



Case studies for the award of the 700MHz/800MHz band: Mexico

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Please note: This document is one of a series of case studies on approaches to awarding the 700MHz/800MHz band¹ for mobile broadband. The countries in this series are Australia, Finland, Germany, Mexico, and UK. Each case study is available as a separate document.²

¹ Across the world, two harmonised UHF bands have been identified for mobile broadband: the 800MHz band (790–862MHz) in ITU region 1 (Europe and Africa) and the 700MHz band (698–806MHz) in the rest of the world.

² The case studies, plus a summary document plus presentation, are available for download from the GSMA website at <http://www.gsmworld.com/our-work/public-policy/spectrum/digital-dividend/>

1 Mexico: Summary

In 2004, the government of Mexico published its plan for the transition to DTT (the ‘Agreement’, or the ‘Policy’ of 2004). The Agreement adopted the ATSC³ standard, and set out a plan for the transition, culminating on 31 December 2021.

In September 2011, the regulator COFETEL made a proposal entitled “Complementary Actions” (CA) for modification of the Agreement of 2004. The CA provides for:

- A pilot analogue switch-off in 2012 for Tijuana and Tecate (adjacent municipalities in the North Western corner of the country, with a population of approximately 1.3 million)
- ‘Specific dates’ for transition by municipality and transmitter station. (These ‘specific dates’ are not set out in the CA document).
- A date for national analogue switch-off (ASO): 31 October 2016.

The CA represents the Mexican Government’s second attempt to accelerate the analogue switch-off. In September 2010, there was a Presidential Decree which brought the analogue switch-off forward to 31 December 2015 (from 31 December 2021). The Chamber of Deputies (the lower house of the Congress) applied to the Supreme Court to have the Decree suspended, and obtained a favourable decision in October 2010. The executive appealed the decision, but lost the appeal in August 2011. At the time of writing it is not known, therefore, whether the revised date of October 2016 may be subject to further successful legal challenge.

We have not been able to identify a quantified cost-benefit analysis (CBA) of the transition to DTT published by any branch of the public administration in Mexico. Instead the argument has been made qualitatively, most recently in the CA.

The 700MHz band (channels 52 to 69, 698–806MHz) is relatively ‘clean’ in Mexico. The band is still used for analogue TV broadcasting, but none of the country’s 147 digital TV broadcasting channels operate in this band: digital TV is entirely broadcast in channels 1 to 51. Furthermore, of the 461 analogue TV broadcasting stations in Mexico, only a few (13 to 28, depending on the source) operate above channel 51. Therefore, the degree of occupation of the 700MHz band by TV is low.

Most of the obstacles to change encountered in the Mexican case have been related to the transition from analogue to digital TV, not in the clearing of the 700MHz band. The latter should take care of itself, after the few remaining analogue transmitters in the 700MHz band (mostly in the north of the country) are finally switched off.

It is impossible to know with certainty how many stations there are in the whole of Mexico pending upgrade to simulcast (that is, simultaneous broadcasting of the same content on one analogue plus one digital channel – known as ‘digital replication’ in the Mexican terminology). This is because the process of upgrading can involve a change in the number of transmitter stations. It is likely that the current 147 digital channels account for more than 147 analogue broadcasting stations. So, in the whole of the country there will be fewer than 314 (461 minus 147) analogue stations awaiting authorisation to upgrade to simulcast.

A survey done by the national statistics agency INEGI (as part of a wider survey of household use of information technology) found that only 13.2% of households in Mexico had a digital TV at the start of 2010. It is possible that the survey measured DTT-capable TVs (which is not the same as TVs actually receiving a DTT signal), and may even have included, as a result of the normal imprecisions inevitable in any questionnaire-based consumer survey, modern flat-screen TVs without DTT tuners. This raises the possibility that the penetration of free-to-air digital TV in homes may be lower than 13.2%.

COFETEL recently called for the deployment of significant financial resources in order to bring about the transition to DTT, estimating the subsidies required to provide decoders, antennas and related costs, only for the north of the country (the broadcasting sites in question are depicted in Figure 2.4 later in this report), to be of the order of USD200

³ Advanced Television Systems Committee for digital television transmission. The broadcasting standard used in USA, Canada, South Korea plus several smaller countries.

million. COFETEL recommended that this be financed by the public, observing that the proceeds of the sale of the corresponding spectrum will amply outweigh that investment of public funds.

Regarding the timing of the 700MHz assignment process, it appears from its public announcements that COFETEL wishes to do this quickly, in order for the benefits of the additional capacity and competition to be realised as soon as possible.

2 Mexico: Detailed case study

2.1 Overview of process adopted by the regulator

In 2004, the government of Mexico published its plan for the transition to DTT (the ‘Agreement’, or the ‘Policy’ of 2004). [1] The Agreement adopted the ATSC⁴ standard, and set out a plan for the transition culminating on 31 December 2021. The transition plan was split into six periods, as shown in Figure 2.1.

Figure 2.1: Transition periods [Source: Agreement of 2004]

Period:	1	2	3	4	5	6
	Up to 31 Dec 06	1 Jan 07 – 31 Dec 09	1 Jan 2010 – 31 Dec 12	1 Jan 13 – 31 Dec 15	1 Jan 16 – 31 Dec 20	1 Jan 09 – 31 Dec 21
Nine major cities*	PC	RC	R	R	R	R
Cities with 1.5 million or more inhabitants		PC	PNC	R	R	R
Cities with 1 million or more inhabitants			PC	PNC	R	R
Cities with ½ million or more inhabitants				PC	PNC	R
Cities with 150 thousand or more inhabitants					PC	R

Notes: *Mexico City, Monterrey, Guadalajara, Tijuana, Mexicali, Ciudad Juarez, Nuevo Laredo, Matamoros, and Reynosa. The first three are Mexico's largest conurbations, but the final six are not: instead, they are a selection of the most important cities in the North which still use analogue TV in channels 52 and above (see Figure 2.4).

PC = ‘Digital Presence’ meaning at least two commercial channels should cover 20% of the pre-existing analogue coverage. A ‘commercial’ channel is one which is not financed mainly from State or Federal resources.

RC = ‘Digital Replication, Commercial channels’, meaning 90% of the current analogue coverage to be achieved, for all pre-existing analogue commercial channels.

R = ‘Digital Replication, Commercial and Non-Commercial Channels’. As per ‘RC’, but adding the non-commercial channels, i.e. those financed mainly from State or Federal resources. In other words, ‘R’ means extending the 20% coverage of the previous period to 90%, for all channels.

PNC = ‘Digital Presence, Non-Commercial Channels’. As per ‘PC’, but for non-commercial channels.

The Agreement of 2004 established the Consultative Committee for Digital Broadcasting Technologies (CCTDR, according to its initials in Spanish) to oversee the transition process. Holders of TV broadcasting licences (‘concessions’ and ‘permissions’ in the local parlance) report annually to CCTDR about their DTT coverage, investment and other statistics. The CCTDR summarises these statistics in its annual report. The CCTDR is empowered to recommend changes to the transition plan, including changes to the timing. However, this is not believed to have taken place as of the time of writing this report.

The Agreement of 2004 provides for the analogue signals to be turned off in a transmitter station once COFETEL (on the advice of the CCTDR) determines that a ‘high level of penetration’ has been achieved. However, this ‘high level’ is not quantified. More importantly, the Agreement did not even specify in what units, or by what survey means, ‘penetration’ was to be measured.

The Agreement is still in force at the time of writing. In September 2010, there was an attempt to accelerate the timetable contained in the Agreement, as well as to provide more exact reporting of penetration, plus clearer incentives for broadcasting operators to collaborate with the plan. This was done by means of a Presidential Decree (the ‘Decree’) [2] which specified two new target dates:

- the clearing of the 700MHz band ‘by 2012’
- ASO on 31 December 2015.

⁴ Advanced Television Systems Committee for digital television transmission. The broadcasting standard used in USA, Canada, South Korea plus several smaller countries.

The Chamber of Deputies (the lower house of the Congress) applied to the Supreme Court to have the Decree suspended, and obtained a favourable decision in October 2010. The executive appealed against the decision, but lost the appeal in August 2011. The grounds for suspension of the Decree were of a legal and procedural, not technical, nature. The Supreme Court did not find a problem with the technical proposals contained in the Decree, but rather expressed concern that the way in which the executive had gone about issuing the proposals set an unwelcome precedent for administrative procedure in general [3].

In September 2011 COFETEL made a revised proposal entitled “Complementary Actions” (CA) [4] for modification of the Agreement of 2004. The CA included:

- A pilot analogue switch-off in 2012 for Tijuana and Tecate (adjacent municipalities in the North Western corner of the country, with a population of approximately 1.3 million).
- ‘Specific dates’ for transition by municipality and transmitter station. These ‘specific dates’ are not set out in the CA document.
- A date for national ASO of 31 October 2016.

Figure 2.2 Summary of major events associated with 700MHz band in Mexico

Year	Event
1996	Creation of COFETEL, an independent regulator ascribed to the Secretariat of Communications and Transport (SCT) the ministry responsible for telecommunications. Control over TV and Radio licensing was not transferred from SCT to COFETEL at this stage.
1996–2004	SCT organised a frequency plan that favoured the use of channels 51 and below for TV, and tended to avoid the licensing of TV channels in bands 52 and above.
2004	The government of Mexico published its plan for a transition to DTT, culminating on 31 December 2021. Establishment of Consultative Committee for Digital Broadcasting Technologies (CCTDR, according to its initials in Spanish) to oversee the transition process. Formalisation of the tendency to avoid the licensing of TV channels in bands 52 and above.
2005–2009	Holders of TV broadcasting licences (‘concessions’ and ‘permissions’) reported annually to CCTDR on DTT coverage, investment and other statistics. The CCTDR summarises these statistics into an annual report. These reports were not (to our knowledge) made public, before 2010.
2009	Control over TV and Radio licensing transferred from SCT to COFETEL.
2010	COFETEL publishes the annual report of the CCTDR (corresponding to the licensees’ statistics) submitted on 1 January 2010). It showed that a DTT signal reaches 36.76% of the population. However, later (in the document “Complementary Actions”, see below) COFETEL pointed out that the penetration of households was only 13.2%. Even this might be an overestimate, as described elsewhere in this report.
2010	Presidential Decree issued, specifying two new target dates: the clearing of the 700MHz band by 2012, and analogue switch-off on 31 December 2015.
2010–2011	Presidential Decree suspended by Supreme Court at the request of the Chamber of Deputies. The executive branch appealed, but lost the appeal.
2011 (Sept)	COFETEL made a new proposal (“Complementary Actions”) for modification of the Agreement of 2004. A pilot switch-off in 2012 for Tijuana and Tecate and set the date 31 October 2016 for national ASO. By issuing this proposal, COFETEL has automatically initiated a public consultation required under the auspices of the Federal Commission for Regulatory Improvement (COFEMER, according to its Spanish initials). At the time of writing this document we do not know the timetable or terms of reference of the consultation.

2.2 Justification for clearance of the 700MHz band

We have not been able to identify a quantified cost-benefit analysis of the transition to DTT published by any branch of the public administration in Mexico. Instead, the argument has been made qualitatively, most recently in the CA, as shown in Figure 2.3.

Figure 2.3 Benefits of the transition to DTT [Source: translation from COFETEL “Complementary Actions” of 2011]

“The text which follows sets out the benefits that are possible with the transition and describes further measures that the process requires, and the actors that must be involved in the process to make the transition to DTT a successful process.

1. **Efficient use of spectrum:** *Analogue television is a technology with over 60 years on the market that, over time, has become inefficient in the use of the spectrum. In contrast, digital technology not only increases the number of programs broadcast by a television station (usually associated with a 6MHz channel), but reduces the requirements for protection (guard bands) between the different spectral channels operating in a locality. As a result, it is possible to compact television service into fewer bands, and use the freed-up bands for other telecommunications services. Today, with analogue technologies, our country uses only 96MHz (24%) of the 402MHz accounted for by VHF and UHF channels. That is, we waste three-quarters of a finite and valuable input. The first example is the 700MHz (108MHz for channels 52 to 69, obtained by concentrating the TV bands to channels 2 through 51), which has been identified as the portion of the radio spectrum valuable for telecommunications services.*

2. **Consumer Benefits:** *Due to the compression and digital signal processing is possible to obtain various benefits of that impact on consumers directly, among which are:*

- *Possibility of new competitors and services;*
- *Largest range of TV programs and content diversity;*
- *Better picture and sound quality (high definition);*
- *Possibility of having mobile TV services;*
- *Electronic program guide;*
- *Development of new digital services, and*
- *Benefits to people with disabilities.*

3. **Benefits to industry:** *the transition to DTT can generate the following benefits to the telecommunications industry in general:*

- *Savings on television companies to stop broadcasting simultaneously two technologies (analogue and digital);*
- *Development of new services and potential sources of income;*
- *Enhance the competitiveness of free-to-air television in the face of the increase in the supply of other means of content delivery;*
- *Development of telecommunications services that are compatible with the broadcasting services, television networks such as payment of compensation to the state; and*
- *In the case of receiver manufacturing industry, it generates the alternative of developing low-cost devices (decoders) to support the continuity of the analogue receivers. Similarly, you can generate new receivers for the new services.”*

2.3 Obstacles faced during band clearance

Most of the obstacles in the Mexican case have been to do with the transition from analogue to digital TV, not in the specific clearing of the 700MHz band. This latter should take care of itself, after the dozen or so analogue transmitters in the north of the country are finally switched off.

2.3.1 Moving analogue transmissions out of the band

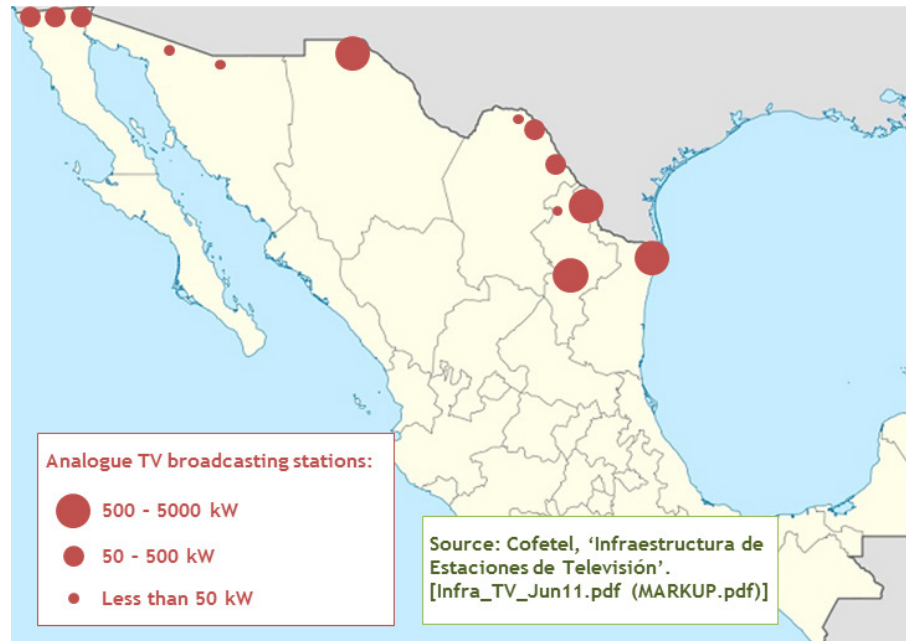
The 700MHz band (channels 52 to 69, 698–806MHz) is relatively ‘clean’ in Mexico. The band is still used for TV broadcasting, but none of the country’s 147⁵ digital TV broadcasting channels⁶ operate in this band: digital TV is entirely broadcast on channels below channel 52 [5] and [6]. This was by design: the USA’s plans for the 700MHz band were already apparent when the Mexican authorities designed their DTT frequency plan. Therefore, they

⁵ As of 30 June 2011.

⁶ In this context, one ‘Digital Broadcasting Channel’ can occupy a number of transmission sites across a federal state.

avoided DTT assignments above channel 51 [5]. Furthermore, of the 461 analogue TV broadcasting stations⁷ in Mexico, only 13 operate above channel 51. This number 13 was derived from inspection of an official COFETEL document dated 30 June 2011 [7]. Other sources cite a slightly higher number in the range of 20 to 28 stations [8].⁸ In any case, the degree of occupation of the 700MHz band by TV is low.

Figure 2.4 Approximate locations of the analogue TV stations authorised to broadcast in the 700MHz band, 30 June 2011 [Source: Aetha Consulting, based on COFETEL data]



As shown in Figure 2.4, the aforementioned 13 TV broadcasting stations authorised to operate on channel 52 or above are generally located in the north of the country, and possess a range of power outputs between 0.5kW and 1838kW. Among the cities shown on the figure are some large conurbations: Ciudad Juárez, Mexicali, Nuevo Laredo, Reynosa, Monterrey and Matamoros, among others. These large conurbations were included in Period 1 of the transition plan (see Figure 2.1). The transition from analogue to digital TV (that is, the simulcasting of analogue transmissions by digital means on other spare channels) is taking place in the band of frequencies at or below channel 51; channels 52 and higher are not being used for this. For example, the allocation of channels in Mexico State (the country's most populous state) is as set out in the table which follows.

⁷ In this context, an analogue 'Broadcasting Station' is, in effect, a single broadcasting site (with its specified power level).

⁸ [8] on page 47, citing a source in COFETEL, Unidad de Sistemas de Radio y Televisión, puts the number at 20 analogue channels, plus 8 which are planned but not operational.

Figure 2.5 Authorised DTT station plan for Mexico State [Source: Aetha Consulting, based on COFETEL data]

Ch.	A/D?	TV Station	Ch.	A/D?	TV Station
6	A	XHXEM, Azteca 13	29		Not assigned
7	A	XHVBM, Once TV México	30		Not assigned
8	A	XEX-TV, Canal 5 (Televisa)	31	A	XHTOK, Canal 5 (Televisa)
9		Not assigned	32	A	XHATZ, Galavisión (Televisa)
10	A	XHTM, XHTOL, Canal de las Estrellas (Televisa)	33		Not assigned
11		Not assigned	34	A	XHPTP, Televisión Mexiquense
12	A	XHGEM, Televisión Mexiquense	35	D	Simulcast of Ch.19
13		Not assigned	36	D	Simulcast of Ch.10
14		Not assigned	37		Not assigned
15		Not assigned	38		Not assigned
16		Not assigned	39		Not assigned
17		Not assigned	40		Not assigned
18		Not assigned	41	D	Simulcast of Ch.34
19		XHLUC, Azteca 7	42	D	Simulcast of Ch.8
20		Not assigned	43		Not assigned
21		Not assigned	44		Not assigned
22		Not assigned	45		Not assigned
23		Not assigned	46		Not assigned
24		Not assigned	47	D	Simulcast of Ch.32
25		Not assigned	48		Not assigned
26		Not assigned	49		Not assigned
27	D	Simulcast of Ch.6	50		Not assigned
28		Not assigned	51	D	Simulcast of Ch.12

Key: ■ = Analogue channel already being simulcast; ■ = Analogue channel not yet being simulcast; ■ = Digital channel; ■ = Free channel; A = Analogue; D = Digital; Ch. = Channel

Note: Channels 1-5 are not shown here, because their occupation (or otherwise) by analogue TV does not impact on the digital transition.

As can be seen from the table, there are sufficient unused channels to allow the completion of the transition to digital broadcasting in Mexico State. In the case of Mexico State (shown in the table), only one channel (Once TV Mexico) remains to be upgraded to simulcast.

It is impossible to state with certainty how many stations pending digital upgrade there are in the whole of Mexico, because the process of upgrading can involve a change in the number of transmitter stations. It is likely that the current 147 digital channels account for more than 147 analogue broadcasting stations. So, in the whole of Mexico there will be fewer than 314 (461 minus 147) analogue stations awaiting authorisation to upgrade to simulcast.

2.3.2 Adoption of set-top boxes

COEFEL's document "Complementary Actions" (CA, [4]) notes that only 13.2% of households in Mexico had a digital TV at the start of 2010, though the true proportion may be even lower.⁹ More encouragingly, this statistic, even though it may be an over-estimate, is higher than the national average (measured by the same survey) in three of the

⁹ This figure comes from the annual report of the Consultative Committee for Digital Broadcasting Technologies (CCTDR, according to its initials in Spanish) [9]. In turn, the CCTDR report cites a survey carried out by the National Statistical and Geographical Institute (INEGI, according to its initials in Spanish) known as the "Survey on the Availability and Use of ICT in Homes, 2010" (ENDUTIH 2010, according to its initials in Spanish). Digital TV was only one of the indicators of technology penetration in homes measured by the survey. The indicator that CCTDR used is called 'homes with a digital television'. Even in the fortunate event that INEGI's survey agents were able to distinguish between a 'digital TV' and a 'modern' or 'flat screen' TV (a distinction that it would be very difficult for them to make, in practice), the statistic is still problematic because it does not tell us the use to which the TV is put. The CCTDR in its report speculates, based on input from the licensees, that many TVs capable of picking up free-to-air digital TV will not be used for this purpose, but instead used for viewing cable TV, other closed TV platforms, watching DVDs, or even just watching free-to-air analogue TV broadcast from a tower whose signal, for those channels, is scheduled for switch-off. The possibility therefore exists that the proportion of homes ready to watch free-to-air digital TV after ASO is even lower than 13.2%.

northern states (Nuevo León, Baja California, Chihuahua), where the issue of analogue broadcasting above channel 51 still persists.

The CA document calls for the deployment of significant financial resources in order to bring about the transition. It observes that the pilot Tijuana, comprising around 250,000 television homes (after netting off those who already have a digital receiver, or use pay-TV providers) will require a subsidy of MXN422 million (approximately USD33 million, equivalent to USD132 per home) to cover decoders, antennas, installation costs and citizen education programmes. Of this, MXN750 per home (equivalent to approximately USD60) is accounted for by decoders and antennas. The document then goes on to estimate the total for the north of the country (Ciudad Juárez, Mexicali, Nuevo Laredo, Reynosa and Monterrey) to be MXN2,531 million (of the order of USD200 million). It recommends that this be financed publicly, observing that the proceeds for the sale of the corresponding spectrum will amply compensate that investment of public funds. The Complementary Actions document also calls for ‘strong leadership’ and the need for coordinated action between stakeholders.

It is worth noting that “Complementary Actions” does not go into detail on how the subsidies, strong leadership and coordinated action will be organised. Instead, it provides the financial estimates summarised above, and a discussion of the role of each stakeholder. In this respect, it is less specific than the (defunct) Presidential Decree of 2010 [2]. The Decree had called for the setting up of an inter-agency body, with specified rules of procedure, to oversee the transition. By making the proposals set out in the Complementary Actions document, COFETEL has automatically initiated a public consultation required under the auspices of the Federal Commission for Regulatory Improvement (COFEMER, according to its Spanish initials). This consultation process will allow more specific detail to be added to the objectives and observations in the document, which are necessary before it can be considered to represent a tangible programme or action plan.

2.3.3 Roof-top aerials

We were not able to identify any published study into the impact on the transition to DTT of the types of antennas in use in Mexican households. The pre-2004 TV frequency plan took account of the existing installed base of antennas, by ensuring that DTT channels would all broadcast at channel 51 or below. Of the MXN750 per household (already mentioned above) that COFETEL has estimated as the average direct cost per household of upgrading to DTT,¹⁰ MXN250 (approximately USD20) is for work on antennas.

The most common antenna configuration for terrestrial TV in Mexico’s cities is an individual ‘yagi’ style directional antenna on a pole on a building rooftop in a multi-dwelling unit. In this way each flat or apartment can select the transmitter site with the best range of programs and signal qualities to suit the tastes of the occupants. We understand that the degree of hill-top sharing of antenna sites is lower in Mexico than in other developed countries. For this reason, situations do arise where a household should choose between good reception of the TV channels of one broadcaster (for example, Televisa) over another (for example, TV Azteca). This situation will not change after the transition to DTT.

2.3.4 Clearing DTT from the Digital Dividend band

As noted above, there are no authorised DTT stations in the 700MHz band, so clearing stations from this band is not an issue in Mexico.

2.3.5 Clearing other non-TV users from the Digital Dividend band

We understand from discussions with COFETEL that there are no other authorised uses of bands 52 to 69 than the few analogue TV channels already mentioned. Evidently COFETEL is unable to comment on unauthorised uses of these bands, though we received the impression that such use is unlikely to cause issues when the time comes to clear the bands for re-use for mobile services.

¹⁰ Excluding installation costs and citizen education programmes

2.4 Protection of other/neighbouring spectrum uses

2.4.1 Interference to DTT

There is, as in any country, the risk of interference between adjacent bands, in this case between mobile base stations in band 52 and DTT in lower adjacent frequencies. We are not aware of any published work on this issue specifically in Mexico. However, it is worth noting that it is an identical situation to that of the USA, which drew the line between TV and mobile at the boundary between channels 51 and 52. The technical standards to be employed by Mexico in the adjacent bands are expected to be identical (or near identical) to the corresponding standards employed in the USA: ATSC for television, and LTE for mobile. By the time operators start to roll out LTE networks in Mexico, it can reasonably be expected that any practical interference problems that come up in the field will have been addressed and resolved in USA, so that Mexican operators can benefit at relatively low cost from the knowledge already gained by their counterparts in their northern neighbour.

2.4.2 Interference at borders

Mexico shares borders with USA, Guatemala and Belize. Thanks to the adoption of a range of similar technical choices by both Mexico and USA (spectrum bands, DTT technology, and mobile technology) unexpected border co-ordination issues are unlikely on the northern border.

Regarding Mexico's southern neighbours, Guatemala and Belize, near the borders there are likely to be co-ordination difficulties impeding mobile use in the 700MHz band, caused by the continued broadcasting of analogue TV in Guatemala and Belize. We are not aware of any specific recommendations relating to the cross-border coordination of LTE and analogue TV at around 700MHz. It is likely that this is a transient problem, as Guatemala and Belize are likely to adopt the 700MHz band for mobile use at some stage in the future.

2.5 Award mechanism for the 700MHz band

The Mexican authorities have not yet published proposals for the assignment mechanism for the 700MHz band.

COFETEL's most recent previous spectrum assignment process was 'Bidding Process 21', for spectrum in the 1.7–2.1GHz band (the AWS band). Key aspects of the process were:

- simultaneous Multiple-Round Auction (SMRA) format
- spectrum caps of 80MHz per operator (which would be expected to be increased for the 700MHz process)
- 20-year licences
- spectrum fees of which approximately 75% of the NPV of the licence was accounted for by the recurring annual payment, and only 25% by the once-off fee
- part beauty contest, part auction. In order to qualify for the auction, bidders were required to make a written application explain their contribution to the wider economy. As part of this, they had to provide 'business plans' using prescribed forms, going into significant detail on their plans (such as proposed prices, investments and coverage plans).

At an international conference held in Mexico around the time of writing of this report, COFETEL appeared to be open to the idea of at least some elements of a beauty contest:

"While there are mechanisms for allocating spectrum through ascending auctions, there are alternative approaches that put emphasis on geographic coverage, investment partners, the technological innovation and other benefits perhaps more intangible but less quantifiable. At least this debate should take place in the discussion we have about the different auction procedures".¹¹

¹¹ Si bien hay mecanismos de asignación del espectro mediante subastas ascendentes, existen enfoques alternativos que ponen el énfasis en la cobertura geográfica, las inversiones asociadas, la innovación tecnológica y otros beneficios quizá más intangibles, pero no menos cuantificables. Al menos este debate debiera contemplarse en la discusión que tengamos sobre las distintas modalidades de subasta. Palabras del Comisionado Presidente, Mony de Swaan, en la inauguración de la Conferencia Latinoamericana del Espectro 2011. 7 de septiembre de 2011.

Regarding the timing of the 700MHz assignment process, it appears from its public announcements that the regulator COFETEL wishes to do this quickly, in order for the benefits of the additional capacity and competition to be realised as soon as possible.

2.6 References

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