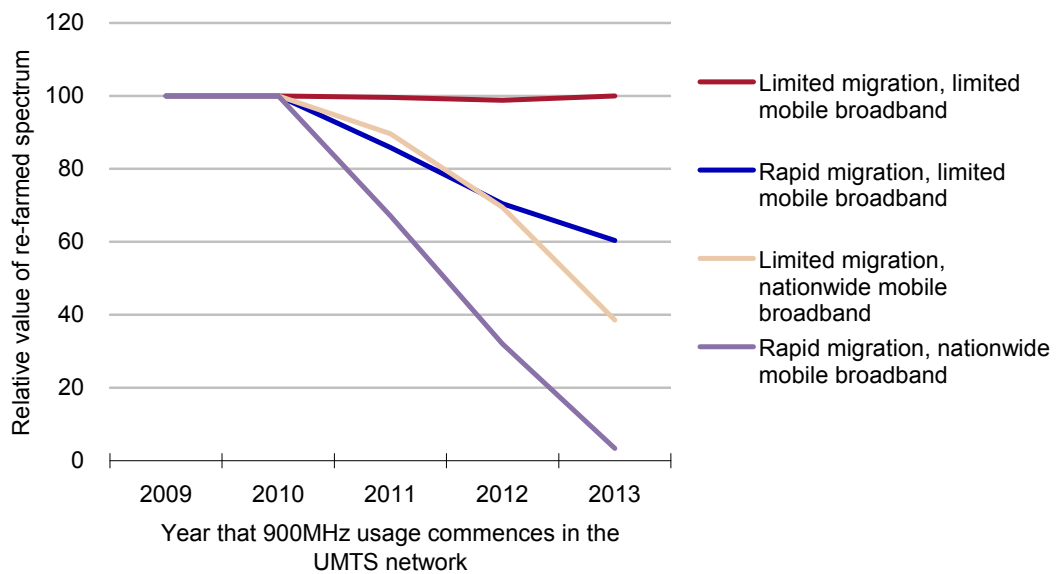


but in those where more extensive measures are needed, the preliminary steps can take a year or more to agree and implement.

Spectrum refarming policies need to balance the likely benefits to the operator, consumer and broader economy of spectrum liberalisation against the potential for distorting competition by introducing 'windfall' gains or losses affecting one or more of the players. The issues can be complex and in some markets will take time to resolve.

However, delays in liberalising the GSM frequencies could significantly reduce the value of the benefits that UMTS900 can deliver, as shown in Figure 3.1. This effect would be particularly marked if there were a rapid migration of subscribers to 3G, combined with wide-scale roll-out of 3G networks. If delays in introducing spectrum refarming are protracted, it becomes increasingly likely that operators will consider alternative solutions for rural coverage or postpone their network expansion.

**Figure 3.1:** The impact of delaying spectrum refarming [Source: Analysys Mason, 2009]



Not all licences used for operating GSM networks have been allocated on a technology-specific basis. Where the regulatory regime favoured a technology-neutral approach at the time of their issue, licences may have been granted that already allow the mobile operators to develop their networks using new technologies as they become available, provided that doing so would not cause interference to other spectrum users.

enable them to develop UMTS900 networks. However, legal challenges have been brought against the regulator, which have delayed licensing procedures and the removal of technology restrictions. In April 2008, the three licences expiring in May 2008 were extended on their present conditions until no later than 31 December 2013.<sup>18</sup>

- **UK:** Ofcom initially consulted on the liberalisation of the 900/1800MHz frequencies in September 2007, but could not reach agreement with the operators on the options proposed. In January 2009, the regulator issued its revised proposals for spectrum liberalisation. It believes that an industry-agreed set of spectrum trades is likely to be preferable to a solution imposed by the regulator, and has therefore given the industry until the end of April 2009 to agree a way forward. If no agreement is reached by the deadline, then a solution will be imposed. This would permit the introduction of UMTS in the 900/1800MHz bands, and in the longer term allow any technology that would not cause interference to neighbouring users to be introduced in these bands and at 2.1GHz. O2 and Vodafone would each be required to hand back 2×2.5MHz of their 900MHz spectrum, which would be auctioned as a single lot of 2×5MHz to allow a third operator access to the spectrum. The operators would be given two years to clear and release the spectrum, with the auction taking place a year ahead of the spectrum becoming available. The level of Administered Incentive Pricing (a charge for spectrum use at an estimated market value) applied to the 900/1800MHz spectrum would be reviewed, to reflect its full economic value post-liberalisation. Under these proposals UMTS900 would be implemented during 2011, considerably later than in some other countries in the EU.

### 3.2 The rest of the world

Outside Europe, countries that permit UMTS900 include:

- **Australia:** Operators' licences are granted on a technology-neutral basis, and all three of the GSM players have refarmed all or part of their spectrum for UMTS (Telstra at 850MHz; Optus and Vodafone at 900MHz, as discussed in Annex A).
- **New Zealand:** The Ministry of Economic Development (MED) favours a technology-neutral approach and the operators are allowed to migrate to new technologies provided they do not cause interference to spectrum users in the adjacent bands. Vodafone New

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<sup>18</sup> "Renewal of GSM licences" *ComCom* online 22 March 2007: [www.comcom.admin.ch/aktuell/00429/00457/00560/index.html?lang=en&msg-id=11585](http://www.comcom.admin.ch/aktuell/00429/00457/00560/index.html?lang=en&msg-id=11585); "Provisional extension of three GSM licences" *ComCom* online 9 April 2008: [www.comcom.admin.ch/aktuell/00429/00457/00560/index.html?lang=en&msg-id=18175](http://www.comcom.admin.ch/aktuell/00429/00457/00560/index.html?lang=en&msg-id=18175).