

CHAPTER 3. GROWING THE MARKET: LICENSING AND AUTHORIZING SERVICES

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CHAPTER 3. GROWING THE MARKET: LICENSING AND AUTHORIZING SERVICES

3.1. Introduction

Chapter 3 explores the role of licensing and authorization in growing national and global markets. The chapter looks at licensing objectives and different types of licensing such as individual and general licenses. The various steps in a competitive licensing process are set out in detail. Authorization principles and procedures are outlined and consideration is given to special authorization situations, such as licensing public-private partnerships. The chapter also looks at the impact of convergence on the development of unified and multi-service licensing and the growing need to lift restrictions on licensees. Finally, the chapter concludes by highlighting the role of standards in growing the market and the need to bridge the standards gap experienced by many developing countries.

3.2. The Trend Towards General Authorization

Traditionally, in many parts of the world, a license was issued to authorize a person to provide

telecommunications services or to operate telecommunications facilities. Such licenses generally described key rights and obligations of licensees and often defined conditions relating to the provision of services. These licenses also tended to be service-specific and technology-specific. A licensee was authorized to provide a particular type of service over a specific type of network. In other cases, a licensee was authorized to operate specifically defined types of telecommunications facilities. A wide range of different licensing approaches has been adopted around the world.

Today the practice of issuing detailed individual licenses to specific telecommunications, or ICT service providers, is gradually being replaced by general authorization regimes. However, the issuance of detailed individual licenses remains common in developing economies. Moreover, issuing detailed individual authorizations remains the norm for authorizing the use of radio spectrum where the demand for the use of a particular frequency band exceeds availability.

In general authorization regimes in developed economies, few, if any, conditions are included in a license document issued to a specific service provider. Instead, regulatory conditions are generally established in rules or regulations that apply equally to all service providers of the same class (e.g., cellular mobile providers) or across the whole ICT industry. While general authorization regimes are most prevalent in developed economies, these regimes have also been adopted in a number of developing and transitional economies. In developing or transitional economies, where the regulatory framework governing the ICT sector is still maturing, it is common for general authorizations to contain a fairly detailed set of terms and conditions. There are thus different variants of general authorization regimes.

With increased liberalization, some regulators are removing any and all authorization requirements for certain specific ICT services. These service markets are then open to entry by any new service providers, without restriction. Open entry regimes are generally found only in countries with a highly developed, competitive ICT sector and a robust set of institutions that can safeguard consumer interests and protect against anti-competitive conduct.

There has also been a movement away from the issuance of service and technology-specific authorizations. In light of rapid technological development and service innovations, countries are increasingly moving towards the adoption of multi-service and neutral or “unified” authorization frameworks. These frameworks feature authorizations that are service and/or technology neutral, allowing licensees to offer a range of services under the umbrella of a single authorization, using any type of communications infrastructure and technology capable of delivering the desired services. There are a range of different approaches to multi-service and unified licensing around the world.

At one end of the spectrum are wide-open authorization regimes, where no form of governmental approval is required to start an ICT service business or to operate network facilities. At the other end are individual licensing regimes with lengthy authorization documents customized to the circumstances of a specific service provider. In between are many forms of general authorization or “class licenses” that authorize and provide generally applicable regulatory conditions for classes of ICT service providers.

This chapter uses the term “authorization” to refer to all forms of licensing, permission or approval required from regulatory authorities to carry on business as an ICT service provider.

3.3. Licensing Objectives and Types

3.3.1. Overview

The development and implementation of authorization policies is one of the most important steps in reforming the ICT sector. Authorization policies determine the structure and level of competition and, ultimately, the efficiency of the supply of ICT services to the public.

Historically, many countries developed authorization policies on an *ad hoc* basis. Frequently, policies were only developed when specific decisions were made to authorize additional service providers. However, as the global regulatory experience evolved, an increasing number of countries adopted explicit authorization policies. Many countries developed policies based on the experience of regulatory reform and telecommunications market liberalization in other countries. In developing and emerging markets, authorization policies often provide for (1) immediate opening of peripheral telecom markets to competition, and (2) phased opening of voice telephony and related “core” markets.

Clearly stated telecommunication policies remove uncertainty and regulatory risk for service providers and their investors. However, regulation is an art, not a mathematical science, and it is neither possible nor desirable to attempt to prescribe detailed policies for all situations that may arise. ICT markets and technologies are too dynamic to permit that. An ideal ICT policy should establish the main objectives and approaches of government policy and deal with major issues of national concern to service providers and investors. However, the more detailed provisions are better left to subsidiary legislation or regulatory rules which can be amended to meet evolving market conditions.

3.3.2. Licensing Objectives and Policies

The development and implementation of authorization policies is one of the most important steps in reforming the ICT sector. Authorization policies determine the structure and level of competition in telecommunications markets and,

ultimately, the efficiency of the supply of ICT services to the public.

Governments and regulators typically have a variety of reasons or objectives for licensing telecommunications and ICT service providers. Some common authorization objectives include:

- Privatization or commercialization;
- Expansion of networks and services and other universal service objectives;
- Regulating provision of an essential public service;
- Attracting investment in the telecommunications-ICT sector;
- Regulating market structure;
- Establishing a framework for competition;
- Allocation of scarce resources;
- Generating government revenues;
- Consumer protection;
- Establishing a framework for quality of service; and
- Regulatory certainty.

3.3.3. License Types

Just as there are different types of authorization authorities in different countries, different types of authorization regimes have been adopted (see Table 3.1). Again, with the sharing of global experience, there has been a convergence in the types of authorization regimes adopted in various countries. Today, the approaches to authorizing ICT service providers and services can be divided into three main categories:

1. Individual authorizations;
2. General authorizations; and
3. Open entry – i.e. no authorization requirement.

There is a clear trend toward the use of general authorizations and open entry regimes in developed economies, consistent with the general liberalization and convergence of ICT markets (see Box 3.1). However, individual authorizations continue to be in place in a large number of countries, particularly in developing and transitional economies. Moreover, individual authorizations are used to license the use of radio spectrum when the demand for use of a particular band of radio frequency exceeds availability.

Table 3.1 Main Types of Authorization Regimes

TYPES OF AUTHORIZATION REQUIREMENT	MAIN FEATURES
Individual Authorizations	<ul style="list-style-type: none"> • issued to a single named service provider • usually a customized authorization document • often contains detailed conditions • frequently granted through some form of competitive selection process
General Authorizations (Class licenses)	<ul style="list-style-type: none"> • useful where individual authorizations are not justified, and where significant regulatory objectives can be achieved by establishing general conditions • normally set out basic rights and obligations, and regulatory provisions of general application to the class of services authorized • normally issued without a competitive selection process; all qualified entities are usually authorized to provide service or operate facilities
Open Entry	<ul style="list-style-type: none"> • no authorization process or qualification • no requirements, beyond rules generally applicable to the ICT sector • registration requirements or other rules of general application are sometimes imposed by regulation

Source: Adapted from Intven, Oliver and Sepulveda, 2000

Box 3.1 Japan- Registration or Notification

Before 1 April 2004, telecommunication carriers in Japan were categorized into two types under the Telecommunications Business Law: "Type 1 telecommunications carriers," which offered services using their own facilities, and "Type 2 telecommunications carriers," which did not have their own facilities and which leased their lines.

Carriers were required to obtain permission to engage in a Type 1 business or were required to submit a registration or notification of their entry into the market to engage in a Type 2 business.

In light of heightened competition and the emergence of numerous substitute services – and also out of a desire to review the regulations for market entry and service provision – the Telecommunications Business Law was completely reviewed in 2003 and the amended law came into force on 1 April 2004. The amendments:

- abolished the distinction between telecommunication circuit facilities of Type 1 and Type 2 carriers;
- abolished the permission system for market entry and withdrawal and introduced a registration and notification system in its place;
- abolished tariff regulation; and
- improved consumer protection rules, holding carriers more accountable for service provision and handling of complaints.

With regard to registration and notification, the amended Telecommunications Business Law states that:

- Any person who intends to operate a telecommunications business by installing telecommunications circuit facilities on a scale exceeding the standards specified in the applicable Ministry of Internal Affairs and Communications (MIC) ordinance shall obtain registration from the Minister for Internal Affairs and Communications.
- Any person (except a person who has to obtain registration) who intends to operate a telecommunications business shall submit a notification to the Minister for Internal Affairs and Communications.

Source: ITU, 2004.

3.4. Competing for Licenses

3.4.1. The Competitive Licensing Process

Competitive licensing processes are generally used to issue an individual license to a single service provider or a limited number of them. In a competitive licensing process, the regulator (or other licensing authority) typically describes the business opportunity and invites interested parties to submit applications for the license to enter the business (see Box 3.2). The successful applicant is normally selected through a form of competitive evaluation, such as a comparative evaluation process (sometimes called a "beauty contest"), an auction, or some combination of the two.

A competition for the award of an individual license is frequently referred to as a "licensing" or "tender" process or a "request for applications" process. In this chapter, we use the term "competitive licensing process" to refer generally to a competitive selection process, by which a number of applicants compete for the right to hold a limited number of licenses.

Competitive licensing processes generally have a number of phases. After determining the basic objectives of a licensing process, the regulator will establish the schedule for the process and prepare a guide to be used by applicants in the licensing

process. Typically, the licensing process begins when the regulator issues some form of notice of invitation to apply for the license.

In some cases, the licensing process includes a pre-qualification phase, in which potential applicants are screened in order to limit the competition to qualified applicants. The pre-qualification phase is followed by the qualification phase and the selection phase, where the regulator uses a competitive mechanism (or combination of mechanisms) to select the successful applicant. In other cases, however, the licensing process does not feature a pre-qualification phase and instead proceeds directly to the selection phase. The licensing process culminates with the selection of the successful applicant and the award of license or licenses.

3.4.2. Scheduling the Licensing Process

In most cases, the guide to the licensing process includes a schedule for the process. Publishing a schedule for the licensing process facilitates compliance with one of the requirements set out in the WTO Regulation Reference Paper (see Appendix A). The Paper requires that certain information about licensing, including the "period of time normally required to reach a decision concerning an application for a licensing," be made publicly available.

Box 3.2 Checklist of Typical Steps in a Competitive Licensing Process

- **Develop a market entry policy**
 - Establishes the goals of the authorization process and shapes the foundation for the process.
 - Make key determinations about the structure of the licensing process
- **Determine the schedule for the process**
 - Determine whether the process will include pre-qualification and qualification rounds, determine which selection mechanism to employ, and determine the criteria for pre-qualification, qualification, and selection, as applicable.
 - Make policy determinations concerning the number of licenses to be awarded, the terms and conditions of license, and other key policy matters.
- **Issue public notice of the license competition**
 - Use traditional media (business magazines and newspapers), online resources, and the regulator's website to provide notice of the competition.
- **Publish the guide to the licensing process**
 - The guide to the licensing process may be published at the same time as the issuance of public notice of the competition or shortly thereafter.
 - If the licensing process includes a pre-qualification stage, the guide to the licensing process may be issued only to applicants who have successfully pre-qualified. In this case, the guide to the licensing process may be issued after the pre-qualification stage. In such a case, directions on how to pre-qualify and a high-level summary of the licensing opportunity should be issued along with the public notice of the opportunity.
- **Publish the schedule for the license competition**
- **Pre-qualification stage (if applicable)**
 - Issue directions on how to pre-qualify for the licensing competition and provide at least a high level summary of the licensing opportunity.
 - Possibly host a question-and-answer session to address inquiries about the process.
 - Receive and evaluate submissions.
 - Notify those who have made submissions about whether they have successfully pre-qualified.
 - Distribute the detailed guide to the licensing process to successfully pre-qualified applicants.
- **Qualification stage (if applicable)**
 - Ensure that the guide to the licensing process has been made publicly available or distributed to pre-qualified applicants, as applicable.
 - Possibly host a question-and-answer session to provide further information about the competition and to address inquiries about the process.
 - Receive submissions on qualification. Submissions regarding selection may be received at the same time, for example, as in the classic "two envelope" system.
 - Evaluate submissions on qualification. Unless the qualification and selection stages have been combined, the submissions regarding qualification and selection should occur separately. Qualification submissions should be evaluated first.
 - Provide notice to applicants about whether they have successfully qualified to be considered for the award of license before moving on to the selection phase. Notice to applicants may be accompanied by a public announcement of the applicants who have successfully qualified to compete for the award of license.
 - Consider returning the unopened submissions on selection of applicants who failed to qualify.
- **Selection stage and award of license**
 - Apply the selection mechanism, e.g., host the license auction or evaluate submissions in a comparative evaluation process.
 - Notify the successful applicant(s) in writing of the award of license.
 - Issue public notice announcing the winner(s) of the licensing process.
 - Generally, it is good practice to require successful applicants to confirm their acceptance of the award of license in writing.
 - Ensure that the successful applicant has completed all necessary requirements (e.g., payment of an initial license fee) before the actual issuance of license.
- **Issuance of license**
 - After receiving confirmation that all necessary requirements have been met by the successful applicant, issue the license.

Source: McCarthy Tétrault LLP, 2005.

The schedule sets out the framework for how the licensing process will unfold. It normally lists all significant steps in the licensing process and the date and time for such steps. The deadlines governing tasks that applicants are required to complete are a particularly important item in the schedule. Many schedules also include the timelines for the review of the licensing applications and the date on which the decision concerning the award of licensing will be announced. Other important steps may be mentioned in the schedule, for example, the effective date of the license.

Dates and deadlines set out in licensing schedules are usually specific. In addition to noting the day, month, and year of a particular event, it is often advisable to include a fixed time (including relevant time zone) for certain steps.

In setting a schedule, the regulator should balance its own interests, the interests of the public, and the interests of potential applicants. For example, the interest in moving the authorization process ahead as quickly as possible after issuing the request for applications must be balanced against the need to provide potential applicants with sufficient time to conduct due diligence and to prepare the required materials for the application.

3.4.3. The Guide to the Licensing Process

As mentioned above, a regulator will generally issue a guide for applicants, outlining the licensing process. Such a guide is sometimes referred to as a “Request for Applications for a License,” “Licensing Guidelines,” or even “Licensing Tender” (see Box 3.3). These documents will be referred to collectively as the “guide to the licensing process”.

The guide to the licensing process typically covers important information about the licensing competition that allows applicants to analyze the prospective opportunity and to submit responsive applications. This information may include: background to the competition; market conditions; the scope of the license; the rights and obligations of the successful licensee; the procedures that will be followed in the competition; qualification criteria; selection criteria; fees; and the schedule for the licensing process. In some cases, the guide also appends a draft license, as well as information about relevant investment legislation and policies, interconnection guidelines, an application for spectrum, the existing tariff, the national numbering plan and a tariff guideline. The guide to the licensing process is often made available to the public or to qualified bidders as soon as a notice of invitation to apply for the license is released.

Box 3.3 Nepal -- Request for Applications for a License to Provide Rural Telecommunications Service (RTS) in the Eastern Development Region

In 2003, the Nepal Telecommunications Authority (NTA) issued a Request for Applications (RFA) for a license to provide rural telecommunications services (“RTS”) in Nepal. The RFA states that the NTA plans to issue one license. The successful licensee will be paid a one-time capital subsidy. The RTS tender process includes a qualification stage. Selection of the licensee is based, in part, on the lowest subsidy bid submitted.

The RFA outlines, among other things, the following:

An Introduction, including a brief overview of the purpose of the RFA, a timetable for the RFA process and the address for correspondence with the NTA.

Background Information about the Nepalese Telecommunications Sector, including information related to the geography and government structure of Nepal, the Nepal Telecommunications Corporation (NTC) network, the RTS policy and NTC rates, numbering, and other licenses.

Rights and Obligations of the Licensee, including information related to, inter alia, exclusivity, network roll-out requirements, RTS subsidy payments, service quality, interconnection, access to public and private lands, the term of the license and spectrum allocation.

Instruction to the Applicants, including information related to, inter alia, the selection process, eligibility and qualification, content and format of the application, communications and requests for clarification, the cost of the application and bidding, the modification of the terms of the license and other legal and formal requirements.

The RFA also includes 17 annexes. These annexes include, inter alia: relevant legislation; interconnection guidelines; the RTS subsidy proposal form; an application for spectrum; a draft license; excerpts from the World Bank Procurement Guidelines; a map of Nepal; the existing tariff of NTC; the national numbering plan; and a tariff guideline.

Source: ICT Regulation Toolkit.

3.4.4. The Pre-Qualification Phase

The licensing process generally begins with a public notice of the license competition. The public notice increases the transparency of the authorization process and is in keeping with current best practices in the ICT sector. Public notice is often issued in a preliminary or pre-qualification phase..

It is sometimes desirable to limit the field of applicants to parties that have demonstrable financial and technical qualifications to achieve the objectives of the regulator. In these cases, the licensing process will have a pre-qualification phase. Some factors that are relevant to the decision about whether to include a pre-qualification phase include:

- *The nature of the telecommunications market and the level of competition:*
Pre-qualification is less important in the case of highly-competitive services since consumers can switch away from a service provider that fails to provide adequate services with minimal cost and disruption;
- *The nature of telecommunications services:*
Pre-qualification is often prudent when licensing processes for services involve the use of valuable spectrum and other scarce resources to ensure that these resources are awarded to applicants who are financially and technically capable of providing the service; and
- *The type of selection mechanism to be applied in the licensing process:*
Prequalification is less important in comparative evaluation licensing processes since comparative evaluations are often structured to include an evaluation of the financial and technical merits of applicants.

During the pre-qualification phase, potential applicants must demonstrate that they meet the pre-qualification criteria to be eligible to participate in the license competition. The pre-qualification criteria are usually minimum requirements that establish a baseline of financial capability and technical competence. In order to enhance transparency and certainty in the licensing process, it is preferable that the pre-qualification criteria be objective rather than subjective measurements of financial viability and technical competence. An objective pre-qualification criterion that is often used requires applicants to demonstrate that they, or an affiliated entity, have actually provided certain types of services or operated a network of a certain size.

Regulators sometimes impose a significant application fee instead of, or in addition to, relying on a formal pre-qualification. Such an application fee will discourage frivolous bidders. The fee may be tied to the submission of an application or may be charged for the purchase of the guide to the licensing process.

One potential disadvantage of requiring pre-qualification is that the pre-qualification round extends the licensing process and delays the actual issuance of the license. Potential delay can be minimized by adopting objective criteria that are relatively easy to adjudicate. In any event, the regulator may ultimately save time by requiring that applicants pre-qualify, since the regulator will then have fewer applications to review during the selection process.

Authorization processes that have included a pre-qualification phase include: the Kenyan GSM licensing process and licensing process for a second national operator; the Jordanian process for the issuance of a third mobile license; the Saudi Arabian cellular mobile services licensing process; and the Saudi Arabian data services licensing process.

3.4.5. The Qualification Phase

Some licensing processes include a qualification phase during which applicants must demonstrate that they meet the qualification criteria for the license and are therefore eligible to be considered for selection for the award of license. The qualification phase is separate from the pre-qualification phase, although sometimes these two phases are combined. In some licensing processes, the qualification phase and selection phase are dealt with separately. In this case, the evaluation of licensing applicants occurs in two phases.

First, applicants are evaluated to ensure that they meet the qualification criteria. Successful applicants then proceed to the selection phase of the licensing process. During this phase, applications are assessed on the basis of the selection criteria and the license is awarded to the successful applicant.

A classic example of the use of a qualification phase and a selection phase is the “two-envelope” approach. Under this approach, each applicant submits two envelopes. The first envelope contains an applicant’s submissions regarding its ability to meet the qualification criteria. The second envelope

contains information provided by the applicant about the selection criteria.

During the qualification stage, the first envelope is opened and the submissions of applicants are reviewed to determine which ones are technically, financially or otherwise qualified to proceed to the selection phase. Applicants are then informed about whether they have advanced to the selection phase of the licensing process. The second envelopes of non-qualified applicants are usually returned unopened. Sometimes an explanation is given as to which qualification criteria the applicant failed to meet. Such an explanation is consistent with the requirement of the WTO Regulation Reference Paper to make reasons for denial of a license known to the applicant upon request.

During the selection phase, the second envelopes submitted by qualified applicants are opened. The most common and objective selection criterion is the financial amount of a bid. This may be based on the highest bid, for example, in the case of a IMT-2000 (3G) license. But it may also be the lowest bid, for example in the case of a least-cost subsidy auction.

In some cases, the qualification and selection processes are held simultaneously, such as in a comparative evaluation process.

Transparency in the qualification phase is promoted by communicating clearly with potential applicants about how their submissions will be evaluated. In particular, it is advisable to inform potential applicants whether minimum compliance with the qualification criteria is sufficient to advance them to the selection phase of the competition. There has been litigation against regulators in some countries where the qualification criteria were specified but some otherwise qualified applicants were subsequently rejected on the basis that they were less qualified than others.

Distinguishing Between Qualification and Selection Criteria

It is important to distinguish between qualification criteria and selection criteria. Qualification criteria are requirements that all applicants must meet to be eligible to compete for the license during the selection stage. Selection criteria are used to determine which applicant will actually be awarded the license or licenses.

In the case of a general authorization, only the qualification criteria are relevant because no selection is made. In the case of a selection process for an individual license, both qualification and selection criteria are normally developed. It is generally advisable to conduct a licensing process in at least two phases. The qualification phase is completed first. For less complex licensing processes, the pre-qualification and qualification phases are sometimes combined as one. Only qualified applicants participate in the second phase – the licensee selection process.

Qualification Criteria

As noted above, qualification criteria are minimum requirements that all potential applicants must meet in order to be eligible to compete for the license during the selection stage. Various requirements may be used as qualification criteria. Some can be more onerous than others. Qualification criteria should be published in advance of the commencement of the qualification phase. This is consistent with the provisions of the WTO Reference Paper, which stipulate that “all licensing criteria” must be made publicly available.

To maximize the transparency of the process, direction may be provided on how potential applicants may demonstrate that they have met qualification criteria, such as technical competence or financial backing. The most common type of evidence involves prior experience in operating a network with a specific number of subscribers.

There are potentially negative consequences to adopting very specific qualification criteria and to specifying in detail the type of evidence that will suffice to demonstrate that these criteria have been met. This specificity makes the process more rigid and constrains the regulator’s flexibility to address novel situations or unexpected but useful qualifications. Maintaining some degree of regulatory discretion in the qualification process may be appropriate.

Some of the considerations relevant to selecting appropriate qualification criteria include: the type of service being licensed; whether the license will include monopoly rights or other forms of exclusivity; whether the licensing process includes a pre-qualification phase; and the type of selection mechanism applied in the licensing process. Table 3.2 summarizes qualification criteria (and their rationale) for certain license types.

Table 3.2 Qualification Criteria by Type of License

LICENCE TYPE	POSSIBLE QUALIFICATION CRITERIA	RATIONALE
First new competitive fixed network (local or international service)	<ul style="list-style-type: none"> • Applicant not currently licensed to offer a competitive service; not associated with the incumbent • Applicant has a minimum number of fixed lines in service in other countries/markets (an international PTO as partner) • Relevant experience in similar markets (direct or by contract) • Financial comfort letter from recognized bank • Business plan, including pro forma financial statements and a marketing plan • Technical plan, including details of network planning and roll out and technology selections 	<ul style="list-style-type: none"> • Effective competition will not develop between related entities • Only experienced service providers can meet the significant challenges facing a start up fixed line competitor • Experience and contacts in local market increases prospects of successful start-up • Evidence of access to required financing • Evidence of financial viability and likelihood of success of the project; disadvantage in that it is costly to prepare plan • Business plan and technical plan can demonstrate detailed and viable service plans and knowledge of local economic and other conditions
Competitive cellular service (first new entrant in an emerging market)	<ul style="list-style-type: none"> • Similar to, but less onerous than, above 	<ul style="list-style-type: none"> • Presence of competition reduces (but does not eliminate) public costs of failure • Significant economic and sector development objectives will be achieved by successful launch • Valuable and scarce spectrum will be allocated to the selected service provider on an exclusive basis
Data transmission service in highly competitive market	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • General authorization is best approach • No scarce resources involved • Existing competition makes success or failure of this service provider relatively unimportant
Broadband wireless services in highly competitive market	<ul style="list-style-type: none"> • Financial comfort letter • Evidence of experience in successful operation of similar businesses in any market 	<ul style="list-style-type: none"> • Spectrum is a scarce and valuable resource. Regulator has a important role to play in ensuring efficient use and avoiding warehousing

Source: Adapted from Intven, Oliver and Sepulveda, 2000.

Regulators around the world have adopted diverse sets of qualification criteria. For example, the Estonian regulator adopted three qualification requirements for its 3G tender process in 2004. Participants were required: (i) to have submitted an application for participation, along with all necessary documentation; (ii) not to be an operator to whom a technical authorization of 3G mobile telephone network had previously been given pursuant to an earlier proceeding; and (iii) to have transferred the deposit sum in the appropriate account of the Ministry of Finance by the deadline for such deposit.

Potential applicants in the Norwegian 3G tender process (2000) were required to meet three main “minimum requirements”: (i) conformity with the terms of the invitation to tender, including the requirements related to scope, form, and content of the application; (ii) certain financial requirements pertaining to development and operations; (iii) and a commitment to meet the specified coverage requirements and corresponding roll-out obligations.

The Federal Office of Communications (OFCOM), the Swiss regulator, included only one qualification criterion in the 2003 licensing process for licenses to

provide telecommunications services based on the GSM standard. This criterion was that sufficient financing for the participant's proposed project had been secured for the term of the license, based on commercial and technical planning. The tender document stipulated that OFCOM would consider that a participant had fulfilled this criterion if: the project was based on a consistent and realistic business plan; a consistent and realistic investment and financing plan exists for the project; and the financial means necessary for the realization of the project are available or can be made available, and this can be proven.

Participants in the 2003 Nepalese Rural Telecommunications Services (RTS) licensing process were required to meet four requirements in order to become a "Qualified Applicant," and therefore eligible to compete for the award of license during the selection stage. First, the participant's application package for the RTS license had to be complete and prepared in accordance with the terms of the Request for Applications (RFA) for the Issuance of an RTS License.

Second, the participant must have satisfied all the eligibility requirements of the RFA, including, *inter alia*, requirements relating to: the purchase of a copy of the RFA; the provision of all required information; company registration; Nepalese participation; financing capacity; operational experience; and field proven equipment. The RFA includes specific details about these eligibility requirements and how participants were to demonstrate that these requirements had been met.

Third, the information contained in the participant's application for license must have demonstrated that the applicant met or was capable of meeting the RTS license requirements related to service quality and availability and network roll-out requirements, as specified in the RFA.

Finally, the participant must not have been disqualified for any other reason, including, *inter alia*, reasons relating to the failure to submit the application for license in a timely fashion; failure to submit a complete application; failure to provide the required bid security amount for the license; and failure to comply with any of the procedures outlined in the RFA.

3.4.6. Selection Process

The heart of the licensing process is the selection phase. There are two main types of competitive selection processes: comparative evaluation approaches (or "beauty contests") and auctions. Other methods include lotteries and a variety of hybrid approaches that use elements of pre-qualification, comparative evaluation, and auctions or lotteries. A guide to a licensing process should provide details about the selection mechanisms, the selection criteria and the process to be followed.

Comparative Evaluations and Auctions

Comparative Evaluation Approach

In a comparative evaluation, or "beauty contest," the award of license is determined on the basis of a merit-based assessment of competitive applications. Each application is evaluated on the basis of a pre-set list of selection criteria or on the basis of the applicant's ability to fulfill certain, more general, requirements. This approach allows regulators to award the license to the service provider that is best placed to meet the specific objectives of the licensing process.

There are many forms of comparative evaluation schemes. In some cases, licenses are awarded to applicants expected to make the best use of the limited resources associated with the license to serve the public. In other cases, the evaluation is based on criteria related to technical competence, experience, and cost efficiency. Some comparative evaluations rely in part on quantitative measures, such as the number of years of operational experience. Others rely on more qualitative (and thus subjective) criteria, such as the quality of management.

The Norwegian 3G license tender process in 2000 featured a comparative evaluation as the selection mechanism. Applicants were evaluated on the basis of two primary selection criteria: geographic coverage and coverage in terms of population of network and services, and network roll out.

In the 2002 South African tender process for a license to provide public switched telecommunications services (PSTN), a comparative evaluation was used to select the successful applicant. The South African regulator evaluated each valid and eligible application based on a set of somewhat unusual criteria that had particular relevance to the political, socio-economic context in

the country. The seven selection criteria for the license were as follows:

- financing and business plan;
- experience in the provision of PSTS, strategic vision regarding the integrated provision of the service and a competitive strategy;
- human resource development policy and practices for training and promotion, especially entry level positions;
- technical feasibility of the project;
- proposed integration of the Black Economic Empowerment (BEE) into management of the licensee company and board representation;
- proposed integration of Eskom and Transnet into management of the company and board representation; and
- empowerment of women, disabled persons, and youth.

In the 2003 Swiss GSM telecommunications services licensing tender, the selection of the successful applicant was also based upon a comparative evaluation. OFCOM conducted a weighted assessment of four selection criteria: the quality of the applicant's business and service plan; technical concept and implementation; market stimulation and innovative strength; and coherence and plausibility of the project.

Specific selection criteria should be clearly described in the guide to the licensing process. Best practices also suggest that the weighting for each criterion should be determined in advance and communicated to applicants. This promotes transparency in the licensing process. This also helps applicants to prepare more responsive applications to ensure that the regulator selects the best qualified applicant for the award of license. Norway, South Africa, and Switzerland all communicated the relative weights of each selection criteria in advance of the selection phase.

Auctions

While the comparative evaluation approach involves the selection of an applicant based on merit, auctions involve little or no qualitative analysis of the merits of the applicant. Instead, selection is based on a single evaluative criterion, namely the amount bid by qualified applicants.

There are many different types of auctions (see Box 3.4). The most common approach involves selection of the qualified applicant who submits the highest bid for the right to hold a license. This type of auction was used in several GSM licensing processes in Europe, including the German, British, Dutch, and Italian authorization processes.

In the 2004 Estonian 3G licensing process, the successful application was selected using a multi-stage tender auction with an unlimited number of stages. The sole selection criterion was the amount of the tender offer. The applicant that bid the highest tender offer was awarded the license.

In least-cost subsidy auctions, a selection is made based on which qualified applicant requires the lowest subsidy to provide a non-economic service. The services authorized using a least-cost subsidy auction are generally subsidized as part of a country's universal access program. In a least-cost subsidy auction, applicants bid on the basis of subsidies they would require to provide the authorized services. The applicant that bids the lowest subsidy is awarded the license, along with the right to the subsidy it has proposed. Such auctions have been used successfully on a number of occasions to license subsidized rural telecommunications services in Latin America, and more recently in other regions. For example, the Nepalese regulator recently used this mechanism to issue a rural telecommunications services license in its country.

Auctions can also be based on any other measurable indicator that is financial or based on financial considerations. These might include the lowest consumer tariff to be charged, the highest quality of service or the greatest level of service to non-economic areas.

In many auctions, bidders are pre-qualified using criteria similar to those used in comparative evaluation processes. As a result, participation in these auctions is limited to bidders with proven financial and technical capabilities.

Hybrid Approaches

There are variations of the two main selection approaches. In some cases, hybrid approaches blend elements of a comparative evaluation with elements of an auction. For example, applicants may be scored on a number of quality-based criteria and market-based criteria, such as the amount of their bid for the license, financial security, technical

competence, and operational experience. In this case, the applicant with the highest combined score may be awarded the license. Table 3.3 compares the

advantages and disadvantages associated with different types of selection mechanisms.

Table 3.3 Advantages and Disadvantages of Different Selection Mechanisms

SELECTION CRITERIA	ADVANTAGES	DISADVANTAGES
Comparative Evaluation – based on subjective assessment and comparison by the regulator of applications based on a list of qualitative and/or quantitative criteria	<p>Maximum flexibility and discretion to select the most attractive application</p> <ul style="list-style-type: none"> Allows applicants to focus on factors they believe are important and to convince regulator accordingly 	<ul style="list-style-type: none"> Non-transparent Subject to accusations of bias or corruption from losing bidders which are hard to refute and damage regulatory credibility Risk of confusion among bidders who may not clearly understand regulatory priorities
Pure Auction – selection from among qualified bidders based on the highest financial bid	<ul style="list-style-type: none"> Maximum transparency Market efficiency – license awarded to the bidder which values it most High bidder will have strong incentive to roll out service quickly to recover its bid Suited to licensing in competitive markets 	<ul style="list-style-type: none"> Payment of fee can divert financial resources from service provision to auction fees (government revenue) Encourages applicants to minimize resources devoted to other important priorities (i.e. rollout, coverage etc.)
Pure Auction – selection based on quantitative criteria, other than cash, relating to the service (i.e. time required to meet roll-out target, commitments on maximum prices for consumers)	<ul style="list-style-type: none"> As above Regulator can focus bidder resources on service development or other priorities as opposed to government revenues 	<ul style="list-style-type: none"> Encourages applicants to minimize resources devoted to priorities which are not selection criteria, unless they make business sense
Combined auction/comparative selection via weighted formula	<ul style="list-style-type: none"> A compromise which has many of the benefits of both auction and comparative selection Applicants are awarded points based on selection criteria 	<ul style="list-style-type: none"> Difficult to develop a sound formula that compares “apples to apples” Compromise has disadvantages of both comparative selection and auctions Less transparent than pure auctions

Criteria for Selection

As noted above, selection criteria are used in the assessment of qualified license applicants to determine which one will be awarded the license or licenses. A wide range of criteria can be used in the selection process, including quantitative and qualitative criteria. A comparative evaluation procedure may involve one or the other or both types of criteria.

The type of selection criteria that should be used in a licensing process depends on the objectives of the licensing process and the relative advantages and disadvantages of each type of criteria in the particular license circumstances.

The selection mechanism also plays an important role in shaping the selection criteria featured in a licensing process. While auctions require a set of criteria that are largely quantitative, beauty contests, by contrast, may feature more qualitative criteria. Hybrid approaches typically feature both qualitative and quantitative criteria. The decision whether to include a pre-qualification or a qualification stage also impacts the type of selection criteria that are applied in a licensing process.

Award of the License

The selection process concludes with the award of license. It is a good practice to specify when and where the award of license will be announced. It is

also good practice to require the successful applicant to confirm its acceptance of the award in writing within a prescribed amount of time. If the successful applicant is required to comply with any conditions before the license is issued (e.g., the payment of a license fee), such requirements should be clearly identified.

To increase confidence in the licensing process, it is important to build as much transparency and certainty as possible into the selection process. There are a number of ways that regulators can enhance transparency and certainty. For instance, regulators can:

- Describe the selection mechanism in the guide to the licensing process, along with the selection criteria and the weight that will be given to each criterion;
- Provide a coherent and complete set of selection procedures that will be followed during the selection process, including an outline of all of the major steps in the process and any required action of applicants at each step, along with the deadlines associated with each step;
- Specify all the materials that must be submitted for review during the selection process, as well as the acceptable form for submitting such materials;
- Address contingencies that frequently occur (e.g., ties in the selection process) in the information provided in the guide to the licensing process;
- Consult openly with applicants about any unanticipated circumstances and communicate the proposed course of action clearly.

Box 3.4 Different Approaches to Structuring Auctions

Regulators have taken different approaches to structuring auctions for tender processes. One common form is the multiple round auction with an unlimited number of stages. This type of auction was used in the 2008 Canadian auction for spectrum licenses for Advanced Wireless Services (AWS) and other spectrum in the 2GHz range. In the Canadian AWS auction, applicants bid for related sets of licenses in simultaneous multiple rounds. The design of the auction featured an "activity rule" that penalized bidders who were inactive in order to maintain the pace of the auction. The rounds in the auction continued until there was a round in the final stage in which there was no further activity (defined as a "cessation of bidding"). The standing high bidders on each license at the cessation of bidding were deemed the provisional winners of those licenses.

Finland adopted a simultaneous multiple-round auction format for its 2500-2690 MHz auction in November 2009. The 15 frequency blocks available in the auction were auctioned at the same time. The auction involved several rounds of bidding. Like the Canadian AWS auction, the Finnish auction featured an activity rule that required bidders to be active during each round of bidding, subject to the provision that each bidder was permitted to sit out up to three bidding rounds. The auction concluded in the bidding round where there were no new bids received and where no bidders elected to sit out the bidding round. The bidder who had the standing highest bid for one or more frequency blocks won those frequencies in the auction.

There are a myriad of variations on the multiple round auction. Some multiple round auctions feature sequential rounds, where the bidding for each license takes place separately. Other auctions proceed through rounds simultaneously such that more than one license may be auctioned at the same time. Multiple round auctions may be "open", with an unlimited number of stages, or "closed", with a limited number of stages. There are also different methods for how participants may bid in the auction and how participants are disqualified.

Another common form of auction is the single round auction. This form of auction is simpler than the multiple round auction as it involves only one step. Typically, each applicant is required to place its bid in a sealed envelope and to submit the bid with its application package. The envelopes are opened at a pre-determined date, and the license is awarded to the applicant with the best bid. The second phase of the Nigerian spectrum auction for the award of licenses in the 2GHz range featured a sealed bid, single round auction. This phase was preceded by a simultaneous multiple round auction to determine the top five bidders. Only the top five bidders were eligible to participate in Phase 2 of the auction. The second phase of the Nigerian 800 MHz spectrum auction also featured a sealed bid single round auction.

The Nepalese regulator adopted a single-staged auction approach in its rural telecommunications services ("RTS") licensing process. In the Nepalese case, the RTS license was to be awarded with a subsidy for the provision of services. Applicants were required to bid upon the amount of subsidy required. The license was awarded to the applicant that bid the lowest subsidy amount.

The Nepalese RTS licensing auction illustrates another possible variation in the structuring of auctions, namely the criterion used to judge participant's bids. In the Nepalese RTS licensing auction, the criterion was the amount of subsidy required. In the Estonian licensing auction, the criterion was the value placed by the applicant on the authorization.

Source: ICT Regulation Toolkit.

3.4.7. Fees

Many different kinds of authorization fees have been imposed on the telecommunications industry. At present, however, the most notable trend in the ICT sector is the reduction of fees to make services more affordable.

Fees differ in a number of material respects, including their purposes, how they are calculated, on whom or on which services they are imposed, and whether they are recurring or paid on a one-time basis. The main types of authorization fees include:

- *Administrative fees*
These fees compensate a regulator for its costs of regulation and are therefore set on a cost-recovery basis. They are increasingly common, and are often considered the “best practice.”
- *Spectrum management fees*
These fees are typically based on similar cost-recovery principles as administrative fees. They are usually charged separately from “operating authorization fees.”
- *Discretionary administrative or spectrum fees*
These fees are established on a one-time or periodic basis (e.g., annually). They are not cost-based. Instead, they are set on an arbitrary “value of authorization” basis or established using some type of benchmarking of other rates.
- *Royalties, premium or “rent”*
These are paid to a government or regulator for the right to operate a network, provide a service or use a limited resource, such as radio spectrum or numbers. They may be set arbitrarily, by using benchmarking, or by using market-based “auction fees.”
- *Other special-purpose fees*
These fees, bundled with authorization fees, include access deficit charges, universal service fees, industry taxes, etc. Transparency and good authorization practice requires such fees to be separated from authorization fees.

Where more than one type of authorization fee is charged, it is good practice to unbundle them, i.e. calculate them separately. This improves transparency and makes it easier to verify that the administrative charges related to cost recovery are indeed cost based. Unbundling fees has particular relevance for transparency and accountability when different ministries or agencies impose fees on the same service providers. For example, authorization fees imposed by the regulator should be separated

from spectrum management fees, which may be imposed by a wholly separate ministry or agency.

While some authorization fees are levied on a one-time basis only (e.g., a one-time, initial authorization fee), other types of fees are recurring and must be paid on a periodic basis (e.g., royalty payments, universal service fees, and administrative fees). In some cases, an authorization may be subject to both a one-time fee and a recurring fee. Most regulators provide details in tender documents about what charges, if any, will be levied on licensees and how such charges will be calculated in order to promote greater transparency and certainty.

Non-recurring fees, such as one-time authorization fees, are often payable in one lump sum amount within a certain amount of time after an authorization has been awarded. However, some regulators have attempted to ease the payment burden by allowing licensees to pay the fee in installments at set intervals after the authorization has been issued. The two most common payment schemes are “split payments”, where unequal portions of the fee are payable over the term of the license, and the payment of equal, periodic installments over a set number of years.

One-time initial authorization fees may be fixed fees or fees that are set according to the market value of the authorization. Fixed fees are set at an arbitrary amount determined by the regulator or Minister. These fees are commonly used in comparative evaluation processes (“beauty contests”). In order to promote transparency in the authorization process, however, it is prudent to adopt a market-set fee. Market-set fees are developed by using common telecommunications valuation methodologies. Examples of measurements that may be used to determine a market-set fee include: a measurement of discounted cash flow; a measurement of net present value; benchmarking against regional or international results for comparable licenses and markets; previously applied license fees (in the case of multiple licenses issued at different time periods); and a specific amount set to address government revenue objectives.

Recurring fees are payable at regular intervals throughout the life of the authorization. In many cases, recurring fees must be paid on an annual basis. The basis on which recurring fees are set varies. In some countries, licensees are required to pay a portion of their annual revenues or “turnover” to the government. In other cases, where the

recurring charge is designed to compensate the regulator for its costs, recurring fees are set on a cost recovery basis.

Authorization fees paid for the right to operate a network, to provide certain services, or for the right to use a scarce resource have evolved considerably since 2000 with the explosion in wireless technologies.

When first introduced in the telecommunications sector, annual recurring revenue charges were quite high. Regulators have recognized, however, that a reduction in the level of revenue-percentage payable to the government is prudent to avoid imposing barriers to entry. Both India and Venezuela have taken measures to reduce the level of revenue-sharing with the government imposed on telecommunications operators.

Policy considerations sometimes play a central role in determining what type of fees will be levied on services providers and how such fees should be calculated. Regulators can advance a number of policy objectives by setting license fees at reasonable levels during the initial years of market development. This may promote social goals, such as universal access or service affordability, or economic objectives, such as stimulating competition in the sector by lowering barriers to market entry..

3.5. Authorization Principles and Procedures

While authorization practices vary from country to country, there are frequently common features. The following sections review practices and procedures commonly employed to improve the effectiveness, efficiency, and transparency of authorization processes.

Procedural Transparency

Procedural transparency is one of the hallmarks of a good authorization process. Transparency increases the confidence of service providers, investors, and other stakeholders in the authorization process. Accordingly, transparency reduces investment risk and increases the attractiveness of investment in national ICT markets. This in turn stimulates the expansion of ICT infrastructure and services. The importance of transparency in the authorization process is emphasized in the WTO Regulation Reference Paper.

In transparent authorization processes, authorizations are generally issued, amended, or revoked based on criteria published in advance.

Public Consultations

It is good practice to engage in public consultations before and during an authorization process. Consultation with telecom sector stakeholders helps to foster a transparent regulatory environment. Consultations also provide the regulator with valuable feedback directly from industry members and other stakeholders on a proposed authorization initiative. Receiving input from these stakeholders helps the regulator make fully informed decisions about the proposed authorization procedures and the proposed authorization terms and conditions in order to maximize the prospects for a successful authorization process. Indeed, consultation is often the least expensive form of “research” a regulator can use to improve the information base on which its decisions are made. Even where regulators choose, for commercial or other reasons, to conduct some discussion with potential applicants out of the public eye, it is useful to conduct public consultation early in an authorization process. This improves the design of the authorization process. Consultation can be particularly important where a general authorization is to be issued. Advance publication of proposed conditions of general authorizations provides an important opportunity for public comment – especially comment by interested service providers.

The Public Consultation Process

Public consultation may occur both before and during the authorization process. It can be formal or informal. However, in the context of any major authorization initiative, it is generally advisable for the regulator to establish a formal and transparent consultation process.

A good approach for a more formal consultation process involves the publication of a notice or public consultation paper that states the regulator’s intention to launch an authorization process, and invites comments on the proposed approach. The notice should set forth reasonable details of the proposed authorization approach and any specific issues on which comments are sought. Where the regulator is unsure of the best approach, comments may be invited on different options. The Consultation Paper on the Unified Licensing Regime published by the Telecommunications Regulatory

Authority of India (TRAI) in 2004 is a good example of this type of formal consultation process.

Notices should be sent to all interested parties, including prospective applicants, existing licensees, and consumer and industry interest groups. Notices are sometimes published on the regulator's website, as has been the case in Jordan, Saudi Arabia, and Ireland, for example. Notices are sometimes also published in official gazettes or the popular business press.

Notices may be issued in short form, inviting interested parties to request copies of a more detailed notice or consultation paper. A less formal "call for comment" may be included in a public notice issued by a regulator. In some cases, a call for comment refers interested parties to a particular website or document where such parties can find more information about the consultation process. Calls for comment may also include some background information or analysis concerning the issue or issues raised for consideration. Although simple calls for comment may not be formally published as a government white paper or include analysis as detailed as consultation papers, they may be just as effective in promoting transparency and soliciting feedback from stakeholders.

The Jordanian public consultation on the licensing of a new mobile operator is a good example of a public consultation document that takes the form of a call for comment. Another good example of a simple call for comments to a public consultation is the ECTEL consultation on draft telecommunications (fees) regulations that it proposed for adoption in its Member States.

A practice that promotes the regulatory objectives associated with public consultations is to allow stakeholders to participate in the consultation process. One of the most basic ways to achieve this is to ensure that the public consultation document clearly identifies how interested parties can provide their comments. Although some regulators prefer to receive contributions by post or by e-mail only, other regulators, such as the Irish regulator, invite responses to be filed by post, e-mail, facsimile, or online.

In some cases, regulators may hold a public hearing or meeting to discuss the issues raised in the public consultation.

Copies of written comments may be published to foster greater transparency. An opportunity is

sometimes provided for a round of reply comments. This keeps parties more honest and accurate in making their initial submissions, and assists the regulator in assessing the merits of positions taken or information supplied in parties' comments.

Follow-up by the regulator following the deadline for filing comments is an important part of the public consultation process. The regulator should give fair consideration to such submissions and comments, even if the proposals contained therein are not adopted. To this end, regulators may consider publishing a report on the public consultation that summarizes the submissions received during the consultation and sets out the regulator's determinations about the matters raised in the consultation. Such a report provides detail and certainty about the regulatory decision on the matter in question. It also bolsters the transparency of the decision-making process.

Alternatively, the regulator may choose to use the submissions as input for the next stage of its licensing process, e.g., the issuance of a licensing regulation or a call for applications for licenses. For instance, in its 2004 public consultation document, India's regulator, TRAI, summarized comments received during earlier stages in the transition to a unified licensing regime.

Authorization Renewal, Amendment, and Renegotiation

Individual licenses are normally granted for fixed terms. Thus, specific issues arise when handling renewals at the end of a license term. Licenses may be renewed, renewed with amendments, or simply terminated at the end of a license term. Termination is extremely rare, since it would deprive customers of service. It is seldom used except in the case of non-operational licenses or serious and continuous breaches of license conditions, laws or other regulatory instruments.

The legal framework for license renewals and amendments is normally prescribed in national telecommunications laws or regulations. Sometimes it is found in the conditions of the license itself, or in the terms of privatization-related agreements, such as shareholders agreements between governments and strategic investors.

Many countries have introduced reforms in their authorization regimes, such as the move from individual licensing to general authorizations. Such

reforms raise the issue of how to treat licenses granted under a previous regime. In some cases, existing or new laws grant regulators the right to amend licenses unilaterally under the new regime. In others, incentives are provided to continue licenses under the new regime, or to amend license conditions to bring them in line with the new regime. Various approaches have been taken to the continuation of licenses in order to reflect changing authorization regimes.

Public consultations often play an important role in managing transitions to a new authorization regime. These consultations can provide the regulator with useful feedback about the concerns of stakeholders and practical matters related to developing and implementing a new authorization regime. These consultations also provide a useful means of disseminating background information on the transition.

Perhaps the most difficult cases are those involving the termination of monopoly or exclusivity rights granted under previous regimes, which are no longer consistent with the telecommunications market liberalization policies featured in new authorization regimes. In a number of countries, the introduction of competition has run counter to the incumbent operator's legal rights to exclusivity in service provision or network operation. In some cases, governments or regulators have not wanted to wait for the incumbent's monopoly rights to expire, since this could delay the introduction of competition and its benefits for sector development.

Terminating monopoly rights can be a difficult and controversial process. Monopoly rights are generally highly valued by incumbents, and, failing agreement, many incumbents are prepared to take legal action to defend these rights. Arbitrary exercises of regulatory power to revoke or amend exclusivity rights or other license conditions may result in litigation and complaints under international trade agreements.

In some cases, new legislation is introduced that mandates the termination of the incumbent's period of exclusivity. However, such legislation may be subject to legal challenge in some countries on the grounds that it constitutes an illegal "taking" or cancellation of property rights.

In other cases, governments or regulators have negotiated mutually acceptable arrangements with incumbent operators to terminate or amend their exclusive rights. In some cases, it is possible to agree

to phase out an incumbent's monopoly over a period of time in return for concessions, such as tariff reform, rate rebalancing, and the right to be issued additional operating rights under a new authorization scheme.

In cases where the government or regulator enters into re-negotiations to amend license conditions, it is often prudent to apply sound, generally accepted dispute resolution principles. These principles have been widely documented in books and articles on negotiation. The following three basic principles of good negotiation strategy are worth bearing in mind: (i) focus on the parties' long-term interests, and avoid focusing on positions; (ii) develop options for mutual gain; and (iii) use objective criteria to assess options.

Balancing Certainty and Flexibility

Telecommunications authorization should balance regulatory certainty with the flexibility necessary to address future changes in technology, market structure, and government policy. This balance is never easy to achieve. Regulators in countries with higher telecommunications sector risks should generally favor regulatory certainty to attract investment. Those with more stable economic and regulatory environments normally have the luxury of increased flexibility and can introduce reforms without undue market impacts.

One way for a regulator to balance certainty and flexibility is to rely primarily on legislation, regulations and regulatory decisions, rather than the terms and conditions in authorizations, for developing a regulatory framework. Legislation, regulations, and regulatory decisions are typically easier for a government, Minister, or regulator to amend without violating rights accorded to service providers in a license agreement. In such a case, licensees would enjoy a fair amount of certainty that the terms and conditions of their license are not subject to change, while the Minister and the regulator retain the flexibility to respond to key changes in the sector.

In some cases, it is not possible to rely on instruments such as legislation or regulations to set the regulatory framework. Where a country's regulatory regime is not well developed, it has often been necessary to include a reasonably comprehensive codification of the basic regulatory regime in an authorization. This is necessary to provide the certainty required to attract new entrants

and substantial investment to the sector. In this case, the terms and conditions of the authorization must be crafted to ensure a reasonable balance between certainty and flexibility.

There are several ways of interjecting flexibility into the terms and conditions of authorizations, including:

1. Permitting unilateral authorization amendments by the regulator;
2. Establishing short authorization terms;
3. Permitting authorization amendments with the mutual consent of the licensee and regulator; and
4. Permitting unilateral amendments by the regulator of specific types of authorization conditions considered key to the general regulatory regime, provided such amendments are made in a procedurally fair and competitively neutral manner.

The first two approaches are not consistent with regulatory certainty. They will generally make it difficult, if not impossible, to attract the investment and financing required for a major authorization, such as a fixed line or cellular authorization. The third approach increases regulatory certainty, but can constrain the introduction of regulatory reforms.

The fourth approach is more attractive as regards regulatory certainty. To implement it, a distinction can be made between authorization conditions that are of a regulatory nature and those which can only be amended with the agreement of the licensee. For example, authorization conditions on industry-wide universal service mechanisms or general terms of interconnection may be subject to amendment by the regulator.

Other conditions of a purely contractual nature or which are fundamental to the economic value of the authorization may be subject to modification only with the consent of the service provider. These would normally include conditions such as the term of the authorization and the authorization acquisition fee payable.

Where the regulator has the right to amend the general regulatory conditions of an authorization, such amendments should be made in a transparent and competitively neutral manner. Any amendments should be preceded by consultation with the licensee and other affected parties. In some cases, a right of appeal or review may be warranted.

Distinguishing Authorizations from Procurement

The act of authorizing a telecommunications service provider should be distinguished from the government procurement process. The government procurement process involves the purchase by the government of goods or services using public money. These goods or services are sometimes used internally by the government and sometimes used by the government to fulfill its public duties. By contrast, a regulator is not buying goods or services using public money when it authorizes a telecommunications service provider. Authorization involves the granting of certain rights and obligations to an authorized service provider. It can be seen as the granting of a business opportunity to qualified investors who agree to comply with certain authorization conditions and regulations. In the case of authorizations, then, the regulator is more a seller than a buyer.

Two important recommendations for the authorization process flow from the recognition that authorization is, in essence, the offering of a business opportunity. First, the regulator must offer an opportunity that is financially attractive to experienced and competent service providers. While some authorization opportunities are an easy sell, others, particularly those in emerging and transitional markets, must be carefully structured and marketed to attract qualified applicants. Experience shows that almost any call for applications for authorizations will attract some bidders. However, many are not financially or technically capable of meeting the regulator's objectives to expand and improve services.

Second, government procurement procedures are generally not suitable for a telecommunications authorization process. Many countries have bureaucratic, centralized procurement administrations. Detailed government procurement procedures are often developed for good reason – to reduce corruption. However application of these procedures can cause legal and administrative headaches, delay, and confusion about the real goals of the authorization process.

Spectrum Auctions

The provision of ICT services that use radio frequencies generally require two authorizations: one to provide the ICT service and a second authorization for the use of the radio frequency. A

cellular service provider, for example, must receive authorizations to use the required spectrum and to operate the cellular networks. Spectrum authorizations required to provide a service are often granted as part of an individual authorization process (see Chapter 4.4).

Authorizations to operate an ICT service and use the required radio spectrum should be granted at the same time. There should be no delays or risks of inconsistent regulatory requirements as between the two types of authorizations. If two separate authorizations are issued, they should be issued simultaneously. A good approach is to attach a draft spectrum authorization as well as a draft service provider's authorization to a request for applications for authorizations.

One reason for retaining two separate authorizations is administrative convenience in the management of spectrum resources. In most countries, spectrum management is delegated to a different administrative group from the group that regulates other aspects of telecommunications operations, such as price regulation or anti-competitive conduct.

By having a separate, consistent form of spectrum authorization, technical, reporting and compliance requirements can be standardized for all users of the radio spectrum.

3.6. Special Authorization Situations

While authorization practices may have common features, there are frequently particular circumstances that require the use of special authorization practices. In this section, we review a number of special authorization processes used in specific circumstances.

3.6.1. Public-Private Partnerships and Concessions

In most countries, the authorization of ICT services involves a unilateral grant of authorization from a regulator to a private sector operator. However, there have been many variations on the theme of authorizing ICT operations. In some countries, private sector investors have entered into business arrangements with governments or state-owned service providers that are more in the nature of joint ventures with government entities than simple grants of rights to operate telecommunications facilities or provide services. These may be referred to as concessions, franchises, Build-Operate-Transfer (BOT) schemes, Build-Transfer-Operate

(BTO) schemes, Build-Own-Operate (BOO) schemes.

Collectively, many of these arrangements have been referred to as Public-Private Partnerships (PPPs). PPPs are increasingly common vehicles for the financing and operations of large infrastructure projects, such as highways, airports, and ports. In the past, PPP arrangements were useful in attracting private investment to markets where privatization or private-sector participation in the telecommunications sector was legally or constitutionally restricted. However, they have become less common in the telecommunications sector, as a result of a growing recognition that there is little public benefit to state ownership or operation of telecommunications service providers. PPP schemes are generally seen to be inconsistent with the promotion of liberalized telecommunications markets and competitively-neutral regulation and policies.

Concessions and License Agreements

In most countries, the term "concession" refers to a commercial agreement between a government and the private builder, owner, or service provider of an element of public infrastructure (such as a toll road or power plant) or a business located on public property. Concession agreements were once fairly common in the telecommunications sector in some regions, particularly where there were legal or constitutional restrictions against private sector ownership or operation of telecommunications facilities. However, such agreements are becoming increasingly less common in the telecommunications sector. They are generally seen to be inconsistent with the promotion of liberalized telecommunications markets and competitively-neutral regulation and policies. The reasons for the decline in such agreements are similar to those for the decline in use of PPP arrangements generally (see above).

Concession agreements had several advantages in attracting private sector investment, particularly in markets with high levels of political or regulatory risk. Such agreements sometimes granted governments an ownership stake and revenue-sharing interest, therefore providing governments with an incentive to support the growth of the telecommunications business in question. Also, the legal remedies available for breach of contract normally applied to concessions, such as money

damages and arbitration. Negotiations often fine-tune concession terms to establish the protections and incentives necessary to attract investors and to guarantee performance by the concession holder in each particular situation.

A related approach adopted in some countries is to grant “license agreements.” In many cases, license agreements were relatively similar to the detailed individual licenses granted in other countries. However, they typically included some obligations – often regulatory rather than commercial – on the part of the government, regulator, or other government signatory. For example, a license agreement might establish the basis of setting tariffs during the license period, by way of a specific price cap formula. By including such mutual obligations in an agreement, the licensee received additional legal protections against changes in its basic operating environment. A major disadvantage of license agreements was that many had quite long terms, therefore effectively restricting sector-wide regulatory reforms from being implemented without the consent of the parties to existing license agreements.

Some license agreements have both regulatory and commercial concession features. It is often important to distinguish between the two. A good approach is to deal with the concession features in a concession contract between the host government (not the regulator) and the investor. In project finance terms, such an agreement would be called a government support agreement.

It should be noted that the terms concession and license agreement have different meanings in different countries. In some Latin American countries, concessions contain most of the features and types of conditions contained in individual licenses in other countries. They might be called license agreements elsewhere. An example is the Telmex concession in Mexico. Some other countries, particularly in Asia, have granted “concessions” that are in the nature of joint venture agreements rather than granting full authorizations to operate telecommunications networks independent of the government.

Public-Private Partnerships (PPPs)

In the past, PPPs were often structured as BOT schemes (e.g., Thailand, Philippines), BTO schemes (e.g., Lebanon, India, Indonesia – Joint Operating Schemes or KSOs – East Timor), BOO schemes

(e.g., Malaysia, Solomon Islands), or similar arrangements. In general, BOT, BTO and BOO arrangements are all project finance structures aimed at attracting investment and management expertise required to develop telecommunications infrastructure in countries with state-controlled telecommunications sectors.

A variation on these structures involves contracts where an investor does not build or own any facilities, but shares in revenues from a state-owned service provider in return for providing financing, management or both. Financing contracts of this type have been entered into in China and Indonesia. An example of a management contract with revenue sharing is the Vietnamese “Business Cooperation Contract.”

Most of the PPP structures discussed here have experienced initial success in promoting network expansion. In part this was because they were not characterized as authorizations to private service providers but rather as contracts under which private contractors would build and operate telecommunications services “owned” by the government or by a state-owned service provider. This arrangement allowed for private sector participation in telecommunications service providers without breaching laws or policies that prevented private sector ownership of service providers.

However, experience in Lebanon, Indonesia, and elsewhere suggests that these models are not viable in the long term. Investors in BOT projects, for example, lack the long-term security and equity interests of a full network licensee. They are therefore motivated to maximize short-term profitability at the expense of long term network or service development. A BOT must either terminate, with the resulting withdrawal of the private investor, or it must be converted into a true authorization. If the investor withdraws, the service provider may or may not be able to continue to expand and manage the service on its own. If the concession is converted to an authorization, serious questions may arise regarding the fairness and transparency of the authorization process. In all cases, the conversion of BOT-types schemes into conventional ICT authorizations can be problematic.

Most countries now realize that there is little public benefit to state ownership or operation of telecommunications service providers. With the liberalization and privatization of the global ICT

industry, joint venture arrangements between governments or PTTs and private sector investors have become less common in the ICT sector in recent years. PPPs also raise concerns about whether public policy and regulation will be competitively neutral if the government holds a stake in one or more of the commercial players in the ICT sector. Nevertheless, some PPP arrangements remain in place and new projects continue to be initiated (e.g., the e-Mitra e-governance project in Rajasthan, India.).

3.6.2. Reauthorization of Incumbent Service Providers

The telecommunications reform process in most countries includes privatization of PTTs and the granting of competitive authorizations in various market segments. Many countries have completed this process; others are in the midst of implementing it, and a few have not yet started.

A major step in the privatization and liberalization process in many countries is the issuance of an authorization to incumbent service providers. Prior to privatization and liberalization, many incumbent service providers were PTTs that may have operated for half a century or more without a formal authorization. Special consideration must be given to the process of authorization of an incumbent and to the definition of the incumbent's rights and obligations to facilitate a successful transition to a liberalized telecommunications market.

New telecommunications laws or amendments often authorize the issuance of a license or licenses to the incumbent service provider. In some cases, incumbent service providers may receive a mix of individual authorizations and general authorizations. This approach can be useful in cases where it is considered necessary to issue an individual authorization to establish the basic rights and obligations of a PTT to operate the fixed public switched telecommunications network (for example where a privatization is pending). In such a case, the rights of the incumbent PTT to provide other services that have been opened to competition, such as VSAT, data transmission or value added services, may be subject to general authorizations. These general authorizations would apply equally to all other service providers of the same class of service.

The rights and obligations set out in new authorizations for an incumbent operator must

generally be adapted to a new and evolving sector policy and regulatory regime. In particular, the rights and obligations must often be adapted to the realities of a market-based economy, especially where the service provider is to be privatized and is to face competition for the first time in some markets.

In some countries, incumbents are granted authorizations for new services (e.g., cellular, data communications, ISP, value-added services) around the same time as authorizations are granted to new providers for those services. The incumbents sometimes receive the authorization outside the competitive selection process that may be used to choose new entrants. This has been the case for cellular mobile authorizations in both developed and less-developed countries.

A concern about fairness may arise if the incumbent service provider is automatically entitled to be authorized to provide services for which other service providers must obtain an authorization through a competitive authorization process. Concerns about competitive fairness may also arise with respect to the fees payable for these authorizations. Often the new entrant pays a significant amount for the authorization under a competitive selection process but the incumbent does not.

Concerns about unfair advantages given to the incumbent relating to fees has sometimes been addressed by requiring incumbent service providers to pay a fee equal to the amount of the winning bid or a fixed percentage of that amount. This occurred when Jordan authorized a second GSM service provider in 2000. When Colombia authorized second cellular service providers in each of three regional markets, the existing service providers were required to pay 95 percent of the amount of the winning bid in the applicable region. In other countries however, the incumbent service provider has not been required to pay authorization fees, even though new entrants do pay these fees.

While there is not always a right answer in these situations, care must be taken to promote a competitively neutral environment. If preferential treatment is given to an incumbent, there should be clear benefits to the public for doing so. These may include maintenance of extraordinary network rollout obligations or other specific universal service objectives.

Table 3.4 Common Authorization Classifications

FIXED LOCAL SERVICES	DIGITAL SUBSCRIBER LINE (DSL)
Fixed domestic long distance services	Cable Data
Fixed international long distance	Leased lines
Mobile local services	Very Small Aperture Terminal (VSAT)
Mobile domestic long distance	Fixed Satellite Service (FSS)
Mobile international long distance	Mobile Satellite Service (MSS)
Public voice telephony	Global Mobile Personal Communications Service (GMPCS)
Mobile cellular network	Third Generation Mobile (IMT2000)
Cable TV network	Paging
Cable TV service	Public Mobile Radio Trunked Services (PMRTS)
Wireless Local Loop	Internet service provision
Value-added services (e.g., email, database access, electronic data interchange, etc)	Data

Source: ITU, 2007.

3.7. Licensing for Convergence

Convergence is one of the most important recent trends in the ICT sector. It has changed how services are delivered and has blurred the lines between fixed and mobile services. The move towards Next-Generation Networks (NGN) is the most recent step in the convergence-driven evolution of the ICT sector. The following sections outline authorization issues raised by convergence and review the practices and procedural approaches being developed in response to these issues.

Recent innovations in ICTs and services are raising interesting discussions in the industry. Some consider there is a radical revolution under way, a paradigm shift of sorts. Others believe it is merely an incremental evolution. What is clear is that these innovations have significantly changed and continue to change the manner in which services are provided, the types and typology of services and the nature of networks themselves. From the perspective of authorizations, two developments have had a particularly significant impact on the ICT sector: convergence and the move to Next Generation Networks (NGN). As the parameters of the ICT sector change, there is a need for a careful re-consideration of traditional authorization practices and approaches.

Convergence and NGN have eroded traditional market boundaries and have heightened the importance of neutrality and flexibility in

authorization regimes. At the same time, as network operators and access providers invest heavily in upgrading equipment and building new infrastructure, service providers seek regulatory certainty. Regulators must balance the need for regulatory certainty with the need for a regulatory framework that is sufficiently flexible to allow stakeholders to enjoy the benefits of technological innovations such as efficiency gains and new services. Regulators must be attuned to new bottlenecks and market dominance that may emerge in the ICT sector.

3.7.1. Unified and Multi-service Licensing

In light of the regulatory issues that flow from convergence and the transition to an NGN environment, regulators have begun to adapt the traditional, service-specific approach to authorizations as described in Chapter 3.4.3. In today’s era of convergence, it can be said that there are three broad types of authorizations:

Service-specific authorizations

These authorizations allow the licensee to provide a specific type of service. Usually the licensee is required to use a specific type of network and technological infrastructure. However, some service specific authorization regimes are technology neutral (e.g., the fixed and mobile services regimes in Saudi Arabia and the Canadian basic international telecommunications services licenses). These types of authorizations are sometimes issued as individual

licenses (particularly in developing and transitional economies) and sometimes as general authorizations.

Unified (or global) authorizations

These authorizations are technology and service-neutral. They allow licensees to provide all forms of services under the umbrella of a single authorization, using any type of communications infrastructure and technology capable of delivering the desired service. In most countries, unified authorizations are issued as individual licenses. However, in some countries, the process for issuing the unified authorization blends aspects of general authorization processes and competitive licensing regimes. These hybrid processes can best be described as non-competitive individual licensing processes: while applicants do not compete for a limited number of authorizations, they must meet a variety of criteria to qualify for a license and their applications are subject to close regulatory scrutiny.

Multi-service authorizations

These authorizations allow service providers to offer multiple services under the umbrella of a single authorization, using any type of communications infrastructure and technology capable of delivering the services in question (see Box 3.5). Like unified authorizations, multi-service authorizations are technology neutral. However, multi-service authorizations are more limited than unified authorizations; licensees are permitted to provide any of a designated set of services, but not any and all services. Multi-service authorizations are sometimes issued as general authorizations and, in other cases, are issued as individual licenses. It is not uncommon for a country to have both general authorization regimes and individual license regimes for their multi-service authorizations. Individual multi-service authorizations are often issued using a non-competitive individual licensing process.

Box 3.5 Features of the Transition to the Multi-Service Authorization Regime in South Africa

Chapter 15 of the Electronic Communications Act, 2005 (ECA) sets out the general framework for the transition to South Africa's new technology- and service-neutral multi-service authorization regime. The key features of the transition include:

Mandatory migration to the new authorization regime. The migration occurs through a conversion of existing licenses to one or more licenses that comply with the ECA.

The Independent Communications Authority of South Africa (ICASA) must convert all existing licenses by granting new licenses that comply with the ECA within 24 months of the adoption of the ECA. (The schedule for conversion has been extended into 2008.)

The new licenses must be granted on no less favorable terms than the existing licenses. However, as part of the conversion process, the ICASA may grant rights and impose obligations on a licensee to ensure that existing licenses comply with the ECA.

All existing licenses issued under the Telecommunications Act (one of the predecessors to the ECA) remain valid until converted to a new license by the ICASA. Existing licenses remain subject to all terms and conditions that are not inconsistent with the ECA until these licenses are converted and re-issued under the ECA.

All licenses converted pursuant to the ECA retain their original term of validity unless otherwise specified by the ICASA.

Once an existing license is converted and re-issued, the new license is governed by the terms of the ECA and the existing license is considered to have been surrendered and is of no force or effect.

The ICASA is not permitted to grant or to include in the terms of a converted license any monopoly or exclusionary rights in any network or services contemplated in the ECA or related legislation. Existing monopoly and exclusionary rights are null and void, subject to the proviso that radio frequency spectrum that is assigned to a license holder is not considered to be a monopoly or to constitute exclusionary rights.

Source: South Africa, Electronic Communications Act, 2005

3.7.2. Lifting Restrictions on Licensees

The dynamic nature of the ICT sector and the significant investments that operators must make to transition to a converged, Next Generation Networks (NGN) environment has prompted some regulators to ease some of the restrictions previously placed on licensees.

Spectrum refarming

Spectrum refarming refers to using spectrum initially allocated for 2G services to provide 3G services instead. In response to consumer demand and in light of technological advancements that have made it possible to use frequency bands allocated for 2G services to provide 3G services, a number of

regulators now permit licensees to refarm allocated spectrum. In Hong Kong SAR, China, mobile service providers have been given the right to choose to use 2G or 3G technology in the spectrum assigned to them in their 2G authorizations. In 2009 the European Union updated its GSM directive approving the re-farming of the 900MHz frequency bandwidth so it can be used for 3G, allowing for future 4G services to be accommodated.

Spectrum trading

Regulators have also allowed greater flexibility for spectrum licensees to resell all or some of their allocated spectrum on commercially negotiated terms. Countries that now permit such spectrum trading include: Australia, Canada, Georgia, Guatemala, New Zealand, Norway, the United States, and the United Kingdom. Austria, France, Germany, the Netherlands, and Sweden have permitted spectrum trading on a more restricted basis.

When issuing authorizations that will require the use of spectrum, regulators might consider giving licensees the freedom to determine whether to use 2G or 3G technology to deliver the authorized services. This gives licensees the flexibility to use the most efficient technology available to them. An alternate approach is to specify that a licensee must use 2G (or 3G) technology, but to include a provision that stipulates that a licensee may apply to use a different technology during the term of the authorization. This approach gives the regulator a bit more control and oversight over the type of technology used by licensees, but also adds some flexibility to respond to changing market conditions.

Infrastructure sharing

In order to facilitate the transition to NGN, another important area in which regulators have begun to lift restrictions on licensees is infrastructure sharing. While some regulators approach infrastructure sharing with caution in light of the need to safeguard competition, they have also recognized the potential benefits of carefully managed infrastructure sharing. An important benefit relates to the reduction of the capital and operating expenditures of operators. Reducing such expenditures helps to facilitate the provision of low cost access to services for end users. Moreover, infrastructure sharing responds to the needs of operators who are incurring high costs as they upgrade existing infrastructure and build new infrastructure in preparation for NGN.

Infrastructure that has been increasingly opened to sharing includes non-replicable resources such as towers, ducts, and rights of way. Some regulators have also considered spectrum sharing. Spectrum sharing is technologically possible though care must be taken to avoid harmful interference. Such interference can be avoided using spectrum sharing strategies that are implemented on the basis of geography, time, or frequency separation.

An innovative strategy set out in the best practice guidelines adopted at the International Telecommunications Union's 2008 Global Symposium for Regulators, focuses on authorizing market players who only provide passive network elements and who do not compete for end-users. These authorizations would apply to market players such as mobile tower companies, public utilities companies with rights of way, and fiber backhaul providers. Licensees would be authorized to provide access to key infrastructure to service providers and to manage the usage of such infrastructure.

3.8. Global Standards Making and Compliance

As the global economy and society becomes ever more dependent on ICT, the role that standards play becomes more important in supporting the growing market. Standards have a key role to play in the take up of ICT. For instance, standards underpin wireless communications, NGN and the Internet. The role of standards is to ensure that these applications are fully interoperable, so that their potential may be fulfilled. Standards are technical specifications that support the development of open and competitive markets for the benefit of both consumers and industry.

3.8.1. The Need for Standards

Standardization and standards ensure a degree of uniformity, fairness, and quality across a wide array of disciplines and processes. Generally speaking, standards are a key means of diffusing innovation through the economy as a whole, ensuring that the majority of firms do not lag too far behind early adopters of new ideas. Standards can play a vital role in growing the market both nationally and globally.

In essence, a standard describes the technical consensus on performance of a product or service. Standards impact on all areas of economic life, e.g., supporting safety regulations, assuring quality and

enabling compatibility of products. New standards may emerge through a competitive market process or by accepted use.

Econometric studies have established a clear link between standardization in the economy, productivity, growth and overall economic growth. Studies for Australia, Canada, France, Germany and the United Kingdom, show that, overall, standards may account for between one eighth and one quarter of productivity growth. In 2005 standards were estimated to make an annual contribution to the U.K. economy of over \$3.5 billion, and 13% of the growth in labor productivity in the United Kingdom from 1948 onwards was attributed to the role of standards. The annual benefits of standards to the German economy have been estimated at €16 billion.

Compared to the cost of financing standards, the benefits are huge: a study in 2000 on the financing of the European standardization system showed that the cost of developing European standards was €700m, of which 93% was funded by the private sector with the remaining 7% from public funds. Thus it is clear that the return on investment for both industry and government is substantial.

Standards, whether voluntary or compulsory, are typically conceived at the national level. However, some degree of global harmonization is necessary as national policies have implications for international trade, travel, and the distribution of technical expertise. This is particularly so in telecommunications, which has increasingly become global in nature. This is why it is essential for governments and industry to participate in the supra national standards making process.

In telecommunications, standards dictate rules of interconnection and transnational relations through technical specifications. Communications, whether voice, data or video messages, cannot take place without standards linking the sender and the receiver. Thus, two key objectives of standardization in telecommunications are interoperability and interconnection.

The European Telecommunications Standards Institute (ETSI) defines a standard as, “A technical specification approved by a recognized standardization body for repeated or continuous application, with which compliance is not compulsory”. Standards may be international, regional, or national in their making and application,

with representative industry organizations or legal bodies developing and adopting standards.

Since 1865, the International Telecommunication Union (ITU) has been central to setting global standards in telecommunications. Since its inception, the ITU has been brokering industry consensus on the technologies and services that form the backbone of the world’s largest, most interconnected man-made system. In 2007 alone, the ITU’s Telecommunication Standardization Sector (ITU-T) produced over 160 new and revised standards (ITU-T Recommendations), covering core network functionality and broadband to next-generation services like IPTV.

One ITU success story has been 3G standards for mobile communications, otherwise known as International Mobile Telecommunications (IMT)-2000. Following 10 years of negotiation 3G communications were officially allotted the spectrum between 400 MHz and 3 GHz at the ITU World Radio Conference in 2000. Without agreements of this kind, mobile networks would remain fragmented and interoperability would not be achieved. IMT-2000 enabled the provision of value-added services and applications on the basis of a single standard. A key element was provision of seamless global roaming, enabling users to move across borders while using the same number and handset.

3.8.2. Bridging the Standards Divide

In the global standards making process, there is a disparity between developed and developing countries in how far they are involved in the process – leading to what has been termed the “standardization gap”. There are fewer ICT firms in the developing world and, because of the highly specialized and technical nature of standards, this field is sometimes viewed as purely technical. But ICT standards are not only necessary for ensuring interoperability and connectivity within a global information infrastructure; their use can also have significant social and economic effects.

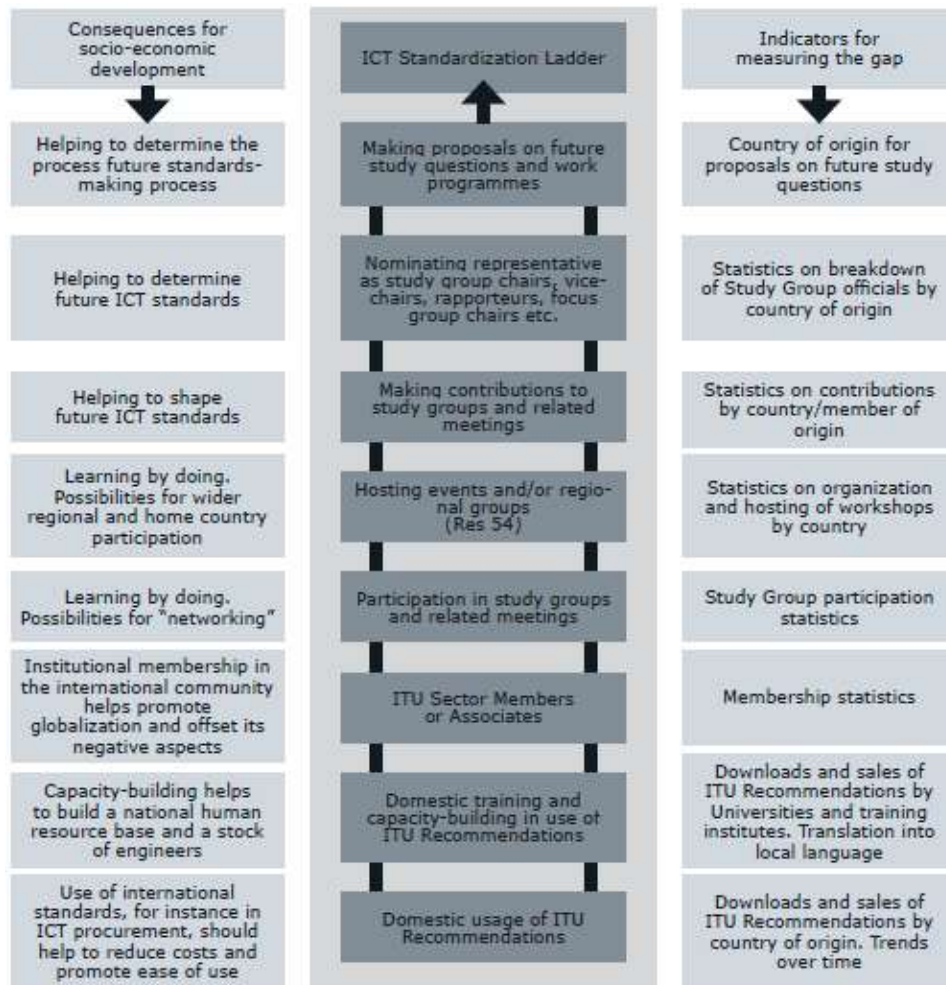
Such inequality is a factor in the persistence of the digital divide. All countries need to be able to help set standards, and know how to implement them, in order to reflect their interests and enjoy better opportunities for economic development and technological innovation. To tackle the issue, the ITU embarked on an initiative called *Bridging the Standardization Gap*, to improve the capacity of

developing countries to participate in standardization, including descriptions of best practice and the situation in various nations.

Based on the research so far, countries generally fall into one of four national categories of standards capability: low, basic, intermediate or advanced.

These four levels are illustrated in Figure 3.1. ITU’s “Ladder of Standardization Development” shows how countries can engage in different levels of participation in the ITU standardization process in particular - from simply using Recommendations and becoming a member of study groups and regional forums, to making written contributions and taking a leadership role.

Figure 3.1 ITU Ladder of Standardization Development



Source: ITU, Bridging the Standardization Gap, 2009.

The policy decisions that countries can take in order to advance their participation in standardization work were also outlined in the *Bridging the Standardization Gap* report. Best practice shows that a national ICT standards strategy is essential, and should include an inventory of what is currently in place in terms of standards usage, policies, regulations, development activities, institutions, and education. A budget should be described for government involvement in this field, and the

strategy should define the roles and responsibilities of various institutions, across the full range of public or private stakeholders. Also, it should specify ways to deal with important topics such as cybersecurity, and the protection of critical infrastructure and personal data. To advise the government, a high-level standards advisory council should be formed from experts from industry, academia and relevant organizations.

3.8.3. Standards and ICT Accessibility

While ensuring access for those in developing countries is a priority, it also is vital to provide access and resources for traditionally underrepresented groups around the world, such as the elderly, the disabled, and the indigenous. Product design is the largest hindrance to including members of these groups because of limited mobility or geographical location. Setting standards for accessibility to ICTs is necessary to ensure access for all and to increase the likelihood that the needs of those underserved will be better understood and responsibly met.

The Joint Technical Committee (JTC1), a committee of the ISO and IEC, established the Special Working Group on Accessibility (SWG-A), which specifically deals with accessibility and ICT concerns. JTC1 and

SWG-A identify seven main categories for which standards for ICTs need to be set. These include:

- High level standards;
- Hardware/equipment- oriented standards;
- Software/service-oriented standards;
- User capabilities-oriented standards;
- Environment-oriented standards;
- Communications services-oriented standards; and
- Other relevant standards.

These standards guide industry professionals in creating more inclusive products targeted towards certain demographics. Not least, by targeting non-traditional (laggard) users, this approach to standards should help to grow markets as a whole.