



EUROPEAN COMMISSION

Brussels, XXX
[...] (2012) XXX draft

COMMISSION STAFF WORKING DOCUMENT

EXECUTIVE SUMMARY OF IMPACT ASSESSMENT

Accompanying the document

COMMISSION IMPLEMENTING DECISION

on the harmonisation of the frequency bands 1920-1980 MHz and 2110-2170 MHz for terrestrial systems capable of providing electronic communications services in the Union

COMMISSION STAFF WORKING DOCUMENT

EXECUTIVE SUMMARY OF IMPACT ASSESSMENT

Accompanying the document

COMMISSION IMPLEMENTING DECISION

on the harmonisation of the frequency bands 1920-1980 MHz and 2110-2170 MHz for terrestrial systems capable of providing electronic communications services in the Union

1. BACKGROUND, CONTEXT AND CONSULTATION

This Staff Working Paper presents the impact assessment of the Commission's proposal on the Commission Decision on the "Harmonisation of the paired frequency bands 1920-1980 MHz and 2110-2170 MHz for terrestrial systems capable of providing electronic communication services (ECS) in the European Union". The main aim of this initiative is to outline the possible introduction of EU-wide technical harmonisation conditions for these frequency bands.

In 1998 the European Parliament and the Council adopted the so-called UMTS Decision' (128/1999/EC) which stipulated that Member States shall take all actions necessary in order to allow the coordinated and progressive introduction of UMTS services on their territory by 1 January 2002 at the latest. The Decision referred to the bands 1900-1980 MHz, 2010-2025 MHz, 2110-2170 MHz (hereinafter: the "terrestrial 2 GHz band"). Technical conditions were set through a mandate to the European Conference of Postal and Telecommunications Administrations (CEPT) and the resulting CEPT report. The UMTS Decision expired in 2003, by the time Member States had fulfilled their obligations as regards the roll out of UMTS. As a result, the terrestrial 2 GHz band is still assigned and used in the EU today exclusively for the provision of electronic communications service by UMTS networks.

The terrestrial 2 GHz band is currently divided into paired spectrum, also called Frequency Division Duplex (FDD) bands and unpaired spectrum, also called Time Division Duplex (TDD) bands. In particular, the 1920-1980 MHz band paired with the 2110-2170 MHz band constitute the FDD bands (hereinafter: "2 GHz paired bands") and the 1900-1920 MHz and 2010-2025 MHz bands constitute the TDD bands (hereinafter: "2 GHz unpaired bands"). Since the adoption of the UMTS Decision, the terrestrial 2 GHz band has been identified as one of the bands, where the Commission, in close cooperation with the Member States, applies technology neutrality and service neutrality as laid down in the Wireless Access Policy for Electronic Communications Services (WAPECS) concept. The revised regulatory framework for electronic communications (Directives 2002/19/EC, 2002/20/EC and 2002/21/EC as modified by Directive 2009/140/EC) stipulates the principles of technology neutrality and service neutrality, which shall be applied by Member States by 24 May 2016.

The Radio Spectrum Decision (676/2002/EC) adopted in 2002 provides the legal basis to harmonise at a European level the use of certain frequency bands for a specific application, creating a common usage at European level with common technical requirements and thereby fostering the internal market. The EC Implementing Decisions providing for such harmonisation are legally binding for all Member States. The Radio Spectrum Policy Programme (RSPP) has recently been adopted and is a strategic programme outlining policy objectives for the next years up to 2015.

The Commission has consulted both internal and external stakeholders on the potential policy measures and its impacts. While harmonised liberalisation of the 2 GHz paired bands, in particular for technologies of the IMT family (such as LTE), has received strong support, the options for the 2 GHz unpaired bands highlighted by the Commission in its call for public consultation have not found broad support. A number of stakeholders proposed alternative options for the 2 GHz unpaired bands.

2. PROBLEM DEFINITION

The specific problems that the initiative addresses relate to:

1. Deployment of innovative wireless services and technologies is hampered by the technology-centric designation and assignment of the terrestrial 2 GHz band, namely for UMTS.
2. Given the fact that some Member States are faster than others in introducing flexibility of use in licences, in the absence of binding common technical conditions this would lead to continuous fragmentation of the use of the terrestrial 2 GHz band within the EU.
3. The 2 GHz unpaired bands are not used in all Member States which results in inefficient spectrum use and contrasts the overall demand for spectrum resulting from the explosion of wireless traffic.

From a broader perspective, the lack of EU coordination has several other potential negative effects:

- lack of interoperability of devices and missed opportunities for economies of scale in the internal market;
- cross-border interference;
- missed opportunities for boosting innovation and investments.

3. OBJECTIVES PURSUED BY THE POLICY INITIATIVE

In line with the objectives set in the Radio Spectrum Decision as well as in the Radio Spectrum Policy Programme the general objective for this policy initiative is to promote more efficient use of spectrum and to promote competition and innovation in the terrestrial 2 GHz band while ensuring that harmful interference is avoided.

Complementary to the general objective, the following specific objectives are set to address the three specific problems identified above:

1. To allow and stimulate the deployment of innovative wireless services and technologies for equipment, services and/or networks by promoting regulatory certainty at a European level in the terrestrial 2 GHz band.
2. To contribute to the development of the internal market by avoiding fragmentation at EU level in the use of the terrestrial 2 GHz band.
3. To allow for the utilisation of the unpaired bands that is most beneficial from an economic, social and environmental point of view by helping to overcome the regulatory and market failure resulting in underutilisation of these bands.

4. POLICY OPTIONS

4.1. Option 1: Baseline scenario/No regulatory change

This scenario assumes that terrestrial 2 GHz licence conditions will not change in the short and mid-term. The terrestrial 2 GHz paired bands will continue to be used for the core mobile and data services provided by mobile network operators (MNOs), which was confirmed in the public consultation.

4.2. Option 2: Harmonised liberalisation of the whole terrestrial 2 GHz band under the technology and service neutrality principle, with a mandatory EU wide allocation established by an EC Implementing Decision on the basis of the Radio Spectrum Decision.

This option would lead to the technical harmonisation and liberalised usage of the whole terrestrial 2 GHz band at an early deadline around 2013. It would be implemented through an EC Implementing Decision. Liberalisation implies that the technology would not be specified and the band would be open to all systems capable of providing electronic communication services. In addition, based on technical parameters defined at CEPT, the use of the terrestrial 2 GHz band (both the paired and unpaired spectrum) would be technically harmonised at EU level.

As a consequence, the 2 GHz unpaired bands could be used for the provision of electronic communication services (ECS) under three different scenarios. They could be used (i) for low power TDD radio access networks to deliver voice and data service as currently provided in the 2 GHz paired bands or (ii) for (high-power) downlink only services to support asymmetric data transfer or (iii) they could be paired with other bands so as to provide FDD services.

4.3. Option 3: Harmonised liberalisation of the 2 GHz paired bands only, under the technology and service neutrality principle with a mandatory EU wide allocation established by an EC Implementing Decision on the basis of the Radio Spectrum Decision

This option would lead to a harmonised liberalisation of the usage of the terrestrial 2 GHz band as regards only the paired bands. It would be implemented through an EC Implementing Decision, introducing technology and service neutrality in the 1920-1980 MHz band paired with the 2110-2170 MHz band.

5. ASSESSING ECONOMIC, SOCIAL AND ENVIRONMENTAL IMPACTS OF THE DIFFERENT OPTIONS

5.1. Option 1: Baseline scenario/No regulatory change

Directive 2009/140/EC introduced the concept of technology and service neutrality, which shall be applied by Member States by 24 May 2016, allowing for liberalisation of the rights of use in all ECS bands, without coordinating the technical conditions of such a liberalisation. The lack of binding technical requirements at EU level can render the environment for investment less attractive and more prone to the risk that Member States apply a non-homogenous approach leading to market fragmentation and hampering the functioning of the internal market. This in return would impact on the speed of equipment development, on the readiness to invest and on a missed opportunity to create economies of scale for new services in a consolidated internal market.

The 2 GHz paired bands continue to be used extensively, while the unpaired bands are mainly left idle. It is very likely that the 2 GHz unpaired bands would remain underutilised as none of the specific problems described above would be solved in the absence of a regulatory action. This represents an opportunity cost of lost benefits to industry and the society.

5.2. Option 2: Harmonised liberalisation of the whole terrestrial 2 GHz band under the technology and service neutrality principle, with a mandatory EU wide allocation established by an EC Implementing Decision on the basis of the Radio Spectrum Decision

The review of the telecom package in 2009 was accompanied by an impact assessment, which examined the impacts of the introduction of more flexibility in spectrum usage. It concluded that flexibility in a harmonised manner across Europe facilitates access to spectrum for innovative and more efficient technologies such as LTE and promotes the internal market.

A study supporting this impact assessment has estimated the socio-economic impact of a harmonisation of both the paired and unpaired bands through a cost-benefit-analysis (CBA) by calculating the additional network capacity that would be created through the deployment of more efficient technologies. The additional capacity would support the ability of mobile network operators to satisfy the exploding demand for wireless broadband. Harmonised liberalisation produces a significant added value in economic and social terms while environmental impacts are negative due to the increase in energy and resource consumption of networks and equipment.

In case that the unpaired bands were used for ECS depending on the type of usage (i.e. low power usage or 'downlink only' usage with asymmetric data transfer, or pairing of the TDD bands with another band to provide FDD type services) harmonisation and liberalisation of the terrestrial 2 GHz band could yield significant economic benefits up to 1,138 M€ Net Present Value (NPV) over the analysis period (2011 to 2021). The Break Even Point (BEP) – the point in time as of which the benefits outweigh the costs – would be achieved in 2013, the year liberalisation is assumed to be implemented.

Compared to the baseline scenario under Option 1 the harmonised liberalisation of the terrestrial 2 GHz band with paired TDD bands yields an economic benefit of 341M€ NPV over the analysis period. Whilst there is some benefit from consumer welfare to be realised, this is just a quarter of the producer surplus.

Uncertainties related to Option 2

Some assumptions of the study, however, were not supported by the respondents to the public consultation and therefore the results of the quantification of socio-economic impacts seem to be too optimistic. In particular, it looks unlikely that **equipment** to use the unpaired bands would become available on the market as estimated. Moreover, the mobile operators have expressed a perceived lack of business case to invest in the unpaired bands, because these bands (15 MHz and 20 MHz respectively) are considered to be too narrow for widespread broadband deployment.

Furthermore, the public consultation has shown that as regards the possibility to use the **unpaired bands for low power services** – which several stakeholders consider to be already possible today under the current licensing regime – no market demand and no ecosystem have emerged.

'Downlink only' services potentially enable the delivery of high bandwidth broadcast applications which are currently not cost-effective using FDD bands. However, also this scenario is dependent on a market being found for a particular broadcast service or application.

Finally, pairing spectrum with other bands will delay utilisation by many years, because such bands have not been identified yet. New spectrum bands are to be allocated at global level. Also for equipment to be developed and to become available it would at least take another 3 years, according to past experience.

5.3. Option 3: Harmonised liberalisation of the 2 GHz paired bands only, under the technology and service neutrality principle with a mandatory EU wide allocation established by an EC Implementing Decision on the basis of the Radio Spectrum Decision

This option offers the benefits of harmonisation and liberalisation for the paired bands as in Option 2. It introduces, however, a cautious approach as regards the unpaired bands as it does not suggest a harmonised liberalisation for its use for ECS, but use of the unpaired bands for applications other than mobile communications following a more thorough technical investigation of the possible alternative options.

Furthermore, this option offers the possibility to introduce *shared use* of the unpaired bands by several alternative applications to ensure efficient spectrum use. This is a major aspect which needs to be examined further in technical studies. The alternative usage proposals put forward in the responses to the public consultations, which could be considered in this scenario, include ad-hoc (broadband) PPDR, PMSE, short-range devices or broadband Direct-Air-To-Ground communications.

The drawback of this approach is that the unpaired bands would continue to be underutilised for some time, while the advantage is that it is more likely that on mid-term the most beneficial option for usage is found. On the other hand, there is no

objective reason to postpone a decision on the 2 GHz paired bands – the sooner a harmonised liberalisation is implemented the higher the estimated net benefits are. Therefore, there is reasonable ground for separating regulatory action in the paired bands from an action in the unpaired bands of the terrestrial 2 GHz band.

If the 2 GHz paired bands were liberalised on a harmonised basis, the net economic benefit that could be achieved relative to the baseline scenario amounts to 135 M€ if liberalisation was implemented in 2013.

Option 3 would address all specific problems, either directly through the harmonised liberalisation of the paired bands, or indirectly through a more thorough investigation of what applications to allocate the unpaired bands for, in line with the majority of views during the public consultation.

5.4. Administrative burden

As regards administrative burden no additional information requirements are necessary to implement this initiative. Therefore this initiative is considered to be neutral as regards administrative burden since it neither saves nor creates additional administrative costs to Member States and mobile operators.

5.5. Comparing options and conclusions

Option 2 shows the potential that can be achieved in socio-economic benefits in case regulatory action is accompanied by common market action from mobile network operators and manufacturers towards a liberalised and harmonised utilisation of the whole terrestrial 2 GHz band. For the 2 GHz paired bands such common action is very likely and confirmed through the contributions to the public consultation organised on this subject.

However for the 2 GHz unpaired bands even if technology restrictions are removed, still significant uncertainty exists, whether manufacturers would develop the necessary equipment that would serve also the unpaired bands. Moreover, mobile network operators who have obtained licences for the unpaired bands maintain the position that there is hardly any business case to provide wireless broadband services in these bands.

Option 3 shows the socio-economic benefits that are likely to be achieved in the **paired** sub-bands and opens the possibility to use the **unpaired** sub-bands in an optimum alternative manner, namely for services other than electronic communication services. Given the limitations indicated above that are likely also in the future to hamper the use of the unpaired bands for broadband ECS, an alternative usage of the unpaired bands looks more promising even if it necessitates further technical investigation of the subject.

Concluding the analysis above the option suggested to be implemented is **Option 3**.

6. EVALUATION AND MONITORING

Article 9 of the Radio Spectrum Policy Programme establishes an inventory of spectrum use. The inventory has the objective to allow identification of spectrum

bands where efficiency of existing spectrum use could be improved in order to accommodate spectrum demand in support of Union policies, promote innovation and enhance competition.

To achieve the objectives the Commission shall adopt implementing acts. These will cover a) practical modalities and uniform formats for the collection and provision of data by the Member States to the Commission on the existing uses of spectrum and b) a methodology for an analysis of technology trends, future needs and demand for spectrum in Union policy.

Since the terrestrial 2 GHz band is within the scope of the inventory, the initiative that is accompanied by this impact assessment will be incorporated in the inventory of radio spectrum use.