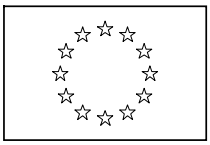

COMMISSION OF THE EUROPEAN COMMUNITIES

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COMMUNICATION FROM THE COMMISSION TO THE COUNCIL, THE EUROPEAN PARLIAMENT, THE ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

RESULTS OF THE WORLD RADIOCOMMUNICATIONS CONFERENCE 2000 (WRC-2000) IN THE CONTEXT OF RADIO SPECTRUM POLICY IN THE EUROPEAN COMMUNITY

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1. INTRODUCTION

Radio spectrum is an increasingly scarce and therefore valuable resource[1] which requires adequate co-ordination between different users in order to make sure all needs are taken into account. Spectrum-dependent industries (such as mobile telephony or broadcasting) are experiencing rapid growth in Europe and already form a vital component of the European economic environment[2]. The non-commercial aspects of spectrum use are also increasing in importance, whether it is for safety-of-life services at sea and in the skies, in research or in defence. Radio systems for all these applications can only be developed as long as sufficient dedicated spectrum is planned and harmonised well in advance of their actual deployment.

By its very nature, radio spectrum needs to be co-ordinated across borders. Decisions on the frequencies which various radio services may use under specific conditions are made at **World Radiocommunications Conferences** (WRC[3]). These conferences are held every two or three years and organised under the auspices of the International Telecommunication Union (ITU), a specialised agency of the UN, and where some 190 countries, including the 15 EU Member States, are eligible to participate.

It is the job of WRC to review and, if necessary, to revise the Radio Regulations, the international treaty obligations governing the global use of the radio spectrum and of satellite orbits. The latest conference, WRC-2000, was held from 8 May to 2 June 2000 in Istanbul.

A significant number of Community policies in the areas of telecommunications, transport, broadcasting and RTD are dependent on an adequate supply of radio spectrum. For this reason, the European Commission participated in the WRC-2000 process, though it was only indirectly involved in the negotiations themselves[4]. Prior to the conference, the Commission published a Communication on the European positions for the WRC-2000[5] with the objectives to ensure that the European negotiating positions developed by the European Conference of Postal and Telecommunications administrations (CEPT) for WRC-2000 were consistent with relevant Community policy objectives and to raise political awareness about the Community issues at stake in WRC-2000.

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1 As epitomised by the recent licensing of new 3G mobile services in Europe, which have raised to date over € 100 billion in revenue for national treasuries.

2 The mobile services market in the EU is estimated to be worth €58 billion and is growing by an average of 20% per year in terms of value (*source: European Commission, Sixth Report on the Implementation of the Telecommunications Regulatory Package, November 2000 draft).*

3 A glossary explaining all the acronyms used in this communication can be found in Annex I.

4 The status of the Commission in ITU/WRC is that of a "*regional and other international organisation*" which means that its formal role in WRC-2000 was that of a non-voting observer.

5 COM(2000) 86, 8 March 2000.

Broad political support for the Community policy objectives and for the European negotiating positions was provided by the Council of ministers when it adopted Council Conclusions[6] which, though not as comprehensive as the Commission would have wished, helped to reinforce the previous Communication's messages in a timely manner.

In line with Council's invitation to the Commission to report rapidly to the European Parliament and to Council on the results of WRC-2000, this Communication aims to:

- **assess the extent to which the results of WRC-2000 satisfy Community policy objectives** with regard to radio spectrum in the areas of telecommunications, transport, broadcasting and RTD (chapter 2);

- **assess the significance of the results** and their implications for possible Community actions in specific spectrum-using sectors (chapter 3);

- **evaluate the WRC-2000 negotiation process** (chapter 4) and to identify possible areas of improvement before the next World Radiocommunications Conference (chapter 5).

2. ASSESSMENT OF WRC-2000

2.1 Community Interests at WRC-2000

The Commission's primary objectives at WRC-2000 were to ensure that the European negotiating proposals were in line with and supportive of Community policies, and that **Community interests were adequately safeguarded during the conference negotiations** in the areas of communications, transport, broadcasting and research. The Community's interest for these sectors is as follows:

Communications

ICT (Information and Communication Technologies) policy is developing as an increasingly important chapter for the Community, both to satisfy a specific user demand and to develop the Information Society in general. The recent European Summits of Lisbon and Feira have confirmed the political will to fully exploit the potential for the Community of these new technologies. New Information Society applications will rely heavily on wireless communications in the future (in particular on third-generation mobile communications, IMT-2000) for which the availability of radio spectrum will be a key factor for successful deployment.

6 Council Conclusions on the Commission Communication on WRC-2000, 2/5/00.

Transport

One of the main objectives of Community policy in transport is to deploy networks across Europe, to interconnect them and to ensure their efficient operation. One of the ways to deal with congestion on European roads and skies is via better traffic management. The development of the GALILEO intelligent transport and navigation system is part of Europe's response to this challenge, and will enable European companies to better tap into the rapidly-growing location-based service industry.

The recent Commission initiative on the creation of the single European sky[7] has been triggered by concerns for the escalating delays of air traffic management in Europe. Securing sufficient access to interference-free radio frequency spectrum for air traffic management is key to increase the safety and efficiency of air transport operations.

Broadcasting

At Community level, broadcasting has so far been addressed mainly with regard to content[8], aiming to ensure access to high-quality and culturally diverse programmes across national borders. The co-ordination of access to spectrum for broadcasting systems is so far not covered by a specific Community policy. However, the development of a strong competitive satellite broadcasting market for which a clear demand exists will facilitate the provision of pan-European broadcasting services. At a moment when Europe discusses intensively the future of digital TV, a change affecting the conditions governing the satellite broadcasting may change the balance with other modes of transport (cable, terrestrial digital TV). In addition, frequency allocation is a key issue for the terrestrial broadcasting sector, as it evolves from analogue to digital services.

RTD

The European Union financially supports a full range of research and development activities in the Community, on the basis of the 5th Framework Programme for Research, Technological Development and Demonstration Activities (1998-2002), with the aim to contribute to the international competitiveness of European industry and to valorise the Union's policies in fields such as environment, agriculture, fisheries, health, energy and regional development. Such support is provided for instance by the funding of Earth observation technologies, including satellite technologies for meteorology, ecosystem management and environmental monitoring.

The European Commission and the European Space Agency are developing a joint policy on space[9] which, besides covering generic space research and space technology, addresses applications of communications, radio positioning and observation by satellite.

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7 See Commission Communication "*The Creation of a Single European Sky*", COM(1999) 614.

8 e.g. the Television without Frontiers Directive (89/552/EEC, amended 97/36/CE).

9 See the Commission Communication "*Europe and Space: turning to a new chapter*", COM(2000) 597, based on a joint ESA/EC document.

2.2 Results of WRC-2000 for Issues of Community Interest

Given the long lead times needed for system implementation, the consequences for users of radio services of the agreements reached at WRC-2000 will not be fully apparent for some time. Nevertheless, on the basis of current knowledge, it is the Commission's view that **the results of WRC-2000 largely comply with the five Community policy objectives identified in the Communication on the European positions for WRC-2000,** namely for third generation mobile systems, satellite navigation, broadband satellite, fixed wireless communications and satellite broadcasting.

2.2.1. Third Generation Mobile (IMT-2000/UMTS):

The Community's interest was to support the successful development of third-generation mobile communications in Europe by securing at global level radio spectrum availability additional to the already available radio frequency bands.

WRC-2000 did succeed in identifying three optional frequency bands[10] to accommodate additional spectrum for IMT-2000 applications in the quantity deemed necessary to support the expansion of this industry in the future. ITU members have the flexibility to determine whether, when and to what extent to allocate IMT-2000 applications in the identified bands.

2.2.2. Satellite Navigation Systems (GALILEO):

The Community's interest was to ensure radio spectrum availability for satellite radio-navigation systems which would allow for a prominent and independent role of the Community in this area of major strategic and industrial importance.

Virtually all Community objectives with regard to spectrum availability for GALILEO have been achieved, thanks to the effective performance of the CEPT negotiators, coupled to solid political support from the EU and strong interest from some non-EU countries In addition, the WRC-2000 debate on spectrum for radio navigation systems helped to increase the visibility of GALILEO, which - although a Community programme - was not widely known in the ITU context prior to WRC-2000.

2.2.3. Broadband satellites

The Community's interest was to facilitate the competitive provision of satellite broadband services while taking due account of the radio spectrum requirements of existing terrestrial and space-based services.

The conference adopted technical spectrum sharing conditions in particular bands[11] where a number of different satellite systems (GSO, NGSO, FSS, BSS) are operational or

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[10] The bands 806-960 MHz, 1710-1885 MHz and 2500-2690 MHz for the terrestrial component of IMT-2000.

[11] The so-called "Ku-band" (10-18 GHz) and "Ka-band" (18-30 GHz).

are planned. These sharing rules which had already been provisionally adopted at WRC-97, subject to the successful conclusion of further technical studies, will allow for the co-existence, and the shared use of spectrum by all the various satellite systems using these bands. Provided these systems observe certain interference thresholds and other parameters, they will be able in future to be licensed without further co-ordination efforts.

2.2.4. Fixed Wireless Communication

The Community's interest was to ensure sufficient spectrum for the timely deployment of reasonably-priced and flexible fixed wireless systems, in order to provide an alternative to wire-based infrastructures for the supply of multimedia applications to European citizens.

The results of WRC-2000 for HDFS were mostly in line with European requirements, with the identification of four new globally-harmonised bands for terrestrial fixed services above 30 GHz. These bands can be used in Europe to provide broadband Internet access at home or in public places (airports, train stations, etc.), but also to deploy base station networks for IMT2000/UMTS services. However, in the band 39.5 –42 GHz, the original European position needed to be modified in order to take into account other regions' insistence to allow fixed satellite services in this band. The result is that the two services are required to co-exist in the majority of this whole band from now on (except for sub-band 40-40.5 GHz, exclusively allocated to the fixed satellite service), which given the high number of fixed terrestrial stations expected in Europe, will complicate any co-ordination between these two services.

2.2.5. Satellite Broadcasting

The Community's interest was to ensure a fair but efficient distribution of resources (orbital positions, channels) needed for existing and new satellite broadcasting systems according to market demand in order to facilitate the provision of cross-border European services and the development of a competitive satellite broadcasting market in Europe.

The issue of revising the global plan governing the sharing of spectrum and of orbital slots for broadcasting satellites has been the subject of disagreement for several years between Europe and notably the Arab countries. Europe was opposing any planned increase of national BSS spectrum allocation without reviewing the principles and modalities of usage. Resolving this issue was of paramount importance, as the lack of agreement could have jeopardised the whole conference. Nevertheless, a compromise which satisfied both sides was found just before WRC-2000 opened: by relaxing the sharing criteria between BSS and FSS, it became possible to increase the BSS allocation from 5 to 10 channels per country.

The revised Plan can in principle accommodate only national systems. However, the agreed solution also provides for the means to protect existing systems, notably those with multinational coverage relevant to Europe. The Conference also tackled BSS systems not yet compliant with the Plan. Systems under preparation or systems with a footprint across several countries will be recorded in a "List of additional uses".

2.3. Results of WRC-2000 for Some Other Issues

2.3.1. High Altitude Platform Systems (HAPS)

These "balloons in the sky" have the potential of providing broadband services to metropolitan areas at affordable prices. If successfully rolled out, such systems could also introduce a welcome degree of flexibility and of additional competition in the broadband sector. Despite the lack of existing operational systems, WRC-2000 decided to maintain the present HAPS allocation around the 48 GHz band until review at the next conference, in order to enable the concept to be validated commercially.

In addition, each HAPS station has the potential of replacing a considerable number of cellular base stations and of repeaters in high-density urban environments. WRC-2000 therefore did not preclude the possibility of HAPS being used as platforms for IMT-2000 systems in the core bands (between 1.9 GHz and 2.2. GHz).

2.3.2. Aeronautical Service

The Community has a keen interest to ensure that improvements in air traffic management capacity and safety are not constrained by insufficient spectrum or by interference. WRC-2000 was positive in relation to the Community's objectives for aviation both in terms of sharing conditions with new services[12] (set such as to ensure interference-free operation of existing aviation infrastructure) as well as giving some degree of assurance[13] that frequencies would be available to the aeronautical service via satellite communications.

2.3.3. Mobile Satellite Services (MSS)

A CEPT proposal to allocate the band 1518-1525 MHz to MSS (space-to-Earth) was not accepted at the conference. However, the conference invited the ITU to study this issue further up until WRC-2003 which will then consider additional allocations to MSS in the 1-3 GHz band. Also, so-called 'little LEOs' (MSS systems operating below 1 GHz) will be examined again during the next conference. Up until then, the MSS industry will have the opportunity to demonstrate that it is able to make effective use of the spectrum allocated to it thus far.

The MSS community's lack of substantial progress at WRC-2000 is possibly linked to the highly-visible commercial failures the sector has suffered recently. More positively,

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[12] Allocation to the radio navigation satellite service in the range 1 to 6 GHz under the condition that existing navigation and radar infrastructures are protected. Also the 2.7-2.9 GHz band is not a candidate for IMT-2000 extension due to the absence of feasibility studies on sharing with 10 cm radars.

[13] Generic allocation of the band 1.5-1.6 Ghz : Resolution COM5/22 calls on administrations to ensure that satellite operators reserve a part of their capacity for the aeronautical service through a frequency co-ordination procedure or through a technical mechanism of prioritisation and real-time pre-emption. ITU-R has to study the feasibility of this technical mechanism. Availability of frequencies for aeronautical service will be reviewed at WRC 2006.

extension bands for the satellite component of IMT-2000 were identified at the conference, thus enhancing the opportunities of the satellite sector to provide viable commercial 3G services.

2.3.4. Satellite filing procedures

WRC-2000 was meant to tackle the difficulties caused by the ITU administrative procedures adopted for the filing of future satellite systems. It is generally acknowledged that the "first come, first served" procedures presently used for satellite applications have encouraged a "hoarding" attitude of frequencies and orbital slots for new satellites. The filing with ITU of applications of a speculative nature (so-called "paper satellites") has meant that real plans for new satellite systems have great difficulty in fulfilling all administrative due diligence requirements without being significantly delayed. With the awareness that the ITU administration has at present a three-year backlog of satellite applications (over 1350 filings to be processed), some corrective measures were proposed at WRC-2000, namely to apply financial due diligence procedures and administrative cost fee recovery to the applicants.

The main proposals on the table were not accepted – the only agreed modification to the current procedure is a new requirement that all filings be submitted in an electronic format, a result which will not reduce the backlog by itself, though it will help in better disseminating information about the systems filed, and this way perhaps reduce the number of multiple filings.

3. SIGNIFICANCE OF THE WRC-2000 DECISIONS AND CONSIDERATIONS FOR FUTURE COMMUNITY ACTIONS

3.1 IMT2000/UMTS

The WRC-2000 results give additional regulatory certainty for investing in and licensing of third-generation mobile communications. While confirming the prior ITU decisions on the IMT-2000 core bands, the WRC-2000 decision in effect paves the way for the extension in the medium term of the spectrum used by these services beyond the frequency bands available today. **This in itself is arguably the most important achievement of WRC-2000, since the perspective of further spectrum will strongly support the industrial and commercial development of IMT-2000/UMTS services in Europe**, expected to start within the next 12-18 months.

Considering the diverging negotiation positions initially presented at WRC-2000, the conference probably delivered as much consensual agreement as was realistically possible[14]. The decisions taken are not allocations of spectrum *per se*, but rather

[14] In fact, WRC-2000 was instrumental in demonstrating to administrations lagging in the development of IMT-2000 services the real momentum building behind this technology and the critical need for sufficient 3G spectrum. Thus, since WRC-2000, the U.S. president has requested the relevant federal agencies to develop a plan for the identification and analysis of possible

constitute a *declaration of intent* for additional spectrum for IMT-2000. It will now be important for the Community to prepare for the effective allocation of this spectrum. The Commission intends to support this process, also taking into account that many network operators are now considering third-generation mobile communications services in a clear pan-European (as well as increasingly global) business perspective.

A **key issue** remains from the conference, namely **to what extent the WRC-2000 decisions are conducive to support a *world-wide* harmonisation of third generation systems to allow for cost-effective *global* roaming**, given that three distinct extension bands have been identified, from which ITU members are free to choose the most appropriate frequencies for operation. Strictly speaking, the objective of harmonising IMT-2000 frequency bands at global level has not been achieved, since administrations can choose from a wide choice of frequency bands for the allocation of IMT-2000 services or even of services using other technologies, based on national requirements. This may hinder real and effective global harmonisation unless there is a pro-active effort in this direction by regional and international regulatory authorities. However, technological progress in the area of multi-band/multi-mode terminals may help offset the difficulties related to spectrum fragmentation, resulting in the availability of world-wide roaming for IMT-2000 services.

At the beginning of WRC-2000, Europe had announced its preference for a specific band (around 2.6 GHz). **The uptake of Europe's preferred spectral solution will now depend on how credibly Europe proceeds in a co-ordinated manner towards an effective allocation of this band throughout Europe**. This might influence and encourage other regions of the world to follow suit with the same band.

The timing of the provision of additional spectrum to IMT-2000 services in Europe is of course strongly dependent on the speed of roll-out and uptake of the new 3G networks[15]. The Community will need to continue monitoring this issue, since in order for new services not to be limited by a lack of spectrum, harmonisation activities will need to be undertaken well in advance of actual requirements, following the procedures established under the UMTS Decision.[16]

The administrations of the Member States are now faced with the challenge to prepare decisions and licensing conditions on the allocation and assignment of the extension bands (including, where necessary, to launch relocation procedures). The experience

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spectrum bands for 3G services by October 20th, 2000 and to auction licenses on the retained spectrum by September 30th, 2002 (Presidential Memorandum of October 13th, 2000). In addition, Brasil and other South American countries are now openly leaning towards adopting the "core" bands for IMT-2000 services.

15 The UMTS Forum specifies that "Extension Bands should need to be made available from year 2005 or later subject to market demand" (Report on Candidate Extension Bands for UMTS/IMT-2000 Terrestrial Component, March 1999).

16 Decision No 128/1999/EC of the European Parliament and of the Council of 14 December 1998 on *the co-ordinated introduction of a third-generation mobile and wireless communications system (UMTS) in the Community* (OJ L 17, 22.01.1999, p. 1).

gained when issuing the first set of third generation licenses will need to be taken into account during this process. Though the decisions taken at WRC-2000 should result in additional spectrum becoming available in the longer term, it is unclear whether the opportunity to increase competition in Europe will be fully exploited by issuing additional 3G licenses, thus allowing new players to enter this market. The Commission intends to follow this issue closely.

Some of the bands identified at WRC-2000 for future ITM-2000 systems are heavily used in Europe by second-generation systems. Other regions in the world might decide to use these frequencies as extension bands for IMT-2000, while current and prospective mobile operators in Europe may make the case for a direct evolution/migration from GSM1800 to IMT-2000. This will accelerate the discussion on how to manage the transition from the second to the third generation of mobile communications, including the spectrum currently used by GSM. However, the discussion will need to consider various possible scenarios, as much will depend on how the third generation mobile communications market is going to develop.

Besides spectrum considerations, the evolution of the IMT-2000 family itself needs to be taken into account when deciding on the best options for using the identified extension bands. Proposals to adapt the IMT-2000 air interfaces are already emerging in ITU. It is therefore important to make sure that any planning for the use of the extension bands will accommodate new technical solutions evolving from the current family of standards, since this might impact on the spectrum allocation.

3.2. GALILEO

Without succeeding in accessing the required spectrum, the Community would have seen the viability of the GALILEO project compromised. **Following the WRC decisions to provide sufficient spectrum for satellite navigation systems, the way is now paved for GALILEO to play an important function at global level.** The focus will now move on the means to validate the GALILEO proposal and ultimately to implement it. However, certain specifically spectrum related tasks still need to be followed up in the context of GALILEO.

In the short-term, it is necessary to file a notification of GALILEO towards the ITU, that is a request to use the newly allocated spectrum for this particular system. In accordance with ITU procedures, this must be done through a national administration. In order to demonstrate the Community dimension of this filing, it is now important that the appropriate political support to this notification is given by all Member States, as happened recently with the filing of GALILEO frequencies to ITU by the French administration.

The co-ordination process and the final assignment of the frequencies to the GALILEO system are questions to be addressed both at Community and at CEPT level in the next few years (notably before WRC-03), since some further studies on sharing bands with aeronautical systems, for instance, will be required within the ITU framework.

Further co-ordination with the Russian Federation and the USA will still be necessary in order to ensure compatibility with the American (GPS) and Russian (GLONASS) systems of radionavigation by satellites. In these negotiations, the European position is now reinforced, as GALILEO will be able to rely on newly available spectrum with significant bandwidth. However, the question of sharing bands already allocated to RNSS and assigned to GPS and GLONASS before WRC-2000 is still being discussed with the USA and Russia.

3.3. Broadband satellite

Broadband satellite systems can provide fast Internet and other data services to areas where terrestrial network deployment is not physically nor economically feasible. **The result obtained at WRC-2000 is fully in line with the commercial interests of the EU in this sector, and will support the development of different technologies** in the same frequency bands, without the need to give priority to one type of technology over the other. It will arguably lead to greater efficiency of spectrum usage in the respective frequency bands, and help to optimise the use of a scarce resource. The WRC-2000 results will allow for a more flexible framework for satellite radio allocation which will enable operators to share the same spectrum where appropriate and increase the penetration of services.

The resolution of this highly complex and technical issue marks a new trend in spectrum management. By using software to dynamically control usage and transmitter power levels, it is possible to develop a technical and regulatory framework within which frequency ranges can be shared between different applications and operators, without compromising on performance and reliability. This new approach re-uses otherwise wasted spectrum capacity and moves the entire radio industry away from the concept of rigidly assigning spectrum to specific uses. The concept of sharing and re-use has therefore the potential to ensure that future systems will not be hampered by a lack of spectrum, while the significant investment in existing services can be protected. It has to be ensured, though, that the approach can lead to a fair burden-sharing between the respective user communities. This balancing of interests does not necessarily take place within the ITU framework but often at national or regional level.

As a number of satellite broadband systems are preparing for deployment within the next three to five years, it will be necessary at Community level to monitor carefully the market development in order to decide whether policy initiatives are necessary to support the harmonised introduction of such satellite systems and in particular whether a harmonisation of spectrum planning and a discussion on licensing conditions needs to be initiated.

3.4. Fixed wireless communications

One of the objectives of the *eEurope* initiative[17] is to remove the bottlenecks to Internet use in Europe by *inter alia* supporting the allocation of harmonised frequencies to multimedia wireless systems. WRC-2000 allocated more spectrum to HDFS in the high frequency bands above 30 GHz. **This additional spectrum will enhance the development of new rapidly-deployed and cost-effective local wireless systems in Europe.**

An issue requiring further consideration is whether the development of the wireless local loop market would be enhanced by introducing spectrum harmonisation initiatives for these systems at Community level. A political reflection on this issue merits consideration within the Community and has already begun.

While taking into account that the sharing parameters allowing the co-allocation of spectrum to HDFSS in the 40.5-42.5 GHz band are provisional for now and will be studied and further reviewed at WRC-03, the European spectrum managers will also need to address the results of WRC-2000 in the work on HDFS/HDFSS. This particular band may also offer Europe the possibility of a consensual approach to spectrum harmonisation measures for HDFS, with resulting economies of scale and benefits for a Single Market for the provision of infrastructures for these services.

3.5. Satellite broadcasting

Considering that spectrum availability is crucial to satellite broadcasting, the WRC-2000 decisions on the allocation of orbital positions and spectrum for BSS are likely to impact on the development of broadcasting in Europe[18].

In general, WRC-2000 attempted to introduce more flexibility in the BSS plan. The use of spectrum allocated at national level is no longer blocked by complicated conditions as in the past, since usage conditions are now simplified. Furthermore, the increased number of digital channels provided in the Plan will improve the viability of the business model for this sector. By introducing a "list" concept, alternative procedures are now foreseen which also protect systems not complying strictly with the Plan. This introduces another element of flexibility, besides giving enough legal security to existing systems to be able to operate without new or more stringent spectrum usage conditions.

The WRC-2000 decisions have therefore the potential to increase the competition in the satellite broadcasting sector and are in line with the policy objective pursued at

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17 See http://europa.eu.int/comm/information_society/eeurope/index_en.htm

18 Note that terrestrial broadcasting was not a major subject at WRC-2000. The frequency aspects of the transition from analogue to digital broadcasting in Europe are expected to be addressed over the next five years in a regional ITU conference of the EBA (European Broadcasting Area), tasked to revise the existing frequency assignment plan (the so-called "Stockholm '61" European Broadcasting Agreement) in the bands 174-230 MHz and 470-862 MHz. In addition, sharing criteria of terrestrial broadcasting Earth stations with BSS are due to be addressed in WRC-03 (agenda item 1.27).

Community level. At the same time, the new rules are still complicated and the exact modalities governing the protection of systems against other systems have not been decided at WRC-2000, and will be subject to further studies.

It must be noted that the new Plan does not satisfy everybody, and resulting difficulties need to be sorted out before all countries can accept the WRC-2000 result. Also, some countries may have difficulties in endorsing certain regulatory clauses limiting their rights to deny delivering authorisations for systems for which co-ordination is not fully completed and where a risk of interference is only suspected rather than demonstrated. It will therefore be important that a consensus in Europe is achieved on the remaining open questions.

3.6. Other issues

The Community has an interest in seeing the issue of **satellite system filing** solved, as it can constitute a major hurdle to regional or global satellite systems which could provide Community-wide services. A reflection process could be launched to find practical modalities within the frame of the ITU procedures to reflect Community support for future filings where a Community dimension is identified.

The Community has a general interest to ensure that **basic and applied research and development**, including radio astronomy, are not unduly constrained by insufficient spectrum or by interference. A joint, coherent Community approach towards obtaining sufficient frequencies and orbital slots for applications of satellite Earth observation, for research and for environmental monitoring may be necessary in the future, with the Community working in concert with European and national space agencies and other stakeholders. This could contribute to a common European research infrastructure within a European Research Area.

Concerning the **aeronautical service**, the actions which are being developed as part of the Single Sky initiative to improve ATM in Europe, may require a co-ordinated Community approach to safeguard frequencies for the introduction of new technology in ATM.

4. OPERATIONAL ASPECTS OF WRC-2000

4.1. Conference Organisation

Despite the fact that WRC-2000 was a well-organised event which delivered once again global radio allocation results acceptable to most interested parties, **the sheer size of the event is causing increasing logistical and negotiating problems**[19]. While the

[19] Some indication of the scale of this month-long conference: 2370 delegates took part, representing 836 organisations and 150 countries; 544 original documents were drafted during WRC-2000,

conference was ably managed by a hard-working steering committee, it is clear that under such conditions there could be no simple overview of on-going proceedings. Though solutions to all individual issues emerged in time to produce a positive overall result, the risk for the conference managers of losing control on the outcome of the conference was always present. Given the ever-increasing complexity of the WRC process together with the changing environment for global spectrum management (see chapter 5.1), its structure and organisation should be kept under review.

Before the conference started, it was preceded by over two years of continuous preparations at national and regional levels. The long preparations involving both spectrum users and regulators, especially spectrum managers and industry, were essential in ensuring that the conference bore fruit. WRC-2000 also displayed a greater effort between regions to approximate their positions before the start of the conference, thereby following the request formulated by ITU members at WRC-97. However, these undertakings were at times greeted with a degree of concern by regions not involved in some of the regional dialogues[20]. Such attitude reflects the "zero-sum game" approach which has been customary in international spectrum allocation negotiations, but which needs to be overcome in order to provide for satisfactory global compromises.

Overall, WRC-2000 was characterised by a heavy and dispersed workload for the attending delegates. The WRC process had also to contend with negotiating linkages between various items. In particular, though it ultimately did not affect the outcome of WRC-2000, the review of the satellite broadcasting plan had to take place in parallel with the other negotiations. Since it was not originally foreseen as a negotiating topic at this conference, this additional activity further complicated proceedings and added to the workload.

Taking all these circumstances into account, the **WRC-2000 negotiations proceeded nevertheless well,** and political disputes did not hinder the work to the same extent as experienced in previous WRCs. **The overall economic impact of spectrum allocation was better understood** and taken account of in this conference, though perhaps still not to the extent wished for by commercial actors requiring access to radio-frequencies.

4.2. CEPT Co-ordination

Negotiations on behalf of Europe were carried out by CEPT, the European Conference for Posts and Telecommunications, in which the Member States participate[21]. From an

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entailing the production and distribution of more than 20 million pages of documents for the delegates; official negotiating sessions numbered in the hundreds.

20 Notably concerning the CEPT-Arab League agreement at the very start of the conference, which was instrumental in averting a potentially serious conflict on the issue of BSS re-planning (see chp. 2.2.5.), and which enabled common positions about other important issues to be established between the two regional groups.

21 For the working arrangements for WRC, see the Council conclusions on WARC-92 (2/2/92); Council conclusions on the Commission Communication on WRC-97 (7/9/97); Council conclusions on the Commission Communication on WRC-2000 (2/5/00).

operational point of view, **CEPT co-ordination worked adequately**, coping with the difficult framework of numerous detailed negotiations evolving in parallel, formally separate but often linked to each other in practice. Positive aspects of the CEPT operation were:

- **Most of the European proposals on specific issues were adopted at WRC-2000**.

- **All Member States and most non-EU CEPT countries adhered in general to the co-ordination guidelines of the CEPT**[22] which had been defined before the conference to improve the regional organisation's effectiveness at WRC-2000.

- **CEPT undertook a sustained effort to approximate regional proposals** prior to and during the conference with its counterparts, such as CITEL (Americas), APT (Asia-Pacific) and the Arab countries. Such approximation helped to prepare for acceptable compromises and led to the ultimately successful outcome of the conference. A significant factor in the conference's success was CEPT's systematic approach in opening up its preparations for WRC-2000 proceedings to all groups of interest and to third-country observers, an attitude replicated to a lesser extent by other regional organisations.

- **European industry was involved in the negotiations to a greater degree than at previous conferences**, via its substantial participation in national delegations and its effective, well-targeted lobbying activities. Its constructive role in the negotiations and its support for overall CEPT positions were evident[23].

Within the context of an overall positive result, **CEPT co-ordination did encounter a number of challenges during the negotiations**, mainly because the disparate national interests of European delegations on specific issues cannot always be completely supported by the CEPT negotiating positions, which themselves are compromises emanating from internal discussions. In addition, some European delegations were numerically unable to cover all the negotiations in the conference, and had therefore to rely to a certain extent on the larger CEPT delegations for feedback and input. Also, the necessity to negotiate during the conference with other regional entities required CEPT to put in place *ad hoc* steering groups. Because of this, some small delegations and observer organisations had difficulty in understanding whether shifts of position expressed by other CEPT delegates in formal WRC sessions actually reflected a new agreed position within CEPT or simply that particular delegation's point of view.

Overall, operational difficulties such as these were bound to arise in a group of 43 delegations over four weeks of negotiations, and the good results obtained by Europe at WRC-2000 indicate that **these difficulties were ultimately manageable** through the CEPT framework**.**

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22 CPG 2000-7, (2000) 66, Annex VI.

23 Since the end of the conference, a number of industrial organisations and trade associations have openly declared their satisfaction with the results of WRC-2000.

5. LOOKING AHEAD TO WRC-03

One of the tasks of WRC-2000 was to define an agenda for the next World Radiocommunications Conference, due to take place in 2003. A long list of topics was agreed upon for WRC-03 – some 35 specific items, together with 7 administrative activities – and successfully submitted to the subsequent formal approval of the ITU Council.

As was the case for previous WRCs, an analysis of the relevance to Community interests or policy initiatives of negotiating items such as radio-navigation, IMT-2000 and beyond, HIPERLAN, public protection systems, space services, and sharing between BSS and terrestrial Earth stations, will help to focus the European effort before and during WRC-03. The Commission intends therefore to prepare a Communication on the Community issues at stake at WRC-03.

The satisfactory conclusion of WRC-2000 is a good starting basis for the Community to focus on future international radio spectrum allocation. Preparations for WRC-03 have already begun. The way the Community approaches WRC-03 will be influenced by several factors. Three of them (developments in technology, evolution in global spectrum management thinking and the proposal for a Community spectrum framework) are presented in the following section, together with some options for enhancing the chances of achieving Community objectives at the next conference.

5.1 The Evolving Role of ITU

Over the last ten years, the context of WRCs has changed considerably, from being a decision-making process primarily on a technical level to one where economic and political forces, driven by liberalisation, competition, globalisation and technological innovation, have become apparent. In parallel, **the global spectrum allocation mechanisms of ITU are evolving**. Two of the most important factors for change are:

- **Convergence:** the increasing similarity in the way wireless data is handled using packet networks and the prospect of spectrum-efficient technologies (such as "smart radios" and UWB) are raising questions concerning the actual differences between the various wireless services defined by ITU and discussed at WRC. The wireless networks of the future will be able to carry data emanating from voice, audio and video without any distinction. Commercial wireless applications will also become increasingly integrated, bi-directional, interactive and fully functional. Allocating spectrum between various services as presently defined will therefore become less meaningful and less relevant to users' real needs.

- **Determination of the value of spectrum :** no explicit attempt is made presently in WRC to quantify the distribution of net costs and benefits of allocation decisions. Valuable spectrum is often allocated on the basis of historical precedent or of equitable resource sharing. However, in recent years the quantification of the spectrum's commercial value by means of auctions, administrative pricing and secondary trading has been increasingly taking place in many countries. In addition,

the determination of spectrum value for non-commercial systems, whether for scientific, safety of life or social applications, is fundamentally different from that for commercial applications and is also an issue now being actively studied.

Whilst this new emphasis on spectrum value may increase the efficiency of assignment in particular bands, **it does not address the fundamental issue of inefficient allocation on a global scale**, since the value of spectrum for different users, whether in economic, social or cultural terms, is not an explicit criterion of the allocation process. This way, applications which are particularly commercially or socially desirable, and therefore heavy users of spectrum, will sometimes suffer from frequency "rationing" which will drive upwards the value of the frequencies allocated for these applications, while adjacent spectrum may remain under-exploited.

The ITU is undergoing a broader process of reform, with the objective of updating its procedures and working principles[24]. This process will need to address also the trends outlined above, in order to ensure that spectrum is allocated as efficiently as possible at WRC. The Community will endeavour to support those reforms aiming to improve the use of spectrum.

5.2 Proposal for a Community Decision on Radio Spectrum Policy

Future improvements to spectrum policy co-ordination are being proposed in a Community context. Following a public consultation on the 1998 *Green Paper on Radio Spectrum Policy in the context of European Community policies such as telecommunications, broadcasting, transport, and R&D*[25], the Commission has adopted a proposal for a European Parliament and Council Decision on a regulatory framework for radio spectrum policy in the Community[26].

In its proposal for a Decision, the Commission proposes to complement, rather than to replace the present spectrum management activities at Community level by establishing a policy and legal framework through which Community policy input can be provided to the CEPT and the ITU.

Different national policy objectives to be pursued often come to the fore at WRC. It is therefore important to ensure that political discussions take place prior to WRC in the Community so as to pave the way for establishing agreement on the technical details in the CEPT and the ITU/WRC. **The proposal for a Decision on radio spectrum policy in the Community, should help enhancing the preparations for WRC.** The proposed policy framework should facilitate a reflection on the policy requirements which need to be supported during the preparation of the negotiating positions (European Common Proposals - ECPs) prepared before the conference. The policy and legal framework to be established will be used to identify overall Community policy objectives before each

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[24] See http://www.itu.int./newsroom/reform/index.html

[25] COM(98) 596.

[26] COM(2000) 407.

conference, to assist in preparing ECPs to achieve such objectives, and to ensure that Community-specific common concerns are taken into due account.

Taking the above-mentioned into account, it is therefore urgent to make progress with the proposal for a Spectrum Decision. This approach is expected to facilitate the cohesion of Member States' delegations during the conference and the achievement of results in line with Community needs.

5.3. Areas for Improvement

It is already clear that WRC-03 will be even bigger and more complex than previous conferences and of ever-greater relevance for users of radio spectrum. The importance for the Community of the applications mentioned above for the European citizen suggests to consider several actions before and during WRC-03, in order to improve the opportunity for successful negotiation on these topics. These may include:

CEPT Preparations and Resources

Given the increasing importance of the WRC process and the rise in workload expected for WRC-03, CEPT has started preparations at an early stage following WRC-2000 via its CPG (Conference Preparatory Group), and will continue its constructive approach towards transparency and open discussion, both internally and with other organisations before the conference[27] All Member States and CEPT will need to consider providing their delegations with sufficient resources before and during WRC-03.

Industrial Involvement

As globalisation in the telecommunication, IT and broadcasting markets gathers momentum, **it is essential to ensure continuity in the partnership between European industry and European spectrum managers** within the WRC process. As an example, the European Union's significant development in wireless markets is reflected by a strong industrial sector, which needs access to spectrum on a global basis and which can be effective in assisting the European regulators to obtain this spectrum.

While significant efforts have been carried out to include the point of view of industry, certain sectors seem to be more present in the spectrum discussions than others. Besides the communication sector, it is therefore important that all industries depending on access to spectrum articulate their view.

The positions of Industry need also to be weighed against the input from other groups. The end-users of spectrum-dependent services are generally not sufficiently represented

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[27] Concerning transparency, CEPT has shown the path which other delegations are following. See for example the analysis of the US' delegation's strengths and shortcomings prepared by the US Head of Delegation, Ambassador Schoettler (Recommendations to Improve United States Participation in World Radiocommunication Conferences, at http://www.ntia.doc.gov/osmhome/wrc/wrcrecommendations.htm)

in WRC in order to reflect adequately socio-economic considerations. Also, public interests must always be considered, to be defended by national administrations themselves, as they are often conflicting with the point of view of industry. **A proper balancing of all inputs is a goal which should be led by a political discussion of spectrum issues at stake in the WRC context.**

Strengthening European Cohesion and External Contacts

Additional efforts must be considered to clarify and support CEPT-agreed positions, within CEPT, with other regions (Africa, Arab League, APT, CITEL…) and with relevant international organisations (NATO, ICAO, IMO, IATA, ESA, etc.). Whilst, with one or two exceptions, Community delegations displayed impressive solidarity and communality of interests at WRC-2000, the same cannot be said for some members of the Commonwealth of Independent States (CIS) and, to a lesser extent, EU accession candidates, with some of these delegations displaying negotiating positions at WRC-2000 significantly at variance with agreed CEPT positions. Such attitude is not surprising in itself, since many of these countries have long had an approach to spectrum use different from Community Member States. The fact that some former USSR republics are in CEPT, while some are not, complicates the co-ordination with the rest of CEPT.

It is now clearly understood by all main players that **co-ordination rather than confrontation is the key to success at WRC**. The expected greater efforts by third countries to influence those elements of CEPT susceptible to such an approach will pose a threat to the CEPT common front at future conferences. A corresponding loss of common ground between CEPT and other delegations may also be possible, in particular concerning developing countries, which are being courted assiduously by Europe's trading partners, via high-level contacts and various types of assistance, such as helping setting up regulatory bodies, training telecom managers, etc.

The Community could help to align the various positions within CEPT by opening a spectrum dimension in the accession negotiations of prospective candidates to the European Union. It could also cement support at WRC for European positions by considering which initiatives could be taken to assist developing countries overcome the "digital divide" in the telecommunications domain. At the same time, the Community is developing new relationships with many of the above-mentioned international organisations. Furthering collaboration in the spectrum field could be envisaged with some of these organisations.

Broadening and Deepening the Spectrum Debate

The **economic and trade dimensions** of spectrum allocation could also be brought further to the fore in the Community as well as the **political overview** of the process. CEPT is fortunate to be served by a consistent group of individuals with acknowledged mastery of the technical and procedural aspects of international spectrum management. On the other hand, economic and trade input in the WRC process is not as important as it could be. The Commission's proposal for a Spectrum Decision will enable to highlight this dimension more successfully in the Community context.

While technical and procedural expertise must be the bedrock of a successful WRC negotiation, **political leadership and visibility can also play an essential function**. Other delegations have recognised this by appointing political officials to head their teams and to be present throughout the WRC conference. The direct involvement of the European Commission on behalf of GALILEO helped to produce a satisfactory result for this specific negotiation item and could be used as an example of the type of **additional political support which could complement CEPT's technical and negotiation skills.**

Addressing Community Objectives

For its part, the Commission will prepare **a specific Communication on WRC-03** closer to the time of this conference, in order once **again to define the objectives for areas of Community interests**. Assistance in the specification of such objectives and in all the previously-mentioned proposals for enhancing the process in Europe will be actively sought by the Commission from the future Spectrum Policy Group, as well as from other interested parties.

6. CONCLUSIONS

The results of WRC-2000 comply in overall terms with Community policy objectives in the areas of telecommunications, broadcasting, transport and RTD. The prospects for Europe's mobile multimedia communications and radionavigation markets have accordingly been enhanced by this conference.

The Member States, united in the CEPT, the Commission and the Presidency co-operated constructively at WRC-2000. However, due to the strategic and economic issues at stake with regard to radio spectrum, **further efforts are needed** to ensure that the Community is fully involved where decisions on the availability of radio spectrum are taken.

The forthcoming proposal for a Decision on radio spectrum policy in the Community is meant to serve all Community policy areas affected by radio spectrum and will seek to ensure that appropriate Community interests are taken into account in radio spectrum policy matters, including in ITU.

The results of WRC-2000 will be taken into account in the implementation and further development of Community policies in the areas of telecommunications, broadcasting, transport and R&D.

The next World Radiocommunications Conference (WRC-03) will be as challenging and important to European interests as the conference recently concluded. Building on the important achievements for Europe at WRC-2000, **an early start to European preparations for WRC-03 is needed**.

ANNEX

GLOSSARY

3G	Third Generation mobile, following 1G (analogue) and 2G (GSM)
APT	Asia-Pacific Telecommunity
ATM	Air Traffic Management
BSS	Broadcast Satellite Service
CEPT	European Conference of Postal and Telecommunications Administrations
CITEL	Commission of Inter-American Telecommunications Administrations
CPG	Conference Preparatory Group of CEPT
CPM	Conference Preparatory Meeting
ECP	European Common Proposal, to be adopted by CEPT/CPG
ERC	European Radiocommunications Committee
ERO	European Radiocommunications Office of CEPT
ESA	European Space Agency
EU	European Union
FS	Terrestrial fixed systems
FSS	Fixed Satellite Service
GALILEO	European satellite-based navigation and positioning system
GLONASS	Global Orbiting Navigation Satellite System of the Russian Federation
GNSS	Global Navigation Satellite System
GPS	Global Positioning System of the United States
GSM	Global System for Mobile Communications
GSO	Geostationary Orbit
HAPS	High Altitude Platform System
HDFS	High-Density Fixed Service
HDFSS	High-Density Fixed Satellite Service
IATA	International Air Travel Association
ICAO	International Civil Aviation Organisation
IMO	International Maritime Organisation
IMT-2000	International Mobile Telecommunications for the year 2000
ITU	International Telecommunications Union
LEO	Low Earth Orbit
MSS	Mobile Satellite Service
NGSO	Non-Geostationary Orbit
RAS	Radio Astronomy service
RNSS	Radio Navigation Satellite System
RR	Radio Regulations of the ITU
RTD	Research & Technological Development
S-PCS	Satellite Personal Communications Services
S-UMTS	Satellite UMTS
UWB	Ultra-Wide Band
UMTS	Universal Mobile Telecommunications System
WRC	World Radiocommunications Conference