

## New era in regulatory reform

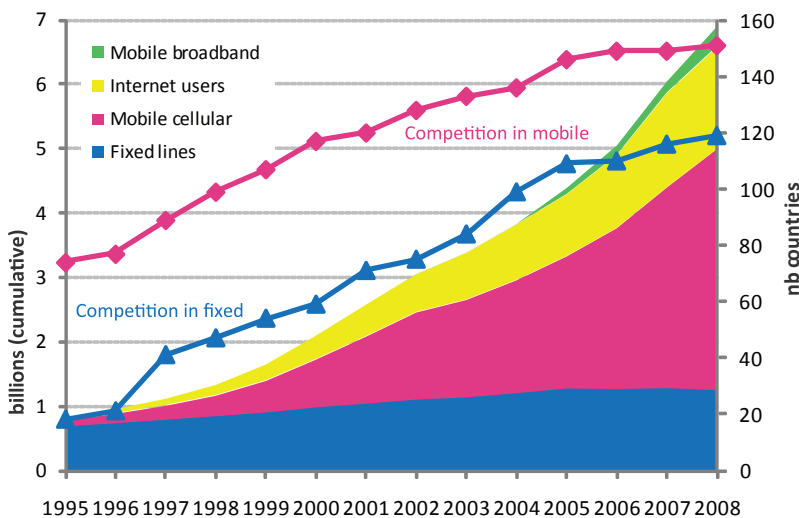
ICTs can have an enormous impact on everyday lives and economic activity, but the opportunities only materialize fully when the regulatory framework fosters investment and widespread diffusion of ICTs. Without these conditions, the full promise of ICTs remains unrealized.

Look at the example of the two most successful ICT services of recent years – mobile cellular and broadband. There is extensive evidence of a strong correlation between opening markets to competition and the increase in the number of subscriptions to these services (see Figure below). The number of mobile markets open to competition grew from more than 40 in 1997 to 171 in 2009. This led to the exponential increase in the growth of mobile subscriptions from more than a billion in 2002 to double three years later adding another billion and doubling again over three years, adding another 2 billion by 2009. In the case of broadband services, very similar developments can be observed. One of the most popular

broadband technologies, xDSL, was born in the early 1980s and standardized by ITU by the middle of that decade. At that time, the mass market for telecommunications was ruled by monopoly fixed-line incumbents, most of which were state-owned, while competition wasn't yet considered a driver for growth in the sector. The rise of xDSL began some 10 years later, due mainly to fierce competition with cable modem services and fibre networks (and, more recently, with mobile broadband technologies).

ICT regulation continues to evolve as new technologies emerge. The liberalization of ICT markets has stimulated a global marketplace of innovations in products, services and applications. Old distinctions among different industries are blurring, as platforms, products and services converge in an IP or Net-centric world. Today, as the ICT sector becomes the nexus where virtually all other sectors of the national economy meet, regulators are increasingly required to address new, unprecedented issues that transcend the original scope of their regulatory practice. ■

Growth in ICT diffusion and competition, world, 1995-2008



Source: ITU World Telecommunication/ICT Regulatory Database.

# The Regulator

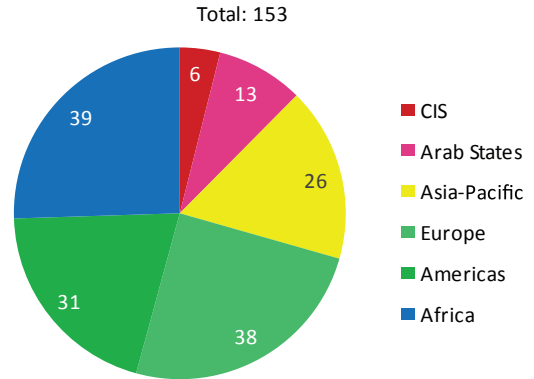
*Leader in creating an enabling environment*

Today's ICT technology and market trends are defined by the inevitable march towards convergence, fueled by the diffusion of broadband. New technologies and convergence may create new market restrictions or bottlenecks, specifically in the access and international gateway portions of the incumbent's network. This means that the changing market environment requires adequate changes in the regulatory framework.

The creation of separate telecom/ICT regulators has been one of the main building blocks of regulatory reform worldwide. The world counted 153 national ICT-sector regulators at the end of 2009 (see Figure at right). A few more countries in different regions are considering creating a separate regulatory authority, although no concrete steps have been taken yet.

As the number of regulators globally is growing, so are their powers and their roles. The scope of regulatory authorities varies among the different regions of the world – and also among the countries within each region (see Figure below). Despite a growing trend toward establishing a single regulatory authority in charge of overseeing the converged market environment, the majority of the world's telecommunication regulators have authority only

**Countries with a separate regulator, 2009**

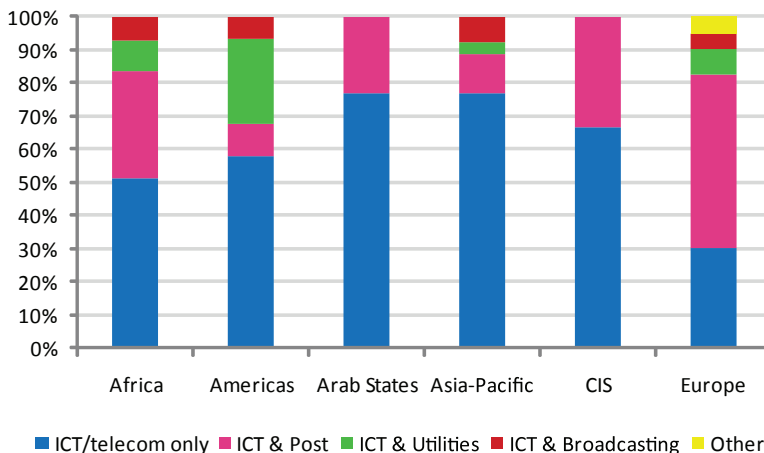


Source: ITU World Telecommunication/ICT Regulatory Database.

over telecommunication/ICT markets (56 per cent). In some cases, they also have regulatory functions in traditionally adjacent markets, such as postal and information services or over the broadcasting sector. Multi-sector regulators, with mandates to regulate all utilities, are also growing in number, mainly in the Americas and Africa.

In order to accommodate those extended powers, a number of regulatory authorities have revised their organizational structures, expanded their staff and developed new skills. ■

**Mandate of the regulator, 2009**



Source: ITU World Telecommunication/ICT Regulatory Database.

# Competitive markets

## *The Holy Grail of market growth*

Competition has been the “Holy Grail” of market growth in the telecommunication sector over the past two decades. It certainly has been one of the *raison d'être* of regulatory agencies. The absence of any competitor with significant market power can be seen as a guarantee for healthy market growth, as well as dynamic innovation in technologies and services. In short, competition in the ICT sector is the sine qua non prerequisite for “win-win” market development.

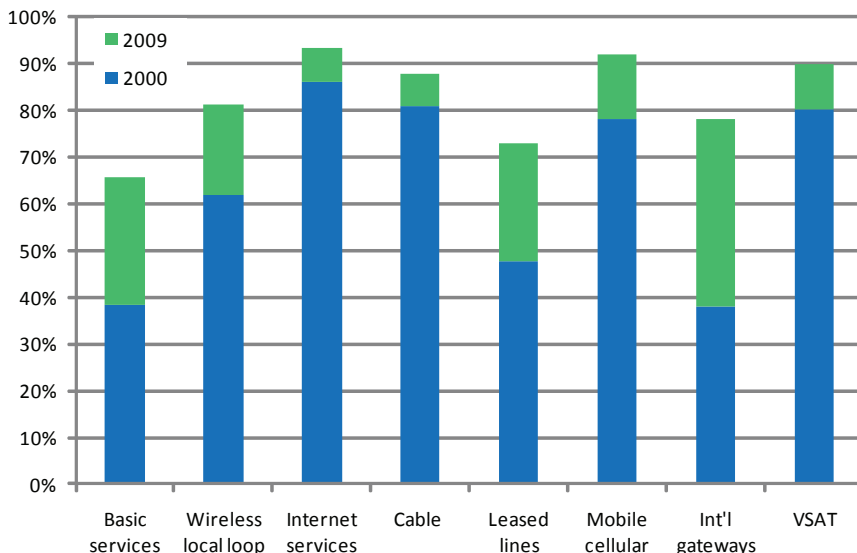
By 2009, some 90 per cent of countries worldwide had introduced at least partial competition in the provision of Internet services (see Figure below). This figure appears to have reached a plateau, as very few markets have joined the broadband competition bandwagon since 2005. For the mobile broadband providers that had just started to take off at this time, this provided a major competitive boost, enabling operators to garner rapid subscription growth compared with their earlier fixed broadband competitors. This has been showcased by the

number of mobile broadband subscriptions overtaking fixed broadband in 2008 and expected to reach 1 billion in 2010.

A lot has been achieved in making telecommunication markets more competitive over the last decade. The mobile and Internet segments continue to be the most competitive. Yet, not all market segments have evolved at the same pace. Competition in basic telephony is progressing, but it still lags behind the other ICT markets. Basic telephony remains a monopoly in about one-third of countries worldwide. International gateways continue to open to competition, but at much slower rate than other services.

Timely regulatory action is needed to enable developing markets to transition from monopoly to competition. Convergence is the present and future reality, and requires a competitive environment to develop. ■

**Growth in competition, world**



Note: In blue: level of competition in 2000; in green: percentage of countries having opened up for competition between 2000-2009.

Source: ITU World Telecommunication/ICT Regulatory Database.

# Ownership

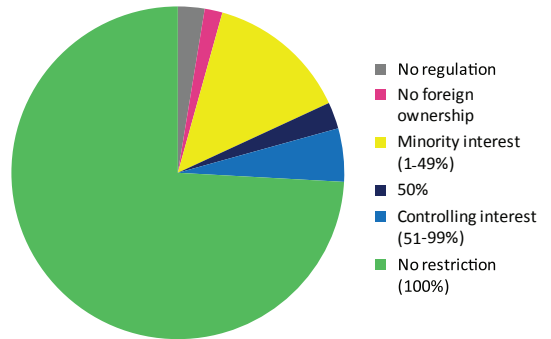
## *Towards open markets*

Despite the general slow down in the sale of state-owned incumbent operators over the past years, privatization remains a priority for most countries that have not yet fully or partially privatized their incumbent operator. The objectives of privatization are to improve efficiency, productivity, and service quality, as well as to raise capital, improve management expertise and further develop the network. In addition, many countries have found that competition is often more fair when the State avoids being both a market player and a referee at the same time. Privatization sends the signal that policy decisions and regulations will be fair to all players.

At the end of 2009, some 125 main fixed-line incumbents were in the hands of private-sector owners, with Europe and the Americas leading the way with more than 70 per cent. In developing countries, some 60 per cent of the incumbents were private or privatized (see Figure below). Out of the 67 state-owned incumbents, several had recently announced plans to privatize without setting a clear time frame.

Privatizing an incumbent is just one way of introducing additional players into the telecommunication/ICT market. Other possibilities exist, such as opening the ICT

**Maximum foreign ownership in telecom/ICT operators, world, 2009**

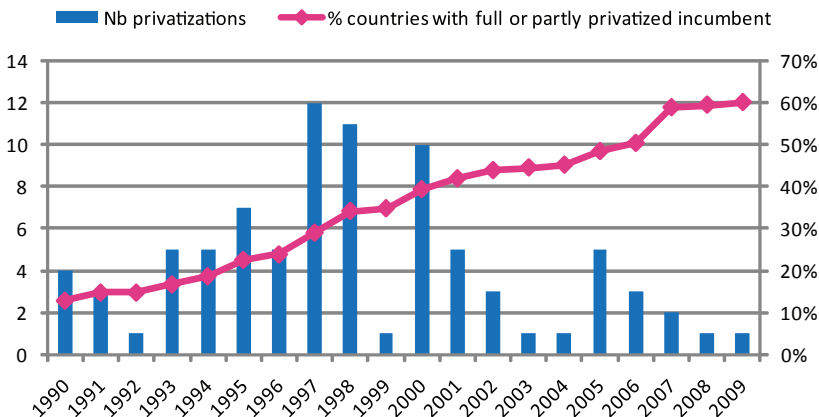


Source: ITU World Telecommunication/ICT Regulatory Database.

sector to foreign investment, in accordance with national commitments to allow non-home grown suppliers of services to operate in a country's market.

Today, there are virtually no barriers to foreign investors in three quarters of countries worldwide and a further 5 per cent allow for a foreign controlling interest (see Figure above). At the opposite end, one out of every seven countries still restricts foreign investment to minority interest in ICT operators. In only a handful of countries no foreign ownership is legally permissible. ■

**Privatisation of incumbents in developing countries**



Source: ITU World Telecommunication/ICT Regulatory Database.

# Licensing

## *More flexible frameworks to enhance access*

With the advent of convergence in telecommunications and broadcasting markets, diverse countries have been simplifying their telecommunications regulations to support the development of convergent services and the expansion of markets and competition, with the objective of promoting the provision of new and innovative services, the reduction of prices and an increase of efficiency in the provision of services, as well as increasing the variety of offerings for subscribers.

The reform of the licensing regimes has resulted in two main trends. The first consists of simplification of licences that traditionally have been established for individual services, which would generally mean that a single telecommunications operator would have to hold as many licences as the different services it provided. Simplification involves the consolidation of different services in a generic categorization or the unification of all services under a single licence or concession, often called a unified licence.

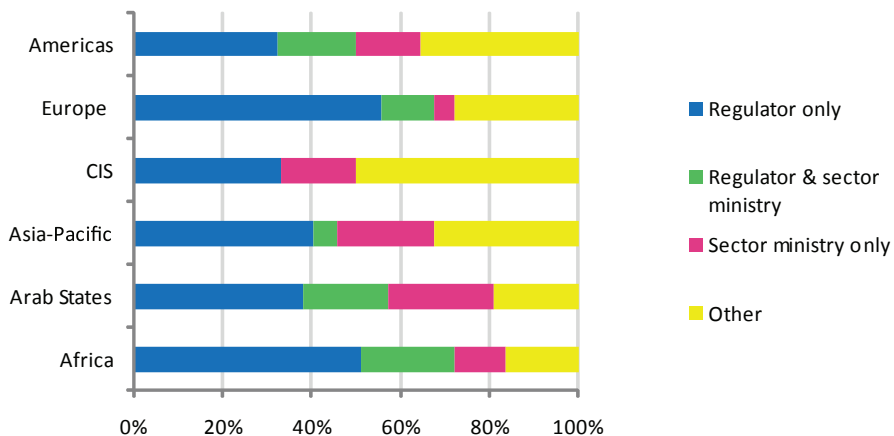
The second consists of the reduction or elimination of the administrative and formal procedures to enter the market. This trend involves modifying the general authorization category to allow more services to be

provided, in most cases only requiring registration or a simple notification. Finally, some countries have opted for deregulation of services, which comprises the elimination of licences or concessions and even of the need to notify or register with the regulator.

Usually, both trends are combined in order to achieve greater simplification and flexibility. It is important to note that any modification must be managed to minimize inconsistencies between new and existing rules. Also, licensing reforms are most effective in addressing the challenge of convergence if the guiding principles of technology neutrality and flexibility are applied to the rights and obligations of the telecommunications operators as well as to the other essential elements of the regulatory framework, including, interconnection, numbering, universal service, and spectrum use.

The regulator is responsible for licensing in 55 per cent of countries where a separate regulator exists, while this responsibility is shared with the sector ministry in 17 per cent of all cases. Of course in countries where no telecom/ICT regulator has been established, market entry is falls under the mandate of the sector or other ministry. ■

**Entity responsible for licensing, by region, 2009**



Source: ITU World Telecommunication/ICT Regulatory Database.

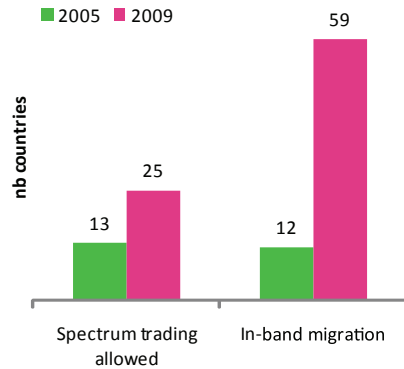
# Spectrum management

## *Ever growing demand for spectrum*

The growth of broadband services over wireless networks is putting enormous pressure on all kinds of limited resources, whether they are rights of way, ducts, numbering resources or access to radio spectrum – especially radio spectrum. Since the launch of the first mobile broadband network in 2001, not less than 130 countries had launched commercial IMT-2000 (3G) services by the end of 2009 (See Figure below).

Many countries have now started assigning spectrum through competitive mechanisms, such as spectrum auctions, in order to maximize the available resources and the potential benefits to consumers. And while the majority of countries still retain centralized control over scarce spectrum resources, a growing number of regulators, mainly in developed countries, are introducing market-based mechanisms such as in-band migration, spectrum sharing and spectrum trading to distribute spectrum access (see Figure at right). Traditionally, regulators have granted licences for exclusive rights to certain spectrum bands. Increasingly, however, many countries have also allocated spectrum bands for licence-exempt use, effectively allowing more freedom for market players to manage spectrum among themselves.

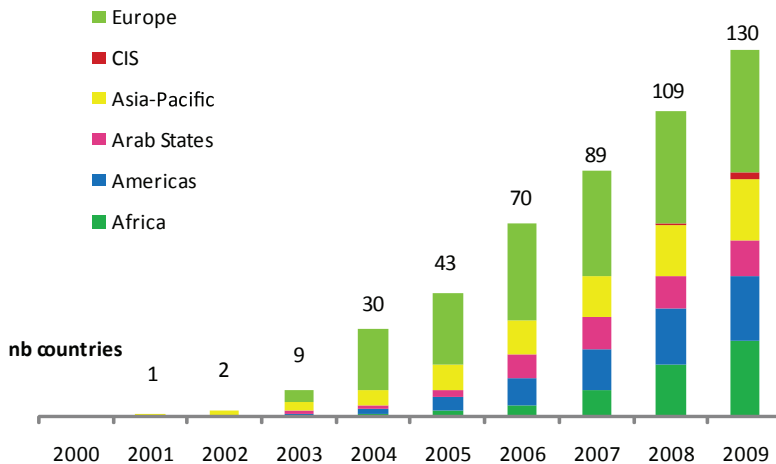
**Evolution of market-based approaches to spectrum management, world, 2005-2009**



Source: ITU World Telecommunication/ICT Regulatory Database.

Technological progress and market transformation have placed an increasing strain on the traditional spectrum allocation approaches. In the same way that liberalization, deregulation and privatization has swept over the ICT sector as a whole, the regulatory approach to spectrum management is poised on the brink of major changes. ■

**Number of countries having assigned spectrum for IMT-2000**



Source: ITU World Telecommunication/ICT Regulatory Database.

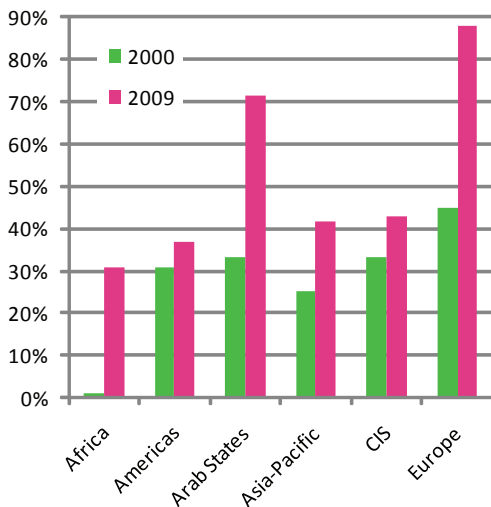
# Infrastructure sharing

*Sharing as a strategy for tough and good times*

The booming volume of digital bits generated by the move to convergence and packet-switching has produced a need for increased network capacity. Taking a broad and innovative view of telecom regulation and infrastructure management, the world's regulators have turned to new-generation policies for promoting sharing.

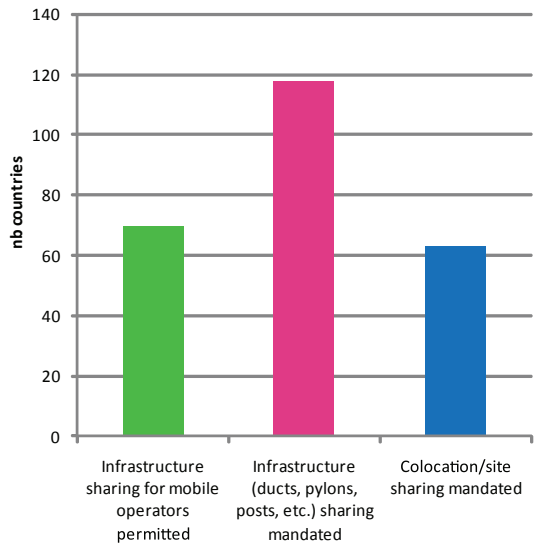
The single biggest reason to adopt sharing is to lower the cost of deploying broadband networks to achieve widespread and affordable access to ICTs. Developing countries can harness the technological, market and regulatory developments that have fostered access to mobile services to promote widespread and affordable access not only to voice, but to broadband services as well. This will enable broadband service providers to reach populations that today are unserved or underserved. For developed countries, infrastructure sharing promises to play an important role in the move to FTTx (fibre to the home/office, etc.) access, as well as reducing the environmental impact of ICT network deployment. In short, all countries share the goal of spurring network development.

**Requirements for unbundled access to the local loop**



Source: ITU World Telecommunication/ICT Regulatory Database.

**Infrastructure sharing regulation, world, 2009**



Source: ITU World Telecommunication/ICT Regulatory Database.

Regulators and policy-makers may elect to adopt only one kind of infrastructure sharing, or they can implement many options simultaneously (see Figure above). Some regulatory frameworks today may authorize passive infrastructure sharing, for example, while prohibiting active infrastructure sharing. Some regulators simply have not addressed the issue – neither explicitly authorizing nor prohibiting infrastructure sharing. Regulators may at least allow active infrastructure sharing (e.g., Mobile Virtual Network Operators) for a limited time, until demand for ICT services grows to support multiple network operators.

As regulators consider and implement new strategies, they will have to remain nimble and flexible, committed to making course corrections as they go. As always, regulators will have to continue analysing and evaluating potential approaches and incentives to greater broadband access – including those that involve any degree of sharing. ■

# VoIP

## *Regulators are responding in flexible ways*

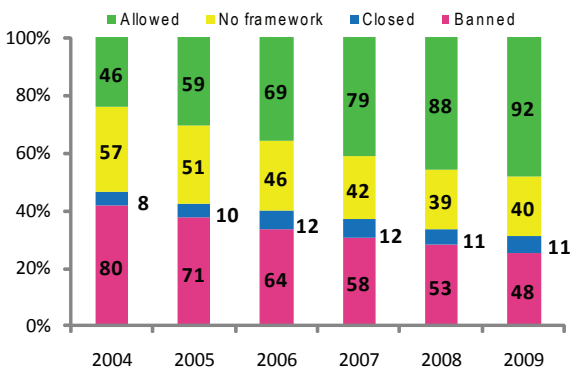
In recent years one technology, Voice over IP (VoIP), has left regulators and businesses wondering what the future of communications will hold. Mobile telephony has swept the world, with expected an 5 billion users in 2010 and over a USD 1000 billion (USD 1 trillion) in revenue, yet it has left the structure of the industry intact. VoIP can boast impressive growth, both in users as in revenues. VoIP does away with some of the truths that were held to be self-evident in the sector. The most striking change is probably the separation between providing voice as a service and providing the physical network infrastructure. Another possibility enabled by VoIP technology is that consumers can have voice telephony without actually getting it from a telephony service provider. What VoIP promises, therefore, is a reduced role for the traditional telephone companies in the provision of voice, and a declining role for traditional telephony in the revenue stream of the telecommunication industry.

Progress in VoIP adoption and legalization is closely connected with market liberalization. VoIP can be seen as a technology for introducing competition – and gaining a competitive advantage – in liberalized national and international telecommunication markets. Over the past five years, VoIP has been gaining ground steadily. In

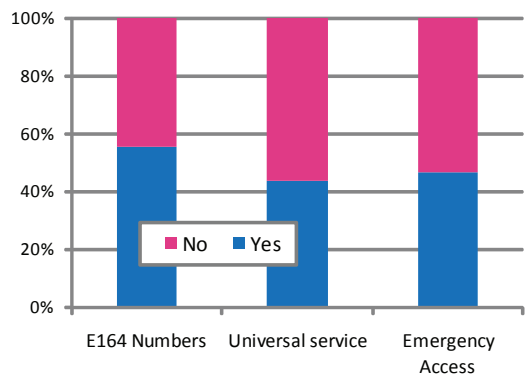
2004, VoIP was explicitly legalized in 46 countries (see Figure below, at left) – mainly in Europe, North America and Asia and the Pacific. VoIP was also broadly permitted in another 57 countries – for example, countries where there was no explicit regulatory framework or licensing for VoIP. Between these two categories, just over half of all countries permitted VoIP in 2004. By mid-2009, the proportion of countries where VoIP was tolerated had risen to two-thirds, with 92 countries having legalized VoIP and a further 39 countries tolerating it. Meanwhile, the number of countries where VoIP was banned shrank from 80 in 2004 to 49 in 2009, or about a quarter of all countries for which data exist.

The regulation of VoIP is an ongoing process that requires regular attention as new issues emerge. According to ITU, VoIP regulations differ widely from country to country (see Figure below, at right). The requirement to provide access to emergency services is a key consideration, as are universal service obligations and numbering allocations. More than half of all countries responding to the ITU's survey question on numbering indicated that they had allocated E164 numbers to VoIP providers (see Figure below, at right). ■

**Worldwide regulation of VoIP, 2004-2009**



**Regulatory frameworks for VoIP, 2009**



Source: ITU World Telecommunication/ICT Regulatory Database.



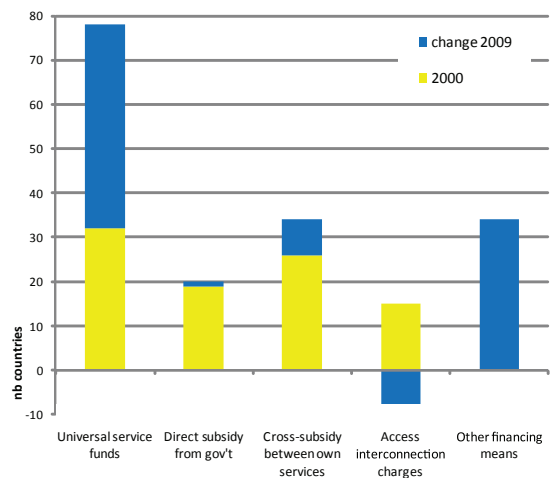
# Universal access to broadband

## *Redefining access*

It is commonly accepted that the liberalization of telecommunication markets and the introduction of convergence friendly-policies, can generally increase efficiency, boost service penetration, lower prices, and improve the choice and quality of services. But even in open, competitive environments, ensuring universal access and/or universal service remains a challenge, especially in an ever-changing market environment.

In order to keep pace with technological developments and provide equal opportunities to all citizens, many regulators have begun re-examining traditional universal service obligations. Only a decade ago, the Internet was beyond the scope of most regulators, but today it is considered to be a utility and an essential tool for social and economic welfare. Out of 132 countries worldwide having established a definition of universal access and/or universal service, a total of 101 – or more than two-thirds – have included Internet access in that definition (see Figure below). Today, at least 25 countries have explicitly mandated access to broadband, including Brazil, China, Ghana, Finland, Kazakhstan, Malaysia, Morocco, Nigeria, Peru, Spain, Sri Lanka Switzerland, and Uganda, and their number is constantly growing.

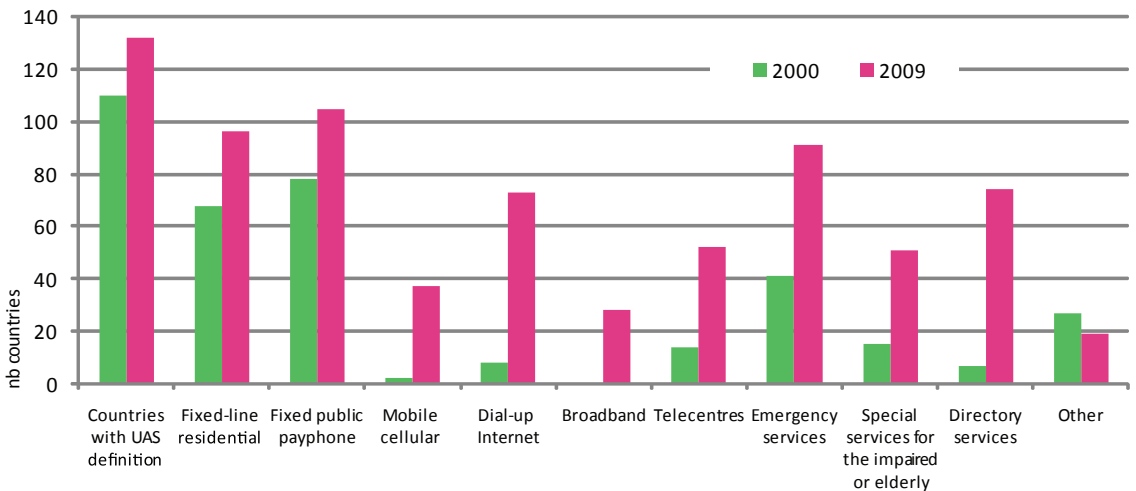
**Trends in means by which the operators finance their universal access/service obligations, 2000-2009**



Source: ITU World Telecommunication/ICT Regulatory Database.

Over the last decade, a shift has occurred in the means of financing universal access, moving away from government direct subsidies and access deficit charges to private-sector funding, and more recently to other mechanisms, such as public-private partnerships (see Figure above). ■

**Universal access/service definition, 2000-2009**



Source: ITU World Telecommunication/ICT Regulatory Database.

# Enforcement

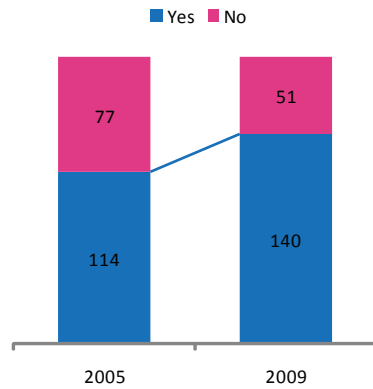
## *Digital economy calling for strengthened regulatory powers*

The erosion of boundaries among networks and the convergence of content in IP-based transmission will shake up regulatory regimes enormously. Regulators are looking at the evolution of networks, and they must evolve along with the industry. The IP network environment pushes regulators and policymakers to address three fundamental building blocks of growth: investment, network access and resource scarcity.

Traditionally, regulators have been primarily in charge of *ex ante* regulation, regulating access to the telecommunication market through licensing, assigning spectrum and other scarce resources, dealing with interconnection issues and contributing to universal access support programmes. Over the last decade, however, regulators face increasing expectations. Recently, the focus has shifted toward general competitive issues (such as mergers and acquisitions, and dominance and significant market power where technologies and services have converged), copyright, privacy, cybercrime, online content.

Today, even more than 20 years ago, regulators need to have enough ‘teeth’ to enforce their decisions in the face of powerful economic forces and often conflicting interests.

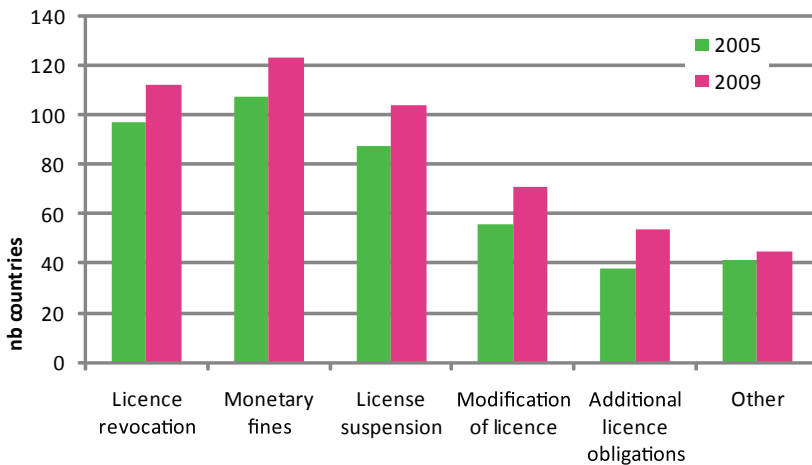
**Regulators having enforcement power, world**



Source: ITU World Telecommunication/ICT Regulatory Database.

They are being given enforcement powers in an increasing number of areas, and in some cases going beyond the sector itself (see Figure above). They are also picking up specific roles in active *ex post* regulation, imposing remedies for market abuse by operators with significant market power, imposing sanctions and penalties (see Figure below) and handling consumer complaints. ■

**Sanctions or penalties the regulator can impose, world**



Source: ITU World Telecommunication/ICT Regulatory Database.

# Dispute resolution & appeals

*Mediation & consensus building on the rise*

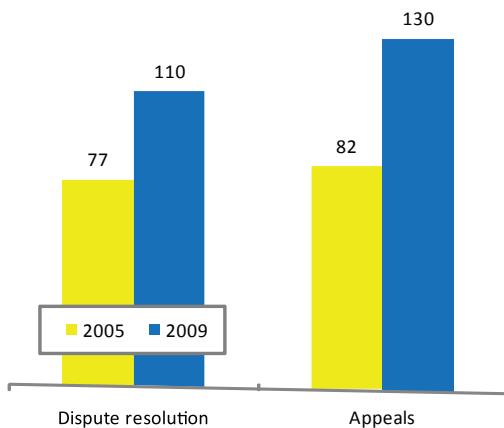
The changes sweeping the sector have contributed to economic growth and improved sector governance, but they also have produced an increasing number and variety of disputes that call for faster, more cost-effective and better resolution.

Dispute resolution mechanisms have an important role to play in regulation, because they provide a useful barometer of market practices. Successful dispute resolution is increasingly important for attracting investment, competition, and development. Dispute resolution mechanisms in the telecommunications sector need to be as speedy as the networks and technologies they serve. Official dispute resolution mechanisms are important as a basic guarantee that sector policy will be implemented.

Over the past 5 years, the number of countries with a clear dispute resolution framework has grown by more than 40 per cent (see Figure below). In addition, appeals of regulatory decisions are allowed today in the majority of countries worldwide.

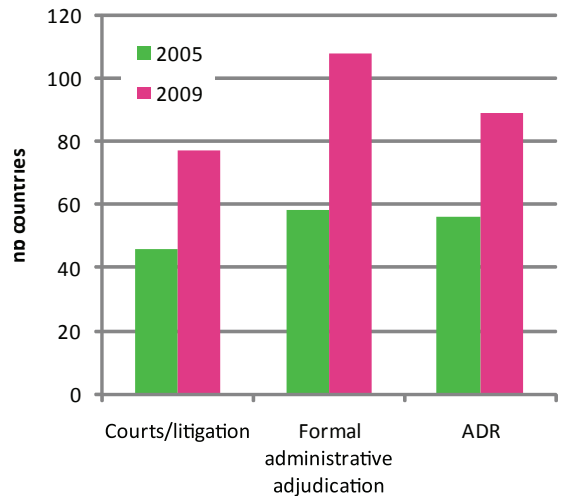
There is no definitive model or best practice in dispute resolution. The main options available are litigation, arbitration and alternative dispute resolution mechanisms

**Countries with regulatory framework setting up a clear mechanisms for dispute resolution and appeal, world**



Source: ITU World Telecommunication/ICT Regulatory Database.

**Trends in mechanisms used to solve disputes once negotiations among parties failed, world**



Source: ITU World Telecommunication/ICT Regulatory Database.

(ADR), including mediation. As a whole, the majority of countries today have set a framework for arbitration and over one third of countries have litigation arrangements in place.

Policy-makers and regulators may want to use minimal but focused regulatory intervention to create an environment where industry players have incentives to resolve disputes constructively. This can often involve the use of alternative dispute resolution mechanisms. It is worth noting that the number of countries using alternative dispute resolution mechanisms have increased by some 60 per cent between 2005 and 2009 (see Figure above), providing quicker and less-costly redress. Progress has also been made in the area of defending consumers' rights. Several countries are now considering ways of securing collective redress, in addition to individual redress. ■

All data in this news report is based on country responses to the ITU annual Telecommunication Regulatory Survey and extracted from the ITU World Telecommunication/ICT Regulatory Database at the ITU ICT Eye.



# ITU ICT EYE

*One-stop shop for ICT data*  
[WWW.ITU.INT/ICTEYE](http://WWW.ITU.INT/ICTEYE)

The ITU ICT Eye is an integrated online platform that enables ITU to track the development and use of ICTs, and measure efforts to build the information society. The portal is a one stop-shop for ICT information and provides over 1 million data entries, including ICT indicators and statistics, regulatory and policy profiles, national tariff policies and scientific institutions, and much much more.



# TREG

*Regulatory resource center*  
[WWW.ITU.INT/TREG](http://WWW.ITU.INT/TREG)

ITU's regulatory reference center (TREG) website provides access to a wealth of online resources, including:

- events
- publications & reports
- regulatory best practice guidelines
- online reference materials
- thematic & country case studies
- a regulatory newslog tracking the latest regulatory news and developments and
- specialized resources on tariff policies, cost-modeling, dispute resolution, and much more.

# ITU Trends in Telecommunication Reform

*Trends* forms a key part of ITU's effort to accumulate, explore and amplify the wisdom of policy-makers and regulators in the ICT sector. This flagship series of annual reports attempts to take stock of telecommunications and ICT development in emerging and developing economies. It reports upon many of the successful efforts of governments, operators and service providers to expand the reach of broadband services throughout the world. In that sense, it celebrates consistent progress, in different countries, toward goals of universal access, broadband network deployment and the greater diffusion of applications, services and content made available.

The 10<sup>th</sup> edition will look at the delicate balance that regulators need to strike in order to operate between the hands-on and the hands-off approach to regulation. Some of the topics examined this year are: effective regulation in a converged ICT sector; stimulating investment and growth of the sector in an economic downturn; consumer protection; VoIP trends; IP and VoIP interconnection; and regulating or not mobile termination rates.

For more information:  
[www.itu.int/ITU-D/treg/publications/index.html](http://www.itu.int/ITU-D/treg/publications/index.html)



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