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World Radiocommunication Conference 12: Reflections on the Spectrum Policy Debate*

Largely overlooked in current debates is the influence of the international spectrum management regime on national spectrum policies. While both were formalised at the turn of the twentieth century to resolve the interference issue and to enforce government control over spectrum, the way spectrum is utilised has changed since then due to two main reasons. Firstly, the Internet's IP platform has enabled the delivery of different applications on the same device. Secondly, while there used to be enough frequencies to accommodate most of the users, many countries are currently facing a shortage in spectrum due to the high demand for data services. This has motivated several countries to review their national policies and to consider the two principal alternatives to command-and-control, namely spectrum trading and commons. While the former calls for allowing a secondary market of flexible spectrum usage rights, the latter is based on managing the spectrum in a decentralized way. With this in mind, this article addresses three of the activities at the ITU World Radiocommunication Conference (WRC-12) in order to show the impact of the international spectrum management regime on the trading versus commons debate.

Enhancement of the international spectrum regulatory framework

WRC-12 discussed introducing more flexibility into international spectrum allocation. Service allocation flexibility is a key element of spectrum trading. The issue was discussed from two perspectives. The first focused only on convergence between fixed and mobile services, while the second addressed spectrum allocation issues more generally. During the conference, with the exception of the European countries, most of the regional organisations called for retaining the current practice with regard to spectrum allocation principles, arguing that there was sufficient flexibility within the existing regulatory framework and that the WRC process does not impede the introduction of new technologies. With regard to convergence between fixed and mobile services, most of the participants also called for retaining the definitions within the Radio Regulations with regard to these services. Eventually WRC-12 decided not to change current spectrum allocation practices with regard to the two issues, and to continue studies on the revision of the definitions of fixed service, fixed station and mobile station till WRC-15.

One possible explanation for this decision is that according to the ITU rules, countries applying full service allocation flexibility cannot claim protection for their radio stations from harmful cross-border interference or cause harmful interference to stations operated in compliance with ITU Radio Regulations in other countries. Furthermore, the harmonisation of spectrum allocation is important to minimise possible cross-border interference between neighbouring countries when they operate different services in the same spectrum band. In addition, the practice of trading in the countries that encourage market determination of service allocation has not proven to be widely successful. Moreover, the IP platform of the Internet has enabled delivering different applications including data, video and voice. This partially renders the need for spectrum flexibility.

The main implication of the WRC-12 with regard to spectrum trading is that it has shown that most countries are not in support of the full service allocation flexibility concept, as it does not provide them with any significant benefits that exceed the potential risks of interference and losing international recognition to their frequency assignments.

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Regulatory measures required to introduce CRS technologies

The second key issue at WRC-12 is the regulatory measures that could enable deployment of cognitive radio systems (CRS). CRS are a main enabler of spectrum commons as they are capable of transmitting dynamically in the temporarily unused frequencies without the need of exclusive allocation. During WRC-12 some concerns were expressed regarding interference between CRS and space, passive and safety services. Countering this, however, others argued that national regulators can set operating parameters for CRS devices through equipment authorization requirements to ensure they will not cause interference. Ultimately, WRC-12 did not decide on any particular measure with regard to CRS, and recommended that any radio system implementing CRS technology should operate in accordance with the provisions of the ITU Radio Regulations.

The WRC-12 decision on CRS can be explained by the fact that if the conference decided to introduce specific regulatory measures with regard to CRS, this might have generated calls for a similar approach for other emerging technologies. Therefore, it is argued that there was support not to change the ITU Radio Regulations rather than to promote CRS. Accordingly, CRS were recognised as a collection of technologies that could enhance spectrum utilisation efficiency and provide additional flexibility.

Therefore, the main implication of the WRC-12 with regard to spectrum commons is that it has given a clear signal that the concept of spectrum open access is not under consideration. However, the WRC-12 decision could promote the development and deployment of CRS technologies within the current international spectrum management regime.

Additional spectrum allocation to mobile services

While the previous two issues were items on the agenda of WRC-12, allocating additional spectrum in the 694-790 MHz band for mobile service in ITU Region 1[1] countries was not. Nor, for that matter, had the issue been studied by ITU-R. This issue was discussed primarily due to the pressure from the Arab and African countries. They called for an immediate additional allocation of spectrum in the 694-790 MHz band for mobile service, which is already allocated to broadcasting service, to meet growing broadband demand. They also argued that the 694-790 MHz band is already allocated in ITU regions 2 and 3 for mobile service and using this band would decrease the cost of deploying such systems. On the other hand, the European countries opposed such proposals because the 694-790 MHz band is mainly allocated for broadcasting service in their territories and a large investment has already been made to fund the transition to digital television. In addition, it was argued that the issue was not a WRC-12 agenda item and had not been studied by ITU-R, and that some countries largely depend on terrestrial TV broadcasting due to the relatively low prevalence of cable television networks. WRC-12 decided eventually to allocate the 694-790 MHz frequency band in Region 1 to mobile service on a co-primary basis with broadcasting service.[2]

[1]The ITU divides the world into three regions in terms of spectrum allocation. Region 1 comprises Europe, Africa, the Middle East west of the Persian Gulf including Iraq, the former Soviet Union and Mongolia. Region 2 covers the Americas, Greenland and some of the eastern Pacific Islands. Region 3 contains most of non-former-Soviet-Union Asia, east of and including Iran, and most of Oceania.

[2] The allocation is effective immediately after WRC-15 upon refinement of the lower edge of the allocation.

The conference decision has clearly shown the dynamic interactions that occur within the international spectrum management regime. More specifically, although the European countries were against the Arab and African position at WRC-12, they are currently reconsidering their 700 MHz spectrum plans. In addition, WRC-12 has highlighted the increasing role in the ITU of some of the developing countries, such as Egypt and Nigeria. Furthermore, the conference witnessed lack of conformity with the regional spectrum allocation within the ITU three regions. More specifically, while the Arab and African countries are located in ITU Region 1 along with European countries, WRC-12 has witnessed the tendency of them to align themselves with Asian and American countries when it comes to the issue of allocating additional spectrum for mobile services in Region 1. Additionally, the decision to allocate spectrum to mobile services in the 694-790 MHz band during WRC-12 without being one of the agenda items or having studied beforehand was, to say the least, a significant challenge to the decision making procedures within the international spectrum management regime. Moreover, introducing mobile service allocation to the 694-790 MHz band in addition to the existing broadcasting service allocation is considered as facilitating partial spectrum flexibility. Hence, it is argued that countries tend to adopt concepts such flexibility in indirect ways if there are clear benefits.

Trading vs. Commons

It can be argued that neither the advocates of trading nor commons have succeeded in creating a paradigm shift that away from the traditional models implemented in national policies. In other words, the benefits from adopting both policies are not enough to change the traditional view of spectrum management for most of the world. This is mainly because trading and commons weaken state control over a valuable asset that has become a source of revenue for many countries. While the former transfers control over spectrum to the private sector via exclusive and flexible access, the latter transfers control to end users via spectrum access etiquettes. Moreover, both would decrease the extent of global harmonisation of spectrum allocation as trading enables full flexibility and commons provides spectrum access on demand rather than through a fixed spectrum allocation.

Last but not least, it seems that the ITU has created a cycle of regulatory lock-in, where national regulators are legally and culturally bound by the treaty-making nature of the ITU. This has largely influenced national spectrum management policies preferences and caused a resistance to changes. In addition, WRC-12 has proved that the main drivers for change in the international spectrum management regime are business opportunities for the industry and the presence of clear benefits for national regulators.

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