This is the **accepted version** of the article:

BONET, M., ALA-FOSSI, M., 2016. Clearing the skies: European spectrum policy and future challenges of DTT in Finland and Spain. International Journal of Digital Television, vol. 7, no. 3, pp. 363-377.

DOI 10.1386/jdtv.7.3.363_1

Clearing the skies: European spectrum policy and future challenges of DTT in Finland and Spain

Marko Ala-Fossi, University of Tampere

Montse Bonet, Autonomous University of Barcelona

Abstract

Digital terrestrial television (DTT) in Europe is facing a serious challenge as it will lose about 30 per cent of its current spectrum resources for mobile services by 2020. European countries originally agreed to release only the 800 MHz band from TV to mobile as the digital dividend. However, over European opposition, the release of the 700 MHz band as the second digital dividend was accepted at the World Radiocommunication Conference (WRC) in 2012 and confirmed in 2015. This article analyses the development of broadcasting and spectrum policies in two DTT pioneer countries to understand their different capacities in adapting to this change in European spectrum policy. Whereas Finland was the first country to decide on rapid release of the second digital dividend, Spain was still struggling to clear the first one. We argue that any geographic and demographic differences explain only a part of the contrast, which is based on divergent national broadcast and spectrum policy contexts.

Keywords

spectrum

policy

television

digital dividend

Finland

Spain

Introduction

Digital terrestrial television (DTT) in Europe is facing a serious challenge as it will lose about 30 per cent of its current spectrum resources for mobile services by 2020. The amount of spectrum to be released as the second digital dividend (96 MHz) is larger than that of the first (72 MHz), and the timetable for the process is also much tighter. It took more than ten years from recognition of the value of the UHF spectrum released in the digitalization of television (Galperin 2004) to an international agreement on the digital dividend as the upper part of the UHF band (470–862 MHz) at the World Radiocommunication Conference in 2007 (WRC-07). While in the rest of the world the digital dividend included both 700- and 800 MHz bands (698–806 MHz), in ITU Region 1 (Europe, the Middle East and Africa) it was defined as the 800 MHz band (790–862 MHz) because the release of the 700 MHz band from television use was considered impossible at that time in Europe (Massaro 2013).

The basis for a European spectrum policy had already been laid in the late 1990s (Michalis 1999; Bonet et al. 2008), but the new supranational regulatory structure was created in 2002, when the

Radio Spectrum Committee (RSC) and the Radio Spectrum Policy Group (RSPG) were established by the European Parliament and the European Commission (EC), respectively. The true essence of the EU policy was defined in the Commission Communications regarding market-based spectrum management and its spectrum policy priorities for the digital switchover in 2005. Some of the EU member states (including Finland and Spain) made national decisions to allocate the entire 800 MHz band for mobile services after the WRC-07, but it took two more years before the EC proposed a coordinated approach – and finally in May 2010, a binding decision on the harmonized use of the 800 MHz band in the European Union. A proposal to clear the 800 MHz band by 2013 was also included in the first EU Radio Spectrum Policy Programme (RSPP), which was approved by the European Parliament and Council in February 2012.

However, this European consensus was broken only two days later. The release of the 700 MHz band also in ITU Region 1 as the second digital dividend was originally not on the WRC-12 agenda, but it was brought up by a group of African and Arab states, backed by the mobile industry. The European states were not able to reject the proposal, but they postponed the implementation so that the re-allocation would be confirmed at WRC-15 (ITU 2013). Most of Europe was upset by this new turn in ITU Region 1 spectrum planning, which Europe had traditionally dominated, but some countries saw this setback as an opportunity for a new approach. Within seven months, Finland was the first EU country to decide on the rapid release of the second digital dividend after 2017 (MINTC 2012), soon followed by Sweden and Germany.

Spain had been among the first EU countries to both implement DTT (2000) and identify the 800 MHz band as the digital dividend (2009), but at the time it was preparing very different national decisions on spectrum use. It turned out it would be impossible to release the 800 MHz if the number of DTT multiplexes was not reduced. In August 2012, the Spanish government and the broadcasters agreed on a 20 per cent reduction in DTT capacity, closing down three multiplexes out

of ten, and the 800 MHz band was finally released for mobile use in March 2015 (Del Valle 2012 2014).

After the loss of consensus on UHF, the EC assigned a High Level Group to produce a report on the future use of the entire UHF band (Lamy 2014), and, based on this report, made a proposal for a joint EU position for WRC-15. The final result of the conference has been considered a victory for Europe. It corresponds well to the Lamy report, which suggested releasing the 700 MHz band by 2020, a review of UHF spectrum use by 2025, and keeping the lower part of the UHF for broadcast use until at least 2030. While the loss of the 700 MHz band for mobile use in Europe was confirmed at WRC-15, the rest of the UHF band remains in DTT use in ITU Region 1 and will not be reviewed until WRC-23. In February 2016, the EC made a proposal for a binding decision on releasing the 700 MHz band in the European Union for mobile use by the end of June 2020 (EC 2016).

This article examines the development of broadcasting and spectrum policies in Finland and Spain to understand the two countries' different strategies and capacities in adapting to this change in European spectrum policy. Finland is a relatively large northern country with a small population, advanced mobile and DTT markets and an average number of households dependent on terrestrial television (47 per cent), whereas Spain is a relatively large southern country with a large population, advanced mobile and DTT markets and a very high proportion of households dependent on terrestrial television (89 per cent).

We argue that geographic and demographic differences explain only a part of the contrast, which is mainly based on divergent national broadcast and spectrum policy contexts. In order to take our comparative analysis beyond simply viewing Finland as an example of the democratic corporatist system and Spain as a representative of the polarized pluralist model (Hallin and Mancini 2004), we have analysed the history of broadcasting as well as the communications and spectrum policies in

both countries from a theoretical perspective, which combines political economy and new institutionalism (Galperin 2004; Brevini 2013).

The analogue age (1920–1997): Similar origins, different monopolies

The origins of broadcasting in Finland and Spain are rather similar: technological experimentation, fascination with the new medium (radio) and interest on the part of the governments to control the new invention. In both countries, all of this started in the local private sector, but that development has been divergent since the 1930s. In Spain, a decree in 1908 established a state monopoly on Hertzian telegraph and on any other invention that might appear in the future. In spite of such tight control over media not yet born, the possibility of making concessions for private companies remained. These origins well characterized what the Spanish broadcasting became in later decades: state control and private initiative operating hand in hand. The country's public radio service was founded in 1937, and when de Civil War was over (in 1939) private stations were not forced to close, but there was a brutal government control over the broadcasters' content (Bonet et al. 2014). The Finnish broadcasting system started with the Wireless Act of 1919, which gave exclusive rights for all radio operations to the newly independent, republic government. After failed experiments with commercial radio, Finland followed the United Kingdom's example by establishing a private, broad-based programme company, Yleisradio (Yle), for nationwide radio in 1926. It was financed by a licence fee, while the broadcast network was owned by the post and telegraph administration. However, in 1934, after the rise of right-wing radicalism, the Parliament increased public control over radio.[1] The state became the main owner (90 per cent) of Yle, and all broadcast stations were transferred directly into Yle ownership. After World War II, in 1948, Yle was brought under parliamentary jurisdiction,[2] and the company itself turned away from daily politics.

As for television, both countries established a monopoly, but where Finland focused on public service TV, the Spanish case is typical of public TV under a dictatorship: a state monopoly

presented as a public service, though it was government-controlled and an arm of propaganda, subject to total censorship and centralization. The history of television in Spain has been just the history of TVE for years. TVE was born in 1956 in very precarious conditions, without a clear model defining what it should be, without a consistent legal basis, and it was the only television network in Spain until the early 1980s. During Franco's time, TVE was a powerful vehicle for propaganda, funded by advertising and receiving no public subsidies. The legal foundations of the corporation were finally laid during the transition period (after Franco died in 1975), but public subsidies were gradually withdrawn, and hence TVE reached the mid-1990s with an unsustainable debt of over 1500 m€.

Another important difference was advertising, which was permitted in Spanish broadcasting from the very beginning but only allowed on Finnish TV beginning in 1957. To avoid the threat of both cross-border Soviet TV and domestic private TV, Yle had to invest in TV. The de facto broadcast monopoly was turned into a business model, as Yle's licence was changed to allow advertising on TV in 1957, and Mainos-TV[3] (MTV) was established to buy broadcast time from Yle TV1 (after 1965, also TV2) for its advertising-financed programmes. As MTV received a monopoly on TV advertising, Yle was selling broadcast time as the sole broadcast licence holder and as the owner of the network, Yle received all the revenues.

This is an illustrative example of the principles of Finnish broadcasting policy tradition: structural regulation of the market; economic pragmatism; political compromise; and cultural protectionism (Hellman 2010; Jääsaari 2007). The Spanish broadcasting system in the mid-1990s was based on terrestrial free-to-air delivery, funded by advertising (until 2010), and it had a three-layer structure that corresponded exactly to the decentralization process designed during the Transition. As noted in a previous work (Bonet et al. 2014), decentralization was the result of the different political concepts that existed at the origin of the process and were maintained for the following decades.

The decentralization process resulted in a gigantic, sometimes repetitive system in both the public and private sectors, which was unmanageable, especially in an economic crisis.

The deregulation process that started in the 1980s brought these two different systems closer to each other. Finnish radio remained a Yle monopoly until a shift towards more liberal regulation in 1985. In television, the old symbiosis of the two TV broadcasters together with increasing competition from cable and satellite led in 1986 to the introduction of Kolmoskanava,[4] jointly owned by Yle, MTV and Nokia, and the third largest European TV manufacturer at the time (Ala-Fossi 2012a). MTV took over the channel as MTV3 after obtaining its own licence in 1993. Yle's position was strengthened by Parliament with a special law on its public service remit,[5] and the dual monopoly of Yle and MTV3 was able to continue in an updated form.

Moreover, in 1986, when Spain joined the European community, the member states were already in the process of 'deregulating' their communications policies. In addition, Spain did not opt to break public television into pieces but rather chose to launch new regional public television networks and allow the private sector to expand.[6] This policy produced a multi-layered system with both private and public broadcasting organizations on each of the three political-administrative levels (national, regional and local). Unfortunately, the regional public broadcasters copied their organizational structures from TVE and thus reproduced the same problems.

Broadcasting in transition (1995–2007): Towards digitalized markets

As noted earlier, deregulation started blurring the differences between Finland and Spain in the 1980s. In the next decade, this process continued with privatization of the national terrestrial television broadcast networks in both countries.

In Finland, while private local radio built its own stations, the MTV3 commercial TV monopoly was dependent on Yle's infrastructure. In addition to its transmission expenses, MTV3 had to pay Yle a 'public service fee' based on the annual turnover of its advertising sales. In this context, the

guidelines for an even more liberalized broadcasting policy were drafted by the Ministry of Transport and Communication (MINTC). The suggestions were quite similar to those the UK government had made a few months earlier: in the emerging information society, Yle could remain neutral to new companies entering the market only if the networks were incorporated into a separate company. This confirmed that the future of national television would be based on the 'existing' terrestrial networks – but owned by someone other than Yle. An ambitious timetable for building the digital platform with no state funding practically forced Yle to divest the networks. As the new subsidiary, Digita started in 1999 with a value of about 250 m€ (Hänninen and Pietilänen 2014). The original plan was to sell a third of Digita to Sonera, formerly Telecom Finland, but Sonera withdrew when it turned out it would not receive a digital TV licence if it owned any Digita shares. So, Yle set up an auction, which was won by Telediffusion de France (TDF), the fully owned subsidiary of France Telecom. TDF bought half of Digita in 2000 and the remainder in 2005 for 300 m€. In the meantime, TDF itself had been sold to private investors. Thus, the networks, as a cornerstone of digital TV as a 'national project', were effectively privatized into foreign hands (Galperin 2004; Miettinen 2006; Jääsaari 2007; Hellman 2010).

For many years, both public and private Spanish radio stations had their own antennas and towers. In the case of television, infrastructure (named Red Técnica Televisión Española) belonged to the state since only TVE existed. When the first public regional radio and television stations appeared, each regional government ordered its own infrastructure. However, the launch of private television forced the creation of an independent public company different from the one managing the TVE technical network. Retevisión (Red Técnica Española de Televisión) was thus born in 1989 to distribute the signal of these new private operators. Led by Partido Popular[7] (PP), the government decided in 1997 to turn Retevisión into a second telecom operator and privatize it to break the monopoly of Telefónica. The liberalization of the sector forced rule changes, and Retevisión lost its

monopoly in 2000 as new companies, especially regional ones, were created. Abertis purchased Retevisión Audiovisual (broadcast distribution division) in 2003.

This was the time when most European governments launched projects aimed at the digitalization of broadcasting, but there were some important differences in these processes. According to Jääsaari (2007), there were three major transformations in Finnish broadcasting policy:

1. A shift in balance from public interest to private interest. The Finnish government decided to let the broadcasters pay all the expenses related to digitalization. In order to raise money from the market, new nationwide analogue licences were granted to Sanoma (Nelonen TV) and MTV3 (Radio Nova) in 1996, with the obligation to invest in digital broadcasting. The competence of the government to establish a 'public service fee' was questioned, which led to a new law[8] that required all commercial broadcasters to pay a share of their turnover as an 'operating licence fee'. However, these fees were collected only from TV channels, reduced to half in 2002, and abolished completely in 2007 along with analogue TV broadcasting (Hellman 2010; Ala-Fossi 2012b).
2. A growing tendency to refer to rules and norms of the market. MINTC had already started planning a legislative reform in 2000 in order to make the same laws apply to telecommunication and broadcasting networks. During this process, it was agreed that the 'operating licence fee' would be abandoned. Yle would be financed only by the licence fee, but it was allowed to distribute PSB content on any platform as long as it was provided on the same terms. The new legislation for converged media markets[9] also set the conditions under which Digita would run its business in Finland (Hujanen 2005; Jääsaari 2007)
3. A reconceptualization of the operating environment of Finnish broadcasting since market steering and competitiveness were seen as better ways to improve consumer choice than state intervention. However, this *marketization* was implemented not only through new licensing policy decisions (Hellman 2010) and legislation but also by redefining the

'terrestrial market' within the larger communication market (Jääsaari 2007: 114). As the first private DTT programme licences were granted in 1999, the licensees were still required to promote freedom of speech and diversity[10] (Hellman 2010; Miettinen 2006). The first multiplex was for the five Yle channels. The second was given to MTV3 and the third to Nelonen, both accompanied with three new channels. Digita had begun building the networks in 1999, and so the problem after the launch of DTT services in 2001 was not coverage but a lack of receivers. All three new DTT network licences were granted to Digita in 2002 (Miettinen 2006), and when Digita later received licences for its fourth and fifth multiplexes, in practice, it had a DTT distribution monopoly for ten years (1999–2009).

Meanwhile, the digitalization of terrestrial television broadcasting in Spain involved three consecutive stages (García Leiva 2008; Suárez Candel 2011):

1. Choosing and implementing a digital pay-TV platform (Quiero TV), following the UK model, which was adapted to provide both national and regional coverage according to the political-administrative organization of the Spanish state of autonomous communities: Quiero TV was launched in an unoccupied upper part of the UHF spectrum. It was a DTT pay-TV platform, with a business model copied from satellite television, and, as it appeared, the two satellite pay-TV platforms (Canal Satélite Digital and Vía Digital) were already negotiating a merger (completed in 2003).
2. Regulating local DTT following the bankruptcy of Quiero TV in 2002: The PP-led government froze the reallocation of its 14 channels (three and a half multiplexes) and opted to make local television the new 'runaway train' of the digitalization process, passing two new laws and issuing a decree.[11] So, local television in Spain was finally legalized through digitalization, but despite the law it was never developed as there was no technical plan.

3. Reorienting, where national and regional public networks together with local television policies were given a leading role: Perhaps the most relevant aspect in this process is that the UHF spectrum that Quiero TV had occupied was re-assigned in 2005 to national private TV (Cullell 2011). Together with UHF channels assigned to regional use, these spectrum allocations were located on the particular frequency band (800 MHz) that was soon chosen as the digital dividend throughout Europe. If we sum the complexity of a three-layer television system and the fact that the digital dividend was effectively assigned to TV operators, it is easier to understand the later development in Spain.

The digital age (2007–2015): Expanding TV, shrinking spectrum

The most recent decade has witnessed increased competition over the radio spectrum between the broadcast and telecom industries. Moreover, broadcasting has been faced with serious financing problems. Finland was able to complete the analogue switch-off (ASO) in 2007 while Spain did so in 2010.

Curiously enough, in 2007 the Spanish government approved a plan for a gradual transition to DTT based on earlier plans, and two new analogue TV operators were granted licences. The first operator was not exactly new: Sogecable, owner of Canal +, was allowed to offer its entire programme schedule free-to-air, and as a result Cuatro was launched. Later, the same Cabinet set up a contest for a new national analogue TV channel – and the channel that operated as La Sexta won. The independence of these new entrants was quite short because in 2011 Mediaset (Telecinco) and Cuatro merged, and Antena 3 absorbed La Sexta in 2012.

Right after the ASO, there was a high commercial demand for DTT capacity in Finland. According to Digita, if any capacity was released, it was sold to the first bidder, and so no community DTT had a chance (Ihanus 2007) – which was not a problem as Finnish legislation does not recognize

community broadcasting. As noted, Digita had all the national network licences, and so it was able to control the market. But MINTC made no effort to foster competition in national DTT distribution until a new nationwide DVB-T2 network licence was granted to telecom operator DNA in 2009. The Finnish Communications Regulatory Authority (FICORA) had set restrictions on Digita pricing because of its significant market power in terrestrial television delivery. Despite this, almost half of Digita's turnover in 2007 was profit, and Yle, MTV3 and Sanoma complained about Digita's pricing practices to FICORA. The issue was taken to the Supreme Administrative Court, which rejected the complaint in 2012. Although Digita remained highly profitable, TDF sold it to First State Investments in 2012 (Hänninen and Pietilänen 2014).

In 2008, pay-TV expanded rapidly to reach about a third of Finnish TV households, and it was expected to drive growth together with DVB-H mobile TV. But DVB-H failed (Ala-Fossi 2012a) and pay-TV stalled. While TV consumption was growing, advertising sales were not, and increasing commercial competition (with Fox and SBS) as well as big misinvestments forced MTV3 and Sanoma to cut their broadcast activities. Yle got into financial problems as it lost private sector revenues and its licence fee income started to decrease. In an urgent cost-cutting move in 2007, it first replaced its YLE24 news channel with a less expensive concept and shut it down eight months later, reducing the number of Yle DTT channels to four. The need for funding reform was obvious, but it took four years to reach political agreement on such reform. A new Yle tax secured funding but also cut the link between broadcasting and income (Ala-Fossi 2012b).

Regarding the Spanish transition to digital, the television landscape was shaken by a new unexpected change – very typical in a clientelistic system, in which television is considered an important political tool (Fernández-Quijada and Arboledas 2013). In general elections in December 2011, PP returned to power, and the new government soon faced a new problem as the future reallocation of the 700 MHz band from broadcast use came up in February 2012. The plans for using spectrum auction revenues to cover the cost of clearing the 800 MHz band were cancelled in

March 2012, and the new government suggested that the broadcasters should give up about half of the 45 DTT channels previously licensed until 2025 to make the transition cheaper, and pay most of the remaining expenses as well. After the EC had decided 'not to object' to covering the expenses of the DTT re-tuning for Spanish households, although it suspected any compensation for the broadcasters to be a form of state aid violating the principle of technological neutrality,[12] an agreement for a significantly smaller (20 per cent) reduction in DTT channel capacity was reached in Spain in August 2012 (Del Valle 2012).

Only a few months later, in December, the Supreme Court of Spain declared that the DTT licensing process of the previous socialist government in July 2010 had been invalid. The Council of Ministers had awarded a full multiplex to each of the existing national commercial broadcasters (Antena 3, Gestevisión Telecinco, Sogecable, Veo TV, NET TV and La Sexta) without any public tender. The Supreme Court ruled in favour of Infraestructuras y Gestión 2002 SL, the company that had been left without any licence and made a complaint – but only in part – and it ordered the closure of just nine channels. The operator appealed again, but this time the complaint was rejected. The closure of channels was made in May 2014 and, obviously, despite criticism and protests from the operators and the audience.

While deregulation brought the countries closer to each other, the diverging political and economic perspectives on broadcasting and the use of the radio spectrum separated them, although both countries had conservative-led governments. After June 2011, Finnish communication policy was further liberalized by two coalition governments led by Kokoomus,[13] which created a new spectrum policy and communications legislation. In this new context, Yle also shifted its focus from broadcasting to new media and started publicly considering telecom networks as alternatives to broadcast networks (2012, 2014).

Until an experimental auction in 2009, Finland had granted all mobile network licences through a political process (and indirectly subsidized the telecom sector). Now, however, the government adopted a new policy[14] in order to auction the spectrum as well as introduce other market value-based spectrum fees. In May 2012, MINTC drafted new communications legislation, which introduced more market-based regulatory practices and a plan for clearing the 700 MHz band with a gradual switchover to DVB-T2. MINTC argued for abandoning all content regulations for private broadcasting since there was no scarcity to regulate: about half of the existing capacity of the DTT infrastructure on the UHF band (4 mux or 20–80 channels) remained empty and unused (Miettunen 2013). The first real spectrum auction in Finland for the 800 MHz band in October 2013 created a modest 108 m€ revenue for the state. In 2015, the new communications legislation[15] gave FICORA the right to grant programme licences for TV and radio broadcasting to all applicants, as long there was no competition over the available spectrum. Interestingly enough, the share of Finnish households with access to cable, satellite or IP-based TV is about the same today as it was twenty years ago, while the remaining half is still dependent on DTT broadcasting (FICORA 2014).

Although Spain had auctioned the 800 MHz band for 1.3 bn€ in 2011, three years later it was still in the process of clearing it. In the autumn of 2014, over ten million Spanish households had to re-tune DTT equipment as the 800 MHz band was finally about to be released. Following the EC's earlier decision, the Spanish government paid the 286 m€ bill for readjusting antenna systems in about a million buildings around the country. Later that year, other stakeholders such as the Federation of Regional Organizations of Radio and Television (FORTA) and the Association of Commercial Television (UTECA) called for a moratorium, claiming that more than 50 per cent of the antennas could not be changed in such a short time. As the Ministry of Industry, Energy and Tourism announced in December 2014 that it would grant five more DTT channels, the Spanish government also gave up and delayed the final DTT re-tuning until March 2015.

Discussion

The most fundamental differences between Finnish and Spanish DTT development are related to the countries' sizes and geopolitical locations on the opposite edges of the European Community as well as their respective national contexts and traditions in broadcasting and spectrum policy. Finland remained a parliamentary democracy, and its transition to a more liberal media policy occurred gradually and in rather small steps. In Spain, however, the process of creating a new audio-visual system was part of a wider democratization and political decentralization. Both public and private sectors evolved into three-layer systems, with parts that were neither compatible nor manageable. And when the time came to make a transition to DTT, it was politically much less difficult to find ways to preserve the existing structure in the digital age than to try reforming it.

The current paradox of the Spanish DTT is perhaps that it is now in trouble, mostly because in previous years it had been considered to be of utmost social, political and cultural importance for Spanish society. Finland started the digitalization of broadcasting in 1996 from rather similar settings as the terrestrial network was understood to be one of the cornerstones of national television, but about five years later the MINTC was already preparing a technologically neutral new policy and legislation, which effectively redefined terrestrial broadcasting as a single market within the marketplace of communications. Unlike in Spain, the Finnish government never had any ambition or desire to use the whole UHF band for DTT since the 800 MHz band was occupied by Russian military aviation at that time.

However, when Spain first introduced DTT in 2000, the number of existing analogue channels was already so high that pay-TV channel Quiero TV had to be launched on a previously unoccupied part of the UHF band, which was considered to be part of the available DTT spectrum. As the clientelist political system started to transfer the decentralized three-layer TV broadcasting system into the digital age, the entire UHF spectrum was occupied for TV without making reservations for any other kind of use. The socialist cabinet (2004–2008) had such a strong commitment to DTT that it

decided to neglect the importance of the digital dividend at the same time it was giving state subsidies to the DTT platform providers.

Perhaps the most influential stakeholders supporting the digitalization of broadcasting and lobbying national policy-makers to establish DTT in the 1990s were the European public service broadcasters (PSB). They wanted to protect themselves from competition with cable and satellite as well as secure their potential for future expansion. Nordic PSBs, including Yle, became 'digital locomotives' to information society – which set them even further apart from state-owned broadcasters in southern Europe, such as RTVE in Spain (Syvertsen et al. 2014: 76; Ala-Fossi 2012b). As this approach turned out to be successful, it was also adopted in Spain about ten years later when DTT was re-launched in 2005.

About another ten years, ten DTT channels and 300 m€ later – after the whole UHF band was allocated for broadcast use in Spain – the last remaining DTT transmitters were cleared off the 800 MHz band at the end of March 2015. Now, when all European countries should also be releasing the 700 MHz band for mobile use by 2020, it is obvious that this process is going to be very demanding in Spain. More than 30 per cent of operational Spanish DTT assignments are on the 700 MHz band, and the huge number of these assignments (2525) makes things even more complicated. There is no way of fitting the existing DTT channels into the remaining part of the UHF band just by re-organizing the spectrum allocations (Morgen 2015).

In practice, the release of the second digital dividend in Europe will require a coordinated transition from the first-generation digital television (DVB-T) to a more advanced and spectrum-efficient system (DVB-T2) – in other words, another digital switchover of television throughout the entire European Union. When compared to Spain, the process will be relatively easy in Finland, which has been preparing since 2009, making plans for the transition to DVB-T2 and re-allocating the whole VHF III band spectrum (56 MHz) for DTT use. However, this does not mean that the transition will

be somehow unproblematic in Finland; it will require additional investments in DTT networks as well as consumers replacing their receivers in a given time.

Conclusion

Although both Finland (2007) and Spain (2010) were able to make a successful switchover, DTT never became a gateway to the information society as hoped. Despite steadily growing TV consumption, there is now increasing pressure to re-allocate the valuable UHF spectrum to other uses that are more likely to generate new economic activities and jobs.

As noted earlier, the Finnish communications policy tradition is very pragmatic. Even highly political issues have often been discussed mainly as technical and economic arrangements, and so it is possible to argue that the lack of open politics has been one the most typical characteristics of past policy decisions. To some extent, Finnish communications policy has always been about industrial and economic policy, with the means and tools of media and cultural policy. As the emphasis of Finnish government policy-making has shifted from striving for economic growth for the welfare of citizens to the more neo-liberal effort of improving the competitiveness of the national economy (Pelkonen 2008), this tendency is now clearer than ever. On the contrary, although Spain is part of the European Union and must accept the European policy framework, it continues to be an example of a clientelistic system, where *path dependency* has a strong influence and implies a great resistance to change (Brevini 2013).

The Finnish solution to decrease pressure on consumers was to require broadcasters to simulcast DTT with both standards until 2026 (MINTC 2014), which creates extra expense for the broadcasters, and especially for the public service Yle, for which funding and remit is currently under parliamentary review. With over 9000 operational DTT assignments, Spain does not even have the option of extensive simulcasting (Morgen 2015), so there has to be a politically accepted system for prioritization of the channels and services in the transition process.

It is interesting that in the mid-1990s, when the Finnish government decided to build the future of national television on DTT networks, the proportion of households dependent on free-to-air television was not much higher than it is today. However, the interpretation of these figures had already changed by the end of the decade, with broadcasting redefined as a single market among other electronic communication markets (new Directive framework in 2002), and Finland became a European spearhead of market-oriented communications legislation. In addition, Yle has changed: ten years after it sold its broadcast networks, the company is considering the reduction of broadcast channels or even replacing broadcasting with IP delivery. In the short term, this may cut spending, but there are risks involved. PSBs have very few priorities outside the broadcast domain. The paradox is that, although Spain also has a market-oriented perspective, the deep-rooted social and political influence of broadcasting has made it more resistant to change.

European countries used to have separate legislation and spectrum policies for the telecom business and broadcasting, which were then used as tools for implementing national communication policy goals. The traditional sector barriers have been taken down in the name of convergence and technological neutrality – although the developments in technologies and markets in real life have not actually followed these paradigms. Instead, it seems that we are witnessing a coexistence of broadcasting and telecommunication in the digital environment, where it is not possible to remain neutral; it is necessary to harmonize the use of the spectrum between the two forms of communication to avoid interference. There is also increasing competition over resources between broadcasting and mobile telecommunication, which is especially clear in the case of the 700 MHz band.

Based on our findings, we argue that both Finnish and Spanish media policy have taken a liberal turn. The process of (neo)liberalization has also been intensified along with the implementation of market-oriented EU policies such as RSPP, but in both countries in parallel, within their own context and policy traditions, and in line with the subsidiarity principle. Digital TV is still using the

most valuable spectrum resources while its economic output has grown less than expected. Its continuing importance in creating social and cultural value tends to be increasingly neglected, especially when making social judgements primarily from an economic standpoint (Delaere and Cullell-March 2014). In Finland, there seems to be more internal or market-related pressure among broadcasters to cut down DTT broadcast services, while in Spain further cuts in DTT are most likely structural and the result of increasing external political pressure on TV broadcasters.

The digitalization of broadcasting and the new uses of the spectrum have put the relationships among institutions to the test. The weight of national communication policies shapes and qualifies the pan-European approach to the radio spectrum as a key resource in technological development for new economic growth.

Acknowledgements

This article is part of a four-year research project entitled 'Broadcasting in the post-broadcast era: Policy, technology, and content production', which is funded by the Academy of Finland (2013–2017).

References

Ala-Fossi, M. (2012a), 'For better pictures on radio: How Nokia's efforts for multimedia radio have shaped the radio landscape in Finland', in J. A. Hendricks (ed.), *The Palgrave Handbook of Global Radio,* Basingstoke and New York: Palgrave Macmillan, pp. 109–28.

____ (2012b), 'Social obsolescence of the TV fee and the financial crisis of Finnish public service media', *Journal of Media Business Studies*, 9:1, pp. 33–54.

Bonet, M., Arboledas, L. and Guimerà, J. A. (2014), 'Past boundaries, future limitations: Spanish public service broadcasting at risk', paper presented at *RIPE@2014 Conference*, Tokyo, 27–29 August, http://ripeat.org/wp-content/uploads/tdomf/3387/Bonet%20et%20al%20RIPE%20paper%202014.pdf. Accessed 5 March 2015.

Bonet, M., Civil, M. and Llinés, M. (2008), 'Una Década de Políticas de Gestión del Espectro Radioeléctrico en la Unión Europea (1997–2007): Análisis de las consultas públicas, el marco normativo y las prioridades estratégicas'/'A decade of radio spectrum management policy in the European Union (1997–2007): Analysis of public consultations, legal framework and strategic priorities', *Observatorio Journal*, 2:4, pp. 40–61.

Brevini, B. (2013), *Public Service Broadcasting Online*, Basingstoke and New York: Palgrave Macmillan.

Cullell, C. (2011), 'Harmonisation of the digital dividend in the European Union and its impact on national DTT planning in the United Kingdom and Spain', *Quaderns del CAC 36*, XIV:1, pp. 69–77.

Del Valle, D. (2012), 'Spain agrees to reshape DTT market', *Advanced Television*, 24 August, http://advanced-television.com/2012/08/24/spain-agrees-to-reshape-dtt-market/. Accessed 5 March 2015.

____ (2014), ‘Unanimous call to extend DTT reset deadline’, *Advanced Television*, 14 December, http://advanced-television.com/2014/12/04/unanimous-call-to-extend-dtt-reset-deadline/. Accessed 5 March 2015.

Delaere, S. and Cullell-March, C. (2014), ‘Radio spectrum policy in the EU: Concepts, trends, issues’, in K. Donders, C. Pauwels, J. Loisen (eds), *The Palgrave Handbook of European Media Policy*, Basingstoke and New York: Palgrave Macmillan, pp. 360–82.

European Commission (EC) (2016), ‘Proposal for a decision of the European Parliament and of the council on the use of the 470–790 MHz frequency band in the Union’, COM (2016) 43 final, Brussels, 2 February, http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=COM:2016:43:FIN&from=EN. Accessed 3 February 2016.

Fernández-Quijada, D. and Arboledas, L. (2013), ‘The clientelistic nature of television policies in democratic Spain’, *Mass Communication and Society*, 16:2, pp. 200–21.

FICORA (2014), ‘Communications sector review 2013’, Helsinki: Finnish Communications Regulatory Authority. https://www.viestintavirasto.fi/attachments/toimialatieto/toimialakatsaus_2013_EN_web.pdf.Accessed 10 February 2015.

Galperin, H. (2004), *New Television, Old Politics*, Cambridge: Cambridge University Press.

García Leiva, M. T. (2008), 'DTT in the UK and Spain: A comparative policy analysis (1998–2006)', *Info – The Journal of Policy, Regulation and Strategy for Telecommunications*, 10:3, pp. 39–50.

Hallin, D. and Mancini, P. (2004), *Comparing Media Systems: Three Models of Media and Politics*, Cambridge and New York: Cambridge University Press.

Hänninen, J. and Pietilänen, T. (2014), 'Suomen tv-verkosta tuli ulkomaisten sijoittajien rahasampo'/'Finnish TV broadcasting infrastructure was turned into a moneymaker for foreign investors', *Helsingin Sanomat*, 17 August, C1–C5.

Hellman, H. (2010), 'Liberal turn in media policy: The case of Finland's digital television', *International Journal of Digital Television*, 1:2, pp. 193–213.

Hujanen, T. (2005), 'Implications for public service broadcasters', in A. Brown and R. G. Picard (eds), *Digital Terrestrial Television in Europe*, Mahwah, NJ: Lawrence Erlbaum Associates Publishers, pp. 57–84.

Ihanus, M.-L. (2007), 'Järjestöille ei riitä: Digi-tv-taajuuksista kova pula'/'Not enough space for associations: Severe shortage of DTT frequencies', *Digitoday*, 18 December. http://www.digitoday.fi/yhteiskunta/2007/12/18/digi-tv-taajuuksista-kova-pula/200732197/66. Accessed 5 March 2015.

ITU (2013), 'The second digital dividend: Another bite for mobile?', *ITU News*, no. 2, 20 March. https://itunews.itu.int/en/3744-The-second-digital-dividend-Another-bite-for-mobile.note.aspx. Accessed 5 March 2015.

Jääsaari, J. (2007), *Consistency and Change in Finnish Broadcasting Policy: The Implementation of Digital Television and Lessons from the Canadian Experience*, Åbo: Åbo Akademi University Press.

Lamy, P. (2014), 'Results of the work of the High Level Group on the future use of the UHF band (470–790 MHz). report to the European Commission', 1 September. http://ec.europa.eu/digital-agenda/en/news/report-results-work-high-level-group-future-use-uhf-band. Accessed 5 March 2015.

Massaro, M. (2013), 'What is the digital dividend? State of play in Europe', Rome, Italy: Luiss Guido Carli University Master's Degree in Economics, Rules and Markets.

Michalis, M. (1999), 'European Union broadcasting and telecoms: Towards a convergent regulatory regime?', *European Journal of Communication*, 14:2, pp. 147–71.

Miettinen, J. (2006), *Havaintoja digitv:n ensimmäiseltä 10-vuotiskaudelta Suomessa/Observations the First 10 years of Digital TV in Finland*, Research report 1, Helsinki: University of Helsinki.

Miettunen, H. (2013), 'Kaupallinen potentiaali ei riitä Suomessa kuin puoleen kapasiteetista; Tyhjän panttina 80 tv-kanavaa'/'Finland has commercial potential only for half of the capacity: 80 TV channels standing empty', *Turun Sanomat*, 16 November. p. 14.

MINTC (2012), 'Communications policy programme for electronic media', Government report to the Parliament of Finland. Helsinki: Ministry of Transport and Communications. http://www.lvm.fi/lvm-mahti-portlet/download?did=80234. Accessed 10 February 2015.

____ (2014), 'Terrestrial television: The next technology transition', Working Group Interim Report, Publications of the Ministry of Transport and Communications 3/2014. Helsinki: Ministry of Transport and Communications. http://www.lvm.fi/documents/20181/797516/Julkaisuja+3-2014/d7328592-9524-420d-b6cc-05287feb3e93?version=1.0. Accessed 10 February 2015.

Morgen, M. (2015), 'Repurposing the 700 MHz Band. Broadcast network options and costs', LS telcom presentation, Brussels, 8 December, https://ec.europa.eu/digital-agenda/en/news/workshop-study-economic-and-social-impact-repurposing-700-mhz-band-wireless-broadband-services. Accessed 8 December 2015.

Pelkonen, A. (2008), *The Finnish Competition State and Entrepreneurial Policies in the Helsinki Region* (Research Reports No. 254), Helsinki: Department of Sociology, University of Helsinki.

Suárez Candel, R. (2011), 'Public policy best practice in the field of Digital Terrestrial Television: Lessons from Sweden and Spain', *International Journal of Digital Television*, 2:3, pp. 297–321.

Syvertsen, T., Gunn, E., Mjøs, O. and Moe, H. (2014), *The Media Welfare State: Nordic Media in the Digital Era*, Ann Arbor: The University of Michigan Press.

Yleisradio (Yle) (2012), 'Yle Strategy 2012–2014', http://yle.fi/yleisradio/about-yle/yle-strategy. Accessed 5 March 2015.

____ (2014), ‘Long term AV-media delivery’, Janne Holopainen, Media Regulation Manager, Finnish Broadcasting Company, 16 October, https://drive.google.com/file/d/0B-S8Z6qbqH8WZk1CNDhQWVRSN3M/view?pli=1. Accessed 5 March 2015.

Contributor details

Marko Ala-Fossi (D.Soc.Sc.) is a university lecturer at the University of Tampere, Finland. He currently works as a research fellow and research group coordinator (Focus A) in a four-year research project entitled ‘Broadcasting in the post-broadcast era: Policy, technology and content production’ funded by the Academy of Finland (2013–2017). He is a former news journalist, producer and market analyst at the Finnish Broadcasting Company (YLE) (1989–2004). His research interests include media policy, political economy and social shaping of the new media delivery technologies.

Montse Bonet is a tenured lecturer at the Autonomous University of Barcelona, Spain. She is the Spanish partner of the project group (Focus A) involved in a four-year research project entitled “Broadcasting in the post-broadcast era: Policy, technology and content production’ funded by the Academy of Finland (2013–2017). She has a Ph.D. degree in Information Sciences (UAB) and an International Master’s degree in e-learning (Universitat Oberta de Catalunya, UOC, Open University of Catalonia). Her main research subjects include cultural industries (especially radio industry), ICT, audio-visual public service and media policy.

Contact: marko.ala-fossi@uta.fi; montse.bonet@uab.cat

Notes

[1] Radio Company Act (216/1934).

[2] Amendment of Radio Company Act (774/1948), ‘Lex Jahvetti’.

[3] Advertising-TV.

[4] Channel Three.

[5] Act on Yleisradio (1380/1993).

[6] Law 10/1988 – but broadcasting was not started until 1990.

[7] People’s Party.

[8] Act on the State Television and Radio Fund (745/1998).

[9] Communications Market Act (393/2003).

[10] Act on Television and Radio Operations (744/1998).

[11] Law 53/2002 and 62/2003 and the Royal Decree 439/2004.

[12] 2012/C 213/03.

[13] National Coalition Party.

[14] Government Resolution on Spectrum Policy.

[15] Information Society Code (917/2014).