

JAMAICA: DIGITAL TELEVISION SWITCHOVER

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FOR DISCUSSION ONLY

PREFACE

The United States, one of Jamaica's major trading partners, and a significant source of equipment and programming will switch to full digital broadcasting in February 2009. Europe has already embarked on its own phased process of transition. In addition, Commonwealth countries such as South Africa and Australia are moving forward with their plans for digital switchover.

New digital platforms broaden the scope for a richer, more enhanced media experience, given the potential for multimedia applications, new domestic commercial services and better technical quality. They also offer greater opportunities for mobile, portable and pocket equipment, in line with next generation network (NGN) technologies.

As plans forge ahead toward digital switchover in other parts of the world, we are challenged to confront the reality that if Jamaica takes too long in making the shift, we risk being placed at an economic disadvantage and ending up on the wrong side of the Digital Divide.

It is for this reason that the Broadcasting Commission began looking at the issue of digital switchover from as early as 2003 when it convened a Digital Television Forum. This was followed by a Digital Switch-Over Workshop in March 2008, with this paper being a significant outcome.

The unfolding issues and strategies for transitioning from analogue to digital broadcasting technology systems are of great importance because they will redefine the face of broadcasting and mark a major milestone for Jamaica.

However, one critical success factor for this far-reaching and national undertaking is a well planned and inclusive process. It is necessary that there be ownership through partnership of broadcasters, cable operators, civic society, consumers, viewers, listeners, subscribers, retailers, the government and regulators. Ultimately, this process must be built on a broad coalition of individuals and organisations committed to the advancement and operating on the ethos of a dynamic and mutually supportive relationship.

It is also important that a core guiding principle be the prioritising of the needs of consumers and the public interest, balanced by commercial and economic interests, and manifested through clear demand and acceptance in the marketplace, accessibility and a low threshold of affordability.

INTRODUCTION

The Jamaican electronic media landscape is marked by an unprecedented explosion of services. At the end of 2007, there were three (3) free-to-air television stations, twenty-two (22) radio stations forty seven (47) subscription television operators in almost eighty percent of the island by zone, including an all island cable licensee (wired) which is expected to have a digital network fully rolled out by 2011, as well as a growing number of local cable channels and other content providers (HYPE, RETV, CPTC, Music+, JNN, SportsMax etc).

Table 1 – Licensed STV service, by parish, as of March 10, 2008

PARISH	Zones in parish	Zones with service	Zones without service
ST. ELIZABETH	14	2	12
TRELAWNY	7	3	4
MANCHESTER	15	7	8
CLARENDON	22	14	8
ST. MARY	12	8	4
ST. CATHERINE	39	30	9
ST. ANN	14	10	4
PORTLAND	8	7	1
ST. JAMES	15	14	1
KINGSTON & ST. ANDREW	66	64	2
HANOVER	7	7	0
WESTMORELAND	14	14	0
ST. THOMAS	10	10	0
TOTAL	243	190	53

The local electronic media market is also patterning international trends in horizontal and vertical consolidation, cross-ownership and shared distribution facilities.

There is limited scientifically tested data on the STV sector. The Broadcasting Commission in 2004 conducted the first in-depth study of the subscriber

television market in Jamaica to gather important data about the demand for and penetration of such services. The study also addressed other areas related to quality of service, pricing and consumer expectations. The study was undertaken, partly to ascertain the credibility of the subscription numbers reported by the industry, having regard to the demographic, social and economic characteristics of the market.

The data revealed that the average subscription and installation cost for subscriber television service was \$750 per month and \$2,718 respectively. Further to such preliminary findings, a binary logit model was used to estimate the demand for subscriber television service. Variables used for the estimation of the demand model included the subscription price, location of residence, ethnicity, type of home ownership, age, level of education, union, sex and access to satellite media systems. The results of the model were in line with a priori expectation with access to satellite systems and subscription price affecting demand negatively while all other variables had positive relationships with demand.

The model showed that the penetration rate for STV in Jamaica was approximately thirty six percent (36%). In addition, the estimated ranges for subscriber count compared to reported subscriber count were acceptable for forty seven percent (47%) of STV companies. The subscriber count for twelve percent (11.8%) of the companies was not available for inclusion.

Those figures did not necessarily mean that companies were under-reporting. It may have been that the companies' provision of service to the widest cross-section of households, in many instances, was less than optimal. Suffice it to say that the underlying cause for the high rate of unsatisfactory penetration levels required further investigation.

Cable penetration rates are therefore best treated as indicative, ranging from estimates of 58,800 to 268,200 in 2004 with a potential audience estimated at 1.5 m. This is in contrast to TV audience which was estimated at potentially 1.5m in 2006, down from 1.7m in 2005. It has also been estimated that in 2006 there were 980,000 television sets in Jamaica. Radio audience was potentially 1.2m in 2006, down from 1.6m in 2005 and 1.7m in 2000

1. STARTING POINT

1.1 What is digital television?

Digital television involves coding the video and audio signals into a stream of ones and zeros which provides a robust format for maintaining quality. It is widely used in television production and increasingly now in transmission and reception. The signal is digitally coded and compressed at the transmission end and then decompressed and decoded by a digital receiver. The compression technique brings the advantage of additional transmission capacity.

Digital television transmission and reception technology is applicable to all the main television distribution platforms – terrestrial transmission from hill-top transmitters to roof-top or indoor set-top aerials, satellite transmission to dish aerials, cable distribution, and television via broadband.

1.2 What is digital television switchover?

Digital television is more robust and more efficient in its use of transmission capacity than traditional analogue television -- facilitating a greater number of channels, the potential for high definition television (HDTV), and the possibility of a range of interactive services. Digital television switchover is the term used for the replacement of traditional analogue transmission and reception by digital transmission and reception. In particular, it is marked by the switching-off of analogue terrestrial transmissions on a planned basis, enforced by government.

1.3 The wider context

Digital technology is not confined to television, nor indeed to broadcasting. Many consumers will have become accustomed to it first through compact discs, mobile telephones and computers. Essentially the technology of digital coding is common to television, radio, telecommunications, recorded sounds and pictures, electronic print and the Internet. It is common to talk about the convergence of broadcasting, telecommunications and computer technologies. This makes it much easier to manipulate pictures, sounds and words from one medium into another, to develop multi-media concepts and to bring an interactive dimension to communications. Sophisticated downloading and recording techniques and server-based on-demand services are a feature of this new digital world.

2. THE RATIONALE FOR SWITCHOVER

2.1 Consumer and cultural benefits

The main consumer and cultural benefits come from switching digital television on, as distinct from switching-off analogue terrestrial, though there are interdependencies. The most readily appreciated benefit, where the analogue television set-up allows only a very limited number of channels, is a major expansion in the breadth of choice. How this opportunity is used depends on regulatory decisions and market conditions, but it carries the potential for

- new content, including more specialised minority-interest programmes
- an expansion and streaming of existing content, e.g. a news channel, a sports channel, a children's programming channel etc., providing more extended coverage and making consumer access more convenient
- new content providers -- and thus greater pluralism and diversity
- more local services
- more data-based services
- interactive features (level of sophistication dependent on the platform)
- the option of widescreen and/or HDTV (of appeal in the growing market for large-size flatscreen TV sets)
- the option of mobile TV, e.g. on screens on mobile telephones.

2.2 Spectrum efficiency benefits

There are efficiency gains in switching to digital technology for all platforms. However, the gains which most clearly involve governments are those to be obtained from switching-off analogue terrestrial transmissions. Spectrum for terrestrial broadcasting is usually scarce and, historically, has normally been allocated by, and ultimately managed by, governments -- or by regulators accountable to governments. Since around six digital terrestrial TV channels can be accommodated in the capacity required for one analogue TV channel, the scope for improved efficiency is considerable. It may well be possible to increase the broadcasting provision substantially and still reclaim some saved spectrum.

The detailed motives for switching-off analogue terrestrial TV transmissions completely, in the end on a compulsory basis, may vary depending on degrees of scarcity and level of demand and may include:

- finding enough frequencies for the introduction of digital terrestrial television at the desired levels of coverage, or for digital radio
- finding enough spectrum for the introduction, or extension, of HDTV
- finding enough frequencies for an expansion of local television
- utilising saved spectrum for new developments in the field of telecommunications, e.g. mobile TV, wireless broadband etc.
- auctioning saved spectrum for a range of competing purposes and securing the financial proceeds from the auction(s).

2.3 Do the same principles apply to radio?

In principle, the concept of introducing digital transmissions and switching-off analogue terrestrial services might be thought to be as applicable to radio as it is to television. However, the scale of analogue radio in terms of the number of broadcasters and receivers, the impracticality of adapting existing receivers, and the smaller potential spectrum benefits have, to date, made the idea of digital radio switchover theoretical, rather than practical. Digital radio seems likely to coexist with the continuation of AM and FM analogue services, whereas in television the policy drive is to achieve a technology substitution. Given the intensive use of the FM band for radio, Jamaica may wish to consider the possibility of introducing digital radio, without any certainty of ending analogue in the near future, evaluating the technical and commercial feasibility of this, alongside any alternative approaches for easing the pressures on the FM band. This, however, should perhaps be considered as a separate radio project.

2.4 Digital television switchover costs

The consumer costs of digital television switchover lie in reception equipment replacement. The scale of expenditure will be, in some respects, a matter of individual choice – whether to subscribe to pay TV, whether to buy a widescreen HDTV set, whether to add top-of-the range recording equipment etc. However, the addition of a digital set-top box to adapt each TV set is a basic requirement. If the existing aerial installation is poor, it may need replacing, since the digital signal is either ‘there’ or ‘not there’ and there is no digital equivalent of a poor snowy or ghosted analogue picture. Moreover, video-cassette recorders (VCRs) contain analogue tuners. After analogue switch-off, the VCR can be driven by the digital TV receiver and record a programme to which the receiver is tuned – but if there is a requirement to record one channel while watching another or to record two different channels while absent from the home, then some form of digital recording equipment will be needed.

Thus, to motivate consumers to switch, the attractions of the new digital services need to outweigh these reception costs.

For broadcasters, digital switchover will entail new digital transmission costs, initially alongside their existing analogue transmission costs during the transition period when analogue terrestrial services are duplicated or ‘simulcast’ on digital terrestrial -- but then offset by analogue transmission savings when analogue terrestrial TV ends. Moreover, analogue transmitters wear out and, given the greater efficiency of digital technology, broadcasters are unlikely to want to do a like-for-like replacement at that point. Subject to issues of timing, the change in transmission technology should make a return on the broadcasters’ investment.

However, broadcaster costs are likely to arise in other areas too – most obviously in the production of new programmes and channels and, if HDTV is adopted, in

TV production infrastructure. Furthermore, by introducing new broadcasters, the switch to digital television will weaken the market share, and thus probably the advertising income, of the incumbent analogue broadcasters.

Finally, there is a set of costs associated with the policy implementation in the areas of communication and publicity, consumer advice and support, retailer training etc. which may fall on government, the regulator and/or the industry.

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3. DIGITAL SWITCHOVER POLICY

3.1 Is a switchover policy required at all?

A public policy to persuade, and ultimately compel, every household in the country to buy new consumer equipment, ahead of a politically-set date for withdrawing the analogue television they know and love, thus carries both costs and risks. Is it necessary?

Doing nothing, and letting the market take its course, is always a policy option. Under this scenario, analogue terrestrial television would probably shrink over time, as the technology became obsolete and equipment replacement impractical. Terrestrial reception might then be largely replaced by some mix of digital satellite, cable and broadband. A market for digital terrestrial television might or might not develop: if it never happened, or if it misfired and failed, so be it. Why not simply allow commercial nature to take its course?

The counter-arguments are

- a purely market-driven technology transition is likely to be driven largely by pay TV companies and could marginalise public service television
- analogue TV would inevitably linger on, withering slowly, so this course could be messy from the consumers' standpoint, with some services disappearing before others, and analogue's slow death would postpone the benefits of managing spectrum efficiently.

Having done this analysis, several major countries have chosen to develop digital switchover policies, based on the concept of allocating existing analogue terrestrial broadcasters new digital spectrum so that, after a planned transitional period, the analogue services can be tidily closed.

3.2 Experiences of the pioneers of digital TV switchover

The pioneering countries therefore initiated their digital switchover policy by launching digital terrestrial television. The central idea was that some of the new digital terrestrial channels should duplicate (simulcast) the analogue terrestrial services during a transition period, giving viewers a chance to equip themselves with digital receivers before the analogue signals were switched off.

In the United States, which started in 1999, the switchover strategy included allocating to the analogue terrestrial broadcasters sufficient spectrum for the option of HDTV. Early take-up was slow and the planned analogue switch-off target of 2006 had to be abandoned. Frustrated by the lack of progress, the Federal Communications Commission made the inclusion of digital tuners in all new television sets a regulatory requirement. Since cable and satellite accounted for over 80% of US homes, the government also decided it could afford to subsidise low-cost set-top boxes for terrestrial households from the revenue it

would receive from auctioning the released analogue spectrum. A new analogue switch-off date was set for February 2009.

Australia also had a slow start, having made HDTV obligatory and with very limited new content. After a rethink it rescheduled analogue switch-off to start in 2010-12.

In the UK, which was first to start in 1998, the mistake, in retrospect, was to place so much faith in the commercial prospects of a new digital terrestrial entrant to a highly competitive pay TV market in which satellite and cable were well established. ITV Digital went bankrupt in 2002. Spain's early experience was similar. In both countries digital terrestrial was re-launched as primarily a free-to-view television platform, much more dependent on publicly funded services. The UK now has the highest digital take-up in the world – around 85% of households by the end of 2007 – but its analogue switch-off timetable is spread over five years and will not be complete until 2012. Spain may or may not meet its revised target of 2010.

Sweden and Finland also started early. Sweden's launch was based on a cumbersome organisation, while Finland initially relied too heavily on Multimedia Home Platform interactive services. However, both countries swiftly overcame their early problems and both completed switchover in 2007.

In Germany cable and satellite reception was so extensive that analogue terrestrial TV had a very limited role. With insufficient spare spectrum for an extended period of simulcasting, Germany has successfully pioneered a series of swift switches, region-by-region, starting in Berlin in 2003. Switzerland, where terrestrial viewers are also a minority, is also undertaking a regionally-based switchover.

In the Netherlands, where over 90% of households rely on cable, the Dutch government was able to switch off all analogue terrestrial TV at the end of 2006. Italy, where terrestrial television has a dominant role, launched digital terrestrial TV in 2003 with a legally controversial receiver subsidy. It has now postponed its original unrealistic analogue switch-off target of 2006.

France did not launch digital terrestrial until 2005 and its plans include the use of an improved compression system, MPEG-4, for some HDTV services. France aims to complete switchover in 2011.

Japan, having been an early pioneer of analogue satellite HDTV, now has a strategy based on digital satellite and digital terrestrial HDTV, together with cable and broadband. Its digital terrestrial system includes a mobile TV component. Analogue terrestrial switch-off is scheduled for July 24th 2011.

3.3 Common principles

National differences -- such as market size, the balance between terrestrial and satellite and cable platforms, and the role of publicly funded television – have been significant in shaping these diverse national experiences. Nonetheless, it is now possible to identify certain common principles:

- No country has yet decided to ‘skip’ digital terrestrial completely, even countries where terrestrial reception is least important.
- No country has launched digital terrestrial without also adopting an analogue switch-off goal (implying a compulsory final phase).
- To facilitate analogue switch-off, digital terrestrial spectrum needs to be allocated to existing terrestrial broadcasters (not necessarily exclusively).
- Digital terrestrial pay TV is commercially risky where satellite and cable pay TV is strong – but hybrid systems including both free-to-view and pay digital terrestrial services can work.
- Full switchover is generally much easier in countries where terrestrial reception is of limited importance and, at least in respect of their main TV set, only a minority of households is affected.
- In countries where terrestrial reception is dominant, high digital penetration achieved during the period of voluntary take-up is important as a pre-condition of switchover, since this reduces the number of households whose main TV set is likely to be analogue at the point of compulsion. Such take-up does not have to be exclusively digital terrestrial but other platforms only contribute if they carry digital versions of the analogue terrestrial services to be withdrawn.
- Subsidy can play a role, especially in the closing stage of compulsory switchover, but any such policy needs to be carefully designed so as to avoid unfair discrimination between platforms.
- Alongside pay TV options, it is important to offer the consumer a free-to-view digital proposition. Compelling reluctant terrestrial viewers to buy a digital receiver only involves them in a one-off cost; requiring them to subscribe to pay TV, other than by voluntary choice, would be unworkable.
- A critical factor is the perceived value of this free-to-view digital television proposition (in terms of the attractiveness of the services or the enhanced quality) and its relationship to the price of digital consumer equipment. A free-to-view proposition which is largely restricted to simulcasts of the analogue services due to be withdrawn will do little to drive digital take-up and analogue switch-off dates which are set politically without regard to consumer take-up tend to be postponed.

The lesson for countries now considering embarking on a digital switchover course is that a successful analogue terrestrial switch-off is possible – having been achieved now in the Netherlands, Finland and Sweden – but that it can be difficult and requires careful design, taking account of the specific characteristics of each national market.

3.4 Public policy and the market

Digital switchover policy requires a collaborative relationship between governments and regulators, on the one hand, and broadcasters and the television receiver industry, on the other.

Governments cannot impose the switch by *diktat*, if they are expecting consumers to spend their own money buying receivers. In theory, it would be possible for a government to provide free digital receivers on a universal basis, aiming to recoup the public investment in due course from auctioning the released spectrum. However, the potential costs would be high, the provision of a set-top box to every household would carry no guarantee of reliable reception (e.g. if there were aerial issues or simply installation difficulties). Moreover, such a scheme would needlessly eliminate the enormous contribution the market could make to switchover. If instead the market could act as the main driver for the voluntary take-up of digital receivers, then the number of households for whom switchover would be compulsory could be kept relatively low, greatly reducing the logistical complexity and the political risk.

It has therefore become increasingly clear that the way forward lies through some form of public policy collaboration with the market involving

- the allocation of some digital terrestrial spectrum to incumbent analogue terrestrial broadcasters, who, though rivals, will need to collaborate with one another in some respects, in order to develop a digital terrestrial television platform on which to compete
- the building of a close working relationship between broadcasters and the receiver industry, to ensure the availability of appropriately specified digital receivers capable of handling the services of different broadcasters which requires manufacturers, importers and retailers also to collaborate with one another in some respects
- consideration of the contribution to digital switchover which can be made by satellite, cable and broadband platforms and a policy approach which is fair and non-discriminatory between rival platforms.

In regulatory and legal terms, therefore, the policy design task is complex. To minimise the risk of legal challenges, to help build industry collaboration and to explain the policy to the public, it is prudent to undertake extensive consultation prior to taking hard decisions.

4. EMBARKING ON DIGITAL SWITCHOVER

4.1 Feasibility study

The first step for policy-makers contemplating digital switchover is to be clear about the rationale – the balance between expanding and improving services, saving spectrum and assisting a national broadcasting system to adapt itself to the inevitable arrival of new digital technology.

A feasibility study should begin with research to ensure that policy-makers have an up-to-date understanding of key market factors. These could include an economic analysis of the future “digital TV” market in five (5), ten (10) and fifteen (15) year spans, to get a view of the carrying capacity (rate of growth of traditional advertising/potential for growth from new services, migration costs for consumers and service providers – grandfathering/new digital licences, public policy objectives and their integration into market driven considerations, cost of various elements and the model for recovery-market costs/natural technology upgrades/public service requirements/sharing the digital dividend, and optimal number of providers vs. free planning “survival of the fittest” market dynamics); take-up of the different platforms, including past trends and informed projections (new digital services-substitutes or addition?); the level of potential consumer interest in new channels, high definition and/or mobile TV; modelling of new TV’s, converters etc and focus group research to test consumer willingness to pay for new services and/or improved technical quality (expected adoption rate by end users).

The next step is to estimate the potential impact of analogue switch-off. How many households are in danger of being directly deprived (a) in respect of their main TV set (b) in respect of secondary sets and recording equipment? By modelling growth in the satellite and cable markets and realistic expectations of digital terrestrial take-up, it is possible to judge how long it might take for the number of households in danger of deprivation to be reduced to a politically acceptable small minority.

It is important to be able to picture a consumer proposition which will generate voluntary take-up in the market. Its nature will depend on national and regional/local market factors and there is a distinction between

- a consumer strategy based solely on features, such as HDTV and/or widescreen, which essentially require the purchase of a new TV set (or the equivalent in terms of a new display monitor and set-top box)
- a consumer strategy based on services, such as extra channels or interactive features, which can be based on the purchase of set-top boxes (whether terrestrial, satellite, cable or broadband) working with existing analogue TV sets.

The latter involves a smaller consumer outlay and a switchover policy based on it should generally be achievable over a shorter timescale. Since subscription

cannot easily be made compulsory, a free-to-view option is required, with some demonstrable improvement on the analogue free-to-view proposition.

A formal Cost-Benefit Analysis can be undertaken for the whole digital switchover process, from launching digital terrestrial through to closing analogue terrestrial, against a 'do nothing' base case. As a policy tool, it has its limitations: the outputs are dependent on the quality of the inputs and the value of released spectrum may be difficult to estimate reliably. Nonetheless, the findings should give a broad picture which can help consolidate political decisions.

4.2 Technology selection

The technology of digital television transmission and reception has been extensively standardised and documented in three main international families of standards known by their acronyms – ATSC in the United States, DVB in Europe, and ISDB in Japan, with a fourth group of standards now being implemented in China. DVB is currently updating its digital terrestrial specifications. Jamaica, like other countries considering adopting one of these recognised systems, can assess their comparative technical features but should also consider commercial factors, especially the system used in any neighbouring countries from which programming and/or receivers are imported.

Within a selected set of technical standards, more specific choices need to be made on the trade-offs between quality, predicted coverage and channel capacity. The HDTV market, initially weak, is now growing – driven by the growing popularity of large-size flat-screen receivers. Many new flat-screen TVs are now sold as HD-ready, but still require an HD set-top box. Improved compression techniques – for example, the use of MPEG-4 technology rather than MPEG-2 – help reduce HDTV's requirement for large amounts of spectrum.

Mobile television has been extensively piloted and launched into the market in the United States and several west European countries as well as Japan.

For pay TV, and perhaps for copyright protection on free-to-view TV, conditional access systems need to be chosen. There are key regulatory issues here and in relation to the selection of an API (Application Programming Interface) and the design of EPGs (Electronic Programme Guides). The judgment is how far to leave these choices to the market, with the likely result of different organisations adopting separate proprietary technologies – and how far to aim for open standards and interoperability within any one platform or even between platforms. (The European Union framework of regulation, for example, permits diversity, including proprietary technology, but requires the owners of proprietary set-top boxes to offer fair and reasonable terms of access for other broadcasters')

services -- and a common interface for conditional access is mandatory on integrated digital TV sets).

Programme information and a new channel numbers will need to be specified.

Consultation with all the relevant interested parties, including informed consumer groups, is advisable in advance of making technology selection decisions. Smaller countries especially will want to take account of the expertise of receiver importers, since low receiver prices are a product of manufacturing volumes. Specifying a receiver which is unique to a small market is likely to result in higher consumer prices than framing specifications which are, in major respects, similar to those due to be manufactured for sale on a wider international scale.

4.2.1 Access and usability by persons with disabilities

Considerations around technology selection, and digital switch-over in general, must be consistent with the government of Jamaica's commitment to the principles of equality, non-discrimination and the inclusion of all persons with disabilities in all aspects of economic, social and cultural life. This is embodied in the The National Policy on Disability in Jamaica which was passed by Parliament in November 1999.

The Digital Switch-Over policy must therefore be crafted to ensure adequate consideration of the needs of persons with disabilities and their fullest participation in the benefits of digitalisation.

4.3 Digital terrestrial frequency planning

A fundamental decision is the level of digital terrestrial coverage desired post-switchover. Some countries, such as the UK, have decided to match the near-universality of analogue terrestrial transmission, which is simple from the consumer point of view, but expensive in terms of transmitter investment. Other countries, such as Germany and New Zealand, have decided to limit coverage to a lower figure, to rely on free-to-view digital satellite elsewhere, and thus to withdraw terrestrial TV from some rural areas. Different coverage targets may also be chosen for different services, with higher coverage for public service television than for commercial channels.

Frequency planning work is then required to see

- (a) how to achieve the desired post-switchover digital terrestrial coverage
- (b) whether this coverage can be achieved before analogue switch-off, when the design of digital terrestrial transmission has to protect analogue transmissions against interference during the transition period.

This work will clarify how many digital terrestrial multiplexes (one multiplex being the equivalent of one analogue channel) might be possible before and after

switchover. It is essential to decide whether, and when, provision will be made for high definition terrestrial television and/or mobile television, since this will restrict how much digital spectrum can be made available for standard definition channels.

Frequency planning work should also help determine whether, as in the UK, digital terrestrial services will initially be launched on temporary frequencies and then switched to the old analogue frequencies at the point of analogue switch-off – or whether, as in Japan, the new digital terrestrial services can be launched on the frequencies where they will remain for the long-term, requiring a programme of analogue frequency changes in the meantime.

4.4 Licensing the operators of digital terrestrial multiplexes

Digital terrestrial multiplex licences could be awarded to broadcasters, or to transmission providers, or to third parties who will make arrangements with broadcasters, transmission companies and the receiver industry. Provision needs to be made for simulcasting the analogue terrestrial services and for other services and features which will motivate viewers voluntarily to acquire new digital receivers.

Governmental and regulatory decisions at this stage include:

- whether 100% simulcasting should be mandatory and whether spectrum for this purpose should be allocated free of any spectrum charge
- the balance between national, regional and local services and between scheduled channels of programmes, on the one hand, and on-demand data and interactive features, on the other
- how far to set public service content objectives for the new digital environment and how far to deregulate, leaving content to be determined by the more pluralist market due to emerge
- the balance between public funding, advertising revenue, subscription and transaction revenue and thus between free-to-view and pay TV
- the qualifications required of organisations seeking digital terrestrial multiplex licences, including their financial strength, any ownership restrictions related to broadcasting dominance or cross-ownership with other media, coverage obligations and any content requirements
- the relationship envisaged between those licensed to run digital terrestrial multiplexes and (a) prospective transmission suppliers, (b) prospective programme channel suppliers and (c) the receiver industry
- the role of competition – whether by ‘beauty contest’, auction or some combination – in selecting the organisations to be granted digital terrestrial multiplex licences
- the financial framework for analogue terrestrial commercial broadcasters and public broadcasters and changes to this framework which are appropriate during the transition to digital TV

- the rules governing existing analogue terrestrial broadcasters' cross-promotion of their digital services, to provide legitimate consumer information without unfair competition.

The design of the digital terrestrial licences should have the switchover goal in mind. Spectrum for simulcasting could be treated as a loan. An obligation to cease analogue broadcasting within a certain time-frame could be incorporated in the digital licences, subject to certain caveats. An obligation to publicise, and participate in the organisation of switchover at some later date could be made explicit, if desired, at the point when the licence is first granted.

4.5 'Must carry' issues

The analogue world normally has some rules about the extent to which, if at all, cable and satellite broadcasters are obliged to relay the services of terrestrial broadcasters – the 'must carry' obligation. Inevitably questions will arise about the 'must carry' ground-rules for cable and satellite when digital terrestrial television is launched. If there is an obligation to carry the main analogue terrestrial services, does this obligation remain purely for those services or should it be extended to cover new digital services? Must digital services be carried in digital form or is it acceptable, after switchover, for any surviving analogue cable systems to down-convert the digital signal to analogue at its head-end and relay it in analogue form?

These issues are likely to be decided after consultation. However, two general principles can be articulated:

- if cable and satellite relay the services which will cease to be broadcast on analogue terrestrial, then cable and satellite households – at any rate in respect of their main TV sets -- will not be deprived at analogue switch-off;
- if the cable industry is slow at making its switch from analogue cable to digital cable, then allowing some down-converting to analogue cable can make analogue terrestrial switch-off achievable at an earlier date than would otherwise be the case.

4.6 The use of subsidy?

A cold start-up for digital terrestrial television carries the risk of a vicious circle of limited expenditure on content, lack of consumer appeal, low receiver volumes, high receiver prices, and low take-up. Hence some kind of subsidy to kick-start a virtuous cycle of growth is a policy option. In Berlin and in Sweden, for example, some government assistance supported digital transmission, while in Italy the government financed a receiver subsidy.

These early subsidy schemes were controversial and gave rise to legal challenges and European Commission investigations. The central question was whether the subsidies had breached platform neutrality by discriminating in favour of digital terrestrial, unfairly disadvantaging satellite and/or cable.

Significantly, even when it found fault in particular cases, the European Commission recognised that subsidies may need to have a role in digital switchover policies. It approved a support package proposed by Austria and, on the basis of this and of its Berlin investigation, set out guidance on how to design public subsidy schemes without falling foul of competition law. The principles to be followed, it advised, are transparency, necessity, proportionality and technological neutrality.

The United States and the UK have both adopted subsidy schemes for the final stage of switchover – in the US case, involving a voucher scheme to allow residual analogue terrestrial households to purchase an adaptor, while in the UK a licence fee-funded scheme was developed to assist elderly and disabled viewers.

4.7 Disposal of and protection against dumping obsolete equipment: Regulating the receiver industry?

There is need for the development of a comprehensive policy for the disposal of and protection against dumping obsolete equipment in the Jamaican market.

As exemplified in the United States, one tool open to governments is to require manufacturers, from a particular date, to include digital receivers in any integrated TV sets they bring to market. The purpose is to curtail the continuing sale of analogue TV sets and to ensure that the TV set replacement market becomes a driving force in delivering digital switchover.

In the United States, the Federal Communications Commission used powers under the 1962 All-Channel Receiver Act, passed when TV stations on the UHF band were being introduced alongside the established stations on the VHF band so that manufacturers were compelled to make receivers capable of receiving both. Use of these powers forty years later for mandating digital receivers was upheld in court when challenged by the TV manufacturers.

In the European Union the Commission can make proposals for the common use of standards and, if appropriate, mandate them, providing the regulation is non-discriminatory between platforms and proportionate to its purpose. However, without European-level action, national governments within the EU are not free to mandate digital TV sets and any informal *concordat* between manufacturers would need to comply with EU competition rules.

The principal arguments in favour of mandating integrated digital TV sets are:

- it provides evidence of the seriousness of the switchover commitment
- it takes full advantage of the TV set replacement market

- it kick-starts the volume production of integrated digital TV sets which brings down consumer prices which provides further impetus to sales and to switchover.

The principal arguments against mandating are:

- the imposition of an unnecessary cost on TV set purchasers who rely on set-top boxes for their digital technology (including, of course, most pay-TV households)
- the difficulties of a 'one answer suits all' policy in a set of national markets with such diverse switchover approaches and timetables as those in Europe and the consequent risks of market distortion.

Either to complement mandating, or as an advisory alternative, labelling digital TV sets so that consumers can readily identify them is a further policy option. A corollary is to place warning labels on analogue TV sets, as the Japanese have done. The practicalities of implementing and enforcing a labelling policy need to be thought through, including the importance of retailer communication and related training.

FOR DISCUSSION ONLY

5. PREPARING FOR ANALOGUE TERRESTRIAL SWITCH-OFF

5.1 Setting the timetable

Naming the timetable for analogue terrestrial switch-off can be done either several years after the launch of digital terrestrial services, as in the case of the UK, or at the same time, viewing the two as essentially one integrated process, as was done, for example, in Berlin.

It makes sense to separate the two stages in a country with a high dependence on terrestrial television, with sufficient spectrum for a prolonged period of simulcasting, and where some commercial and political uncertainty may surround the switchover timing. That way, the effectiveness of the launch of digital services and the speed of take-up can be assessed before analogue switch-off is firmly timetabled. The Berlin model is more appropriate where the number of terrestrial households to be switched is small, terrestrial spectrum is scarce, and the political commitment to completing switchover is not dependent on the level of commercially-driven digital take-up.

By modelling predicted take-up, some insight can be gained into the optimum timing for analogue switch-off. Generally, the sooner it is done, the earlier the benefits can be obtained but also, up to a point, the higher the political risk – while the later it is done and the higher the voluntary take-up in the meantime, the lower the political risk.

Switch-off can be managed across the whole country at a particular point in time, or region-by-region. It is also possible to switch off one channel first, so that late adopters viewers appreciate fully the need to acquire new receivers, and then switch off the rest.

If firm dates are named and then postponed, the policy can lose credibility. Some countries start by naming guideline dates, perhaps linked to a percentage take-up criterion, before finalising hard dates.

5.2 Implementation plan

An essential requirement at this stage is a plan for implementing the actual analogue frequency switch-off operation at the transmitters, and any associated change in digital frequencies, synchronised with a communications plan to inform the public well in advance and motivate viewers to acquire and install digital receivers in good time.

Responsibility for leading implementation could be entrusted to a regulatory body or, alternatively, some specially-constituted body, with strong links to broadcasters, transmission providers, retailers and installers, could be appointed to coordinate the various bodies involved and spearhead consumer

communications. In the latter case, the body could be appointed by the relevant government department, as in Sweden, or else, on the UK model, the Government and regulator could ask the broadcasters to appoint it in conjunction with the receiver industry. Governments and regulators will nonetheless retain some direct implementation responsibilities of their own.

Policy issues linked to the implementation of analogue switch-off include:

- setting or amending the broadcasters' licence conditions, if necessary, and clarifying whether cable companies' down-converting 'must carry' digital signals to analogue is, or is not, acceptable
- identifying any groups for whom analogue switch-off could be seriously difficult (financially and/or physically) and assessing what measures to take to assist them
- undertaking any switch-off pilots to test feasibility and readiness
- checking that the industry can meet the full range of consumers' recording needs (e.g. with hard disc recorders incorporating digital tuners)
- ensuring sufficient advance training within the industry, especially of retail and installation staff
- ensuring sufficient advance financial and practical planning by social and private landlords and by a wide range of institutions from hospitals to hotels and from bars to prisons
- modelling the energy usage implications of the increased volume of set-top boxes, and weighing this against the savings on energy used in transmission, and deciding whether to enforce energy usage restrictions on receiver manufacturers and importers
- developing the communications strategy to
 - (a) maximise voluntary switching to digital TV
 - (b) explain the compulsory phase and win broad support for it
 - (c) explain the implications of compulsory switchover to those directly affected with as much local and individual focus as possible and with back-up advice and support.

In the later stages the focus will be less on those who have already converted their main sets voluntarily and more on those – especially the elderly, the severely disabled, and the poorest households – for whom switching presents serious difficulties. Targeting such groups with advice and information, practical help and charitable or publicly financed assistance is the key both to helping the groups themselves and to winning the consent of the wider population who would otherwise be concerned on their behalf.

5.3 Public persuasion

Throughout the whole switchover policy process, public explanation and persuasion play a central role. Compulsory policies have to have a wide measure of public support in order to be enforceable, certainly in a field like television reception.

If the strategy is to allow an extended period of time for voluntary migration before the compulsory timetable starts to bite, it may make sense for the initial communications drive to come primarily from broadcasters, retailers and the receiver industry, engaging with the public as consumers, without complicating commercial marketing with political arguments. The benefit of a 'softly, softly' approach from a political standpoint is that it can help avoid a major storm of adverse publicity of the kind that might trigger a mass consumer revolt. The drawback, however, could be a continuing low level of public awareness.

Switchover cannot in the end be implemented without high public awareness. Everyone has to buy, or have already bought, a digital receiver in order to continue receiving television at the point at which the analogue signal from their local transmitter is switched off. So a gear-change in communications is required when the timetable is named. The arguments deployed to encourage digital take-up will probably be insufficient to sell the concept of a compulsory analogue terrestrial switch-off. The long-term and social benefits of utilising spectrum more efficiently need to be explained.

The question will arise as to who shoulders any potential unpopularity resulting from the compulsory element. The orthodox approach is for politicians to explain the rationale for the policy and take responsibility for the consumer implications of the timetable, while leaving communication of the practicalities to some combination of the regulator, the industry and any specially-created body with switchover responsibility.

The public awareness and understanding of digital switchover need to be measured and tracked, stimulating new publicity initiatives if necessary. Then the final stages of public communication must be closely linked to the practicalities of the transmitter switching operations, informing consumers what exactly will happen in their local area and when, explaining what to do e.g. if re-scanning is required, and offering sources of help. As well as leaflets, posters and other forms of advertising, public information spots and on-screen captions giving a point of contact for more detailed advice are likely to play a major role. At this point the analogue terrestrial broadcasters have every incentive to inform their audiences of how to continue to watch their programmes after switchover without disruption or aggravation.

5.4 Risk management

The risks involved in national digital switchover policies are such that they cannot all be managed by the parties facing them – hence the importance of collaboration between stakeholders.

Professional risk management techniques, involving systematic risk assessment, the use of a risk register, and risk reduction measures, have a role here.

In a sense the whole design of switchover policy is a form of collaborative risk management. Governments and regulators cannot easily switch off analogue terrestrial broadcasting without migrating existing terrestrial broadcasters to digital terrestrial – and that migration is too risky for the broadcasters unless there is public policy support, at the very least in terms of spectrum allocation and probably also through financial regulation, allowing a viable free-to-view market to develop alongside pay TV. Broadcasters cannot embark upon the transmission investment and new content creation without some assurance from the receiver industry on the supply and marketing of digital receivers.

Neither broadcasters nor the receiver industry will switch out of the analogue market fully without some announcement from government of a firm and reliable switchover timetable which will be enforced. However, governments will only commit to a firm timetable if the consumer proposition of the broadcasters' services and the industry's receivers is strong enough to carry most analogue terrestrial households across to digital TV of their own volition and to minimise the risk of a consumer-voter revolt.

Consumers will only accept the policy without rebelling if they understand the reason for it, if the consumer proposition offers real benefits (one measure of which is the level of voluntary take-up), if the element of compulsion is relatively small, and if help is provided to those who will find switching most difficult. Governments and the industry need to deliver those assurances.

APPENDIX 1: MANAGING A STAKEHOLDER PARTNERSHIP APPROACH

The whole process of digital TV switchover involves various parties – broadcasters and consumers especially – in spending their own money voluntarily, motivated by the benefits they will receive. There is a very high level of interdependence, but, of course, different parties have different interests which need to be reconciled. A successful transition to digital TV involves almost an informal ‘joint venture’ between public policy and the market, and between broadcasters, the receiver industry and consumers.

An open, participative approach to the process is therefore desirable. However, this will need to be structured, in order to facilitate detailed professional work where expertise is required and to avoid paralysis. Moreover, it is important that the different parties continue to take responsibility for their own decisions and do not ‘pool’ their roles inappropriately.

Each country will find its own structure for managing this, influenced by its institutions and established ways of working. Some starting suggestions are:

- consider setting up a formal project on a cross-industry and consumer basis, with government and regulator participation
- decide the objectives of the project and don’t try to do everything at once, e.g. an initial project might be charged with undertaking a feasibility study from a commercial, technical, spectrum management, regulatory, cultural and consumer-centred standpoint, and reporting its findings to government and the wider public
- such activity could be overseen at a high level by a board or committee with broad representation, but of a manageable size
- at the heart of the project might be a full-time project team, drawn from different organisations on a secondment basis, with professional project management expertise, including the ability to map the Critical Path showing what tasks should be undertaken by whom in what order
- specialist groups could undertake specific tasks, with appropriate professional expertise – e.g. covering technical issues, spectrum planning, market preparation and consumer information, regulatory issues, specific government responsibilities (e.g. environmental issues), and any pilots
- in addition there can be a much larger Stakeholder Forum, open to any party with a legitimate interest, to which the project team would make regular reports and where a wide range of issues and concerns can be voiced, for the project team to take on board
- periodic reports from the project team, once approved by the senior level board or committee, can be made public during the process and the project’s final report would be published.

The underlying aim would be to ‘get the work done’ but to do so in a balanced and inclusive way, providing assurance that the process would not be driven by, or captured by, any particular interest at the expense of others.

APPENDIX 2: THE INITIAL CONSULTATION

Assuming that, after augmenting and finalising this paper it is to be published, as the basis for a wide public consultation, it should conclude with some questions on which the public is invited to comment.

Possible questions could include:

1. Do you think Jamaica needs a digital switchover policy? If so, could you give your main reasons? If not, what would you expect to happen as digital television technology becomes more common all over the world?
2. How interested are you in seeing the introduction of new television services? Can you say what particular types of new channels you would like to see and whether they should be national or regional/local?
3. Do you want to see new providers for such new services and, if so, why?
4. Are you interested in seeing new interactive services, such as data or archive video, which can be accessed at the viewer's convenience?
5. Are you interested in the possible development of mobile television, for reception on a portable telephone, for example?
6. Are you interested in the possible provision of high-definition television (HDTV), for high quality reception on large flatscreen TVs, for example?
7. If analogue terrestrial television is switched off, is it important for digital terrestrial television to match its coverage or would it be acceptable for some parts of the country to be served only by cable or satellite TV?
8. Do you have any views on the process to be followed for the selection of technical standards and on the criteria to be used in making decisions?
9. Do you have any views about the terms on which new licences should be granted for the operation of digital terrestrial multiplexes and services?
10. Do you have any views on the 'must carry' obligations appropriate for cable (and any satellite) television in an all-digital broadcasting system?
11. Are there any particular points about the implications of digital switchover for the cable industry which you want to ensure are fully considered?
12. Do you have any views on whether, to assist digital switchover, the sale of analogue TV sets and recorders should at some point be prohibited?

13. Do you think that there are any groups of consumers whose digital reception equipment should be funded by the government (and thus by all taxpayers)? If so, could you please say which groups and why.
14. Do you have any views on the process by which a digital switchover policy might be developed, for example along the lines suggested in Appendices 2 and 3?
15. Do you think the Broadcasting Commission should take an initiative to investigate jointly with the industry stakeholders the possibility of introducing digital radio, and any alternative ways of easing the pressures on the FM band?

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APPENDIX 3: BROADCASTERS AND SUBSCRIBER TELEVISION OPERATORS

RADIO BROADCAST LICENSEES

	LICENSEES	Call Signs	Islandwide Broadcasters	Limited Area Broadcasters
1.	Aeronautical Telecommunications Limited	KOOL 97-FM	<input checked="" type="checkbox"/>	
2.	Alliance Francaise De La Jamaïque	RFI		<input checked="" type="checkbox"/>
3.	British Broadcasting Corporation	BBC	<input checked="" type="checkbox"/>	
4.	Cornwall Broadcasting Company Limited	Mello FM		<input checked="" type="checkbox"/>
5.	Grove Broadcasting Company Limited	IRIE-FM	<input checked="" type="checkbox"/>	
6.		ZIP 103 FM	<input checked="" type="checkbox"/>	
7.	Independent Radio Company Limited	POWER 106FM	<input checked="" type="checkbox"/>	
8.		MUSIC 99 FM	<input checked="" type="checkbox"/>	
9.	Island Broadcasting Company Limited	(KLAS-FM 89)	<input checked="" type="checkbox"/>	
10.	Kommerical Suites Limited	MEGA JAMZ-98FM	<input checked="" type="checkbox"/>	
11.	Mustard Seed Communities	ROOTS FM		<input checked="" type="checkbox"/>
12.	National Religious Media Company Limited	LOVE-FM	<input checked="" type="checkbox"/>	
13.	RJR Communications Group	FAME FM	<input checked="" type="checkbox"/>	
14.		HITZ 92	<input checked="" type="checkbox"/>	
15.		RJR 94 FM	<input checked="" type="checkbox"/>	
16.		RJR AM	<input checked="" type="checkbox"/>	
17.	St. Bess Radio FM Company Ltd.	BESS FM		<input checked="" type="checkbox"/>
18.	Tarrant Baptist Church	TBC		<input checked="" type="checkbox"/>
19.	Western Broadcasting Ltd	HOT 102FM	<input checked="" type="checkbox"/>	
20.	Westmoreland Broadcasting Service Limited	VYBZ FM		<input checked="" type="checkbox"/>
21.	Universal Media Company	NEWS TALK 93 FM	<input checked="" type="checkbox"/>	
22.	Yard Broadcasting Limited	LYNX FM		<input checked="" type="checkbox"/>

TELEVISION BROADCAST LICENSEES

	LICENSEES	Call Signs	Islandwide Broadcasters	Limited Area Broadcasters
1	CVM Television Limited	CVM	<input checked="" type="checkbox"/>	
2	Television Jamaica Limited	TVJ	<input checked="" type="checkbox"/>	
3	LOVE Television	LOVE TV	<input checked="" type="checkbox"/>	

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