Paper Title: Digital Switchover in Europe

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1. Introduction

Digital switchover has been put high on the agenda of European regulators in recent years. In June 2005 the European Commission published a Communication 'on accelerating the transition from analogue to digital broadcasting' which urged EU Member States to bring forward the likely date of analogue switch-off and called for a coordinated approach to making freed-up spectrum available across the EU. This Communication builds on the 2003 Communication 'on the transition from analogue to digital broadcasting' (from digital 'switchover' to analogue 'switch-off'), which set the benefits of switching over to digital broadcasting and initiated the debate on EU policy orientations on the amount and future uses of spectrum potentially released at switch-off of analogue terrestrial television transmission.

The purpose of this paper is to discuss the political, economic, technological and human aspects of the digital switchover and explore various policies for managing the process. The first part examines the advantages and drawbacks of digital switchover, and identifies a number of challenges and policy dilemmas of making switchover an achievable objective. Part two looks at digital television adoption across Europe and assesses the effectiveness of free-to-air digital television to accelerate take-up. The third and final part deals with the EU initiatives as well as national plans in digital

switchover and proposes various measures for encouraging the take-up of digital services and therefore bringing forward the likely idea of analogue switch-off.

2. Setting the Scene

Following the introduction of digital broadcasting, 'switchover' is defined as the progressive migration of households, from analogue-only reception to digital reception. 'Analogue turn-off' or 'switch-off' refers to the termination of analogue broadcasting, which is considered to be possible when most households are equipped to receive digital signals (BIPE, 2002: 2). As it is conceived by the European Commission, the term 'switch-off' means the termination of terrestrial transmission of analogue television, whereas 'switchover' refers to the transition from analogue to digital broadcasting of all networks including terrestrial, cable, satellite and DSL (Digital Subscriber Lines) (EC, 2005a: 4). Digital switchover is largely seen as an inevitable result of technological progress. It is an unpopular policy that people often see as coercive. This is partly because the national governments' rationale and motives for switchover are not entirely understood and trusted, and partly because people think analogue television will be 'taken away' and therefore they will have to incur costs to be able to continue to watch television (Klein, Karger and Sinclair, 2004: 8, 14). Addressing the issue of social acceptability of switchover is a public duty to be fulfilled by the state.

In fact, large parts of the population see little or no reason to adopt digital television (DTV). Research undertaken in Britain by the Generics Group found that for some people DTV is too confusing or just too difficult to use. For others, converting their

TV sets seems to incur a significant financial investment which they are not prepared to take (Klein, Karger and Sinclair, 2004). There are also millions of viewers who are simply satisfied with the programming available on the analogue channels and who do not see the merits of the multi-channel era. In many European Union (EU) countries the established analogue terrestrial channels still get the lion's share of television viewing. For example, despite the entry of a number of pay-TV networks, public television channels in most European countries still hold audience shares close to a very respectable 40 per cent. According to the 2004 Yearbook of the European Audiovisual Observatory, in 2003 most public television channels managed to retain an audience share of between 30 and 45 per cent, with the exception of some extreme cases (i.e. ORF in Austria securing a very high share of 53 per cent, while the Greek ERT only managing a 10 per cent share) (EAO, 2004). Also traditional free-to-air commercial broadcasters attract large audiences. In spite of inevitable losses (for example, in the period between 1993 and 2002 the British ITV lost an audience share of 15.9 per cent, followed by the French TF1 which lost 8.4 per cent), these private broadcasters still get shares of over 30 per cent each in their respective highly competitive and fragmented broadcasting markets (Screen Digest, 2004). It then comes as no surprise that in 2004 the European DTV landscape has not reached stability (see below).

However, completing the switch to digital will bring significant benefits both to consumers and broadcasters. National economies as a whole are also expected to benefit. More specifically digital broadcasting brings (BIPE, 2002; Jowell, 2004):

- Increased choice and quality for viewers (as there will be more channels and the opportunity to provide a better image, including wide-screen aspect ratio, high definition and sound quality)
- Lower transaction costs or the ability to transmit more channels or services for the same cost. Broadcasters will no longer have to incur the costs of transmitting signals in both formats (simulcasting), releasing sources for investment in programming and other services for consumers
- Better efficiency in spectrum use (as more data can be transmitted within the same bandwidth). Spectrum will be released to allow the development of more television and other services for consumers. Digital terrestrial television signals are also expected to reach the population who live in areas that cannot currently receive them because of spectrum limitation
- The ability to transmit associated data allowing for enhanced television or fully interactive applications when associated with a return-path facility.

Alongside these tremendous economic and social benefits, the analogue switch-off entails drawbacks, notably it may result in social exclusion in so far as DTV is unavailable to some parts of the population. Most European countries have taken measures to ensure that certain criteria of availability and affordability are satisfied as part of their strategy for analogue switch-off. For example, the Austrian broadcasting regulatory authority KommAustria, charged with developing a specific strategy for the introduction of digital broadcasting, set up a 'digitalisation fund' as a support measure. The resources from the fund may be used for various purposes, including assisting consumers who are unable to afford the end-user equipment in the final switchover phase scheduled to take place in 2010.[1] In Italy, the ambitious target of

switching-off analogue terrestrial television in 2006 is promoted by heavy government subsidisation of set-top boxes. In order to speed the switchover, in 2004 the government offered a 150 Euros subsidy to buyers of the first 700,000 set-top boxes required to receive digital signals, which typically cost 200 Euros (Saitto, 2004: 8). The parties involved in the switchover process in Berlin that was completed in 2003 (see Case Study below) were in agreement that a key issue for a successful switchover was affordability for all homes regardless of income. Also the Interstate Broadcasting Treaty governing broadcasting in all German states was amended to entitle public broadcasters to gradually discontinue analogue terrestrial transmission under certain conditions including universal coverage of digital broadcasts. The British government's objective, first announced in September 1999, is to achieve full switchover from analogue to digital only when the following tests are satisfied (DCMS, 2004):

- To ensure that everyone who can currently get the main public service broadcasting channels can receive them on digital systems
- To ensure that switching over is affordable for the vast majority
- To ensure that 95 per cent of consumers have access to digital equipment.

Collapses of DTV Consortia – The Cases of *ITV Digital* and *Quiero TV*

In Britain, the satisfaction of the above main criteria of availability, affordability and accessibility were until recently considered unrealistic. The digital switchover policy was conceived at the end of the 1990s, in the middle of the dotcom euphoria. The take-up of DTV services was then relatively high, but following the collapse of digital

terrestrial pay-TV platform *ITV Digital* in 2002, the initial high rate was not maintained as digital television failed to meet some customers' expectations. In particular, in April 2002 *ITV Digital*, jointly owned by commercial broadcasters Carlton Communications and Granada Media Group,[2] filed for bankruptcy. This financial crisis was the result of a poor management policy, technical problems (picture freezing) and the decision to give away free set-top boxes to emulate the strategy of pay satellite broadcaster BSkyB (Iosifidis, Steemers and Wheeler, 2005: 112-14). Above all though, the consortium's collapse was caused by overbidding for football rights. In particular, in 2001 *ITV Digital* signed a three-year £315 million deal to show Nationwide League (First Division) games, the largest broadcasting contract in the League's history. The intention was to compete with BSkyB, which had previously acquired the rights to show live Premiership matches. The problem was that the Nationwide is a lower league and so *ITV Digital* attempted to copy BSkyB's strategy by using less appealing football matches, attracting fewer football fans and viewers. Its inability to create a large subscriber base (in early 2002 *ITV Digital* only managed about 1.2 million viewers compared to BSkyB's 5.5 million) resulted in huge debts and eventual shut down. Not only had the closure a negative effect on the 72 English football clubs that depended on *ITV Digital* for much of their income, but it also held back the government's plans for an all digital Britain.

The simultaneous closure of another pay digital terrestrial television (DTT) platform in Spain put the viability of the technology in serious doubt. DTT operator *Onda Digital* (later renamed *Quiero TV*) was introduced in 1999, making Spain the third country in the world to launch DTT (the other two being Britain and Sweden). The main shareholder of *Quiero TV* was Retevision, controlled by the Spanish bank

Santander Central Hispano and Spanish electric utilities Endesa and Union Fenosa. Owing to huge debts and limited subscriber base, in April 2002 *Quiero TV*'s shareholders decided to close the platform. *Quiero TV*'s failure can be attributed to a number of factors, including the relatively limited number of services compared to those offered by rival digital satellite platforms Canal Satellite Digital and Via Digital (now merger), limited geographical reach as it covered only 60 per cent of the Spanish population, and prohibitive cost (about 400-500 Euros) of purchasing the digital decoder (Iosifidis, Steemers and Wheeler, 2005: 115-16).

The Free-to-air Model – the Cases of *Freeview* and *Freesat*

Given the low subscriber base of the Swedish pay DTT platform (securing just 150,000 customers in 2002), a new strategy was urgently needed to target more viewers. Until 2002 the economic model for DTV (not only terrestrial, but also cable and satellite) had been largely based on pay television services offered by private consortia. These consortia have acquired exclusive popular programming (particularly sports and film rights) and require subscribers to buy a decoder (and, in the case of satellite, a dish) to access it. While pay television has driven the initial uptake of DTV in Europe, saturation of the pay television market in terms of penetration may be occurring. Already the market may have arrived at a situation in which those consumers prepared to sign-up to digital pay television services have already done so. In the highly competitive British digital pay television market, about 37 per cent of homes had taken up digital television by 2002, leaving more than 60 per cent of homes unconvinced. Attention was focused on the free-to-view market and with the

launch of the BBC-led *Freeview* service in September 2002, DTT in Britain has turned into a free-to-air only platform.

Freeview, which is backed by the BBC, BSkyB and the transmission company Crown Castle, is aimed at an audience confused by DTV and hostile to subscription services. The re-direction of DTT towards a primarily free-to-air system has proved compelling to many households which are negative about pay television. Evidence of this is that from the third quarter of 2002 (the time *Freeview* was launched) until the first quarter of 2005 DTT showed a strong increase in share of the digital television market from 10.6 per cent to 32.8 per cent, whereas over the same period digital cable saw a decline from 21.1 per cent to 16.5 per cent, and digital satellite showed a drop from 68.1 per cent to 47.7 per cent (Ofcom, 2005a). In terms of numbers, digital satellite remained the market leader in 2005 (BSkyB's subscribers in Britain reached 7,349,000 at the end of the first quarter of 2005), while the total number of subscribers to cable television was just under 3.3 million (digital cable accounted for just over 2.5 million). However, *Freeview*'s household numbers were estimated to have grown to around 5,059,350 in just over two years since its launch. Total DTV penetration was estimated to have reached 61.9 per cent of British households by 31 March 2005, up from just 37 per cent in 2002, mostly thanks to the launch of a free-to-air DTT platform.

The subscription-free scheme helped to rebuild public confidence in DTV. As it is a free-to-view platform, it helped to combat the common misconception that DTV is necessarily pay-TV. Since the launch of *Freeview*, DTV has become considerably more affordable as competition between manufacturers and retailers of *Freeview*

receivers resulted in significant price reductions (in mid 2005 digital adapters were sold for as little as £50). Perhaps more importantly, *Freeview* appeals to those who reject satellite and cable pay-TV services and to whom, as a BBC report states (2004: 10), 'a terrestrial free-to-air service is a welcome bonus'. In fact, the popularity of free digital service *Freeview* has contributed in DTV take-up from previously sceptical groups. Analysis of the demographics of *Freeview* subscribers reinforces the notion that free-to-air digital customers are largely additional to pay-TV subscribers. In March 2003 a Quest survey gave demographic data on the types of households that were using each platform and concluded that *Freeview* had a different profile to other platforms.

In particular, the findings suggest that many of *Freeview's* customers are affluent, older people who have no interest in purchasing satellite or cable pay-TV services. Many of *Freeview* homes comprise of an age group of over 45, compared to satellite subscription television take up which is heavily skewed to the under 45s. The fact that the free-to-air package includes far less available channels (about 30 compared to over 200 from BSkyB) made no difference to this group who have no interest in multi-channel TV (Quest Survey, 2003). Research undertaken by Oliver & Ohlbaum (2004: 17) on behalf of the BBC reinforced the notion that *Freeview* penetration has been largely additional to, rather than a substitute for, digital pay TV take-up. The research found that those considering getting subscription television services continued to do so, as evidenced by the rise of pay-TV (both cable and satellite) following the launch of *Freeview*, albeit at a slower rate than before (see above).

Without doubt, the healthy growth of *Freeview* reinforced competition between different platforms and established free-to-air digital reception as a viable alternative to pay-TV services. However, because of a technical shortcoming of the digital terrestrial signal, at switch-off, only an estimated 73 per cent of the population will have access to digital terrestrial television, well short of the 95 per cent target set by the government. For this reason it was thought that the launch of an attractive, viewer-friendly free-to-air satellite option available to everybody without having to pay a subscription would perhaps contribute to universal digital coverage and certainly push forward the withdrawal of analogue services. This is true because, unlike digital terrestrial television, satellite signals are technically available to every British household.

Ultimately in late 2004 BSkyB launched a subscription-free satellite service, a move that deepens its involvement with free-to-view services (the satellite operator is also a partner in *Freeview*). The new digital platform from BSkyB, dubbed *FreeSat,* enables customers to receive about 140 TV channels, 80 radio stations and 13 interactive services for a one-off fee of £150 that includes a satellite dish, a set-top box and installation. As Shah (2004) argues, the launch of *FreeSat* seems to be a response to the runaway success of *Freeview* and can perhaps be seen as a defensive move given the success of the digital terrestrial package The strategy is expected to enable BSkyB to target a wider range of potential customers, notably those who do not wish to pay subscriptions, but either cannot receive *Freeview* (rural British households), or are not satisfied with the limited channels available on it. The service is part of an evolving strategy being formulated under the new chief executive of BSkyB, James Murdoch, to target a wider range of potential customers (ibid). Regardless of BSkyB's

motivations, the launch of this service is expected to encourage DTV take-up and accelerate the digital switchover process.

DTV Adoption across Europe

Following the British example, other European countries considered launching subscription-free DTT services. The service has been available in Germany since late 2002, while Italy set up free DTT in 2003. But even the free-to-air DTV services, alongside the steady growth of some pay satellite television platforms such as BSkyB, Canal Plus, Premiere and Sky Italia,[3] could not secure a wide range of customers that would justify prompt analogue switch-off across Europe. Switching-off the analogue frequency depends to a large extend on the level of DTV penetration. As will be presented below, some European governments have announced bold plans for analogue switch-off and European regulators have imposed an EU-wide switch-off date. However, the availability of DTV remains partial and penetration rates differ substantially among European countries. Whereas the Scandinavian region had quite successfully developed DTV, with penetration rates in Sweden and Norway both above 30 per cent in 2004, in certain countries, particularly the smaller and Mediterranean markets, DTV has not secured a significant share of the television market.

No country will have completed digital conversion by 2010, according to market reports. Forecasts by Informa Telecoms & Media (2004) in the European digital terrestrial television consider that DTV penetration is only expected to reach 46% by end-2010, representing 110 million homes. In a more recent study, the Informa Group

reported that Britain is leading the race to switch-off its terrestrial analogue TV signal, for DTV penetration in the country will have increased to 66% by the end of 2005, up from 58% at the end of 2004 (see Table 1). Still, about 35 per cent of households remain unconvinced of the merits of DTV. Converting these households by 2012 (the date set by the government) will be a huge marketing and communications task.

Sweden, which is committed to making the switchover to digital in 2008, is expected to end 2005 with a DTV penetration of almost 44%. According to Table 1, Ireland, Norway and Finland are the only other countries with an end-2005 DTV penetration rate above 30%. All these countries consider making the switchover before the end of 2010. However, plans for an early analogue switch-off for some European countries remain ambitious. France, which has a provisional date of 2010 for terminating the analogue terrestrial television will end 2005 with a DTV penetration at slightly more than one quarter of its households. Italy, which has one of the region's most ambitious switchover timetables will end 2005 with a penetration rate below 20%. DTV adoption in Spain will be just 17.5% at the end of 2005, but the government has announced a switch-off date of 2010 (which however does not include any detailed plan). According to Simon Dyson, Senior Analyst for the TV International Database,

> the process of an early switch-off of analogue signals in some European countries looks unlikely, given the slower than expected rate of shift to digital. Even Britain, which has Europe's highest digital penetration rate, could have some problems with resistance from later adopters (Informa Telecoms & Media, 2005).

So why have national governments committed to switching off analogue television? The answer partly lies in the tremendous economic benefits resulting from switch-off (lower transaction costs, better efficiency in spectrum use), and partly in the action taken from European regulators. The next section looks at the EC initiatives in the field and the following considers the national switchover plans in some more detail.

EU Initiatives in Digital Switchover

The digital switchover plans may primarily be the responsibility of national policymakers, but there is also a European dimension that requires intervention of European public authorities. As it is stated in an EC Communication, beyond the advantages at national level, an acceleration of the switchover process could increase learning and awareness, and promote best practices across Member States (EC, 2005a: 8). New digital technologies and services depend to a large extend on achieving a critical mass of users at an EU-level and become more attractive with an increased installed base of technology in Europe. The Communication goes on to argue that the development of new services could be hampered by differing national approaches to the transition process to digital switchover. Harmonisation of national policies contributes to achieving a 'level playing field' and eliminating legal uncertainty (ibid). According to BIPE (2002: 12), the need for European action in this field derives from:

- The transnational nature of spectrum management
- The free circulation of goods and services in the single European market

- The promotion of global European competitiveness in all the industries involved (television services, consumer electronics, advanced television technologies), which requires co-ordination and synchronisation of developments.

In its Response to the EC's request for an Opinion 'on the spectrum implications of switchover to digital broadcasting', the Radio Spectrum Policy Group (RSPG) considered that the coordination between Member States on spectrum management can contribute to a quick and efficient switchover and for this reason should be facilitated and encouraged. The RSPG (2004: 5) identified the following areas where EU-level initiatives could promote and facilitate a coordinated approach:

- Information sharing, collection and distribution of information between Members States, such as regular reports on national plans and strategies for digital switchover
- Arranging public workshops at which representatives from Member States can discuss and provide guidance on best practices in areas such as bilateral coordination and transition phases.

The European Commission seems to share the view that Member State coordination at EU-level can facilitate an open and transparent approach to switchover, for in September 2003 it published a Communication aimed at assisting Member States in making the transition from analogue to digital broadcasting.[4] The Communication on Digital Switchover (EC, 2003) sets out a guide on how best to migrate from analogue to digital radio and television broadcasting in a consumer-friendly fashion. It also

launches a policy debate on how to make best use of the radio spectrum made available after analogue broadcasting is switched off. The then Commissioner for Enterprise and the Information Society Erkki Liikanen emphasised that the EU was not considering 'intrusive measures' such as prescribing deadlines for digital switchover, since progress varies widely across the Union. However, the Commission was actively monitoring national processes and would continue to run benchmarking exercises. The Commission's aim was to elicit voluntary switchovers through a series of incentives. Under the eEurope2005 Action Plan, Member States were expected to publish their digital switchover plans – including a possible date for ending analogue television - by the end of 2003 (see below).

The Commission's active role in the area verified with the publication of yet another Communication (EC, 2005a) which builds on the 2003 Communication and, in the light of Member States' switchover intentions published within the framework of the eEurope Action Plan, as well as a 2004 Opinion of the Radio Spectrum Policy Group (RSPG, 2004), it proposes a deadline for switch off of analogue terrestrial broadcasting across the EU. It can be seen from this document the EC has in fact changed its policy on digital switchover, which may reflect the different priorities pursued by the new Information Society and Media Commissioner Vivian Reding. While the 2003 Communication merely set out the benefits of switching over to digital television and explored various policy orientations on future uses of released spectrum, the 2005 Communication went further and in fact proposed the beginning of 2012 as the date for switch-off in all Member States. As it is stated in the Communication, economic and social benefits across the EU will only be fully achieved once all Member States have completed switch-off. The Communication

acknowledges that there is disparity among national plans and recognises that a binding EU-wide switch-off date common to all Members may not be realistic, but it nevertheless proposes a coordinated European approach to switchover and the setting of a common timescale. Commissioner Reding explained why: 'by recommending 2012 as EU deadline for the analogue switch-off, I would like to give a political signal to market participants and customers alike that digital TV will soon be a reality' (EC, 2005b).

However, the great diversity in terms both of national levels of digital television take-up and approaches to digital switchover makes the 2012 EU-wide deadline unrealistic. The following section outlines the national approaches towards analogue terrestrial television switch-off and assesses the countries' readiness for the process.

National Approaches to Digital Switchover[5]

The eEurope Action Plan called upon Member States to publish by the end of 2003 their intentions regarding a possible switchover and the European Council of Telecommunications (ECT) of 20 November 2003 endorsed this deadline (ECT, 2003). These plans reveal great variety in national approaches and advancements with regards to digital switchover. Table 2 shows that about five countries (all at the time in the process for accession to the EU) did not respond to this call. Six countries among those which did respond did not provide any detailed plans for the conversion process. It is interesting to note that established members, such as the Netherlands, Ireland, Denmark, Luxembourg and Portugal had not come up with detailed switchover plans by the end of 2003. Luxembourg has taken the decision not to

develop a switchover plan with specific target dates because the government favoured a market-driven approach. Along similar lines the Dutch policy with regard to the introduction of DTT is that digitalisation should be market-driven. Although the government favours a platform-neutral approach, it nevertheless acknowledges that the development of DTT might be problematic due to cable's strong position in the Dutch broadcasting market (over 90 per cent of households receive cable TV).

Ireland's unwillingness to propose a specific switch-off date partly stems from the unsuccessful 2001 process to introduce DTT on a commercial footing with a free-to-air component. The contemporary Irish government thinking is that a date will be proposed only when (a) the coverage of free-to-view digitally broadcast national television is likely to be sufficiently high and nearing universality and (b) analogue switch-off will be expected to result in minimum disruption for viewers. In its response to the EC's call, the Danish government stated that priority was given to the introduction of DTT that would enable the setting of a switch-off date. Under an agreement between the Government and the Danish People's Party (*Dansk Folkeparti*) of 1 September 2003, it was decided that DTT would be operational by April 2005, but this might be extended if necessary. Finally, by the end of 2004 the Portuguese regulator was still in the process of re-evaluating the different options for a successful implementation of DTT and preparing a plan for switchover to digital.

It can be seen that most of these countries which had not set a final switch-off date by the end of 2003 also lacked a detailed plan for the introduction of DTT. However, four EU Member Members indicated the year 2010 as a possible switchover date, while the majority (seven) aim to complete the national terrestrial switchover process

by 2012. Most of those countries which gave a date between 2010 and 2012 are also in a quite advanced stage of DTT roll out. In Britain, for example, DTT was launched on a commercial basis in 1998 and a year later this pioneer attempt was followed by Sweden and Spain. Another country that has launched DTT since 2001, Finland, has set an early switch-off date at 2007.

In fact, Sweden and Finland are expected to be among the first EU Member States to switch-off analogue terrestrial television at a national level. In May 2003 the Finish Ministry of Transport and Communications set up a Working Group to assess the transition to all-digital broadcasting. The Group considered a prompt and binding decision to switching off analogue broadcasting to be the most important means to promote digital television, and for this reason it proposed that the terrestrial analogue network be switched-off on 31 August 2007. This early date was partly chosen because the licensing period for analogue television licences expires by the end of 2006, and partly due to economic considerations (due to geographical reasons television transmission costs are high in Finland). The various parties consulted by the Working Group (broadcasters, the supply chain and consumer associations) were unanimous about the need to set an unequivocal and realistic date for switching off analogue broadcasting. These parties noted that the setting of a clear switch-off date actually promotes the purchase of digital equipment, stimulates the development of services and encourages household decision-making in adopting digital television.

Along similar lines the last analogue television transmitter in Sweden is expected to switch-off in February 2008. In March 2004 a Switchover Commission was appointed with the dual task of drawing a plan for switchover and raising public awareness of

the process. As it was the case in Finland, a key issue that emerged was that during the conversion period there should be close cooperation between broadcasters, electronics companies and consumer associations. A basic political ambition is that everyone living in Sweden should be able to receive TV broadcasts after the analogue terrestrial network in the country is shut down. From a human aspect perspective, the Switchover Commission's view is that the period until switch-off (in 2008) would give consumers a reasonable amount of time to adjust to DTV technology. From an economic point of view, the Switchover Commission envisaged that the earlier the shutdown of the analogue terrestrial broadcasts, the larger the economic gains. Given the early adoption of DTT in the country (despite its slow development), the final digital switchover date seems more realistic than in other countries.

Case Study 1: Germany

Broadly speaking DTV conversion depends on the adoption levels of the technology, but there might be the case that a country with low DTV penetration rates to storm ahead with regards to switchover. Germany, with a DTV penetration rate of well below 10% in 2004, does not even feature in the top 10 European countries by DTV household adoption (see Table 1). The main obstacle to the rollout of digital has been that German households can access over thirty free-to-air channels on cable and satellite (Iosifidis, Steemers and Wheeler, 2005: 114-15). The structure of the German television market differs from that in most of the other European countries in that more than 90 per cent of households receive programming via cable and satellite while terrestrial reception is below 10 per cent. However, with the successful completion of the first switchover process in August 2003 Berlin/Brandenburg has

played a pioneer role in Europe and beyond. In particular, the digitalisation of terrestrial transmission began in the Greater Berlin/Postdam region in January 2002 and was successfully completed in August 2003, when analogue broadcasting was totally switched off. The factors which made the switchover in Berlin/Postdam a success were the following (Berlin Goes Digital, 2003):

- It occurred at the right time and the right region was selected (i.e. availability of frequencies, few transmitter locations needed)
- There was a binding agreement between the parties concerned
- The media authority for Berlin/Brandenburg adopted central planning and control
- Availability of new performance characteristics (portability, mobility)
- There was a short simulcast period until final switching-off of analogue transmission that ensured low transmission costs for broadcasters.

An additional reason for the success has been the multi-platform approach to universal coverage. This approach ensures that digital terrestrial television would not necessarily have to be available in areas covered by cable and satellite transmission. This provided tremendous economic incentives, given that Germany is a heavily cabled country. It basically meant that only those households with terrestrial reception were affected and that cable and/or satellite households would not be converted. Most importantly, the switch-off in this region was accompanied by an efficient communication campaign aimed at providing relevant information to homes affected by the process, as well as close cooperation between interested parties who identified affordability and universal coverage as key issues to address before switchover. In

this context, the process was largely socially acceptable. The results of this process provide encouraging findings to continue along this route. Based on the Berlin model, in 2004 the switchover continued in North Rhine-Westphalia and in Northern Germany. In fact the German government is determined to a nation-wide rapid switchover to digital terrestrial broadcasting and to analogue switch-off before 2010.

Case Study 2: Britain

Britain seems to proceed with caution in the field of digital switchover. Despite being the most advanced DTV market in Europe, digital switchover is expected to be achieved as late as 2012. Similarly to Germany, digital switchover will take place in stages. According to the regulator Ofcom (2004), television screens should not go blank overnight, but switchover should be phased in, region-by-region. Although the government said no firm decision on the timetable would be made until customers' interests were protected, media regulator Ofcom remained committed to the earliest practical switchover policy. Ofcom's proposal, submitted to the government in February 2005, is that the phasing in of a digital-only service would begin in 2008 in Wales and the Border region and end with the analogue signal being switched off in the Channel Islands in 2012. Each region is expected to take six months to convert, giving households time to switch to digital cable, satellite or terrestrial (Ofcom, 2005b).

In April 2005, Britain witnessed the launch of SwitchCo, the organisation which will coordinate the country's switchover to digital television. SwitchCo has been formed at government request by the public broadcaster BBC and commercial channels ITV,

Channel 4, Five, Teletext and S4C, as well as the digital terrestrial television multiplex operators Crown Castle and SDN, all of whom are represented on its management broad and provide funding. The setting up of the organisation is a major step on the road to a totally digital Britain, as it takes forward the work of the government's Digital Television Action Plan,[6] completed in December 2004. The three main tasks of the new body are the following (SwitchCo, 2005):

- To coordinate the technical roll out of digital terrestrial television across Britain, region by region, to a timetable agreed by the government
- To communicate with the public about digital switchover to ensure everyone is aware about the process, what they need to do, and when
- To liaise with television equipment manufacturers, retailers, digital platform operators and consumer groups to ensure understanding of support for the switchover programme.

The relatively late timetable for switch-off is expected to allow plenty of time to manage the public information campaigns and coordinated industry communications through Switchco. It will also allow time to address people's concerns about the switchover process. The Generics Group's 2004 report on the human aspects of digital television showed that while the policy is feasible people are concerned about certain aspects of digital switchover and need more information (Klein, Karger and Sinclair, 2004). The Generics report was based on a survey of 1500 British households which were asked how they engage with DTV and found that there is widespread concern about the cost of getting DTV. Some households were not

convinced about the benefits in making the transition to digital. However, the report presented the following encouraging results:

- 23% of households plan to convert voluntarily even if switchover does not happen
- a further 22% would convert if switchover took place
- less than 5% of households claimed that they would never had DTV.

While recognising that a lengthy switchover period allows the regulator to take full account of the interests of viewers and other key parties, it is worth emphasising that without shutting down analogue the existing digital system cannot be extended (Watson, 2004: 19). In Britain it is not technically possible for about 27% of the population to have DTT until after switchover when more spectrum will be released and the more efficient use of the broadcast spectrum will take place. In this context, accelerating the process to digital switchover is in the wider public policy remit. For this purpose public broadcaster BBC is required to implement digital switchover under the terms of its Royal Charter, as set out in the government's 2005 Green Paper (DCMS, 2005). Commercial broadcasters with a public service remit, such as ITV, Channel 4, Five, S4C and Teletext are also required to fulfil the digital switchover obligations contained within their Digital Replacement Licences, issued by Ofcom at the end of 2004.

Further Scenarios to Accelerate Switchover

As can be seen, a few national governments have committed to a prompt fixed date for analogue switch-off and some others have given a tentative timetable from between 2010-12. Based on the information received from Member States, the European Commission has proposed a deadline of 2012 for phasing out traditional analogue terrestrial broadcasting. But does fixing a date for the switchover actually promote DTV take-up? Current conversion to digital broadcasting is occurring on a voluntary basis and is being driven by the perceived benefits of digitisation. Households' plans for converting their televisions are voluntary because they do not take into account a definite switchover timetable.

However, a 2004 report from the British regulator Ofcom (published before the government announcement of the 2012 timetable) indicates that digital switchover is achievable provided that there is a greater certainty over the timing of switchover. As the report notes, the announcement of a timetable would significantly extend DTV penetration in Britain and bring forward the idea of digital switchover (Ofcom, 2004). Also research undertaken in the country by the Generics Group shows that the announcement of a switchover timetable would trigger many people who would otherwise not have converted any televisions before the deadline to make a plan (Klein et al., 2004: 3). The study shows that without a timetable for switchover, uptake is likely to plateau at between 70 and 80 percent of households. If switchover is announced, then the vast majority of households will convert at least one television[7] by the date of switchover (ibid: 11). Those people who would only convert 'if pushed' to do so by the impending switch-off of analogue television will tend to leave conversion until the last possible year. This is evidenced by the Berlin case, where

most households left the conversion up to the last minute despite the information available to them throughout the switchover process.

Setting a date for analogue switch-off is not the only means of encouraging early DTV adoption. Subsidising the relevant equipment to receive DTV (integrated TV sets, set-top boxes) may also prove compelling. For example, BSkyB in Britain has played a significant role in making DTV more affordable as it continues to subsidise digital set-top boxes, offering them for free to new subscribers. Cable operators also offer incentives to convert to digital as customers can access telephony, DTV services and broadband Internet with a single subscription. Apart from the direct, spontaneous actions from market players, another option would be for the government to help subsidise the cost of set-top boxes. This has been the case in Italy. In order to push the switch to digital, targeting 2006 as the completion date, the government offered a 150 Euros subsidy to buyers of the first 700,000 set-top boxes. While 450,000 subsidies had been issued by October 2004, that is still 1 per cent of the Italian TV market, leading many analysts to conclude that the deadline is unrealistic (Saitto, 2004: 8). In any case, as digital conversion is occurring on a voluntary basis, any government plans to subsidise digital take-up might jeopardise the market momentum for voluntary purchase of DTV. But the government (and the broadcasting industry) will probably have to pay to convert the households which are refusing to buy any DTV services. As the Generics research found, in Britain these households account for 5 per cent of the total (Klein, Karger and Sinclair, 2004: 14).

Some national governments view public financial support as a necessary precondition to set the switchover process in motion and to implement it in a socially acceptable

manner. Austria, for example, considers that the switchover to digital technology cannot be achieved without state support. As a financial incentive, in 2004 the Austrian broadcasting regulatory agency KommAustria considered setting up a 'digitalisation fund' with an annual budget of 7.5 million Euros derived from licence fees. The resources may be used for the following purposes:

- co-finance pilot trials or research projects
- develop programmes and additional services with 'digital added value'
- raise public awareness on digital transmission
- assist infrastructure operators and broadcasting companies to manage the simulcast phase (the phase in which channels continue transmitting in both analogue and digital modes to reach all viewers, as part of their public service remit until analogue switch-off)
- assist consumers who cannot afford the end-user equipment.

However, the allocation of subsidies should comply with EU competition law and in particular the regulations on State Aid. The EU has not yet published any clear guidelines as to whether government measures to fund the digital switchover constitute violation of competition law.[8] A BIPE study for the European Commission found a way around this problem, for it recommended the setting up of a so-called 'Switchover Fund', which would consolidate the macro-economic transfers (BIPE, 2002: 11). The funds raised from some of the players that will ultimately benefit from the analogue turn-off (terrestrial broadcasting players, other spectrum users, governments themselves) would be used to finance some of the measures that will help accelerate the process. Compared with financial transfers through the general

public budget, a dedicated Fund would provide some specific advantages: higher guarantees of transparency, platform neutrality and proportionality, consensual private/public decision-making (ibid).

In addition to funding, active management is required to complete switchover effectively. Some European countries have established working groups with the task of bringing together all relevant players (TV broadcasters, the supply chain, regulators and consumer associations) to achieve a consensus in designing a clear plan for the switchover. In Austria, for instance, a working group dubbed 'Digital Platform Austria' was set up in 2002 with the task of developing a plan for a speed introduction of digital broadcasting. The group consists of members of broadcasting companies, service providers, network operators and consumer associations. Also in Britain the April 2005 formation at Government request of a properly staffed body with a significant marketing budget, SwitchCo, is expected to contribute to the coordination of the country's switchover to digital television.

Conclusion

In sum, both the government and industry must work together if switchover is to be achieved with the set timeframe. If left entirely to the market, the British Broadcasting Corporation predicts that it will take until 2013 for 95 per cent of British households to have DTV (BBC, 2004: 1). Paris-based research firm BIPE also considered that if left to the market the switch to digital is likely to happen at a moderate speed, which will be determined by transmission and switching costs (such as the upgrade of networks to support digital broadcasting; or the equipment of every household with

digital-compliant receivers) (BIPE, 2002: 6). Of course it night be unwise to put in place a rapid implementation of digital switchover when markets and television services, particularly DTT, are still in the process of consolidation. For example, the early deadline of analogue turn-off set by the Italian government seems unrealistic as the take-up of digital services in the country remains relatively low.

Clearly though analogue switch-off should not be left to the unpredictable outcome of market forces at an unpredictable date in the future (DigiTAG, 2002). Some form of national public policy intervention will be required to create the necessary conditions for a successful switchover process. The nature and timing of intervention may vary depending on the phase of analogue switch-off. What is considered essential during the transition period are, first, the design of a communication campaign aimed at informing households of the various stages of the process and the effects on television reception, and second, cooperation between the players involved to ensure a smooth technical and commercial implementation. Governments should also reserve intervention for the final stages of turn-off in order to ensure that the minority of homes that have not gone digital are given economic incentives (perhaps by subsidising equipment) to encourage conversion.

Intervention may also be justified at an EU level to guarantee a coordinated approach to the switchover process and to the use of the available spectrum. There is currently little or no coordination of the switchover plans of Member States. As it is stated in the 2005 Communication, market players are concerned that the development of new services could be hampered by different implementations from country to country as this may result in legal uncertainty regarding terrestrial spectrum that may be made

available (EC, 2005a: 8). For these reasons this paper welcomes the EC initiatives in the area, but it is sceptical as to the feasibility of the 2012 deadline proposed. Without doubt, switchover will bring about benefits to viewers and broadcasters, stimulate innovation and growth of the consumer electronics sector, and therefore contribute to the renewed Lisbon agenda. Hence the earlier the switchover process is started and the shorter the transition period, the sooner these benefits are realised. However, the Commission's proposal for a common timescale may not be workable, in view of the disparities of Member States' approaches and advances to digital switchover. The EC's proposal for the 2012 deadline for completing terrestrial analogue switch-off may lead some Member States to an ill-timed, insufficiently planned and unduly rapid introduction of DTT services to catch up with other more advanced territories. The role of the Commission should end at setting out the benefits of switching over to digital television and explore various policy orientations, rather than announcing EU-wide deadlines for phasing out analogue terrestrial television, for national fragmentation casts doubts on the credibility of setting such deadlines.

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Notes

[1] Member States' switchover plans are available at: http://europa.eu.int/information_society/topics/ecomm/highlights/current_spotlights/switchover/national_swo_plans/index_en.htm

[2] In late 2003 the two groups merged their operations in a £2.6 billion deal.

[3] Canal Plus ended 2004 with 8.4 million subscribers up 300,000 on the year, helped by the signing of new premium content agreements with the French movie industry and an exclusive two-year French soccer deal (see http://www.dtg.org.uk/news/news.php?class=countries&subclass=74&id=619). In early 2005, the total number of Italian pay-TV users was 2.6 million (see http://www.satexpo.it/en/news-new.php/4?c=25605), while at the same time German Premiere's users reached 3.25 million (see http://info.premiere.de/inhalt/eng/medienzentrum_news_uk_17012005.jsp).

[4] It is worth noting that since the late 1990s the Commission has actively stimulated the debate of the appropriate policy and regulatory framework for the development of digital services, notably with the Convergence Green Paper and the Spectrum Green Paper. The EC's 1997 Green Paper on Convergence between Telecommunications, Media and Information Technologies covered certain radio spectrum and analogue switch-off issues in respect to specific sectors (EC, 1997). The 1998 Green Paper on Radio Spectrum Policy stimulated debate on how to identify, in a practical way, the transport industry's needs in terms of coordination and protection of radio spectrum (EC, 1998).

[5] Unless otherwise indicated, this section is largely based on Member States' switchover plans (see note 1)

[6] More details about the Digital Television Project and Action Plan can be obtained at: http://www.digitaltelevision.gov.uk/dtv_project/project_details_home.html

[7] So far one of the primary objectives for the switchover set by national governments has been to drive digital take-up of primary sets and prepare viewers for switchover. Driving conversion of secondary sets will require a fundamentally different approach and marketing messages, for many viewers who have already adopted digital for their primary TV sets do not equate this with consent for losing the analogue services from their secondary sets.

[8] In June 2005 the EC adopted a State Aid Action Plan that would set guiding principles for a comprehensive reform of state aid rules and procedures over the next five years. In particular, the Commission intends to use the EC Treaty's state aid rules to encourage Member States to contribute to

the Lisbon Strategy by focusing on aid that improves the competitiveness of the industry, creates sustainable jobs, ensures social and political cohesion, and improves public services. For this purpose the Commission has opened a consultation that would enable it to put down concrete proposals (see EC, 2005d).