



**Review Paper**

## Medium wave band of All India Radio – an end or a new beginning

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### Abstract

*The research tries to study the present scenario of medium wave band of transmission on radio in India. The process of bringing medium wave to an end and converting it into low power FM stations catering to local regions, which is however a slow process but this transition is happening around the world. The research also tries to explore the state of medium wave transmission across the globe with the new technological developments taking place. How this new scheme can be adopted to the Indian conditions thereby making it more accessible to the people of the country even at the remotest of regions, with ease. With the Government of India developing its mega project of digital India how will it play out in the aspect of radio transmission. At the same time can the medium wave listenership be retained which otherwise is getting divided amongst multiple sources of information and entertainment. The research also focuses on the Future of Radio in the years to come.*

**Keywords:** Medium Wave, DRM, HD Radio, Podcast, Simulcast.

### Introduction

Medium wave a band on radio that comes between short wave and Long wave. The term is of significance, dating from the early 20th century, when the radio spectrum comprised long (LW), medium (MW) and short (SW) radio wavelengths. There were generations which grew up on listening to and enjoying medium wave programs and have grown old with it. As many would remember those were the times when it was only radio that entertained us, informed us and brought us closer to one another. This was the power of medium wave which however cannot be stated about short wave and long wave as these radio bands were prevalent but had programs not for the masses but for a select few.

During the last two decades, the market for MW broadcasting has been declining in most countries, both in number of services, receivers and listeners<sup>1</sup>. The irruption of Digital Radio standards in the late nineties has revitalized the MW band around the world, so how can India be left behind.

The research tries to establish the fact that although medium wave radio transmission in India available over amplitude modulation band has been all India radio's strength all along with over 141 stations and a coverage of 94% approximately of the population of the country however the present scenario is different, the band is available only on old transistors or radio sets that are not readily available in the market. Medium Wave can be A.I.R's ultimate tool for greater transformation and bringing the fast falling out listeners under its umbrella. Government is putting in efforts with incorporation of digital

radio mondi ale and installation of low power FM stations with coverage of about 10 kilometres of radius. The research also tries to explore the band in context of other countries its reach, accessibility and advantage.

Radio enjoyed supremacy as the largest mass medium for a very long time however with new changes taking place in the field of technology and the choices of audiences changing as well the good old radio started losing out its once loyal listeners to other sources of media. Surprisingly the consumption of media by the people rose. Since now in the present times the multiple sources of information are available therefore the young generation prefers ease of use and ease of attaining information via the other media sources like internet or mobile phones which are now faster and simpler to use. The market today is one which supports the user or consumer therefore the listener who is the consumer decides about the programme they would like to listen or watch, they would like to listen to programmes which have better quality of output in terms of audibility and accessibility for one and all. They also want more choice of programmes and more choices of radio channels. At the same time there is a need of radio channels for serving the purpose of knowledge to visually challenged or with auditory problems.

### Present scenario of medium wave in India

All India Radio's medium wave coverage now is lacking in many a aspects like the vision and wholesomeness of the programmes. Medium wave transmission is now treated as a preserve of the rural listeners: those living in cities have the privilege of FM listening. Barring short insertions in news

bulletins or a few sponsored programmes, AIR's FM frequencies are now fully devoted to entertainment and few information based programs. As for AIR's rural audience, it is now treated as a stereotype of backwardness. Messages - paid for by different ministries - intercept news to remind villagers about the importance of cleanliness and contraception. Both in content and style, these messages treat India's rural population as a mindless mass<sup>2</sup>.

The process of converting medium wave into low power FM stations is in its planning stages under the Ministry of Information and Broadcasting, Government of India. The plan is to simulcast content aired on Medium Wave stations and FM mode as well. In a scenario where the receiver sets for Digital Radio Mondiale (DRM) are out of the reach of the common man owing to the cost factor, the best alternative for All India Radio is to take the national channel across the country through a network of FM stations, former Prasar Bharati, CEO Jawhar Sircar said in event in 2013 to mark 86 years of broadcasting in India. However A.I.R being under Prasar Bharati which falls under the domain of Government, it is tough to execute the plans in time so much so that sometime the plans simply remain on paper and never materialise. The constant tussle between the bureaucrats and the politicians holding important posts is nothing new to speak about. However the impending decisions leave the common man bereft of the benefits of this great medium.

## **History of medium wave**

Guglielmo Marconi's pioneering wireless work, begun in the late 1800's, developed an important principle which more than twenty years later would help determine which wavelengths would be available for broadcasting. Marconi's most significant early discovery was of the "ground wave" radio signal<sup>3</sup>.

Medium Wave is the original radio broadcasting band, in use since the early 1920's. Typically it's used by stations serving a local or regional audience. However, at night, signals are no longer absorbed by the lower levels of the ionosphere, and can often be heard hundreds or even thousands of miles away<sup>4</sup>.

## **Medium wave fading out around the world**

AM has fallen silent across a major part of Europe, in France, Germany and Luxembourg to name a few, reason are many. The quality of sound is deteriorating due to hindrances, multiple sources of information available to people especially the youth and it turns out a costly affair to run medium wave station as the consumption of transmitters is higher.

Amongst others, Germany's Deutschland radio closed down its seven Medium Wave transmitters; and Radio France, France Info, France Blue RCFM and France Blue Elsass all went dark. RTL also finally turned off the famous 1440 (208m) Luxembourg apparatus which had carried the 'Luxy' service

until 1991<sup>5</sup>. The poor sound quality is probably the main reason that listeners stay away from the medium wave. The digital standard DRM has tried to establish itself for a couple of years now. The break-through still seems far away. The competition is high: FM usually offers about 20 stations, internet radio via cell phone networks (where available) offers the ultimate variety<sup>6</sup>.

RTÉ has decided to close medium wave as the technology offers poor value for money, is environmentally erroneous and out of date; with poor quality reception and audio. No other Irish station broadcasts on medium wave. RTÉ's medium wave service had brought the world into homes of the listeners of the country since 1926 capturing moments of history and life through decades of news, sport, features and entertainment. Listeners began to leave medium wave when the superior sound of FM was introduced in the 1970s and today more than 90% of RTÉ Radio 1 listening is on FM. In addition the growth of new platforms such as podcasting, mobile phones and digital radio, mean that radio audiences have a much wider choice of when and how to listen<sup>7</sup>.

Commercial and public AM broadcasting is authorized in the medium wave band worldwide, and also in parts of the long wave and shortwave bands. Today, AM competes with FM, as well as with various digital radio broadcasting services distributed from terrestrial and satellite transmitters. In spite of the phenomenal growth in technology the competition is tough for AM.

## **How do AM and FM work?**

Traditional radio works simply by turning sounds into electromagnetic waves and transmitting those waves across air space to radio receivers. To broadcast sounds on radio, a transmitter is required to generate the radio waves by moving electric charges rhythmically up and down an antenna. As the electric charges oscillate back and forth on the antenna, they produce changing electric and magnetic fields that recreate each other as they then travel across space in the form of electromagnetic waves. When these waves come across a radio receiver antenna, the electric fields push electric charges up and down this antenna, thus detecting the radio carrier wave.

All kinds of waves have three parts: wavelength, amplitude and frequency. Each of these parts can be altered to carry information. In AM (amplitude modulation) radio the carrier wave is modulated or varied by changing its amplitude. In FM (frequency modulation) radio the frequency of the transmitted wave is modulated in accordance with the amplitude and pitch of the signal.

AM radio generally uses a medium frequency broadcasting mode while FM uses a mode in the VHF (very high frequency) broadcasting bands. FM delivers a high quality analogue signal that in comparison to AM is practically free from static interference. However there are advantages of AM radio as well

for instance minimum geographic coverage area of AM radio is anywhere between 40 and 80 kilometres even though atmospheric effects can improve AM coverage importantly, especially at night. A high-powered FM transmitter can cover an area of approximately 100 kilometres<sup>8</sup>.

## Digital radio

Digital radio sends speech and songs through the air as strings of numbers. No matter what comes between your radio and the transmitter, the signal almost always reaches its destination. The digital technology also brings many more stations and displays information about the program you're listening to, such as the names of music tracks or programs<sup>9</sup>.

For the past ten years we have witnessed a rapid digitization of all types of radio communications, all in order to increase the quality and quantity of content that can be transferred wirelessly, thus saving and optimizing the use of radio frequency spectrum<sup>10</sup>. A study group called "sub-group ongoing Digital" was set up by planning commission to study the digitalisation of broadcast industry. The sub-group was headed by the Member Secretary, Planning Commission. The sub-group has laid down the migration path from analogue transmission to digital domain. Year 2017 has been given the target for complete switch over to digital mode<sup>11</sup>.

## New technology in radio broadcast

Digital technology brings along with it vast possibilities of transmission of programmes which can be through television network, mobile network, internet and eventually through FM networks. Digitisation of radio transmission is the biggest development occurring around the world. From analogous mode to digital mode, the conversion shall be of immense significance in India as Medium Wave covers practically the entire nation under its operation. Each kind of technology is related to the audience's choice to select it for e.g. the portability factor, the choice of radio stations the listeners can choose from, the ease of accessibility of the station for the audience and the functions one can get from a particular technology.

Technology can make life easy for all even those who are visually or audibly challenged. Such is the power of technology. Digital radio thus can bring the ease of use to this section of population where by the voice feedback function when selected by a user instantly brings back the message about channel chosen and the programmes it has which can be then played as per the choice of the user.

What does ease of use mean for the disabled audience both visually and audibly challenged, it means that they can choose either radio or television the programmes are implemented with the key functions of displaying text, providing audible information and sign language interpretation to make it convenient for the audience who are otherwise at a

disadvantage. So technology will include them in to its gambit and make them its beneficiaries.

Among many of the other benefits of digital technology one main advantage digital transmission has over analogue network is that digital transmission uses only a third of the total power for its operation in comparison to analogue transmission. A fine example of this is that now the mobiles phones are being manufactured with the facility of inbuilt FM stereo this could signify that more number of people have portable radio receiver.

Another feather in the cap of digital technology is the efficient use of given frequency band whereas in the analogue network the space usage is limited. This means that more number of operators can have the flexibility of using the digital technology at the same time more private companies can increase their broadcast with increased number of channels. This is eventually going to benefit the users to have better and increased choice of programmes.

In 2012 four digital wireless radio systems are recognized by the International Telecommunication Union: the two European systems Digital Audio Broadcasting (DAB) and Digital Radio Mondiale (DRM), the Japanese ISDB-T and the in-band on-channel technique used in the US and Arab world and branded as HD Radio.

With old technology making way for the new one means greater benefit to all as in the case of HD radio which provides many advantages. HD radio makes it convenient to transmit both analogue and digital network simultaneously. Now it is up to the consumer to gradually change over to use digital radio until he stops using his present FM stereos. Just like in the case of television sets now everyone has more or less changed over to HD TV similarly this transition will occur with radio receivers as well. The need of greater number of transmitters is more in FM networks, one transmitter for every radio channel on the other hand DAB/DRM transmitter makes the broadcast of about 10-20 channels at the same time. Digitisation of radio distribution can be taken as an expensive affair however the costs of installing this highly beneficial technology can be brought down with sharing of technology and cooperation in use of infrastructure.

DRM reception requires a digital receiver. Presently these receivers are costing about Rs. 5000-8000/- in India. Cost of digital receiver could come down to considerably low able (Rs.1300-2000) with - Road map for AIR digitisation has been presented Mainstream receiver manufacturers and AIR has to joined hand to produce low cost indigenous DRM receivers for the larger interest of public.

With the advent of Indian DRM broadcasting will come affordable DRM receivers," said Nigel Fry, head of BBC-World Service. "This, in turn, could attract such affordable radios coming to Europe, giving broadcasters here a reason to launch MW DRM channels". James Cridland, radio futurologist in his

blog added that what really is needed to succeed in Europe is a multi-format world digital radio, one that can seamlessly receive DAB, DRM and U.S. HD Radio broadcasts on an affordable, easy-to-use platform<sup>12</sup>.

### Road blocks - in going digital in India

On one hand the Medium Wave transmissions are shutting shop around the world with India doing no different, on the other the new digital platforms making inroads to provide with more variety, better coverage and good sound quality in content. Although the conversion is a gradual process, eventually it is the only way for a brighter future of our good old companion radio. Technology has redefined the presence of radio in our lives without which we would not feel complete as radio is deeply ingrained in the system of entertainment and information.

However digitization in the Indian context will be less easier said than done. There are a number of key issues that need to be addressed. With digitization process on the roll in India, it still seems a dream more than the reality considering the present Indian status of infrastructure, regulations and independent networks. As put across by Shyama Ponappa in his article on digitization in India<sup>13</sup>. He aptly put his view as there are too many problems and too few synergies for India's ubiquitous digital access with current approach. There are several independent country wide arterial systems which connect at the end user on their own; these systems require massive capital investments where the rural areas can be made inclusive as well. Over and above this our administrative system are more constraining than the technological limitations. The plan to reach the clusters of villages at the gram panchayat level is going to take long. Also we need policies and regulations to be framed keeping the interests of all in mind.

The other aspects that need to be taken a stock of is the percentage of use of internet via mobile or otherwise in the rural areas. Rural mobile internet users grew by a staggering 93% between December 2014-Dec 2015, yet only nine per cent of the hinterland has access to the technology, shows a nationwide survey released on Wednesday. In comparison, 53% of urban areas had mobile internet connectivity and grew at 71% during the same period, thereby highlighting the urban-rural divide in the country<sup>14</sup>. Still there is a long way to cover most rural areas with internet. Other than the reach and infrastructure necessities another area that needs attention is the digital divide in India.

With the arrival of information-age there are new technological inventions taking place practically every day, technology which user friendly, information packed, income generating and enabling learning for all. In this conducive environment where does the poor and the rural population fit in and how, this needs to be looked at and solutions need to be created to include the poor and the less educated and rural residents of our country. This is where the digital divide occurs between the urban and rural population, between those who use information technology in

everyday life and those who are oblivious of its significance. The swift emergence of a global "information society" is changing the way people live, learn, work and relate. An explosion in the free flow of information and ideas has brought knowledge and its myriad applications to many millions of people, creating new choices and opportunities in some of the most vital realms of human endeavour. Yet most of world's population remains untouched by this revolution<sup>15</sup>. However, technological advancement is highly driven by consumerism, and is leading to a digital divide, especially between rural and urban areas. While technology is ubiquitous in cities, about 42,300 villages in India do not have mobile networks. This is something we are all aware of<sup>16</sup>.

In India a majority of population still resides in villages and small towns with little or no knowledge about the use and benefits of information technologies. They too have an equal right to such technological advancement which today has made the world a global village making our lives easier, progressive and prosperous due to the boom in communication networks which are of state of art. However to make it all inclusive the poor and the powerless, the illiterate and the weak and ignorant population need to be updated and enlightened about how to use ICTs and reap its benefits. This digital divide which can be economic, social and cultural gets further widened with stratification of the users and those who do not know how to use it.

The areas are many from which people can benefit like more employability opportunities, greater participation in political processes of the country, the medium of radio until now reaches out to the furthest citizens of India, however with the digitization of medium wave for greater good, what needs to be kept in mind is how easily it can be accessible to the people without affecting their financial positions and how then can they also be a part of the whole evolution of digital life in not just one but multiple areas.

### Future of radio

Digitization is the answer, with better sound quality, more multimedia features and choices; inexpensive for one and all are few of the many features the digital radio would bring along. Television has become HD with receivers having better picture quality, more choices in terms of programs with paid and unpaid channels, in telecasting there has been a major evolution, simply installing required equipment like antennas can bring the world into your bedroom no matter where you are based. Similarly for radio as well the future is promising with spectrum sale in the third auction, greater number of cities and towns almost 283 will be covered up under the broadcast which are as many as 800 new FM stations will be a part of the media landscape.

Earlier it was stated that today listeners expect more than just audio with their consumption of media. Certainly the poor audio quality, static and noise of AM frustrated listeners over the

years. With the digital technologies we can clean up the audio and add many more multimedia aspects. Radio with pictures is really more than just that, it could include a myriad of additional rich features such as using smart phones as a back channel for interactivity<sup>17</sup>. With digital radio, broadcasters can invite the listeners to participate in a contest and more. And all feedback which they receive can be measured on a device and counted. As a result, it's much more immediate and programme related as it happens on a radio set and not on a different medium completely detached from radio. And all this happens in a very unobtrusive way<sup>18</sup>.

Personalisation and creativity seem to be the two growing trends shaping the future of radio, according to James Cridland, radio futurologist, writer, consultant, and Managing Director of media.info. Podcasting is another development in the radio landscape with growing interests in broadcasting over the internet, there will be many platforms for downloading audio files of one's own choices and enjoy listening. Moving away from the nonstop chatter of radio jockeys to enjoying more meaning content with less commercialisation.

Although internet radio is going to be the new trend in few years from now, in India however broadcast radio (analogue) will continue alongside as many listeners still enjoy listening to it on their little handsets or while on the move, as broadcast radio will get you the local news and information. Therefore the public broadcaster All India Radio needs to nurture and expand in the direction of internet based radio services as well and regular updating on the formats and content. For example the BBC has introduced Audio Factory, a new system of streaming its radio stations over the internet.

The BBC has promoted media literacy where by viewers and listeners are made to understand how media works, how it influences our lives and how it can be best used, as being the world largest and most popular public service broadcaster, transmitting in more than 42 languages other than English to 146 million listeners around the world. In the near future there will be automobiles fitted with inbuilt digital radio; this is going to be added feature.

It will provide clear, uninterrupted programs with more choices of stations. Already such digital radios have made their entry in the European markets with radio systems which have a display screen providing information about the station, news headlines, music and email addresses. At this moment one is reminded that each system of delivery has its own merits and shortcomings. There is no perfect solution, co-existence of different technologies will remain, digital technology cannot overtake and clear out terrestrial or analogue technology. Although consumer needs will demand more portability and mobility, internet on the other hand suffers from serious congestion, such problems do not occur in broadcasting. Terrestrial transmitters will remain an essential element of broadcasting. In short

broadcasters will have to find ways of benefitting from exponential technologies<sup>19</sup>.

## Conclusion

The Indian radio industry is poised for a new era with digitalisation at the lowest of levels – the much loved and heard Medium Wave can never be given up, only to make a comeback in a new avatar of digital radio or conversion to FM stations. In order to give the people what they have always loved about medium wave it will be significant to simply change the technology a little bit and bring medium wave back to where it belonged in a new avatar thus letting its listeners enjoy the good old favourite programs with better sound clarity and reach. This is a new promise technology can make and for us to enjoy and make the most of this handy mobile source of entertainment. The essence of a radio broadcast will remain only the process can change for a better, inclusive and progressive future.

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