**MOD** ARB/21A4/1

RESOLUTION 9 (Rev. buenos aires, 2017)

Participation of countries, particularly developing   
countries, in spectrum management

The World Telecommunication Development Conference (Buenos Aires, 2017),

considering

*a)* that the continuing growth in demand for spectrum, from both existing and new radiocommunication applications, places ever greater requirements on a scarce resource;

*b)* that, because of the investment in equipment and infrastructures, major changes in the existing use of the spectrum are often difficult to achieve, except in the long term;

*c)* that the marketplace drives the development of new technologies to find new solutions to address development problems;

*d)* that national strategies should take into account international commitments under the Radio Regulations;

*e)* that it is recommended that national strategies should also take into account global changes in telecommunications/information and communication technologies (ICTs) and developments in technology;

*f)* that increased spectrum access may be facilitated through technical innovation and greater sharing capabilities;

*g)* that, based on its ongoing work, the ITU Radiocommunication Sector (ITU‑R) is well placed to provide worldwide information on radiocommunication technology and spectrum utilization trends;

*h)* that World Radiocommunication Conferences provide many decisions that have a significant economic and social impact on the national spectrum management strategy;

*i)* that some countries, particularly developing countries, have some difficulties in implementing the outcomes of the World Radiocommunication Conferences;

*j)* that the ITU Telecommunication Development Sector (ITU‑D) is well placed to facilitate the participation of developing countries in ITU‑R activities, and, for those developing countries that so request, to distribute to them the results of particular ITU‑R activities;

*k)* that such information would assist spectrum managers in developing countries to develop their own national medium- or long-term strategies;

*l)* that such information would enable developing countries to benefit from sharing studies and other technical studies in ITU‑R, including frequency sharing methodologies such as dynamic spectrum sharing (DSS);

*m)* that, within spectrum management, one of the most pressing concerns of many developing countries, including least developed countries, small island developing states, landlocked developing countries and countries with economies in transition, is the difficulty of elaborating methods for the calculation of fees for use of the radio-frequency spectrum;

*n)* that regional, bilateral or multilateral agreements could be a basis for fostering cooperation in the field of the radio-frequency spectrum;

*o)* that spectrum refarming[[1]](#footnote-1)1 could accommodate the increasing demand for new and existing radiocommunication applications;

*p)* that spectrum monitoring includes effective use of spectrum monitoring facilities to support the spectrum-management process, the evaluation of spectrum utilization for the purpose of spectrum planning, the provision of technical support for frequency allocation and assignment and the resolution of cases of harmful interference;

*q)* the need, in studying spectrum-management best practices, to make broadband access more affordable to lower-income populations, especially in developing countries;

*r)* the anticipated enormous number of connected devices, focusing particularly on short-range devices and applications, as defined by ITU-R, for development in various sectors,

recognizing

*a)* that it is the sovereign right of every State to manage spectrum use within its territories;

*b)* that administrations should not assign to a radio station any frequency contrary to the Radio Regulations;

*c)* that there is a strong need for the active participation of developing countries in ITU activities, as expressed in Resolution 5 (Rev. Dubai, 2014) of this conference, Resolution ITU‑R 7‑2 (Rev. Geneva, 2012) of the Radiocommunication Assembly and Resolution 44 (Rev. Dubai, 2012) of the World Telecommunication Standardization Assembly, which may be represented individually and through regional groups;

*d)* that it is important to take into consideration the ongoing work in ITU‑R and ITU‑D, and the need to avoid duplication of effort;

*e)* the successful cooperation between ITU‑R and ITU‑D to produce the reports entitled "WTDC-98 Resolution 9: Review of national spectrum management and use of the spectrum – Stage 1: 29.7-960 MHz", "WTDC Resolution 9 (Rev. Istanbul, 2002): Review of national spectrum management and use of the spectrum – Stage 2: 960-3 000 MHz"; "WTDC Resolution 9 (Rev. Doha, 2006): Review of national spectrum management and use of the spectrum – Stage 3: 3 000 MHz – 30 GHz"; and "WTDC Resolution 9 (Rev. Hyderabad, 2010): Participation of countries, particularly developing countries, in spectrum management";

*f)* the considerable support given by the Telecommunication Development Bureau (BDT) in the compilation of these reports, supporting developing countries;

*g)* the successful development of the Spectrum Fees Database (SF Database) and the initial compilation of guidelines[[2]](#footnote-2)2 and case studies to assist administrations in extracting information from the SF Database for use in the preparation of fee-calculation models that suit their national requirements;

*h)* that, in connection with the ITU‑R Handbook on National Spectrum Management and Report ITU‑R SM.2012, additional guidelines have been compiled offering various national approaches to spectrum-management fees for spectrum use;

*i)* that there is significant activity across multiple ITU‑R study groups to address spectrum sharing, which may have implications for national spectrum management and which may be of particular interest to developing countries;

*j)* that ITU‑R continues to update Recommendation ITU‑R SM.1603, which provides guidelines for spectrum redeployment;

*k)* that the ITU‑R Handbook on Spectrum Monitoring provides guidelines for the installation and operation of spectrum-monitoring infrastructures and the implementation of spectrum monitoring, while Recommendation ITU‑R SM.1139 prescribes administrative and procedural requirements for international monitoring systems,

taking into account

*a)* No. 155 of the ITU Convention, defining the aim of studies conducted within ITU‑R;

*b)* the current scope of ITU‑R Study Group 1, as defined by the Radiocommunication Assembly in Resolution ITU‑R 4-6,

resolves

1 to prepare a report within the next study period on national technical, economic and financial approaches to, and challenges of, spectrum management and spectrum monitoring, taking into consideration development trends in spectrum management, case studies on spectrum redeployment, spectrum sharing, efficient spectrum approaches and associated regulatory impact and best practices implemented in spectrum monitoring around the world, on the basis of ITU-R outputs;

2 to continue the development of the SF Database, incorporating national experiences, and provide additional guidelines and case studies, based on contributions from administrations;

3 to update the information available in national frequency allocation tables and make the Resolution 9 and ICT Eye portals complementary;

4 to compile studies and guiding principles relating to short-range devices in terms of spectrum issues and policy considerations, taking into account relevant ITU-R studies;

5 to continue to gather the necessary information on activities carried out by ITU‑D Study Groups 1 and 2, ITU‑R Study Group 1 and relevant BDT programmes;

6 to organize a capacity-building programme to meet the need of Member States, especially developing countries, for assistance in developing their spectrum management capacities, particularly concerning new technologies,

instructs the Director of the Telecommunication Development Bureau

1 to continue to provide the support described in *recognizing f)* above;

2 to encourage Member States from developing countries, at national and/or regional level, to provide ITU‑R and ITU‑D with a list of their needs with respect to national spectrum management, to which the Director should endeavour to respond, and an example of which is given in Annex 1 to this resolution;

3 to encourage Member States to continue to provide ITU‑R and ITU‑D with practical examples of their experiences of using the SF Database, development trends in spectrum management, spectrum redeployment and the installation and operation of spectrum-monitoring systems;

4 to take appropriate measures so that work in accordance with this resolution is carried out in the six official and working languages of the Union;

5 to continue the collaboration with BR to assist Member States, in particular developing countries, in the implementation of the outcomes of the World Radiocommunication Conferences,

invites the Director of the Radiocommunication Bureau

to ensure that ITU‑R continues the collaboration with ITU‑D in the implementation of this resolution.

Annex 1 to Resolution 9 (Rev. Buenos aires, 2017)

Specific needs in spectrum management

The main types of technical assistance which developing countries expect from ITU are as follows:

# 1 Training and dissemination of available ITU documentation

Spectrum management must be in accordance with the provisions of the Radio Regulations, regional agreements to which administrations are parties, and national regulations. Spectrum managers must be able to provide frequency users with relevant information.

Developing countries would like to have access to ITU‑R and ITU‑D documentation, which must be available in the six official languages of the Union.

Developing countries would also like to see suitable training (either on-site or via the Internet) provided in the form of specialized ITU seminars, in order to help frequency managers gain a thorough knowledge of ITU‑R Recommendations, Reports and Handbooks, which are constantly changing.

Through its regional offices, ITU could set up an effective system to provide frequency managers with real-time information on existing and future publications.

# 2 Assistance in developing methodologies for establishing national tables of frequency allocations and spectrum redeployment

Tables of frequency allocations form the mainstay of spectrum management; they identify the services provided and their category of use. ITU could encourage administrations to make available national frequency allocation tables to the public and stakeholders and facilitate administrations' access to information available in other countries, in particular by developing links between its website and the websites of administrations which have produced national tables of frequency allocations available to the public, allowing developing countries to obtain information on national allocations in a rapid and timely fashion. ITU‑R and ITU‑D could also compile guidelines for the development of the above‑mentioned tables. Spectrum redeployment is sometimes necessary to allow the introduction of new radiocommunication applications. ITU could provide support in this regard by compiling guidelines for the implementation of spectrum redeployment, on the basis of practical experience of administrations and based on Recommendation ITU‑R SM.1603 – Spectrum redeployment as a method of national spectrum management.

In certain circumstances, the Telecommunication Development Bureau (BDT) could make available the assistance of its experts for the development of national tables of frequency allocations and for the planning and implementation of spectrum redeployments, at the request of the countries concerned.

To the extent possible, ITU‑D should incorporate appropriate issues into its regional seminars on spectrum management.

# 3 Assistance in setting up computerized frequency management and monitoring systems

These systems facilitate routine spectrum-management tasks. They must be capable of taking local features into account. The establishment of operational structures also enables the smooth execution of administrative tasks, frequency allocation, spectrum analysis and monitoring. According to the specific features of individual countries, ITU can provide expert help in identifying the technical means, operational procedures and human resources needed for effective spectrum management. The ITU‑R Handbook on Computer Aided Techniques for Spectrum Management and the ITU‑R Handbook on Spectrum Monitoring may provide technical guidelines for setting up the above‑mentioned systems.

ITU should improve the Spectrum Management System for Developing Countries (SMS4DC) software (including its availability in the other official languages), and ensure the necessary assistance and training in the implementation of the software in administrations' daily spectrum-management activities.

ITU should provide expert advice to administrations of developing countries and facilitate participation of developing countries in regional or international spectrum-monitoring activities, as necessary. ITU should also provide encouragement and assistance to administrations in setting up regional spectrum-monitoring systems, if required.

# 4 Economic and financial aspects of spectrum management

ITU‑D and ITU‑R could, together, provide examples of:

a) reference frameworks for management accounting;

b) guidelines for the implementation of management accounting, which could be very useful for calculating the administrative costs of spectrum management referred to in *recognizing g)* of this resolution;

c) guidelines of the methods used for spectrum valuation.

ITU could further develop the mechanism set up under *resolves* 2 of this resolution in order to enable developing countries to:

– learn more about practices in other administrations, which could be useful for defining spectrum fee policies tailored to each country's specific situation;

– identify financial resources to be allocated to the operational and investment budgets for spectrum management.

# 5 Assistance with preparations for world radiocommunication conferences (WRC) and with follow-up on WRC decisions

The submission of joint proposals is a way of guaranteeing that regional needs are taken into account. Alongside regional organizations, ITU could give impetus to the establishment and running of regional and subregional preparatory structures for WRCs.

With support from regional and subregional organizations, the Radiocommunication Bureau could communicate the broad outlines of decisions taken by the conferences, and thereby contribute to establishing a follow-up mechanism for such decisions at national and regional level.

# 6 Assistance with participation in the work of the relevant ITU‑R study groups and their working parties

The study groups play a key role in the drafting of Recommendations which affect the entire radiocommunication community. It is essential that developing countries participate in study group work in order to ensure that their specific features are taken into account. For effective participation of those countries, ITU could – through its regional offices – assist in running a subregional network organized around coordinators responsible for the Questions under study within ITU‑R, as well as by providing financial assistance in order for the coordinators to participate in meetings of the relevant ITU‑R study groups. The designated coordinators for the different regions should also assist in meeting the desired needs.

# 7 Assistance in identifying the most efficient ways to utilize the digital dividend

Developing countries, upon completing digital switchover, will have some portions of a very valuable spectrum freed, which are known as the digital dividend. Different discussions are being conducted on how to optimally reallocate, and enable more efficient use of, the relevant part of these bands. In order to maximize both economic and social impacts, it will be appropriate to consider including potential use cases and best practices in ITU's library, and to hold regular international and regional workshops on that subject.

# 8 New spectrum-access approaches

The constantly growing demand for high data rates is leading to continued development and implementation of new plans for spectrum access to improve spectrum efficiency and use, noting *considering f)* in this resolution. Developing countries need to be aware of these innovative plans, alongside the relevant policies. In particular, developing countries are concerned with the following:

– exchange of information and best practice to improve spectrum efficiency, including innovative concepts like spectrum sharing;

– exchange of information and best practice on regulatory considerations relating to new spectrum access approaches.

# 9 Short-range devices

Short-range devices (SRDs) are designed to communicate over a limited range and are used almost everywhere: vehicle identification, measuring wireless domestic data, security and storage systems, medical equipment and vehicle systems, to give only a few examples. The coming trend of the Internet of Things and IMT-2020 systems revolves around robust access and a lack of homogeneity among short-range technologies.

In relation to paragraph *r)* of *considering* and output 5 of this resolution, developing countries need to be aware of a number of issues in this regard including the regulatory framework of SRDs globally and regionally, and technical standards.

# 10 Spectrum monitoring

A key function of spectrum management is spectrum monitoring, which helps achieve the twin goals of ensuring compliance with advanced rules and application of efficient new techniques of spectrum access. Furthermore, the growing trend toward a lack of homogeneity between devices, coverage bands and levels of dynamic adjustment make it necessary to have a careful eye and advanced control techniques to take into account weak signals and dynamic spatial and temporal configurations. Developing countries need guidance in the following areas:

– creation/development of monitoring systems;

– exchange of information on advanced monitoring techniques;

– analysis of occupancy measurement data and taking appropriate decisions to improve planning, along the lines indicated in *considering q)* in this resolution.

1. 1 As noted in Recommendation ITU‑R SM.1603, redeployment is also referred to as refarming. [↑](#footnote-ref-1)
2. 2 Here, "guidelines" refers to a range of options that may be used by ITU Member States in their domestic spectrum-management activities. [↑](#footnote-ref-2)