

Table 2.13. Spectrum tendering processes

Australia	<p>Spectrum in the 700 MHz (digital dividend) and 2.5 GHz bands is being cleared of broadcasting services and will be made available for new communication services.</p> <p>The clearance processes are expected to be complete by 31 December 2014 for the 700 MHz band, and by 30 September 2014 (31 January 2016 for the Perth area) for the 2.5 GHz band</p>	<p>Spectrum allocation (auction, CCA)</p> <p>The 700 MHz and 2.5 GHz spectrum will be auctioned by the ACMA in a single process in April 2013.</p> <p>Selection criteria in the assignment process to promote competition</p> <p>On 2 Feb 2012, the Minister directed the ACMA to determine procedures to impose competition limits on the amount of spectrum participants are permitted to acquire in the auction. The directions specify limits of 2 x 20 MHz for the 700 MHz band and 2 x 40 MHz for the 2.5 GHz band respectively. On 14 December 2012, the Minister issued an amending directive to the ACMA to increase the limits to 2 x 25 MHz for the 700 MHz band.</p>	<p>New policy initiatives for effective use of spectrum</p> <p>There were no new policy initiatives regarding this matter.</p> <p>Frequencies available for unlicensed use</p> <p>There is no unlicensed spectrum in Australia. The Radiocommunications Act provides for three types of radiocommunications licences: class, apparatus and spectrum licences. Each applies to the use of spectrum under particular circumstances or for particular devices e.g. WiFi is authorised under class licensing arrangements in the 2.4 GHz band. A class licence is a standing authority that allows any person to operate specified types of radiocommunications devices.</p>
Austria	2.6 GHz spectrum in 2010	Auction (CCA)	Coverage obligations with penalties
Belgium	<p>Yes. The bands 2 500-2 690 MHz and 3.4-3.6 GHz have been made available for ECS. The 2.6 GHz has successfully been auctioned. Also spectrum at 2.1 GHz for a fourth 3G operator has successfully been auctioned.</p>	<p>Spectrum allocation (beauty contest, auction)</p> <p>Auction</p> <p>Selection criteria in the assignment process to promote competition</p> <p>Yes. Priority has been given to a new entrant at 2.1 GHz for the fourth license.</p>	<p>New policy initiatives for effective use of spectrum</p> <p>The 800 MHz will be opened next year</p> <p>Administrative incentive pricing for fixed links</p> <p>Frequencies available for unlicensed use</p> <p>The frequencies in EC Decision 2006/771/EC are generally for license exempt use. Furthermore ECC Decisions are being followed as much as possible: e.g. ERC REC 70-03 for Short Range Devices, etc.</p>
Canada	No additional spectrum has been made available since 2010.	<p>Spectrum allocation (beauty contest, auction)</p> <p>An auction for licences in the 700 MHz band is planned for 2013 and an auction for spectrum in the 2 500 MHz band is planned to take place the following year.</p> <p>Selection criteria in the assignment process to promote competition</p> <p>Sustained competition in the wireless telecommunications services market is one of the government's three policy objectives in regard to the use of the 700 MHz and 2 500 MHz spectrum. In March 2012, the government proposed several measures in regard to the 700 MHz and 2 500 MHz spectrum auctions.</p> <ul style="list-style-type: none"> – Caps: The government is applying spectrum caps in the 700 MHz and 2 500 MHz auctions to limit the amount of spectrum that each company can obtain. – Tower sharing and roaming: As a condition of licence, the government will improve and extend these existing policies on roaming and tower sharing. These policies promote competition by requiring wireless service providers to provide other companies with access to roaming and towers on commercial terms. The proposed changes include an extension of inter-territory roaming for all service providers indefinitely, accelerated timelines for both triggering arbitration and the arbitration process, and improved transparency with respect to the tower information necessary to facilitate sharing. These proposals are currently under consultation. Decisions are pending on these proposals. – Rural rollout: The government will apply specific measures in the 700 MHz auction to see that rural Canadians have access to the same advanced services as everyone else in a timely manner. In each licence area, companies that have access to two or more blocks of 700 MHz 	<p>New policy initiatives for effective use of spectrum</p> <p>Consulted in 2011 on the possible use of TV white spaces. Decisions are pending.</p> <p>www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf10050.html</p> <p>Frequencies available for unlicensed use</p> <p>FRS and GMRS: 462-467 MHz</p> <p>SM bands: 902-928 MHz, 2 400-2 483.5 MHz</p> <p>Unlicensed PCS (used for DECT cordless phones): 1920-1930 MHz</p> <p>RLAN bands: 5 150-5 250 MHz, 5 250-5 350 MHz, 5 470-5 725 MHz, 5 725-5 850 MHz</p> <p>Point-to-point: 24.05–24.25 GHz</p> <p>Other bands: 57-59 GHz, 92-94 GHz, 94.1-95 GHz</p> <p>Policy provisions available at:</p> <p>FRS and GMRS:</p> <p>www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf08450.html#s2</p> <p>ISM:</p> <p>www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf05491.html</p> <p>www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf01054.html</p>

Canada (cont.)		<p>spectrum, through licences obtained in the auction or through spectrum sharing, will be required to deploy services to 90% of their existing broadband mobile coverage area within five years, and 97% within seven years of licensing.</p> <p>More information on these measures can be found at: www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf10121.html</p>	<p>RLAN: www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf08441.html#c432</p> <p>Point-to-point: www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf09110.html#c65</p>
Chile	<p>Spectrum for new generation wireless services</p> <p>Yes.. A beauty contest is in progress now to assign three frequency blocks in the band of 2.6 GHz. This contest includes obligations for interested companies to deploy services in isolated rural localities.</p>	<p>Spectrum allocation (beauty contest, auction)</p> <p>Beauty contest evaluating coverage and time of deployment. (Obligation to deploy access Infrastructure in 186 rural localities.)</p> <p>Selection criteria in the assignment process to promote competition</p> <p>No.</p>	<p>New policy initiatives for effective use of spectrum</p> <p>Chile has announced the next contest in 2013 in the 700 MHz band (digital dividend).</p> <p>Frequencies available for unlicensed use</p> <p>According to Chilean law, unlicensed bands do not exist. However, using administrative rules, bands for use in Wi-Fi, DECT or other services, including applications that use low power are authorised for the regulator on a generic basis.</p>
Czech Republic	<p>Spectrum for new generation wireless services</p> <p>Yes:</p> <p>The frequency band 800 MHz – 2 × 30 MHz</p> <p>The frequency band 1 800 MHz– 2 × 24.8 MHz – the frequency band 2600 MHz – 2 × 70 MHz FDD (frequency division duplex) + 50 MHz TDD (time division duplex)</p>	<p>Spectrum allocation (beauty contest, auction)</p> <p>Radio spectrum rights will be assigned by a common auction within 2012-13</p> <p>Selection criteria in the assignment process to promote competition</p> <p>A continuous frequency segment 2 × 15.6 MHz within the frequency band 1 800 MHz is designated for new applicants only (via a spectrum cap defined for this purpose).</p> <p>Spectrum caps are set as common for the frequency bands 800 + 900 MHz and as individual for 1 800 MHz (together with frequency spectrum which is already owned) and 2 600 MHz FDD.</p> <p>An obligation is set to provide national roaming of 2G, 3G and 4G networks for new applicants (while minimal requirements are fulfilled – minimal amount of the spectrum obtained and minimal own coverage).</p> <p>There is a commitment to host MVNOs in 4G networks.</p>	<p>New policy initiatives for effective use of spectrum</p> <p>Implementation of new technologies is underway (CR/SDR – Cognitive Radio/Software Defined Radio) in accord with the spectrum usage policy of the EU and CEPT/ ECC (Electronic Communications Committee)</p> <p>Frequencies available for unlicensed use</p> <p>A large amount of frequencies are designated for unlicensed use. These frequencies are derived in accordance with EU and CEPT/ ECC documents (i.e. EC Decision 2010/368/EU on harmonisation of the radio spectrum for use by short-range devices, determination of subclasses of class No. 1 according to EU Directive R&TTE, and similar).</p>
Denmark	<p>Spectrum for new generation wireless services</p> <p>Yes. The 800 MHz band (790-862 MHz) has been made available for mobile broadband and licences are about to be issued following a successful auction.</p>	<p>Spectrum allocation (beauty contest, auction)</p> <p>The spectrum in the 800 MHz band has been assigned following an auction in June 2012.</p> <p>Selection criteria in the assignment process to promote competition</p> <p>In the 800 MHz auction, spectrum caps were set at 2*20 MHz in order to promote competition in the auction and to ensure that the entire spectrum would be sold.</p>	<p>New policy initiatives for effective use of spectrum</p> <p>In Q3 2010, licence-exempted usage of spectrum for PMSE in "white spaces" in the frequency band 470-790 MHz was made possible.</p> <p>Frequencies available for unlicensed use</p> <p>The Executive Order with rules for using frequencies without a licence (Executive Order on the Use of Radio Frequencies without a Licence and on Radio Examinations and Call Signs etc.) gives an overall survey of what frequencies may be used without a licence and what general rules must be observed when such frequencies are used.</p> <p>More information on the Executive Order can be found here: www.erhvervsstyrelsen.dk/use_frequencies_no_licence</p> <p>The executive order can be found here (Danish): http://erst.lovportaler.dk/showdoc.aspx?docId=bek20120459-full</p> <p>In general, the policy regarding unlicensed frequencies is that the Danish Business Authority (DBA) will assess whether the risk of interfering usage or interference to other frequency bands is sufficiently minimal to allow usage of those frequencies without a license. If the DBA concludes that this is the case, the DBA will set some general conditions (block-edge-masks) that will apply to all who use the frequencies.</p>

Estonia	<p>Spectrum for new generation wireless services</p> <p>800 MHz and 2.6 GHz frequency bands.</p>	<p>Spectrum allocation (beauty contest, auction)</p> <p>Public competition (auction and a beauty contest). 2.6 GHz is assigned already.</p> <p>Selection criteria in the assignment process to promote competition</p> <p>There are no specific measures, but spectrum is divided into parts which could encourage additional competition.</p> <p>Spectrum caps of 2 x 10 MHz in the 800 MHz frequency band. And spectrum caps of 2 x 20 MHz in the 2.6 GHz frequency band.</p>	<p>New policy initiatives for effective use of spectrum</p> <p>Implementation of spectrum trading in frequency bands allocated for broadband mobile services.</p> <p>Frequencies available for unlicensed use</p> <p>Wi-Fi. The policy towards unlicensed spectrum use is in accordance with European regulation on free circulation and licence exemption.</p>
Finland	<p>Spectrum for new generation wireless services</p> <p>The 800 MHz band has been allocated for wireless broadband systems use since 2008, but it was the signing of the bilateral coordination agreement with Russia which made use of the band possible in Finland in Q3 2011.</p>	<p>Spectrum allocation (beauty contest, auction)</p> <p>The 800 MHz band will be auctioned in early 2013.</p> <p>Selection criteria in the assignment process to promote competition</p> <p>The spectrum gap will be 2 x 15 MHz in the 800 MHz band.</p>	<p>New policy initiatives for effective use of spectrum</p> <p>On March 2012, the Finnish government passed a resolution on spectrum policy, proposing that the auction process be used in the future as well as a spectrum fee that reflects the market value of frequencies and exceeds the administrative costs, especially when granting licences for new frequency bands through a process other than the auction.</p> <p>A further draft Government Resolution on Spectrum Policy requests that beyond 2016 the TV multiplexes should be transmitted on DVB-T2 technology in order to make more efficient use of the spectrum and to release more spectrum for wireless broadband systems within the TV UHF-band. Similarly, the use of white space in the TV UHF band has been possible in Finland since 2009.</p> <p>Frequencies available for unlicensed use</p> <p>There are several bands for unlicensed use. These bands are mainly used by various short range devices. WiFi networks can use the spectrum in the 2 400-2 483.5 MHz, 5 150-5 350 MHz (indoor only) and 5 470-5 725 MHz ranges. The frequency bands for unlicensed use are for devices which cannot claim protection from interference.</p>
France	<p>Spectrum for new generation wireless services</p> <p>Yes. In 2010, 14.8 MHz were awarded in the 2.1 GHz band: 5 MHz duplex to Free Mobile on 12 January 2010; 5 MHz duplex to SFR and 4.8 MHz duplex to Orange on 8 June 2010.</p> <p>In 2011, two procedures for licensing frequency bands for the deployment of high-speed broadband (4G) mobile networks took place. In the 2.6 GHz band, 70 MHz duplex were awarded on 11 October 2011: 20 MHz duplex to Orange; 15 MHz duplex to SFR; 15 MHz duplex to Bouygues Telecom; and 20 MHz duplex to Free Mobile.</p> <p>In the 800 MHz band, 30 MHz duplex were</p>	<p>Spectrum allocation (beauty contest, auction)</p> <p>Spectrum in the 2.1 GHz band was awarded following a call for applications. Spectrum in the 800 MHz and 2.6 GHz bands was awarded after a selection process with different criteria (price, coverage commitment, commitment to host MVNOs).</p> <p>Selection criteria in the assignment process to promote competition</p> <p>Three objectives were set for the assignment of 4G frequencies: the digital development of territories, competition in the mobile market and enhancing public domain. The selection of the winners included a test for hosting MVNOs. This test has helped to meet the objective of the development of competition in the mobile market by encouraging candidates to offer favourable conditions for the hosting of MVNOs on their network. Frequency caps were also set for each frequency band: 15 MHz duplex in the 800 MHz band and 30 MHz duplex in the 2.6 GHz band. After allocation procedures, each of the four French mobile operators could obtain frequencies (20, 25 or 30 MHz duplex) to deploy 4G and improve the capacity and quality of the network.</p>	<p>New policy initiatives for effective use of spectrum</p> <p>Auctions and fees for using frequencies are widely used to ensure efficient use of the spectrum. The 800 MHz and 2.6 GHz frequency bands were attributed in late 2011 and early 2012 for mobile services. The price offered for obtaining frequencies was one of the criteria for the selection of candidates during the procedures.</p> <p>Spectrum sharing between different applications, including between governmental and non-governmental applications, is widely used, for example, in the 5 GHz band (Wi-Fi and radar).</p> <p>The white spaces of VHF and UHF TV bands are used for auxiliary applications of broadcasting (radio microphones) without license.</p> <p>Frequencies available for unlicensed use</p> <p>There are dozens of frequency bands designated for unlicensed applications, generic or specific. ARCEP has authorised the use of the 1 880-1 900 MHz band for applications of digital wireless telecommunications (DECT) and the</p>

France (cont.)	awarded on 17 January 2012: 10 MHz duplex to Bouygues Telecom; 10 MHz duplex to SFR; and 10 MHz duplex to Orange.		2 400-2 483.5 MHz, 5 150-5 350 MHz, 5 470-5 725 MHz and 57-66 GHz bands for systems of broad data transmission. The TV white space VHF and UHF bands are reserved for radio microphones. Uses of unlicensed spectrum must not cause harmful interference to radio services and may not claim any protection against interference.												
Germany	<p>Spectrum for new generation wireless services</p> <p>Additional spectrum for new generation wireless services were auctioned in 2010:</p> <p>800 MHz Band: – 791.0-821.0 and 832.0-862.0 MHz</p> <p>1.8 GHz Band – 1 710.0-1 725.0 MHz/1 805.0-1 820.0 MHz – 1 730.1-1 735.1 MHz/1 825.1-1 830.1 MHz – 1 785.1-1 763.1 MHz/1 853.1-1 858.1 MHz</p> <p>2 GHz Band: – 1 900.1-1 905.1 MHz – 1 930.2-1 940.1 MHz/2 120.2-2 130.1 MHz – 1 950.0-1 959.9 MHz/2 140.0-2 149.9 MHz – 2 010.5-2 024.7 MHz</p> <p>2.6 GHz Band – 2 500.0-2 570 MHz/2 620-2 690.0 MHz – 2 570-2 620 MHz</p>	<p>Spectrum allocation (beauty contest, auction)</p> <p>The Bundesnetzagentur allocated these frequency ranges by auction in April/May 2010. No restrictions applied regarding the use of particular technologies and the frequencies were made available for broadband applications nationwide.</p> <p>The results are shown in the following table:</p> <table border="1" data-bbox="741 438 1153 646"> <thead> <tr> <th>Frequency range(MHz)</th> <th>Results (EUR)</th> </tr> </thead> <tbody> <tr> <td>800</td> <td>3 576 475 000</td> </tr> <tr> <td>1 800</td> <td>104 355 000</td> </tr> <tr> <td>2 000</td> <td>359 521 0 0</td> </tr> <tr> <td>2 600</td> <td>344 295 000</td> </tr> <tr> <td>Σ</td> <td>4 384 646 000</td> </tr> </tbody> </table> <p>Selection criteria in the assignment process to promote competition</p> <p>For the 2010 frequency award the spectrum cap in the 800 MHz band was set at 2 x 20 MHz, with existing assignments in the band at 900 MHz counting towards this. This resulted in the following spectrum caps at 800 MHz:</p> <p>Deutsche Telekom → max. 2 x 10 MHz at 800 MHz. Vodafone → max. 2 x 10 MHz at 800 MHz. E-Plus (KPN) → max. 2 x 15 MHz at 800 MHz. o2 (Telefónica) → max. 2 x 15 MHz at 800 MHz. Newcomer → max. 2 x 20 MHz at 800 MHz.</p>	Frequency range(MHz)	Results (EUR)	800	3 576 475 000	1 800	104 355 000	2 000	359 521 0 0	2 600	344 295 000	Σ	4 384 646 000	<p>New policy initiatives for effective use of spectrum</p> <p>Frequencies in the 900 MHz and 1 800 MHz bands for nationwide use for wireless access for the provision of telecommunications services will become available for assignment again as of 1 January 2017. In addition to applications by interested companies, the Bundesnetzagentur also takes into account future developments in order to provide frequencies as necessary in line with demand. A public consultation of these proceedings ends in July 2012. The Bundesnetzagentur will consequently come to a decision after all circumstances have been established, taking particular account of relevant, objective facts in the course of objective, transparent and non-discriminatory proceedings.</p> <p>Frequencies available for unlicensed use</p> <p>Wi-Fi for common usage: – 2 400.0-2 483.5 MHz – 5 150-5 350 MHz – 5 470-5 725 MHz</p>
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Greece	<p>Spectrum for new generation wireless services</p> <p>Auction 2011: technology neutral spectrum for 3G and 4G services: – 2 x 25 MHz in 900 MHz (2 x 5 new – 2x20 renewed). – 2 x 20 MHz in 1 800 MHz (4G). – 2 x 30 MHz in 1 800 MHz (renewed).</p>	<p>Spectrum allocation (beauty contest, auction)</p> <p>Simultaneous multiple round auction</p> <p>Selection criteria in the assignment process to promote competition</p> <p>Spectrum caps: – 2 x 15 MHz total holding in 900 MHz. – 2 x 35 MHz total holdings in 1 800 MHz.</p> <p>Commitment for antenna collocation. Commitment to strike commercial deals in good faith for hosting MVNOs.</p>	<p>New policy initiatives for effective use of spectrum</p> <p>Technology neutrality in 900 MHz and 1 800 MHz for 3G and 4G services</p> <p>Frequencies available for unlicensed use</p> <p>The unlicensed bands in Greece for Wireless LANs use are the following:</p> <table border="1" data-bbox="1503 1053 2134 1362"> <tbody> <tr> <td>2 400-2 483 MHz</td> <td>Max 100 mW EIRP. For modulations except FHSS, max EIRP density 10 mW/MHz</td> </tr> <tr> <td>5 150-5 350 MHz</td> <td>Only for indoor usage</td> </tr> <tr> <td>5 470-5 725 MHz</td> <td>Max mean EIRP 1W. Max mean EIRP density 50mW/MHz in any 1MHz band. Above limits shall be reduced by 3dB in case of no TPC use</td> </tr> <tr> <td>17 100-17 300 MHz</td> <td>Max 100 mW EIRP</td> </tr> <tr> <td>57-66 GHz</td> <td>Max 40 dBm EIRP/max EIRP density 13 dBm/MHz Fixed outdoor installations are not allowed</td> </tr> </tbody> </table>	2 400-2 483 MHz	Max 100 mW EIRP. For modulations except FHSS, max EIRP density 10 mW/MHz	5 150-5 350 MHz	Only for indoor usage	5 470-5 725 MHz	Max mean EIRP 1W. Max mean EIRP density 50mW/MHz in any 1MHz band. Above limits shall be reduced by 3dB in case of no TPC use	17 100-17 300 MHz	Max 100 mW EIRP	57-66 GHz	Max 40 dBm EIRP/max EIRP density 13 dBm/MHz Fixed outdoor installations are not allowed		
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Hungary	Spectrum for new generation wireless services Yes. 900 MHz, 1 800 MHz, 2 100 MHz, 26 GHz (technologically neutral base).	Spectrum allocation (beauty contest, auction) 2011: 900 MHz – auction 1 800 MHz, 2 100 MHz – option with 900 MHz only for the newcomer 2011: 26 GHz – tender Selection criteria in the assignment process to promote competition Yes. In the first round the new entrants had the right to obtain frequency with special obligations.	New policy initiatives for effective use of spectrum There is a study on secondary trading regulation revision. A spectrum cap was implemented for the 900 MHz auction and there is the intention to use such regulation in the future. Frequencies available for unlicensed use See the following decisions by European Commission: 2006/771/EK, 2008/432/EK, 2009/381/EK, 2007/131/EK, 2009/343/EK, 2008/294/EK, 2004/545/EK, 2005/50/EK, 2005/513/EK, 2006/804/EK, 2008/671/EK and 2008/295/EK.
Iceland	Spectrum for new generation wireless services Yes. 800 MHz and 1800 MHz	Spectrum allocation (beauty contest, auction) Auction Selection criteria in the assignment process to promote competition No	New policy initiatives for effective use of spectrum None Frequencies available for unlicensed use ERC/REC 70-03
Ireland	Spectrum for new generation wireless services No. ComReg is currently in the process of releasing 2 850 MHz of spectrum via an auction covering the 800 MHz, 900 MHz and 1 800 MHz frequency bands.	Spectrum allocation (beauty contest, auction) ComReg is currently in the process of releasing 2 850 MHz of spectrum via an auction covering the 800 MHz, 900 MHz and 1 800 MHz frequency bands. Selection criteria in the assignment process to promote competition The spectrum award is structured to ensure an even playing field for both incumbents and potential new market entrants. Please see ComReg document 12/25 and 12/50.	New policy initiatives for effective use of spectrum None Frequencies available for unlicensed use Please see ComReg document 02/71 R8: http://www.comreg.ie/fileupload/publications/ComReg0271R6.pdf which has an extensive list of the frequency bands currently exempted from the requirement for licences. ComReg's policy on licence-exempting spectrum is set out in section 6.5 of ComReg document 11/89: http://www.comreg.ie/publications/spectrum_management_strategy_statement_2011-2013_english.583.104016.p.html
Israel	Spectrum for new generation wireless services Yes. 2.5 GHz spectrum was allocated in 2011.	Spectrum allocation (beauty contest, auction) Auction. Selection criteria in the assignment process to promote competition Winning bidders will receive their bid back if they reach certain targets of market share in the private market (7% within five years).	New policy initiatives for effective use of spectrum Frequencies available for unlicensed use 2.4 MHz is available for public use.
Italy	Spectrum for new generation wireless services Yes. In 2011 a total amount of 240 MHz of additional spectrum has been made available and assigned for electronic communication services. That includes a digital dividend of 800 MHz and 2.6 GHz spectrum and some additional blocks at 1 800 MHz that were refarmed from military applications. Additional spectrum used by an operator with GSM technology was also made available and authorised to be	Spectrum allocation (beauty contest, auction) By auction, and the total amount of 240 MHz of spectrum in different bands was simultaneously auctioned. Selection criteria in the assignment process to promote competition Yes. The described auction procedure included selection criteria for promoting market competition; in fact, many provisions were dedicated to favouring possible new entrants. A combination of caps between new and existing spectrum assignments was adopted to make available a maximum availability of spectrum for new entrants. Spectrum caps of 2 x 25 MHz (at 800 + 900 MHz), 2 x 25 MHz (at 1 800 MHz) and 55 MHz (at 2.6 GHz) were defined in detail. Possible new entrants were also able to declare their minimum total requirement of spectrum at the beginning of the auction. More favourable coverage obligations were also defined for	New policy initiatives for effective use of spectrum Policy initiatives for effective use of spectrum are in line with decision 243/2012/EU establishing a multi-annual radio spectrum policy programme. The programme contains general regulatory principles, policy objectives, provisions to enhance efficiency and flexibility of spectrum, spectrum inventory and clear indications to take all steps necessary to ensure that sufficient spectrum for coverage and capacity purposes will be made available within the EU. Frequencies available for unlicensed use Frequencies available for unlicensed use are mainly those included in Commission decision 2006/771/EC of 9 November 2006 on the harmonisation

Italy (cont.)	referred to UMTS/LTE technologies, according to EU legislation (Commission decision 2009/766/CE, as amended by decision 2011/251/UE, and directive 2009/114/CE).	possible new entrants and other provisions about roaming, site sharing and frequency sharing.	of radio spectrum for use by short-range devices (SRD), and later periodic amendments to that decision. The generic term "short-range device" (SRD) stands for a large variety of low power radio transmitters that use frequency bands on a licence-exempt basis, based on specific technical parameters. The policy on unlicensed spectrum use is to promote this kind of approach in the defined bands and to ensure that SRDs can be used everywhere in Europe. Other frequencies for unlicensed applications are also those included in other Commission decisions, such as decision 2009/343/EC amending decision 2007/131/EC on allowing the use of the radio spectrum for equipment using ultra-wideband technology, decision 2007/90/EC amending decision 2005/513/EC on the harmonised use of radio spectrum in the 5 GHz frequency band for the implementation of Wireless Access Systems including Radio Local Area Networks (WAS/RLANs), decision 2011/485/EU amending decision 2005/50/EC on the harmonisation of the 24 GHz range radio spectrum band for use by automotive short-range radar, decision 2008/673/EC amending decision 2005/928/EC on the harmonisation of the 169.4-169.8125 MHz frequency band and in general those in CEPT ERC/REC 70-03, as implemented in the National Frequency Allocation Table (for other frequencies/unlicensed applications not covered by the 2006/771/EC decisions).
Japan	Spectrum for new generation wireless services March 2012: 900 MHz band for LTE June 2012: 700 MHz band for LTE	Spectrum allocation (beauty contest, auction) MIC examines the Establishment Plans submitted by operators who wish to be assigned new frequency to ascertain if they conform with the Establishment Guidelines specified by MIC, and then determines which operators are to be assigned new spectrum. Selection criteria in the assignment process to promote competition One of the provisions of the Establishment Guidelines is a concrete plan to promote the use of base stations to a number of parties including other telecommunication carriers (for example MVNO).	New policy initiatives for effective use of spectrum MIC is actively moving forward with efforts to take advantage of white spaces in radio spectrum. In September 2010, "The Council for White Space Promotion" was launched to discuss prevention of interference to broadcasting services, and flexible operation based on needs etc. The technical requirements and licensing procedures for Area-wide Broadcasting System and Wireless Microphone are already determined, and for other systems, such as sensor network, etc. to be formulated based on experimentation. Frequencies available for unlicensed use Extremely low power radio stations and specified radio stations operating for a certain purpose and using radio equipment under certain conditions do not require a license, e.g. the following radio stations do not require a license: – Radio stations operating with extremely low emissions. – Citizen radio stations (that operate in the frequency band of 26.9 MHz and 27.2 MHz with an antenna power of 0.5 W or less) – Radio stations with low antenna power (that operate under certain circumstances for a specific purpose and fulfil all of the following conditions) – Antenna power of 1 W or less – Use of radio type and frequency as specified in the ministerial ordinance – Automatically sends or receives call signs or call names and does not disturb the operations of other radio stations. – Only uses radio equipment with Technical Regulations Conformity Certification – Radio stations established by obtaining registration.

Korea	<p>Spectrum for new generation wireless services</p> <p>Spectrum in the 800/900 MHz and 2.1 GHz bands for IMT-Advanced was allocated. (May 2010).</p> <p>– The allocated spectrum includes 20 MHz bandwidth in the 800 MHz band, 20 MHz bandwidth in the 900 MHz band and 20 MHz bandwidth in the 2.1 GHz band.</p> <p>Spectrum in the 800 MHz, 1.8 GHz and 2.1 GHz bands for IMT-Advanced was allocated (August 2011).</p> <p>– The allocated spectrum includes 10 MHz bandwidth in the 800 MHz band, 20 MHz bandwidth in the 1.8 GHz band and 20 MHz bandwidth in the 2.1 GHz band.</p>	<p>Spectrum allocation (beauty contest, auction)</p> <p>Spectrum charge assignment (May 2010): comparative selection + assignment of spectrum charge taking into consideration the economic values of the spectrum to be assigned.</p> <p>– Spectrum charge is calculated based on the expected sales revenue during the period of spectrum use, bandwidth and the characteristics of the spectrum.</p> <p>Spectrum Auction (August 2011): simultaneous multiple round auction (SMRA)</p> <p>– Groups of related spectrum licences are auctioned simultaneously over many rounds of bidding. Minimum opening bids are set for each band and the highest bidder is licensed to the related spectrum.</p> <p>Selection criteria in the assignment process to promote competition</p> <p>In the case of the spectrum assignment in 2010, current low spectrum band owners were excluded from the assignment to foster a fair competition environment.</p> <p>In the case of the spectrum auction in 2011, a maximum of 20 MHz out of a total of 50 MHz bandwidth was assigned to a single operator. While a new operator was given allocation priority, an existing spectrum band owner of 2.1 GHz was restricted from tendering for the 2.1 GHz band.</p>	<p>New policy initiatives for effective use of spectrum</p> <p>Idle bandwidth in the TV spectrum band (470-698 MHz) is now being considered for sharing with other mobile devices.</p> <p>In 2011, a test service for TV white space utilisation was implemented and a general plan for the application of TV White Space was established.</p> <p>In 2012, a standard to avoid spectrum interference from broadcasting services was prepared and a table of spectrum allocation was set to be revised.</p> <p>In 2013, a TV white space database is scheduled to be built and its trial service will be implemented.</p> <p>Frequencies available for unlicensed use</p> <p>The KCC has released ranges of spectrum and electric intensity within which Short Range Devices (SRDs) with little spectrum interference can be used without licensing procedures.</p> <p>– The ranges include RFID 13.552~13.568 MHz, 433.670~434.170 MHz, 917~923.5 MHz, WiFi 2.4~2.483 GHz, 5.150~5.350 GHz, 5.470~5.650 GHz, 5.725~5.825 GHz, UWB 3.1~4.8 GHz, 7.2~10.2 GHz, etc.</p> <p>The KCC promotes utilisation of unlicensed spectrum with consideration for industrial demand and national benefit while allocating spectrum in linewith international spectrum assignments.</p>
Luxembourg	N/A	N/A	N/A
Mexico	<p>In August 2010, Cofetel allocated 90 MHz in bands 1 850-1 910/1 930-1 990 MHz and 1 710-1 770/2 110-2 170 MHz, for new generation wireless services, known as tenders 20 and 21.</p> <p>Cofetel is analysing the possibility of auctioning the remaining spectrum of bands 1 710-1 770/2 110-2 170 MHz, not awarded during 2010. As well as, 50 MHz in the band 3 400-3 600 MHz.</p>	<p>All spectrum in Mexico is assigned through auctions. The 90 MHz were assigned by a simultaneous ascending process. For tenders 20 and 21, the Competition Regulatory Authority (Comisión Federal de Competencia) established limits of spectrum accumulation (spectrum caps) to the participants in the auction in order to promote competition.</p> <p>COFETEL has ordered the revision of various aspects of planning, administration and use of spectrum in Mexico. In this framework, it has developed a document, which was subject to public consultation. The document is in the final stage of revision and will be published at the beginning of 2013. This document includes several initiatives for the effective use of spectrum, with an emphasis on IMT bands.</p> <p>www.cft.gob.mx:8080/portal/wp-content/uploads/2012/11/EL-ESPECTRO-RADIOEL-CTRICO-EN-MEXICO.-ESTUDIO-Y-ACCIONES-FINAL-CONSULTA.pdf</p> <p>Frequencies available for unlicensed use</p> <p>Although in Mexico the term “unlicensed spectrum” is not used, the Telecommunications Act, employs “free use spectrum”, an equivalent term. The regulatory policy regarding free use of spectrum bands is based on technical studies, according to available and foreseen future technologies, taking into account international and regional recommendations.</p> <p>Accordingly, the most common “free use” bands in Mexico are as follows: 902-928 MHz; 1 920-1 930 MHz; 2 400-2 483.5 MHz; 5 150-5 250 MHz; 5 250-5 350 MHz; 5 470-5 600 MHz; 5 650-5 725 MHz; 5 725-5 850 MHz; 71-76/81-86 GHz. Also, several narrowband channels in the VHF and UHF bands have been identified for free use, and are mainly used for FRS (Family Radio Service) and GMRS (General Mobile Radio Service).</p>	<p>The Ministry of Communications and Transportation published a document entitled “Actions to Strengthen broadband and Information and Communications Technologies” (<i>Acciones para el Fortalecimiento de la Banda Ancha y las Tecnologías de la Información y Comunicación</i>), in which several actions are planned to more rapidly decrease the market gap. One of these actions is to liberate additional spectrum bands for public telecommunications networks. In parallel, Cofetel has initiated a public consultation regarding a document called “The Radio Electric Spectrum in Mexico. Study and Actions” (<i>El EspectroRadioeléctrico en México. Estudio y Acciones</i>) whose main goals are to:</p> <p>– Improve and update the procedures and tools associated with the planning, management and monitoring of spectrum.</p> <p>– Implement a review process of a wide range of frequencies below 4 GHz, with special emphasis on “IMT” bands, in order to optimise their use.</p> <p>According to the Federal Telecommunications Act, “free use” spectrum is equivalent to “unlicensed spectrum”. Under this, the “free use” bands in Mexico are: various narrow band channels in the VHF band; various narrow band channels in the UHF band (450-470 MHz); 902-928 MHz; 1 920-1 930 MHz; 2 400-2 483.5 MHz; 5 470-5 600 MHz; 5 650-5 725 MHz; 5 725-5 850 MHz; 71-76/81-86 GHz.</p> <p>The regulatory policy regarding unlicensed use of spectrum bands is based on technical studies to establish the feasibility of unlicensed use of certain bands</p>

Mexico (cont.)			of frequencies, according to available and predicted technologies, taking into account international and regional recommendations on this issue.
Netherlands	<p>Spectrum for new generation wireless services</p> <p>The Ministry of Economic Affairs and Agentschap Telecom deal with these issues. In April 2010 there was an auction for the 2.6 GHz band. Another auction is foreseen for the end of October 2012 for several 800 MHz, 900 MHz, 1 800 MHz bands, 2.1 GHz and a remaining block of 2.6 GHz.</p>	<p>Spectrum allocation (beauty contest, auction)</p> <p>Auction.</p> <p>Selection criteria in the assignment process to promote competition</p> <p>Yes. Blocks are reserved for newcomers and there are caps for some existing operators.</p>	N/A
Norway	<p>Spectrum for new generation wireless services</p> <p>The use of the 900 and 1 800 MHz band has been liberalised.</p> <p>The 2 600 MHz band was awarded in 2007 and is currently being used for LTE.</p> <p>The 800 MHz band has been made available, but the auction is still in the planning phase and will not take place before 2013.</p>	<p>Spectrum allocation (beauty contest, auction)</p> <p>Auction.</p> <p>Selection criteria in the assignment process to promote competition</p> <p>A spectrum cap was used for the awarding of the 2 600 MHz band.</p> <p>Spectrum caps will also be used in the awarding of the 800 MHz and the 1 800 MHz bands.</p>	<p>New policy initiatives for effective use of spectrum</p> <p>In early 2011, NPT made available frequencies in the range 510-790 MHz in TV white spaces for wireless microphones. The use of these frequencies is licence-exempt and the white spaces are searchable at the website: www.finnsenderen.no.</p> <p>Frequencies available for unlicensed use</p> <p>Unlicensed use is given in regulations concerning general authorisations for the use of radio frequencies. An English version can be found here: www.npt.no/ikbViewer/Content/103810/fribruksforskriften_2012_endelig_eng.pdf. NPT implements EU regulations concerning SRDs. In addition they mainly follow the CEPT regulations given in ERC Recommendation 70-03. NPT also continuously considers using licence exemption for other frequency use if appropriate.</p>
New Zealand	<p>Spectrum for new generation wireless services</p> <p>Yes. The 698-806 MHz band is in the process of being allocated and will be available for use from December 2013. New Zealand has already allocated spectrum suitable for IMT/wireless broadband in the bands: 850, 900, 1 800, 2 100, 2 300, 2 500 and 3 500 MHz. Including the soon-to-be allocated 700 MHz band, a total of 934 MHz of spectrum is available for use. The technology used in each band is a matter to be determined by individual operators (owners).</p>	<p>Spectrum allocation (beauty contest, auction)</p> <p>Government decisions on the allocation of the 700 MHz band are expected by October 2012. New Zealand has a long history of using auctions for competitive allocation of cellular/IMT/wireless broadband spectrum.</p> <p>Selection criteria in the assignment process to promote competition</p> <p>Government decisions on the assignment process are expected by October 2012.</p>	<p>New policy initiatives for effective use of spectrum</p> <p>None</p> <p>Frequencies available for unlicensed use</p> <p>915-928 MHz, 1 880-1 900 MHz (DECT), 1 895-1 920 MHz (PHS), 2.4 GHz, 5 GHz. Note also that 10 MHz is used for NFC systems to enable data exchange.</p> <p>Unlicensed spectrum will be made available on a non-interference basis where suitable. New Zealand has a strong preference for these bands to be globally harmonised.</p>

Poland	<p>Spectrum for new generation wireless services</p> <p>Yes. The 2 x 25 MHz FDD block in 1 800 MHz band was made available at the beginning of 2012.</p> <p>The so-called "digital dividend" 790-862 MHz band is also being prepared to make that spectrum available.</p>	<p>Spectrum allocation (beauty contest, auction)</p> <p>The free spectrum was planned to be assigned at the end of 2012 using the tender procedure. The digital dividend is planned to be assigned at the end of 2013, through auction.</p> <p>Selection criteria in the assignment process to promote competition</p> <p>According to the Polish Telecommunications Law, promoting market competition is a mandatory selection criterion in case of tender. Other proportionate and non-discriminatory criteria are to be determined after public consultations.</p>	<p>New policy initiatives for effective use of spectrum</p> <p>The new policy initiatives for effective use of spectrum consist of enabling spectrum trading and rental, enhancing spectrum and infrastructure sharing, and promoting technology and service neutrality.</p> <p>Frequencies available for unlicensed use</p> <p>There are some bands available for unlicensed use, described in the Ordinance of the Minister of Transportation of 3 July 2007, for instance, Wi-Fi in 2.4 GHz.</p> <p>Unlicensed spectrum use is allowed when technical conditions are met. Polish NRA is supporting the light licensing approach.</p>
Portugal	<p>Spectrum for new generation wireless services</p> <p>800 MHz (790-862 MHz); 900 MHz (880-890 MHz/925-935 MHz); 1800 MHz (2x57 MHz); 2.6 GHz (2 500-2 690 MHz) 3.4/3.6 GHz (3.4-3.8 GHz)</p>	<p>Spectrum allocation (beauty contest, auction)</p> <p>Through auction procedures.</p> <p>Selection criteria in the assignment process to promote competition</p> <p>Yes. For the 800/900/1 800/2 600 MHz bands, a whole set of measures were taken to promote market entry:</p> <p>Lower bands (800/900 MHz): Spectrum caps; 25% discount on the final price of the 900 MHz lots; obligations of full MVNO and light MVNO agreements; obligation of national roaming agreements; coverage obligation only for the 800 MHz band.</p> <p>Upper bands (1 800/2 600 MHz): spectrum caps were defined in order to set spectrum aside for new entrants.</p> <p>Moreover, a reduction of 50% in the annual spectrum fees, during the first three years, was applicable for operators with less than 60 MHz in the bands assigned for electronic communication services. The following measures, which were applicable to all participants, were also considered as incentives to promote market entry: low coverage obligations; spectrum trading; auction model – designed to minimise aggregation risk.</p> <p>For more details please refer to www.anacom.pt/render.jsp?contentId=1102709. As regards the 3.4/3.6 GHz bands, the incumbent mobile operators were prevented from participating in the auction, so as to promote market entry.</p>	<p>New policy initiatives for effective use of spectrum</p> <p>The effective use of spectrum is one of the key criteria upon which, existing and future spectrum planning is based.</p> <p>There is no new ANACOM initiative per se in this respect. ANACOM favours an harmonised approach preferably on a European scale.</p> <p>Frequencies available for unlicensed use</p> <p>The frequencies available for unlicensed use are published in Annex 4 of the Portuguese National Table of Frequency Allocations (NTFA) (http://www.anacom.pt/render.jsp?contentId=1092468). These include:</p> <p>WLAN: 2.4 GHz, 5.1-5.7 GHz</p> <p>BFWA: 5.8 GHz (the registration procedure for the central stations is still to be defined).</p> <p>Other developments related to shared/unlicensed use of spectrum are underway (e.g LSA, CUS). ANACOM is following closely these developments particularly in the European framework.</p>
Slovak Republic	<p>Spectrum for new generation wireless services</p> <p>The NRA intends to assign frequencies in the 800 MHz and 2 600 MHz bands for new generation wireless services.</p>	<p>Spectrum allocation (beauty contest, auction)</p> <p>Electronic auction (2013).</p> <p>Selection criteria in the assignment process to promote competition</p> <p>Spectrum cap</p>	<p>New policy initiatives for effective use of spectrum</p> <p>Measures to prevent inappropriate spectrum accumulation in place.</p> <p>Frequencies available for unlicensed use</p> <p>The Slovak Republic follows common EU legislation and CEPT recommendations. All relevant EU and CEPT decisions and recommendations are implemented (e.g. Commission Decision 2011/829/EU amending Commission Decision 2006/771/EC on harmonisation of the radio spectrum for use by short-range devices).</p>
Slovenia	<p>Spectrum for new generation wireless services</p> <p>Yes. 800 MHz, 2600 MHz, 3 500 MHz and 3 700 MHz.</p>	<p>Spectrum allocation (beauty contest, auction)</p> <p>Beauty contest (auction , subject to planned changes in the law).</p> <p>Selection criteria in the assignment process to promote competition</p> <p>Yes. Subject to strategy which will be available in 2013.</p>	<p>New policy initiatives for effective use of spectrum</p> <p>TV white spaces use</p> <p>Frequencies available for unlicensed use</p> <p>Wi-Fi, white space</p>

Spain	Spectrum for new generation wireless services	Spectrum allocation (beauty contest, auction)	New policy initiatives for effective use of spectrum
	<p>Refarming of 900 and 1 800 MHz bands. 2.6 GHz band.</p> <p>800 MHz: 3 licences have been granted, but the spectrum will not be available until 1 January 2014.</p>	<p>Comparative selection (beauty contest) for 900 and 1 800 MHz bands. Auction for 800 MHz, 900 MHz and 2.6 GHz bands.</p> <p>Selection criteria in the assignment process to promote competition</p> <p>Limitations on the participation of operators (Telefónica and Vodafone) in the beauty contest carried out for the 900 MHz band. Spectrum caps for spectrum over and under 1 GHz respectively (800 and 900 MHz bands considered together; and 1 800 MHz, 2.1 and 2.6 GHz bands considered together).</p> <p>In certain cases, obligation of wholesale service.</p>	<p>Authorisation of secondary spectrum market (trading) and technological neutrality in mobile licences. Studies on co-sharing of spectrum between different services. Promotion of unlicensed use of spectrum.</p> <p>Frequencies available for unlicensed use</p> <p>Cordless telephones in 30 MHz.</p> <p>Short range devices (SRD) in 800 MHz, 5 GHz, 24, GHz, etc.</p> <p>Cordless telephones (DECT) in 1 900 MHz.</p> <p>WiFi in 2.4 GHz, 5 GHz and 5.8 GHz.</p> <p>PMR 446 in 446 MHz.</p> <p>Medical implants in 402 MHz.</p> <p>Cordless microphones in 860 and 1 700 MHz.</p> <p>RFID in 860 and 2 400 MHz.</p> <p>Ultra-broadband devices in several frequency bands. Frequency bands allocated for short-range devices are listed in the Annex to the Commission Implementing Decision of 8 December 2011, amending Decision 2006/771/EC on harmonisation of the radio spectrum for use by short-range devices (http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:329:0010:0018:EN:PDF)</p>
Sweden	<p>Spectrum for new generation wireless services</p> <p>800 MHz, 1 800 MHz, 3.5 GHz, 10.5 GHz</p>	<p>Spectrum allocation (beauty contest, auction)</p> <p>All of the bands were assigned by auctions.</p> <p>Selection criteria in the assignment process to promote competition</p> <p>There was a spectrum cap in the 800 MHz auction, 2 x 1 0 MHz.</p>	<p>New policy initiatives for effective use of spectrum</p> <p>PTS reserves the right to allow DSA in the frequency bands in order to achieve high spectrum efficiency.</p> <p>Frequencies available for unlicensed use</p> <p>Frequencies available for Wi-Fi are the 2 400-2 483, 5 MHz, 5 150-5350 MHz and the 5 470-5 725 MHz bands. For wireless telephone systems following the DECT standard frequencies, 1 880-1 900 MHz are used. National spectrum policy states: "When the risk of harmful interference is minimal and obstacles do not otherwise exist, exemption from the license requirement should be imposed. Services in license free bands operate on a non-interference non protective basis."</p>
Switzerland	<p>Spectrum for new generation wireless services</p> <p>Yes. The frequencies that correspond to the digital divide were attributed to operators at the beginning of 2012 following an auction process.</p>	<p>Spectrum allocation (beauty contest, auction)</p> <p>Auction process (combinatorial clock auction).</p> <p>Selection criteria in the assignment process to promote competition</p> <p>No priority has been given to new entrants; however the auction design includes spectrum caps.</p>	<p>New policy initiatives for effective use of spectrum</p> <p>There are no new developments in spectrum policy. Mobile operators who obtained frequencies have geographical coverage obligations.</p> <p>Frequencies available for unlicensed use</p> <p>Mainly the Wi-Fi and Dect frequencies.</p>

Turkey	Spectrum for new generation wireless services E-GSM (2 x 10 MHz) band will be available for GSM/UMTS.	Spectrum allocation (beauty contest, auction) Auction Selection criteria in the assignment process to promote competition Spectrum caps	New policy initiatives for effective use of spectrum 790-862 MHz will be used for communication services other than broadcasting after the analog switch off. Frequencies available for unlicensed use 2.4, 5.1, 5.4, 5.8, 17.1, 17.3 GHz and 1 880-1 900 MHz are used for unlicensed use. ERC/REC 70-03 is being followed closely. The policy is to increase the number of unlicensed bands.
United Kingdom	Spectrum for new generation wireless services No	Spectrum allocation (beauty contest, auction) Auction Selection criteria in the assignment process to promote competition In its July 2012 statement setting out the 4G auction process of 800 Mhz and 2.6 Ghz spectrum bands, Ofcom noted in its conclusion that UK consumers are likely to benefit from better services at lower prices if there are at least four credible national wholesalers of 4G mobile services. Therefore, in the interests of competition, Ofcom decided to reserve a minimum amount of spectrum in the auction for a fourth operator. This could be either the UK's current fourth MNO, Three (Hutchison 3G), or a new entrant altogether. Ofcom also considered it appropriate and proportionate to impose limits on the amounts of spectrum that each bidder can acquire in the auction, such that their overall holdings of "mobile spectrum" in general, and sub-1 GHz "mobile spectrum" in particular, do not exceed certain safeguard caps. This is in order to mitigate the risk of highly asymmetric spectrum holdings after the auction leading to lower competitive intensity. Details of the measures to promote competition can be found in paras 1.10-1.20 in the Ofcom statement here: http://stakeholders.ofcom.org.uk/binaries/consultations/award-800mhz/statement/statement.pdf . More information can be found here: http://media.ofcom.org.uk/2012/07/24/ofcom-unveils-plans-for-4g-auction-of-the-airwaves/	New policy initiatives for effective use of spectrum Ofcom intends to allow white space devices (WSDs) to operate in the bands used for UHF television broadcasting and has recently participated in tests to prove the concept of controlling these devices using a geo-location database. Examples of the applications for WSDs include: —Enhanced WiFi with improved range and capacity compared to 2.4 GHz; – Rural broadband, providing internet to remote properties; and – Machine to machine communications. Ofcom expects that white space technology could be launched in the UK in 2013 and will operate on a licence-exempt basis. For more information see: http://stakeholders.ofcom.org.uk/consultations/geolocation/ Frequencies available for unlicensed use Ofcom is required to exempt radio stations, equipment or apparatus from the need to hold a wireless telegraphy license where their use is not likely to involve any undue interference to other legitimate use of radio spectrum. This is done through regulations detailing the particular technical requirements which equipment must meet in order to not require a licence: http://stakeholders.ofcom.org.uk/spectrum/spectrum-management/licence-exempt-radio-use/ .
United States	Spectrum for new generation wireless services Several spectrum bands have been identified, including 25 MHz of WCS spectrum, 40 MHz of AWS-4 spectrum, and 65 MHz of spectrum to be auctioned under the Middle Class Tax Relief and Job Creation Act of 2012.	Spectrum allocation (beauty contest, auction) The FCC generally uses spectrum auctions to assign new licences. Selection criteria in the assignment process to promote competition The FCC has used various methods for promoting market competition including auction bidding credits for certain designated entities and spectrum caps.	New policy initiatives for effective use of spectrum In 2010, the FCC adopted rules for the use of white spaces by low power devices. In February 2012, Congress passed legislation giving the FCC authority to conduct incentive auctions. In an incentive auction, current licensees – like over-the-air-broadcasters – would have the option to contribute spectrum for auction in exchange for a portion of the proceeds. This will open up new business opportunities for current holders of spectrum licenses while helping to meet the demand for spectrum by new services Frequencies available for unlicensed use There are numerous bands that support unlicensed use in the US including 900 MHz, 2.6 GHz, 3.6 GHz, 5 GHz and 57-64 GHz. The rules for equipment and usage vary by band.

Source: OECD