Switching to digital television

The transition from analogue to digital television is well under way in a number of countries around the world. Digital television allows for better picture and sound quality, as well as more choice of channels and programmes. Broadcasters can offer several programmes simultaneously, using the amount of spectrum required for only one analogue channel. Moreover, moving to digital technologies results in a massive — almost ten-fold — reduction in the power consumption of broadcasting transmitters. The number of transmitters can also be reduced by transmitting several programmes in one frequency channel.

For decades, spectrum in the very-high frequency (VHF) and the ultra-high frequency (UHF) bands has been allocated globally for broadcasting analogue television. However, because digital television uses the radio spectrum much more efficiently, more becomes available for other uses. This has been called the “digital dividend” — allowing governments to benefit the public by redirecting the use of these freed up radio frequencies. Countries and regions have taken various approaches to exploiting this opportunity.

**United States turns off analogue**

Under the Digital Transition and Public Safety Act of 2005, full-power broadcasting of analogue television was to cease in the United States from 17 February 2009. To encourage consumers to make the switch, the Act also established a federally-sponsored programme to help people acquire digital television converter boxes. From 1 March 2007, all new television devices that received signals over the air, including portable televisions, DVD recorders and personal computer video capture card tuners, were required to include digital tuners.

However, under new legislation in early February, the date for cutting off the analogue signal was postponed to 12 June 2009. This was in order to help the
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With regard to cable television, the FCC voted on in September 2007 to require operators to make local broadcasts available in the analogue system. This requirement lasts until 2012, when the FCC will review the position.

Europe coordinates the transition

Europe is on course to switch from analogue to digital television, according to the European Commission, which is leading a coordinated approach to the freeing up and future use of the radio spectrum. The Commission says it wants to ensure that European Union (EU) citizens can enjoy the benefits of digital television and its growing range of interactive services, such as video on demand. These should be available on multiple transmission platforms, including terrestrial, cable, satellite, mobile and Internet protocol (IP)-based television.

To achieve this goal, EU Member States are gradually closing down analogue transmissions and moving to digital broadcasting. Switch-off has already been completed in Germany, Finland, Luxembourg, Sweden, the Netherlands, Belgium (Flanders) and major areas of Austria, and other EU countries will follow by 2012. It is expected that most other European countries will have switched off their analogue services by 2015.

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millions of households in the United States that had not yet been able to obtain digital television set-top boxes under the subsidy scheme because demand exceeded the funding provided in the initial law. Extra money is being provided under the American Recovery and Reinvestment Act of 2009.

Meanwhile, the Federal Communications Commission (FCC) devoted significant resources to easing the transition and ensuring that those with analogue sets had the assistance they needed “to reap the benefits of the digital age.” More than a million phone calls were made to an FCC help centre, and hundreds of FCC employees travelled to all corners of the country to offer support where it was most needed. Between February and June 2009, these efforts helped to halve the number of households that were unprepared for digital television, according to the FCC. It adds that its doors and phone lines will remain open for consumers who need assistance, and it will continue to work with broadcasters to find the most effective ways to improve their services.

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used effectively to stimulate economic recovery and achieve the greatest benefits for Europe’s 500 million citizens. From 10 July to 4 September 2009, the Commission ran a public consultation to determine how to coordinated action at the EU level can make the most of this unique opportunity.

“The digital dividend comes at a critical moment when we want to connect all parts of Europe to high-speed broadband, ensure high-quality broadcasting, and expand consumer choice in future wireless services,” Ms Reding said at the launch of the consultation. “Europe will only achieve all of this if it adopts a coordinated approach using radio spectrum in the most efficient way. Depending on the choices we make, the potential impact of the digital dividend can be increased by billions of euros.”

The Commission has estimated that appropriate European coordination would increase the potential economic impact of the digital dividend by EUR 20 to 50 billion between now and 2015. And an additional benefit of EUR 30 billion could be achieved beyond 2015 through further EU coordination. Meanwhile, as a result of the consultation, the Commission is expected to soon put forward an EU roadmap to ensure that a clear and predictable regulatory environment prevails in order to make the best use of the digital dividend.

The issue of sharing

The Commission is also considering a plan for harmonizing the 800 MHz band in the ultra-high frequency (UHF) range, which is particularly suitable for new generations of mobile broadband. The ITU World Radiocommunication Conference in 2007 (WRC-07) gave ITU Member States from Europe the option of opening up some of the UHF bands for sharing by mobile services, under certain conditions.

The conference also confirmed that the “GE-06 Agreement,” adopted in Geneva at the ITU Regional Radiocommunication Conference 2006, must be respected. The “GE-06 Agreement” covers 120 countries, mainly in Africa and Europe (Region 1), as well as the Islamic Republic of Iran. It calls for the transition to digital television to be completed by 17 June 2015 for most of the countries.

WRC-07 said that if, before that date, countries wish to implement mobile services in the UHF band 790 MHz–862 MHz, they should prevent interference with broadcasting services that are still operating in the same band. And before putting such mobile services into operation, agreements must be obtained from neighbouring countries. It was decided that ITU would carry out technical studies on the sharing of mobile services with other services using the band, and the results will be considered at the next World Radiocommunication Conference, in 2012, under agenda item 1.17: “To consider the results of sharing studies between the mobile service and other services in the band 790–862 MHz in
Regions 1 and 3, in accordance with Resolution 749 (WRC-07), to ensure the adequate protection of services to which this frequency band is allocated, and take appropriate action.”

**Australia passes a milestone**

More than half of all Australian homes have made the switch to digital television. Announcing this milestone on 28 August 2009, the Minister for Broadband, Communications and the Digital Economy, Senator Stephen Conroy, said “The digital switchover is the largest national format change since decimal currency, and progress to date suggests Australians are on board”. This follows the launch of new channels by broadcasters and an information campaign focusing on the practical steps people can take to switch to digital television.

Senator Conroy also released the second Digital Tracker Survey, a quarterly survey of national digital television adoption, awareness and attitudes. Key results of the survey for April–June 2009 are that:

- Free-to-air digital television broadcasts are being received by 53 per cent of Australian households
- Almost all households (93 per cent) are aware of the digital switchover
- Well over three quarters (82 per cent) of the households that have converted to digital television are pleased that they did.

Under government plans, Australia will complete the transition from analogue to digital television by 31 December 2013. The government has announced a progressive switchover timetable starting in the northwestern area of the state of Victoria in the first half of 2010.

**Japan is on track**

Japan has some 48 million households and 100 million television sets. Terrestrial broadcasters have established many relay stations to provide maximum coverage throughout the mountainous archipelago, and there are more than 3000 transmitter sites. Due to the heavy use of UHF channels by existing analogue relay stations, digital channels must share the band until the switch-off of analogue broadcasting nationwide, scheduled for 2011.

Digital television broadcasting began in Japan in December 2003 in the three major metropolitan areas of Tokyo, Nagoya and Osaka. Since then, service coverage has been expanded and as of December 2007, more than 90 per cent of households in Japan were covered.
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The choice of technology

Various types of digital terrestrial television technology are used around the world. North America and the Republic of Korea employ Advanced Television Standards Committee (ATSC), an evolution from the analogue National Television Standards Committee standard (NTSC). The transmission system for digital television in Japan is ISDB-T, also applied in Brazil and Peru. In addition, Argentina has recently announced that the government has decided to use the ISDB-T standard incorporating changes made by Brazil, thus guaranteeing full coordination in the deployment of their system with the neighboring country.

The technology with the most widespread use, DVB-T, covers Europe, countries in the African and Arab regions, Australia, New Zealand, Colombia and Uruguay. All these digital television standards are contained in ITU–R Recommendations that are internationally recognized. China has its own standard, although Hong Kong’s private operators use DVB-T.

DVB-T will be the digital television standard adopted for Sri Lanka’s transition from analogue to digital. This was announced in August 2009 at a Cabinet news briefing by the Media and Information Minister Anura Priyadarshana Yapa. The Japanese and United States standards had also been considered, but as most countries in the Asia-Pacific region were adopting the DVB standard, the Telecommunication Regulatory Commission decided to do the same. “The current transmission system has to be upgraded, and therefore around USD 1.3 million each will be allocated for both Sri Lanka Rupavahini Corporation (SLRC) and the Independent Television Network (ITN) in the 2010 budget,” the minister said. The money will be used to buy equipment and antennas for the digital technology.

Dividing up the dividend

There is continuing — and sometimes hot — debate about how best to use the digital dividend of radio-frequency spectrum that is being released by the move from analogue to digital television broadcasting. Certain UHF bands have qualities that are regarded as particularly suitable for mobile communications. At the same time, such applications as emergency communications are competing for space in the spectrum alongside continued broadcasting. The answer will lie in cooperation, so that the benefits of the digital dividend can truly be shared by all.

*A report was published in May 2009 by ITU’s Radiocommunication Sector (ITU–R), entitled “Transition from analogue to digital terrestrial broadcasting,” and provides detailed information on the issues.*