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*Citation for published version (APA):*

van Eijk, N., & van der Sloot, B. (2011). How television went digital in the Netherlands. (Mapping digital media. Reference series; No. 11). Londen: Open Society Foundations.

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# MAPPING DIGITAL MEDIA: HOW TELEVISION WENT DIGITAL IN THE NETHERLANDS

By Nico van Eijk and Bart van der Sloot



# Case Study: How Television Went Digital in the Netherlands

WRITTEN BY

Nico Eijk and Bart van der Sloot<sup>1</sup>

The Netherlands was the second country in Europe to switch off traditional analog television. On 11 December 2006, some three months after Luxembourg had taken this step, the analog terrestrial signal was switched off and the same frequencies are now primarily used for digital broadcasting.

The Netherlands was and is a densely cabled country. The fact that less than 1.5 percent of households were dependent on analog terrestrial television was the key precondition for the successful switch-over.

After describing the background of switch-over, this paper summarizes the development of digital television in the Netherlands, analyzing such key policy issues as: technical decisions on access for public television, the allocation of broadcasting licenses, license conditions, roll-out obligations, and issues with regard to regional broadcasting organizations.

In conclusion, the authors consider the effects of switch-over on the Dutch media landscape.

(This paper partners the Mapping Digital Media country report on the Netherlands.)

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# Mapping Digital Media

The values that underpin good journalism, the need of citizens for reliable and abundant information, and the importance of such information for a healthy society and a robust democracy: these are perennial, and provide compass-bearings for anyone trying to make sense of current changes across the media landscape.

The standards in the profession are in the process of being set. Most of the effects on journalism imposed by new technology are shaped in the most developed societies, but these changes are equally influencing the media in less developed societies.

The Media Program of the Open Society Foundations has seen how changes and continuity affect the media in different places, redefining the way they can operate sustainably while staying true to values of pluralism and diversity, transparency and accountability, editorial independence, freedom of expression and information, public service, and high professional standards.

The **Mapping Digital Media** project, which examines these changes in-depth, aims to build bridges between researchers and policy-makers, activists, academics and standard-setters across the world.

The project assesses, in the light of these values, the global opportunities and risks that are created for media by the following developments:

- the switchover from analog broadcasting to digital broadcasting
- growth of new media platforms as sources of news
- convergence of traditional broadcasting with telecommunications.

As part of this endeavor, the Open Society Media Program has commissioned introductory papers on a range of issues, topics, policies and technologies that are important for understanding these processes. Each paper in the **Reference Series** is authored by a recognised expert, academic or experienced activist, and is written with as little jargon as the subject permits.

The reference series accompanies reports into the impact of digitization in 60 countries across the world. Produced by local researchers and partner organizations in each country, these reports examine how these changes affect the core democratic service that any media system should provide – news about political, economic and social affairs. Cumulatively, these reports will provide a much-needed resource on the democratic role of digital media.

The **Mapping Digital Media** project builds policy capacity in countries where this is less developed, encouraging stakeholders to participate and influence change. At the same time, this research creates a knowledge base, laying foundations for advocacy work, building capacity and enhancing debate.

The **Mapping Digital Media** is a project of the Open Society Media Program, in collaboration with the Open Society Information Program.

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# I. Background

## Public and Commercial Broadcasters

Dutch television after the analog/digital switch-over is still a “dual system” of public and commercial broadcasting. In the analog era, only national and regional public broadcasters were allowed to use terrestrial frequencies. This restriction was driven by priority rights that were granted to public broadcasting and by the fact that frequencies were scarce. Other television broadcasters (local public broadcasters and commercial broadcasters) had to use different means of distribution, especially cable television.

The Netherlands has three national public television channels (Nederland 1, Nederland 2, and Nederland 3), which belong to Netherlands Public Broadcasting (*Nederlandse Publieke Omroep*, NPO), as well as various digital channels (including catch-up television, called *Uitzending gemist*) that are mainly distributed on the internet or on digital channels of the cable television networks. Eleven of the 12 provinces of the Netherlands have one regional channel, and one province has two. Furthermore, the public sector includes a world service (*Radio Nederland Wereldomroep*), providing a satellite television service in cooperation with the Flemish public broadcaster in neighboring Belgium, and offering a selection of the national public channels. About 300 local public broadcasters cover almost every municipality; about 40 percent of these offer television broadcasts.

The RTL Group and the SBS Broadcasting Group are the main providers of commercial broadcasting. Both are owned by large publicly listed international media businesses (Bertelsmann AG and ProSiebenSat.1 Media AG, respectively). RTL has four channels with national coverage: RTL 4, RTL 5, RTL 7, and RTL 8. It also broadcasts RTL 24, which was specially created for DVB-H and RTL Lounge, and can be received on digital television only. SBS Broadcasting runs three channels: NET 5, SBS 6, and Veronica TV. SBS is still in its infancy as far as the development of digital services is concerned. Both RTL and SBS offer the option of watching programs that have already been broadcast (catch-up television as an on-demand service).

The Netherlands was and is a densely cabled country. Before switch-over, 93 percent of households received cable television, which at that time equaled 6.5 million households. Fewer than 1.5 percent of households depended on analog terrestrial television for their main television connection. A larger number of households used analog terrestrial television for a second home in the countryside or for a second television set at home.

Around 7 percent of households (around half a million) used a satellite dish to receive television. Around half of the households with a satellite dish also received television through cable.

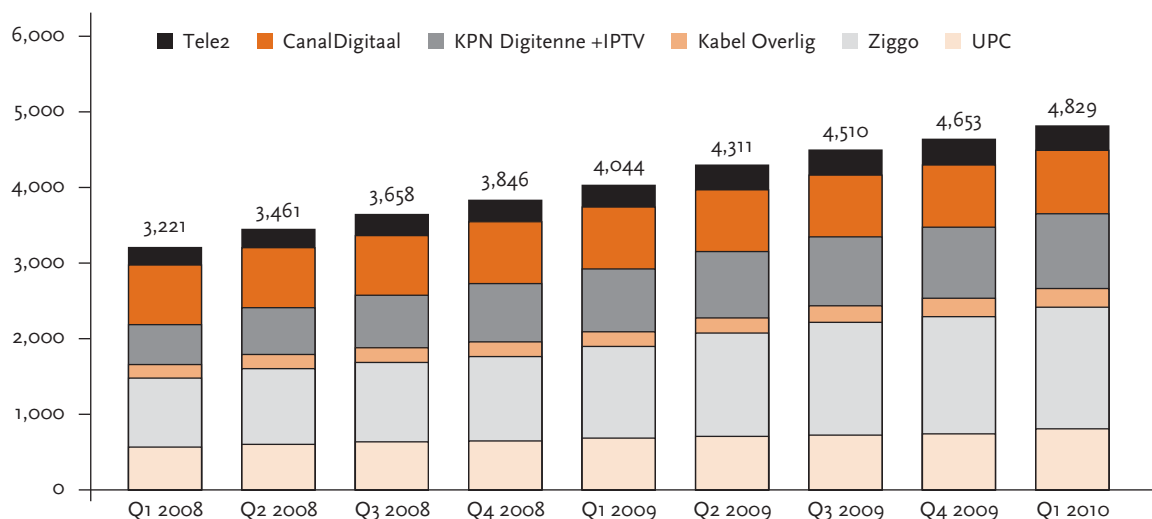
## Distribution and Digitization

In the fourth quarter of 2009, there were 7,312,579 households in the Netherlands. Of these, 77 percent received cable television (analog or digital), 12 percent satellite television, 12 percent digital terrestrial television (DTT), and 5 percent Internet Protocol Television (IPTV).<sup>2</sup> Some 64 percent of households received a form of digital television. The number of households with a digital television cable connection stood at 2,345,000, equaling 32 percent of households in the Netherlands and 42 percent of the cable households.

The Netherlands has one of the world's highest per capita ratios of cable coverage. Cable is the dominant distribution platform. DTT and IPTV are competing with cable distribution, but DTT and satellite are also complementary (second homes, reception abroad).

Figure 1.

Digital Distribution in the Netherlands (in thousands)



Note: Ziggo and UPC are the dominant cable operators; Tele2 and KPN provide IPTV. CanalDigitaal offers satellite.

Source: GFK/Digital Monitor Immovator, 2010.

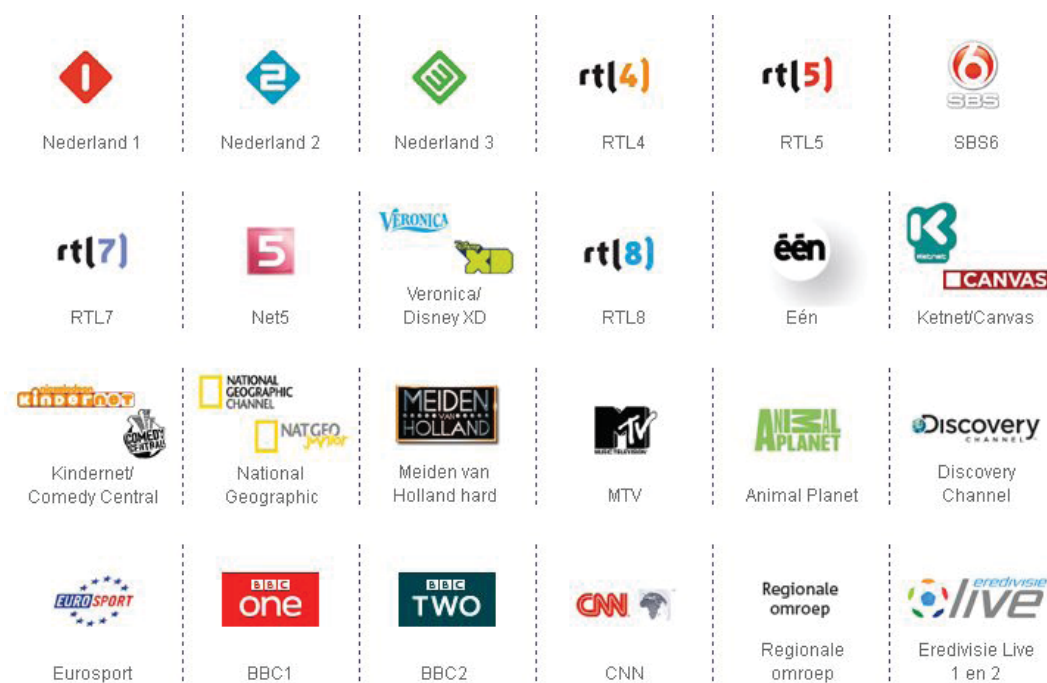
There are several ways in which digital television (Digital Video Broadcasting, or DVB) can be received in the Netherlands: DVB-T (terrestrial), DVB-H (handheld), DVB-C (cable), DVB-S (satellite), and IPTV. Since the switch-over to digital terrestrial television in 2006, a DTT network has been offering national coverage. The broadcasts are using the MPEG-2 standard. Digital television for handhelds (DVB-H) is offered through the DVB-T network, which was designed specifically to provide mobile coverage.

2. Responses to parliamentary questions regarding the switch-off of the distribution of analog television signals, 17 May 2010 (*Aanhangsel II*, 2009/2010, nr. 2443).



The cable companies offer both analog and digital signals. As early as the late 1990s, some cable companies began providing digital television. However, since analog and digital signals can be broadcast simultaneously (“simulcasting”), the move from analog to digital broadcasting took some time. The transition was expedited by the introduction of the new standard DOCSIS-3 and increased marketing efforts to promote digital reception (i.e. high-definition television, or HDTV). Cable operators offering analog reception are subject to must-carry obligations (including the public broadcasters as part of a regulated package of 15 television channels). DVB-C is provided by virtually all cable companies. Although most cable companies still provide analog and digital broadcasting, most of them have announced that they want to stop analog distribution. The third-largest operator (300,000 households) terminated analog on 10 October 2010. Answering questions in Parliament, the Government confirmed that in such a case of full conversion, there is no legal requirement to continue analog cable distribution.

Figure 2.  
DTT Program Package 2011



Note: This figure does not include regional channels (only available in each region). Nederland 1, Nederland 2, Nederland 3, and the regional channel are free-to-air.

Source: Digitenne.

Finally, digital distribution is provided by satellite and via broadband internet—so-called IPTV. Satellite services are being offered by CanalDigitaal (privately owned). Its lineup includes all relevant public and commercial channels. Similar packages are being offered by the providers of IPTV. The telecommunications incumbent KPN, together with Tele2 (primarily using the local KPN network), are the main providers of IPTV.

## II. Switch-off

### Digital Broadcasting Starts Early

In the late 1990s, the Dutch government began debating the future of the broadcasting infrastructure and the media in general. One of the main topics of debate was the digitization of the audiovisual landscape. Several other topics were also discussed, such as market influences, the public sector, freedom of choice, and pluralism in the media. It was felt that both analog radio and television broadcasting had to switch over to digital broadcasting. This would allow the frequencies to be used more efficiently and introduce the possibility of more competition in a media landscape dominated by cable distribution, while at the same time guaranteeing continuity and universal service through a wireless terrestrial network.

Since 1993, the Dutch company Nozema (whose main activity has been the operation of the terrestrial networks for public broadcasting) has been involved in the development of DTT in the Netherlands. Nozema was 59 percent state-owned, with the remaining 41 percent in the hands of the national public broadcasters. Nozema created a joint venture called Digitenne, a consortium that included almost everyone involved: commercial broadcasters, public broadcasters, and KPN.

The Dutch regulatory framework (as laid out in both the Telecommunications Act of 1998 and the Media Act of 1987, replaced by the Media Act of 2008) provides that licenses can be granted either in order of application, through a “beauty contest”, or through an auction. The government chose a beauty contest because of the innovative element and unknown risks of DTT. A special regulation was provided to set the conditions for obtaining DTT frequencies. There was, however, only one applicant—Digitenne. While Digitenne received a license in January 2002, it did not begin transmitting DTT until 23 April 2003. Digitenne became a full monopolist when it was also granted the exploitation of a separate license that was given to the national public broadcaster at about the same time.

The Netherlands Competition Authority (*Nederlandse Mededingingsautoriteit*, NMa) had to look into the Digitenne consortium because it included both infrastructure provisioning (Nozema and KPN) and service providers (public and commercial broadcasters). It decided that the consortium did not interfere with competition regulation, as long as other providers could enter the market. The consortium agreement was

amended accordingly. A few years ago, KPN gained full control over Digitenne through acquisitions, such as the purchase of Nozema. While leading to a parliamentary debate, neither the government nor the NMa feared that this would lead to an abuse of power. However, once again, concessions had to be made and although KPN was obliged to split off parts of its infrastructure, it kept full control over the digital television services.

## Report by the Switch-off Committee

On 11 December 2006, the analog ether signal was switched off. Originally, switch-off was planned for 30 October 2006, but it was postponed to create more time to inform the public about the consequences. The decision was made by the Ministry of Education, Culture and Science and the Ministry of Economic Affairs. Parliament agreed with this decision. No public consultation was held regarding switch-off. However, all pros and cons were weighed during a parliamentary debate. Questions with regard to the timeframe, costs, and efficiency were part of the discussion. Special attention was paid to topics such as media pluralism, free access to public television, and further license conditions and roll-out obligations. Finally, the selections procedure was also part of the discussion. Consulting with stakeholders (i.e. Digitenne, public broadcasters, and cable operators) was part of the process. Their opinions and doubts were taken into account by Parliament. Also, a broad public consultation on the government's frequency policy was held in 2005. During this consultation, attention was paid to the problems and opportunities with regard to the broader development toward digitization.

The decision to switch off analog television was prepared by the so-called Switch-off Committee. The Ministries for Economic Affairs and for Education, Culture, and Science established the Committee in 2002 as an independent body to investigate the possibilities for digital switch-over. Preparing its report to Parliament, the Committee interviewed 17 stakeholders including industry, representatives of the Dutch consumer organization (*De Consumentenbond*), and ministries.<sup>3</sup> Given that fewer than 1.5 percent of households used analog ether television as their main connection, the Committee estimated that switch-off would have relatively minimal consequences. Moreover, nearly all of those households had adequate alternatives for their television connection. Most households which used analog terrestrial television used it in their second home, while camping, on their boat, or for their second or third television set.

The Committee recommended switching off no earlier than 2007, because nationwide digital coverage of the public broadcasting services needed to be guaranteed. In the Netherlands, public television broadcasting can be received free of charge by anyone. One of the Committee's suggestions was that after switch-off, public broadcasting should remain free of charge.

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3. Opinion of the Switch-Off Committee, *Switching Off to Switch-over to Digital, 2003*, available at [http://ec.europa.eu/information\\_society/policy/ecomms/doc/todays\\_framework/digital\\_broadcasting/switchover/nl\\_annex\\_en.doc](http://ec.europa.eu/information_society/policy/ecomms/doc/todays_framework/digital_broadcasting/switchover/nl_annex_en.doc).

The Committee calculated that the cost for the end-user in relation to switch-off (the purchase of devices to receive digital television) was relatively low. The only device that should be purchased to receive digital television was an inexpensive set-top box. The Committee stated that analog terrestrial television reception was not free of charge either, since there were maintenance and replacement costs involved with antennae as well. Moreover, the Committee estimated that the costs related to switch-off could be retrieved after some time, and stated that it was very difficult to determine who should receive compensation and for how much.

The Committee calculated that there were no entry costs for cable television, and the annual subscription fee would be about €120. For DTT, the cost of a decoder would be about €150 (although the report also indicated that this price might fall substantially), and the annual subscription fee was estimated at €100. Finally, for satellite television, the cost of buying a decoder and satellite dish was estimated at €500, but with an annual subscription the cost is much less (around €18). Thus, the Committee felt that switch-off would create sufficiently equal circumstances for the creation of a competitive market.

As shown in Table 1, the Committee found that the groups most affected by switch-off would be households with more than one television in their home using ether television (category IV, comprising households which receive their primary television connection through cable, but use analog terrestrial television for a second television) and households with a second home or a boat where they used terrestrial television (category V, comprising households which use analog terrestrial television in their second home, mainly located in the countryside). A relatively small group of households received ether television that did not also have the ability to use a cable connection (category I, comprising households that could not rely on cable television for their primary television connection) and a smaller group that did have the ability to use cable (category II, comprising households that had the opportunity to connect to cable but for whatever reason did not do so). Finally, a small number of skippers (category III, comprising riverboat captains who sail the inland waters) and people working at fairgrounds (category VI, comprising households traveling on a permanent basis for their work at fairgrounds) depended on traditional analog television.

*Table 1.*  
Analog Usage Before Switch-off by Category of Users

Category of Users	Usage
I. Households without cable access	65,000
II. Homes passed, but not connected	35,000
III. Professional skippers	1,000–2,000
IV. Second sets at home with terrestrial reception	200,000
V. Second homes	200,000
VI. People working at fairgrounds	1,000

*Source:* Report of the Switch-off Committee (see footnote 2).

Table 2 shows percentages regarding analog television before switch-off. The far left column shows the provinces. The second column shows the percentage of analog television received as a percentage of the total

national number. The third column lists the number of households as a percentage of the total national number. The final column shows the percentage of analog reception in the particular provinces. The figures demonstrate a slight difference between rural provinces such as Friesland, Drenthe, and Overijssel, and non-rural provinces such as Noord-Holland, Zuid-Holland, and Utrecht.

*Table 2.*  
Regional Spread of Analog Reception Before Switch-off

Province	Analog national market (%)	National households (%)	Analog reception within province (%)
Groningen	4	4	1.4
Friesland	9	4	3.2
Drenthe	10	3	4.8
Overijssel	11	7	2.3
Flevoland	7	2	5.0
Gelderland	17	11	2.2
Utrecht	3	7	0.6
Noord-Holland	8	17	0.7
Zuid-Holland	10	22	0.7
Zeeland	10	2	7.2
Noord-Brabant	6	14	0.6
Limburg	4	7	0.8
Total	100	100	1.4
Total number of households	c. 100,000	6,977,000	

*Source:* Report of the Switch-off Committee (see footnote 2).

## III. Policy Issues

During the decision-making process, several technical and non-technical issues had to be addressed. Technical aspects included interference and the underlying decoder technology. The more policy-relevant questions dealt with matters such as the license selection process, the license conditions, roll-out obligations, and the position of the public regional broadcasters.

The licensing process, including setting terms and conditions, is overseen by the Ministry of Economic Affairs. This means that the minister can be held accountable by Parliament, which makes Parliament an important factor. Proposals for frequency allocation and the license terms are often discussed with Parliament directly, as was the case with the introduction of DTT. Frequency allocations need to be in line with the national frequency plan, which also defines the allocation process. The rules of the allocation and the draft license conditions are published by the ministry in the Official Journal. After the allocation process has ended, the definitive license is again published in the Official Journal.

### Technical Issues

During the implementation phase, there was quite a bit of discussion about the problem of interference. DTT broadcasts on frequencies that are also used by cable television networks. Traditional television sets have tuners that can receive signals within the same bandwidth. Because this type of interference was less of a problem in the analog era, most of the cables used to connect television sets with cable network plugs did not meet the necessary quality standards, and the appropriate plugs and cables were not available for retail purchase. Moreover, there was little public awareness of this problem. The solution was found in a public awareness campaign. Also, replacement sets were offered at a discount. Naturally, the cable operators focused strongly on the interference problems and raised their concerns with the Government and Parliament.

The Government, under pressure from Parliament, required that public programs be broadcast “free to air”, meaning without any charge. Some discussion took place about how to interpret “free to air”. Digitenne suggested the option of an obligatory smartcard system offering free access to public channels. However, the Government insisted that there should not be any technological barriers to access.

## The Selection Process

One policy issue that arose regarded the proper way to distribute the commercial license separate from the license that was given to the public broadcasters based on their priority rights. The Government had the option to hold an auction, utilize the first-come, first-served principle, or hold a “beauty contest”. The Government chose the “beauty contest” for various reasons, the first of which was that it was an innovative technology with exploitation risks. A beauty contest would also provide an opportunity to set certain criteria for the usage of the license, which will be presented below. Finally, the beauty contest was chosen because this allocation mechanism got the strongest support in Parliament. Some argued that the beauty contest would favor the most likely candidate, the Digitenne consortium.

## License Conditions

As mentioned above, the “beauty contest” offers an opportunity to set conditions regarding democratic, social, lingual, or cultural policy issues, in order to support pluralism.

The regulation of DTT frequencies contained conditions to determine the “beauty” of the contestants. These parameters addressed the economic power of the applicants, their planned offer of new services, their proposals to deal with the interference problem, their use of the multiplexes, their measures to promote open access to the DTT infrastructure, their cooperation with the public broadcasting partners, and their plans to cooperate with the European standardization for receivers. Finally, the offer of television programs to a broad public and a good quality–price ratio were also to be taken into account. The explanatory notes specifically mentioned that the pluralism of the program offer was a factor in selecting the successful bid. Besides broadcasting, the license conditions also allow the offer of data services.

Another policy question arose with regard to the sharing of benefits gained through the exercise of the license to broadcast digital ether television. The administration opted for a form of “benefit sharing”. As soon as the exploitation of licenses started to become lucrative above a certain set level, the party involved in DTT broadcasting had to share some of its benefits with the State. This tool would ensure that the company was incentivized to make profits but also assured that the State would benefit from these profits.

The term for the license, granted to Digitenne in 2002, was set at 15 years. This term was understood to be long enough to give the company the opportunity to get its investments back, and not too long so as to hinder new developments and new insights. For the first six years of the 15-year period, a minimum of 80 percent of the multiplexes had to be used for digital television. After this initial period the operator would be free to determine the type of services it would offer. To make the license “future proof”, the provisions allow it to be modified. In 2010, the Government announced plans to reallocate frequencies (without reducing the number of multiplexes) in order to meet EU policies on using the digital dividend for mobile broadband. The necessary decisions are expected later in 2011.

## **Roll-out Obligations**

To ensure a lucrative business plan for the company involved in ether television broadcasting, the Government wanted to roll out DTT quickly. Therefore, it disregarded the Switch-off Committee's advice and chose to switch off in late 2006, rather than in 2007 as the Committee had recommended.

The Government envisaged a three-phase roll-out of DTT. In the first phase, DTT would be made available in only the densely inhabited west of the country. In this phase, analog terrestrial television would continue to be broadcast nationwide. In the second phase, one multiplex would be used for nationwide distribution of public broadcasting and the analog network would be shut down. This would make frequencies available for four more multiplexes with nationwide coverage. These then could be used for commercial services. Since 2008, Digitenne can be received indoors almost everywhere in the Netherlands.

## **Regional Public Broadcasting**

With regard to the regional public broadcasting stations, a special situation arose. Since the footprint of the various DTT transmission antennae did not correspond to the borders of the different provinces, it was decided that regional broadcasters should also be allowed to have their programs simulcast by satellite. An agreement for the free-to-air broadcasting on satellite ASTRA 3 was concluded. The Dutch government funded the costs.



## IV. After Switch-over

In the previous sections, the introduction and implementation process of digital terrestrial television and analog switch-off have been described. In this section, the results of switch-off are discussed and analyzed.

### Acceptance of Switch-off

Perhaps because considerable time was spent preparing for the introduction of digital television and analog switch-off, the transition was rather uncomplicated. Complaints about the termination of analog broadcasting were limited. This was directly linked to the fact that only a very limited percentage of the population was depending on analog terrestrial distribution. Cable television had become the main source for watching television programs and was available to virtually every household. Interference problems turned out to be limited.

### Consumer Interest

The fact that there was very little consumer interest in digital reception can be explained by the same reason. Because cable television was available everywhere, very few households were interested in a subscription. Also, the subscriptions were not very popular because the price was close to that for cable offerings.

Take-up remained slow and Digitenne incurred substantial losses. The situation changed after the telecoms incumbent KPN gained control over the company and started to market the product more aggressively. First, the subscription fee was lowered to about €8 per month including the necessary decoder (actual price €8.50). Second, the Digitenne proposition is sold in combination with voice telephony and broadband access (a so-called triple-play offer).

At the end of March 2011, the DTT-operator reported a total of 882,000 subscribers. The offer has to compete with satellite (which is less expensive) and cable (which offers more programs and faster broadband).

The additional value of the terrestrial digital network could be that it offers mobility, because it also supports DVB-H. However, mobile television has turned out to be unsuccessful, and the service is no longer actively promoted, although it is still available.

## Pluralism

The Netherlands has a balanced system of broadcasting regulation that is supposed to meet the requirements of freedom of expression and editorial independence. Along with the open press regime, the public broadcasting model (well established at national, regional, and local levels) and the “light” system for acquiring a commercial broadcasting license offer substantial guarantees for pluralism.

The Media Act of 2008 put in place a public broadcasting system with a four-layer structure. A world service (*Radio Nederland Wereldomroep*) produces programs to inform citizens in other (developing) countries and Dutch citizens who live abroad. At the national level, a five-year concession is granted to NPO, but the actual programs are made by independent private organizations representing various groups within civil society. During the last license renewal process (in 2010), 11 organizations received airtime (radio and television). In addition, two independent organizations are responsible for dedicated general programming (news, culture, education, and sports). Also, organizations with a religious or spiritual background can broadcast within the national public broadcasting system. However, they receive a limited amount of broadcasting time. The same is the case with political parties.

Furthermore, the Netherlands has a well-established system of regional and local public broadcasting organizations (regional broadcasting operates at provincial level, while local broadcasting is conducted at the level of municipalities). Their principal objective is to provide a program service for general broadcasting purposes at regional or local level. The program service must aim to satisfy the social, cultural, religious, or spiritual needs of the general public in the given area. In total, 13 regional broadcasters and 287 local stations are active in 2010.

As for the commercial sector, the Media Act established a very lightweight system for licensing commercial broadcasters (primarily following the minimum standards of the European Directive on Audiovisual Media Services). As described in section 1, the main players are RTL and SBS.

All public broadcasters are entitled to frequencies to broadcast their programs, with the exception of the public local broadcasters who only have access to FM radio frequencies (due to the scarcity of television frequencies). Must-carry rules guarantee the redistribution of public broadcasters on cable (including the first distribution of television programs made by local public broadcasters). Legislation also requires cable operators to provide a minimum package of 15 television and 25 radio programs (including those that fall under a “must carry” obligation, such as the public broadcasting programs). The selection is based on advice by an independent cable council. Cable operators have very few possibilities to deviate from this advice, which normally includes the main commercial programs.

Until 2010, a special law regulates ownership of the media. Three markets are defined (newspapers, radio, and television). A company may own a maximum of 90 percent (of the total 300 percent), with some specific restrictions including a maximum market share of 35 percent for newspapers and the ownership of two national FM stations. Public broadcasting was not covered by this law because it is not allowed to engage in commercial activity. The law, deemed no longer necessary by the Government, was withdrawn on 1 January 2011.

DTT has had no significant impact on the diversity of the Dutch broadcasting landscape. Terrestrial distribution did not increase the number of services available to the public, because cable television is the dominant distribution network. Not only does cable offer more capacity (the number of programs on the cable networks is more extensive than through DTT), but also cable is subject to must-carry obligations and access regulation. The DTT program package is not only available on cable, but also cable offers additional digital programs such as niche channels provided by the national public broadcaster and services such as on-demand television.

It should be noted that increasing pluralism as such was not a policy goal when DTT was introduced. During the preparatory phase, including the consultations with civil society, industry, and other interest groups, arguments that DTT would increase pluralism were not part of the debate, with the exception of potentially offering terrestrial broadcasting opportunities on a local scale. However, the original argument—spectrum scarcity—remained in place (although frequencies are available for local digital terrestrial radio). The relevant license conditions were mainly aimed at creating a level of diversity similar to cable, to guarantee the distribution of the national public channels and to avoid abuse of dominant positions. If regulation had intervened—by prescribing a higher level of pluralism—it would have had a direct effect on the already-cumbersome business model. One can also question whether the introduction of DTT could have prompted the creation of more programs, given the fact that cable is a more interesting distribution means, because it offers more bandwidth/channels and reaches most households.

## V. Conclusion

Looking back, it can be seen that analog switch-off in the Netherlands caused no major problems from a technical or societal perspective. The minimal importance of terrestrial television broadcasting in a highly cabled country has turned out to be the key factor. It made the transfer easy, but it also showed how difficult it is to turn digital terrestrial broadcasting into a success. While expectations were already moderate, DTT only started to gain momentum after KPN gained full control of Digitenne and started marketing DTT aggressively. DTT now has about one million customers, but it is unclear whether the business is profitable. The introduction of DVB-H (DTT on handhelds/mobile phones) was unsuccessful and the service is no longer actively marketed.

Although it contributed to limiting the scarcity of the spectrum (the issue of “digital dividend”), switch-off had no effect on the number of available channels. The channels carried by the terrestrial digital network are the same as those which had been available on cable and satellite. The competitive environment—with the cable and satellite offer as a reference—has impacted the possibility of creating a different offer based on other considerations than commercial ones. Nevertheless, countries with a similar distribution environment should face very few problems when opting for a rapid switch-off.

As mentioned, the DTT licensing process addressed the issue of pluralism to some extent by defining criteria for the composition of the program package. However, other related issues such as transparency, accountability, editorial bias, professional standards, freedom of expression, and the public interest were not debated, because they are considered to be (sufficiently) safeguarded by other instruments, such as the law regulating access to audiovisual media. The impact of DTT and switch-off were not relevant in this respect.

A decade after the introduction of DTT and almost five years after the switch-off, we may conclude that switch-off created no substantial problems or concerns, besides commercial ones.

**Mapping Digital Media** is a project of the **Open Society Media Program** and the **Open Society Information Program**.

## Open Society Media Program

The Media Program works globally to support independent and professional media as crucial players for informing citizens and allowing for their democratic participation in debate. The program provides operational and developmental support to independent media outlets and networks around the world, proposes engaging media policies, and engages in efforts towards improving media laws and creating an enabling legal environment for good, brave and enterprising journalism to flourish. In order to promote transparency and accountability, and tackle issues of organized crime and corruption the Program also fosters quality investigative journalism.

## Open Society Information Program

The Open Society Information Program works to increase public access to knowledge, facilitate civil society communication, and protect civil liberties and the freedom to communicate in the digital environment. The Program pays particular attention to the information needs of disadvantaged groups and people in less developed parts of the world. The Program also uses new tools and techniques to empower civil society groups in their various international, national, and local efforts to promote open society.

## Open Society Foundations

The Open Society Foundations work to build vibrant and tolerant democracies whose governments are accountable to their citizens. Working with local communities in more than 70 countries, the Open Society Foundations support justice and human rights, freedom of expression, and access to public health and education.

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Cover Design: Ahlgrim Design Group  
Design and Layout: Judit Kovács | Createch Ltd.

