmitters condensed into two networks with better coverage. France Inter was broadcast on long wave, supplemented with medium wave transmitters around the periphery, while France Culture was on medium wave. Both services were

also available on FM with regional programmes opting-out on France Inter FM and/or France Culture AM. From 1980, most France Culture programmes became FM only and the medium wave network carried separate programmes: oldies station Radio Bleue in the mornings and educational programmes in the afternoon and early evening. There were also regional programmes initially, but these were gradually replaced by a separate local radio network on FM. The regional opt-outs on France Inter FM were also phased out. During the 1990s, Radio Bleue gradually displaced the other programming, eventually taking over the whole network.

During 1996, France Inter's medium wave relays were closed, leaving FM and the long-wave transmitter, which provides usable reception across several neighbouring countries. Then, in 2000, Radio Bleue was merged with the FM local radio network, becoming France Bleu. Most (but not all) of the medium wave transmitters were then reallocated to France Info, which was available on FM, but with poorer coverage than most of the other public networks. Three medium wave transmitters closed in 2014 and the remaining transmitters scheduled closed at the start of 2016. The France Inter long wave transmitter is due to close at the end of 2016.

Until the 1980s, no commercial radio was licensed in France. However four stations broadcast to France from neighbouring countries: RTL from Luxembourg, Europe 1 from Germany, Radio Monte Carlo from Monaco and Sud Radio from Andorra. RTL, Europe 1 and Radio Monte Carlo (now RMC Info) all broadcast on long wave, covering most of France. From the late 1980s, these stations were licensed to broadcast on FM in French cities. Although the number of FM transmitters has increased over the years, all three long wave transmitters were retained to fill the gaps in FM coverage. Europe 1's AM transmitter closed at the end of 2019.

Sud Radio, which relocated its transmitters in the 1980s, was the only commercial radio station licensed to broadcast on AM in France until 2003, when 30 AM frequencies were licensed to commercial broadcasters. These used the medium wave frequencies abandoned by France Inter and a number of low power allocations. Existing stations RMC Info and Radio Orient were awarded licenses to plug gaps in their coverage. However, most of the licenses were awarded to new minority stations, including a childrens' station, a Jewish station, an Islamic station and a maritime station. About half of the licensed transmitters actually launched, however all of them (including Sud Radio) had closed by 2015. A new AM music station, Bretagne 5, launched in June 2015.

France is unusual in that AM broadcasting has always been dominated by long wave. Many radios sold in France have FM and long wave, but not medium wave. Since 2016, only one medium wave transmitter (Bretagne 5) has served France.

Germany

Germany is unusual in having both national and regional public broadcasters. In Western Germany, a national and a regional AM network was developed. The regional broadcasters launched new stations on FM only, whereas the national broadcaster, Deutschlandfunk (DLF) did not start to develop an FM network until the end of the 1980s. In the former East Germany, five national networks were broadcast, four on both wavebands and the fifth on FM only. At unification, one of the East German networks became national service Deutschlandradio Berlin (DLRB), whilst the other networks were replaced by regional services, broadcasting mainly on FM. DLF and DLRB both retained AM networks broadcasting mainly to the West and East, respectively. Both networks are available on FM throughout Germany, but coverage is not universal, so AM plugged the gaps. Most of the regional broadcasters have experimented with separate programmes on their AM transmitters, such as a news service, travel information or programmes for immigrants.

A few commercial stations launched on AM in the 1990s and early 2000s using a mixture of former international and Eastern high power frequencies and new lower power allocations. However, most of these stations only lasted a few years and none survive today. Megaradio tried to build up a national pop/dance music network on AM, but this closed in 2003. Radioropa, a news station serving the former East Germany on long wave, with a handful of FM transmitters in the west, also failed.

Since the end of 2009, the public broadcasters, starting with Hessischer Rundfunk, have gradually closed their AM transmitters. The DLF and DLRB long wave transmitters were closed at the end of 2014, with the remaining medium wave transmitters closing at the end of 2015, marking the end of AM broadcasting in most of Germany. The remaining low-power American Forces Network AM transmitters closed in October 2016. German language broadcasts on AM from Luxembourg also closed at the end of 2015, so there were no German language broadcasts on medium wave or long wave anywhere in the world in 2016 and 2017 (Austria and Switzerland closed AM radio some years ago). The final permanent AM transmitter in Germany, broadcasting Europe 1 long wave to France ceased, at the end of 2019.

Netherlands

AM and FM radio were initially simulcast in the Netherlands. When the third public network opened in the 1960s, it had full FM coverage, but AM coverage was limited to a 10 kW transmitter serving Amsterdam, Rotterdam and Utrecht, until a higher power frequency was allocated in 1978. From the end of 1975 a fourth network (Classical) replaced the second network during the day on FM, then in 1983, a fifth network replaced the first network on AM, initially part time. By 1993, with more FM spectrum available to public radio, these services had been consolidated to two AM/FM networks, two FM-only networks, one AM-only network and a chain of local stations on FM.

From 1992, commercial stations were licensed in the Netherlands, initially on FM. The third public AM network (which continued on FM only) was handed over to commercial station, Radio 10 Gold, in the mid 1990s. Three further commercial stations on AM, broadcasting to the most populous region of the country followed. In June 2003, radio in the Netherlands was completely reorganised, with the last simulcast public station removed from AM and all commercial licenses re-awarded. All of the major AM frequencies were awarded to new stations, including one proposing to broadcast to England. A year later, none of these new stations had started due to financial difficulties. The two national frequencies in the commercial sector eventually went to existing stations, Radio 10 Gold and Arrow Rock Radio, which had failed to obtain FM frequencies. After a few years, both were replaced by religious stations, Radio Maria and Groot Nieuws Radio which had both reduced power by the start of 2015. There are also 7 low-power AM stations, one relaying an FM network in Limburg and 6 community stations. The public network, Radio 5, and Radio Maria both left AM at the beginning of September 2015, becoming digital only, with Groot Nieuws Radio continuing on AM until the end of 2018. From 2016, most of the AM frequencies in the Netherlands were re-allocated to local services with about fifty 50W and 100W stations and about 25 1W stations licenced. Additional frequencies were allocated for these low power services in 2019.

Spain

Spain is one of the few countries in Europe that continues to broadcast a full AM radio service. It has always had both public and commercial radio. There are four national networks on AM, plus a few standalone stations. RNE1 and RNE5 are public, whereas COPE and SER are commercial. All four networks broadcast mainly talk, news and sport and have extensive regional opt-outs. They are simulcast on FM in most places, though RNE1 has more extensive coverage on AM. A few AM transmitters have closed from 2013 onwards.

Italy

RAI, the Italian public broadcaster, originally broadcast three networks on AM. Two of these provided national coverage with a mixture of high-power and low-power transmitters while the third provided more limited coverage using only low-power transmitters. These were cut back to one network at the end of 2002 and the number of transmitters has been subsequently reduced. A few commercial stations have broadcast unlicensed on AM for many years. However, in 2017-18, the Italian government advertised licences to operate more than 100 AM transmitters, some in synchronized networks and some independently. These use a mixture of former RAI frequencies and new frequencies with some transmitters to be licensed for high-power operation. Several hundred applications were received, so there is likely to be a major increase in Italian AM broadcasting over the next few years.

Other European Countries

When the AM band in Europe was planned over the first half of the 20th century, most countries were allocated sufficient high power (>100 kW) frequencies for two services, with larger countries operating a national and a regional network. Between the 1950 and 1978 re-organisations, countries were allocated additional frequencies for low power (up to 2 kW) and medium power (up to 20 kW) transmitters on an ad-hoc basis. These were used for improving reception or introducing additional stations. However, where there was a third (and fourth in the case of England, Scotland, Wales and Northern Ireland) AM network, this had poorer coverage than the two main networks. At the 1978 AM band re-organisation, countries were given the opportunity to apply for additional frequencies and increase the power on their existing frequencies. Some countries such expanded their AM networks, but many others cut back, closing relays or consolidating their best frequencies into a single network and encouraged listeners to switch to FM.

With the extension of the FM band to 108 MHz towards the end of the 1980s, most countries built an extra network, ending AM-only programming. The eighties also saw the introduction of commercial radio in most countries, virtually all of which was on FM only. Most countries simulcast two or three public networks on AM and FM into the 1990s with new stations starting on FM only, the AM transmitters plugging gaps in FM coverage

and serving AM only radios, particularly in cars. From 2000 (before, in some cases), most countries have cut back their AM transmissions, reducing transmitter powers, cutting relays or dropping the number of services.

The number of AM transmitters in Europe (excluding Russia) was steady at about 1300 from the mid-1970s until 2000, with some countries increasing numbers and others decreasing. However, by the end of 2015, this has halved to about 650 (excluding very-low-power transmitters). Excluding England, Scotland, Wales, Northern Ireland and Spain, the number of AM transmitters has dropped from about 840 in 2000 to about 220 at the end of 2019.

Most European countries are now running a reduced AM radio service with fewer transmitters, fewer services and lower power. Albania, Andorra, Austria, Belarus, Belgium, Croatia, Estonia, Finland, Norway (except Svalbard), Sweden and Switzerland have completely closed their AM radio services. Denmark retains a part-time long wave service for mariners. Lithuania has closed domestic AM radio, but retains a medium wave transmitter for international broadcasting. Only Cyprus, Czechia, Hungary, Iceland and Romania (together with England, Scotland, Wales, Northern Ireland and Spain) are continuing with a comprehensive AM radio service.

United States of America

Most radio in the United States is commercial, with public broadcasting limited to 88–92 MHz FM. Thus, all AM stations are commercial. AM/FM simulcasting was phased out very early at the end of the 1960s. Initially, FM was used for minority formats, such as classical music, easy listening and adult oriented rock. As FM became established through the 1970s and into the 1980s, the mainstream formats migrated across. FM has become dominant for mainstream music stations, whilst AM has found a successful niche as the home for most talk and sport stations and a range of minority formats, such as Spanish language, religious and children's stations. Between 1990 and 2013, the number of AM stations in the USA dropped only slightly from 4987 to 4738. The AM band was also extended to 1700 kHz. Thus, the medium is holding up well compared with most other countries.

Australia

Australia is a sparsely populated country in a sparsely populated region of the world. There are relatively few high power AM transmitters, so there is very little interference, even at night. The AM band has also been extended to 1701 kHz. Unlike other countries, Australia has never simulcasted radio stations on AM and FM. FM radio was not introduced to Australia until 1974 and the band was shared with television until the early 1990s. The first FM stations were a public classical music service and a few community stations. A few commercial stations in major cities were introduced at the beginning of the 1980s. However, there was little development of FM radio until the 1990s. In the main cities, the oldest public and commercial stations have stayed on AM, rather than migrating to FM as in the rest of the world. Today, although AM is dominated by speech-based stations, there are still plenty of music stations. Any programme format can appear on either waveband and stations often transmit on AM in some places and FM in others. In many places, the most popular stations broadcast on AM. AM (and FM) stations in the major cities also broadcast in DAB+.

Japan

Japan has very little radio compared with other developed countries. Its FM band was limited to 14 MHz (between 76 and 90 MHz) until very recently (90-108 MHz was used for television). AM is high bandwidth with many stations broadcasting in stereo. There are three national public radio networks, two on AM and one on FM. Commercial radio comprises local stations, with one AM station and one FM station in most locations, together with additional stations in the major cities. With the extension of the FM band to 95 MHz from 2014, the AM commercial stations have all been awarded FM licences and are permitted to simulcast initially. However, two of the public networks remain AM only. New Japanese FM receivers tune between 76 and 108 MHz, so further extension of the FM band is possible if 95-108 MHz is not used for digital radio.