

Towards Introducing Uniform Energy Accounting in Bangladesh : *The Rationale and Way Forward*

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Introduction and Background: In the last 20 years or so, infrastructure sectors all over the world have undergone a deep transformation. Starting with deregulation in the United States and deregulation and privatization in the United Kingdom, movement quickly spread to other countries, notably countries in Latin America but also those in Africa and Asia. In many cases the restructuring involved the introduction of competition in the market in at least some service segments. Among these segments were long-distance calls in the telecommunications sector, and production and supply in energy markets (electricity and gas). However competition was not a possibility in sectors characterized by large sunk investments, large share of fixed costs, economies of scale and scope. In these sectors the efficient economic decision is to have just one service provider, which means that regulation was necessarily an integral part of the transformation. A key element in the transformation of activities in which competition was not a solution was the division of policy-making along with classifying regulator and service-provider functions into distinct institutions. In the past, many state-owned enterprises had been performing— legally or de-facto — all three functions, but the reform wave of the 1990s stressed the need to move regulation into an independent body. In many cases the transformation also involved the participation of the private sector in provision of the service.

Economic theory suggests that a monopolist will have strong incentives to reduce quantities and raise prices, reducing total welfare in the society. The solution to this market failure is to impose certain restrictions on the behavior of the firm through direct or indirect regulation of profits, prices, and service conditions.

Although natural monopolies have been regulated for well over a century, not until the late 1970s and early 1980s did economic theory consider ‘information’ to be a key element of the regulatory game. Laffont (1999) points out two important theoretical milestones. First, Loeb and Magat (1979) propose viewing regulation as a contractual relationship in which a regulator (the principal) attempts to control a firm (the agent). They emphasized that the main difficulty is the regulator’s lack of information about the regulated firm. Second, Baron and Myerson (1982) show that there is a trade-off between efficiency and the unavoidable informational rents that must be given up to a regulated firm when the regulator wants a project to be realized but does not know the cost of the regulated firm. Since these seminal studies appeared, economists have understood regulation as a game of two players—the regulator and the firm—that do not share the same information. Laffont and Tirole’s (1994) model with cost or profit observability and with asymmetry of information about the firm’s technology and (un-observable) cost-reducing efforts became the basic paradigm of the theoretical analysis of regulation.

While economic theory moved towards highlighting the role of information in regulation, regulatory practice in many countries appeared to move in the opposite direction. The introduction of price-cap regulation in the United Kingdom with the RPI-X (retail price index minus expected future productivity gains) system was interpreted—erroneously—by many practitioners as a mechanism that freed them from the need to rely on detailed information on regulated companies. With the regulatory function limited to estimating the efficiency factor once every four or five years, there appeared to be little need to generate a detailed system of information on the regulated firm or firms.

After 10 years of regulatory practice and in the wake of many countries' restructuring its infrastructure sectors in the 1990s, this false perception has been rapidly vanishing, and the unavoidable need for reliable information system that enables regulators to fulfill their complex objectives has become even clearer. As Estache and Burns (1999a, 1) points out, *“the initial ineffectiveness of regulation resulting from information gaps creates allocative inefficiencies but just as important, carries political and social ramifications which can endanger the stability of the regulatory regime. In developing countries, this influences the incentives to operate efficiently and the cost of investment often ends up threatening the sustainability of the increased role of the private sector in the delivery of infrastructure services and ultimately, the foundations of the overall reform process itself.”*

This context is one in which a regulatory accounting system is an important source of reliable information for regulators to use to adequately fulfill their duties. Good, accurate, and consistent information provides the basis of effective regulation. Regulatory accounting can help to establish a reasonably defined and stable reporting regime. As Byatt (1991, 124) points out, *“stability in the reporting cycle and avoidance of ad-hoc requests should assist those planning and managing the industry. It should also facilitate the integration of information systems for both internal and external reporting.”*

Objective of this paper is to evaluate the need for Uniform Energy Accounting, identify the limitation of traditional financial accounting, define the scope and methodology and the Core Issues in Uniform Energy Accounting and implementation thereof. And finally to share the experience of introducing the Uniform Energy Accounting in the context of Bangladesh when the Bangladesh Energy Regulatory Commission (BERC) is in the process of designing and implementing the Uniform Energy Accounting for the regulated industries. **Section one** deals with the economics of public service regulation, information need for regulated entities. This section also identifies the limitation of traditional financial accounting and management accounting information which are unable to serve the regulatory needs. **Section two** introduces the specific need for the uniformity of accounting methodologies, objectives, general presentation of information needs, and periodicity of reporting, allocation of cost and valuation principles. Limitations of traditional financial and management accounting of regulated entities. Consistency between statutory and regulatory accounting, using of cost information in tariff determination, exclusion of cost, criteria and guidelines of uniform accounting system. **Section three** describes the core issues of uniform accounting energy accounting system, separation of activities, regulatory alternatives, operation of companies, activities and accounting, determine regulatory asset base, and valuation thereof. Depreciation policy for asset base, related party transactions and transfer pricing including basis of cost allocation. **Section four** deals with the scope of uniform energy system guidelines and purposes, general principles, conformity of uniform and national accounting standards, principles for preparation of uniform accounting statements, revision of methodologies, qualification of costs, ascertaining asset base, information requirements, time line, consultation period, dispute resolution, communication and dissemination including consultation. **Section five** describes the development in Bangladesh and finally **Section six** presents summary and conclusions.

Why Public Service Regulation: From an economic perspective, public service regulation seeks to secure four basic objectives: sustainability, allocative efficiency, productive efficiency and equity.

1. Economic and financial sustainability implies that tariffs should generate enough revenue to allow an efficient firm to cover the economic costs of service provision. When referring to economic costs (as opposed to accounting costs), a just and fair rate of return on the capital invested in the provision of the service is explicitly included.
2. Allocative efficiency requires that - in an environment of scarce resources and alternative uses for them - tariffs equal service production costs. Strictly speaking, allocative efficiency requires that tariffs reflect their marginal costs. Under natural monopoly conditions, however, a firm would not cover its average production costs, so there is a need to reconcile these objectives.

3. Productive efficiency relates to the minimization of costs at a certain production level or the maximization of output given the amount of inputs. A firm's incentives to minimize costs will depend on the rules used to adjust tariffs in the future. There is a trade-off here between allocative efficiency and productive efficiency, because incentives can only be created by breaking a link - if only temporarily - between a firm's costs and tariffs.
4. Equity or distributive efficiency relate to access and affordability. Many regulatory regimes have universal service access as a medium or long-term goal. For many essential infrastructure services, the need to relate tariffs to the poorest users' capacity to pay is well accepted.

Simplicity, certainty, consistency, and price stability are also important elements of many regulatory regimes. Given that, to a large extent, regulation involves dealing with conflicting interests of the parties involved (actual, potential, and future users; firms; government; lenders), the formal and procedural aspects of any regulatory decision are as important as the substantive aspects. For example, the formal principles considered relevant to the derivation of regulatory decisions of the Independent Pricing and Regulatory Tribunal (IPART) of New South Wales, Australia, is 'Simplicity'.

Deriving the optimal approach for regulatory decisions may be a complex task. All things remaining constant, a simple approach that approximates a more complex calculation should be preferred. Certainty and consistency - The efficiency of investment in regulated activities is enhanced by consistency in decisions across time and, absent strong grounds to do otherwise, adherence to previous commitments. The ease with which an approach can be replicated from one regulatory period to the next may be an important contributor to certainty and consistency.

Price stability - All else remaining constant, a lower variance in prices over time and more equal inter-temporal allocation of common costs across customers may be preferred. Achieving these objectives and the trade-offs they require makes regulation an information-intensive activity.

Moreover, regulation features a strong information asymmetry between the firm and the regulator, in relation to the regulated firm's underlying costs, market prospects, and (to the regulator) unobservable actions.

External and Internal Regulatory Information:

One classification of the information needed for regulation is based on the source from which the information is obtained. This classification differentiates between information originating in the firm and information from other sources.

- **Information Originating in the Firm:** The main source of information on unregulated activities is the accounting information generated by the firm. The firm generates financial accounting aimed at external parties (information to be used by shareholders, the financial community, fiscal administrations, the public) and

management accounting or cost accounting aimed at internal parties. Accounting in general is defined as a system for classifying the economic events occurring in a business. It deals with recording, classifying, and summarizing the economic operations of a business to establish a firm's financial capacity; and with interpreting the results. Therefore, accounting provides a means for investors, managers, and directors to follow the course of their businesses. Ideally, it provides an accurate picture of a firm's stability and creditworthiness, the flow of collections and payments, the trends in sales, overall costs and expenses, and so on. Importantly, accounting information constitutes an integrated body of consistent information. Accounting information is governed by general rules aimed at determining the basic elements that must be included to meet its objectives.

Economic theory states that the use of the firm's own economic and financial data create incentive problems. Some regulatory regimes therefore seek to minimize the use of the firm's own information. Such is the case, for example, of efficient firm regulation (which originated in the electricity sector in Chile and then spread to Peru, Bolivia, and other countries in Latin America). A similar approach was adopted in the U.S. telecommunications sector through the use of cost models such as the model developed by the Federal Communications Commission to determine inter-connection charges. Although this approach might appear to solve the incentives problem, it does not properly take into account economic sustainability objectives. Its use may be most relevant to the telecommunications sector in which competition in the market is the norm and sustainability concerns are not central for the regulator.

However, as long as economic and financial sustainability is an objective, regulation has to use the firm's own data on costs, revenues, assets, and liabilities. The main source of information, though clearly not the only one, is the firm's accounting information. The requirement to use this information is reinforced by the position adopted by the courts in a range of countries that have regarded the actual costs and financial condition of the utility as key elements to be taken into account by the regulator. The nature of 'traditional' financial accounting information and some basic underlying principles of accounting in general make these data useful from a regulatory standpoint but far from sufficient. This chapter discusses some of the elements differentiating the regulator's needs from needs met by traditional accounting information.

- **Information originating Outside the Firm:** Public service regulation cannot be based exclusively on information from the firm itself. To meet different regulatory objectives, the regulator must have information on the demand for and supply of the regulated service from outside the firm as well. With respect to supply, the regulator needs to be able to determine whether the firm's costs are consistent with an appropriate level of efficiency. Therefore, the regulator needs information on available technologies and reasonable service costs to assess the firm's relative efficiency. The regulator can rely on either technological information or efficiency benchmark studies. The regulator needs to thoroughly understand the functioning of the regulated sector, its technologies, and their

application. The objective is not to micro-manage the firm, but to assess the firm's proposals from a technical and an economic perspective. Information on standard costs of products and typical processes are examples of important elements to be considered in the determination of efficient cost levels.

In recent years regulators have emphasized the use of efficiency frontiers (applying data envelope analysis or total factor productivity methods) as a useful tool for reducing information asymmetry. Clearly, these studies are possible only when there is homogeneous information about a relatively large number of firms in the same sector or activity (to determine the relative efficiency of each firm) and over a relatively long period of time (to get measures of technological change over time). This need calls for unification of the criteria used to collect both accounting and extra-accounting information, to ensure its homogeneity and comparability as well as achieve a high degree of consistency of information over time. The regulator also requires detailed information about the demand for goods and services faced by the regulated firm. Achieving allocative efficiency and equity, in particular, calls for detailed information about users' behavior.

Regulators need reliable information about expected demand in the medium term. Revenues may vary directly with demand but due to the fixed nature of many infrastructure costs, current costs may not vary greatly with variations in demand. Thus changes in demand can have a significant impact on the economic performance of infrastructure companies.

The greatest impact of demand variations on company expenses is on the amount and timing of investments. The indivisibility and long construction times of many infrastructure facilities make it necessary to decide on their construction long (typically several years) before they are to commence operations. Therefore, an optimal expansion plan requires the ability to estimate demand quite accurately for a good number of years into the future. Quantities demanded by users depend directly on price through a parameter known as 'price elasticity'. Consequently, the quantities consumed are to some extent endogenous to the tariffs set by the regulator. This finding has an important impact on the sustainability of the service.

Equity objectives seek to ensure access and affordable tariffs for infrastructure services for the poorest segments of society. Although public service tariffs are not the best instrument of social policy, and output-based aid is a more efficient and transparent means of achieving equity objectives, in many cases fiscal and budgetary constraints limit the alternatives of direct subsidies and tariffs. Access prices that explicitly account for the conditions of poor users may be appropriate.

Whether cross-subsidies, promotion funds or some other forms of access subsidy are used, efficient implementation requires detailed information about the consumption patterns of the users to whom these policies are targeted. Capacity and willingness-to-pay studies represent essential elements of an efficient tariff policy seeking to meet the access and service needs of

poor users. That this information is often necessary for regulatory purposes does not mean that it must be generated directly by the regulator. Indeed, much of this information, or the data needed to estimate it, is routinely produced by statistical agencies or other government organizations or research centers. Regulators can use their limited resources efficiently by identifying information sources and adjusting available data to meet their own needs.

Limitations of Traditional Accounting Information for Regulatory Purposes:

Traditional accounting information and some of the basic underlying principles of accounting make this information useful for regulatory purposes. Nevertheless, regulatory purposes differentiate the regulator's needs from needs met by traditional accounting information in several areas:

- Financial accounting information focuses on the firm, whereas the regulator focuses mainly on the regulated activities of the firm. From a regulatory perspective, the co-existence of regulated and un-regulated activities within the firm calls for the separation of the costs and revenue of the two types of activities. Moreover, some firms may engage in activities subject to regulation by different regulators. Separation of information related to each of the activities, but particularly to the regulated and un-regulated activities, places an important limitation on traditional accounting when used by the regulator.
- The focus of accounting within a firm may not be sufficient when a regulator regulates more than one firm in the same activity. Applying certain regulatory tools, such as yardstick competition, calls for a degree of homogeneity in the identification of accounts that is not always achieved by generally accepted accounting principles.
- Accounting is usually based on a temporal cost imputation rule that may not always reflect regulatory needs. The regulator can determine tariffs that allow the recovery of costs when these costs are incurred or when the costs would be recognized in the financial accounts of the firm. Most regulatory agencies do not allow an asset to be included in the asset base until the asset is in service. To cover the financial costs associated with long-maturity projects, regulatory practice allows capitalization of the financial costs incurred during construction (AFUDC—allowance for funds used during construction). This strategy also departs from the accounting practices of un-regulated firms and from generally accepted accounting principles.
- General accounting principles are inadequate for dealing with common costs that need to be allocated not only among different regulated services, but also between the regulated and un-regulated activities of the firm because different allocation criteria will substantially affect the achievement of regulatory objectives. A regulated firm would have strong incentives to allocate common costs to its regulated activity rather than to any of its competitive activities.

In some cases, a system of management or cost accounting will elaborate more than that the firm is using maybe will need to properly identify the revenues and costs associated with regulated activities and un-regulated activities. In other cases, management may already collect similar

information for its own purpose, and regulatory compliance may entail re-allocations or modifications of existing cost allocation rules for the purpose of harmonization with regulatory requirements.

Specific cost-recording and allocation rules will clearly depend on the regulated sector, its sectoral and institutional organization (number of companies within the regulator's scope, extent of competition among the different segments, extent of vertical integration, and the like), and particular features of the regulatory regime (price caps, cost of service, hybrid systems). Development of these specific rules - in a manner as consistent as possible with generally accepted accounting principles - is the aim of regulatory accounting.

Crafting Independent Regulation for Utility: In most countries, the utility has been typically operated by a government agency, which is often organized under a ministry of energy or some other ministerial-level unit. In this framework, the utility fulfils a government's responsibility of providing utility services, acting as an agency of the government. Pricing decisions are often premised on social welfare or political criteria. Underlying cost structures are not closely related to prices. In fact, prices are often set using an 'ability to pay' theory. Almost universally, there is an assumption that industrial and large commercial consumers are able to pay, while household and agricultural customers are not able to pay. As a result, electric pricing tends to be a highly political process, unsupported by a rational economic policy. As a result, the operations of the electric utility may experience low levels of reliability, inability to serve total consumer demand, and little or no access to local, regional or global capital markets. These conditions have led to a widespread effort to reform the electric sector in many developing countries.

Functions and Responsibilities of a Regulatory Commission: Electric sector reform usually involves two major reorganizations of the industry. First, the utility operations are transformed from a government agency into an enterprise format. This may or may not involve transferring the assets of the utility to private ownership. Even where the utility remains under government ownership, its entire operations are separated from the government structure and budget process and placed on a stand-alone *enterprise* basis. The other major reorganization involves the creation of a utility regulatory commission to regulate and control the reformed utility. A regulatory commission must impose a variety of economic regulations on the utility and must be mindful of a variety of collateral issues.

The functions and responsibilities of a commission include:

- rate setting (often called tariff setting);
- general regulatory rule-making;
- utility system resource planning;
- environmental impacts of resource utilization;
- conservation and efficient use of utility and societal resources;
- consumer protection;

- maintenance of the utility's financial integrity;
- assuring high system reliability;
- utilization of appropriate tools to assure that utility management is given the proper set of incentives.

Commission process: It is imperative that the commission establishes rules that are open and encourage public participation. Not only does public participation increase public confidence in the commission as an institution, but experience has shown that public participation also improves the overall end result of regulation. Rules that encourage participation by all interest parties will help to ensure that the commission fully understands the issues of importance to those parties as well as the impact of the commission's decisions. To support and implement a viable public process, the commission's rules should address the key subjects, such as, rules of procedure; minimum data and format requirements for filing a tariff/rate case; rules for disposition of consumer complaints; service quality rules for the utility; annual and other periodic disclosure and reporting for utilities; rules for enforcement of the commission's decisions; rules for system planning—integrated resource planning; and rules for competitive bidding for resource acquisition.

Institutional Requirements: The structure and process of infrastructure regulation determine how effective it supports reforms and promotes efficiency and other social objectives. In the developing countries such regulations is at an early stage of implementation. Hence, the developing countries can draw on recent findings for effective regulation of privatized utilities, including importance of coherence, independence, accountability, transparency, predictability and capacity.

Coherence: Regulation for each infrastructure sector should be complementary and mutually supportive. The laws guiding regulation must be in agreement, and regulation must be consistent over time. New rules should take into account previous one, with amendments made to eliminate significant inconsistencies. Regulatory coherence requires that national regulators, ministries, and provincial and municipal regulators have clearly defined the responsibilities, ensuring that the same agency always makes decisions involving specific aspects of regulation. Such agreements imply continuity in the people and methods used to make adherence to rule of law or more likely. Similarly, the same agency should handle regulatory activities that require harmonization. Regulators should be required to publish statements explaining their goals and reasons for decisions on entry, pricing, and other industry behavior subject to oversight. Doing so forces government to think through its long-term policy and regulatory principles. It also enables firms and consumers to predict how they will be treated in the future, enhancing accountability.

Independence: Effective regulation requires that regulators be largely free from political influence, specially on the day-to-day or decision-by-decision basis. Agencies must be objective, apolitical enforcers of policies set forth in controlling statutes. Still, complete independence for regulators is not possible or even desirable. The executive branch should be able to ensure that regulators

it appoints are sympathetic to its reforms and to administration policies. But if regulators are not insulated from political intervention, the regulatory process may become politicized, decision may be discredited, and policies may lack continuity. Compromise is needed to ensure that regulators are both independent and responsive to an elected administration's policy goals. Safeguards that can help achieve such compromise include: giving regulator statutory authority free on ministerial control, setting clear professional criteria from appointing regulators, requiring both the executive and legislative branches participate in appointments, appointing regulators for fixed periods and prohibiting removal without clearly defined cause, staggering the terms of agency's board members so that they can be replaced only gradually by successive administration, funding the agency operation with users fees or levies on service providers to insulate agencies from political interference through budget process, exempting agencies from civil service salary caps to attract and retain well-qualified staff, prohibiting the executive branch from overturning an agency's decision except through new legislation or judicial appeal of existing law.

Accountability: A regulator's independence should be reconciled with its accountability. Allowing a regulator to set prices and quality standards gives it enormous power to redistribute rents. Without an accompanying obligation to respect previous decisions and the legal rights of all parties, a regulator has considerable room for maneuver for opportunism. Thus check and balances are required to ensure that regulators do not become capricious, corrupt, or grossly inefficient. Citizens and firms should be able to find out who makes regulatory decisions and who guide them, and who voice their concerns. Added to this, the affected parties should be able to easily and quickly obtain redress if a regulator acts arbitrarily or incompetently. To strike a balance between independence and accountability certain measures can be helpful. *Rights and responsibilities:* define rights and responsibilities while writing statutes of a regulatory agency and distinguish between primary and secondary objectives when there are multiple goals. *Decision making process:* Subjecting agency decisions to review by courts or by another non-political entity. *Independent audit review:* Requiring regulators to produce annual reports on their activities and subjecting their performance to a formal review by independent auditors or legislative committees. *Removal:* Removing regulators that act inappropriately or incompetently.

Transparency: Infrastructure regulation is an important policy issue and in a democracy all citizens need transparent information about it to evaluate government performance. Thus all regulatory rules and agreements and the principles guiding them including future ones should be a matter of public record. This record must be accessible to all market participants, not just service providers, to inform long-term business plans. Transparency helps induce investment by incumbents and new entrants and avoid costly, time consuming regulatory disputes. Transparency also protects against corrupt regulation. It makes citizens, especially those adversely affected by regulatory decision less likely to believe that decisions are corrupt. When regulatory decisions and principles are clearly written, the reasons for them are apparent. In addition, corrupt decisions are easier to detect and harder to defend.

Predictability: Regulatory agencies are predictable if they follow the rule of law, in particular, respect for precedent and principle of *stare decisis*. Respect for precedent means that regulator

reverse past decisions only if they have created significant problems. *Stare decisis* requires that cases with the same underlying facts be decided the same way every time. Thus regulatory decisions must be based on durable rules and procedures that will apply in future cases unless new information is obtained. Even then, regulators must prove that past decisions should be changes. Otherwise market participants will lack confidence in regulation, undermining the size, scope, and quality of infrastructure and related investments.

Capacity: A regulatory agency's responsibilities should match its financial and human resources. Available financing reflects government willingness to support independent regulatory institutions. But with the possible exception of very small and poor countries, lack of financial capacity is unlikely to be a genuine constraint-though failure to provide adequate financing for regulation is a more common problem. Well developed economic, accounting, engineering, and legal skills are required for regulatory functions such as monitoring industry performance, analyzing cost data, dealing with information asymmetries, and analyzing the behavior of regulated firms. Regulatory efforts have focused on institutional building, writing enabling legislation, defining organizational architecture, determining administrative procedures, identifying sources of funding and so on. Enough attention is needed to identifying issues that require regulatory resolution-ensuring access to bottleneck facilities, eliminating anticompetitive cross subsidies, setting prices and rebalancing tariffs, developing mechanisms to fund universal service mandates and to developing related expertise.

Independent Regulation and Consumer Issue: Until recently, infrastructure services in India were provided solely by the government or its agencies, leaving little choice for the consumer. With state monopolies providing infrastructural services, there was a total insensitivity to consumer expectations. The financial sickness of the state-owned infrastructure sources is largely attributable to irrational 'user charges' based on electoral instead of economic considerations. State funding of investment in infrastructure did not pose many problems as long as the central and state governments had a healthy revenue surplus and very few public debt obligations. The situation has changed now with both the social and infrastructure sectors competing for investment in the context of increasing revenue deficits. Potentially lucrative infrastructure services were starved of funds by irrational tariffs and cost inefficiencies arising out of the monopolistic nature of the services. Against this backdrop, a dilution in state monopoly was sought to attract both domestic and foreign private capital into this sector. The private investors insisted on a level playing field with tariff regulations based on economic principles and not on social or political considerations. In short, they wanted a regulator distanced from the government. This was the birth of independent regulation of infrastructural services in Bangladesh. Despite this, the regulatory processes governing the financial and operational revival of infrastructure are capable of dealing with a wide range of consumer concerns.

Transparency: Traditionally, the rules for conducting business in any state organization have been an internal exercise without input from the stakeholders. Regulatory commissions have been formulating their conduct of business rules after inviting and considering the comments of a cross-section of stakeholders. These rules are likely to be simple, straightforward, and consumer-friendly. Apart from disputes and disagreements between operators and consumers, most

regulatory commissions take decisions in areas such as tariffs and licensing after public hearings where consumers can voice their concerns. Regulations and codes dealing with power supply standards, commercial procedures of supply, standards of service, consumer rights, etc. are evolved after an elaborate consultative process with a cross section of stakeholders, including consumer organizations. The proceedings and records of the regulatory commissions are open to public scrutiny, and many of them are made *available on the Internet*

Quality and reliability: Most regulatory commissions have been mandated to issue licenses to the operators and monitor their quality of service. The conditions of the licenses stipulated by the regulatory commissions are very stringent to ensure quality and reliability of service. They prescribe overall standards of performance to allow comparative measurements of efficiency. A breach of these can invite penalties and payment of compensations.

Affordability: Competition in the market is the key to declining prices of commodities and services. Many infrastructure services lack market competition, and therefore the regulator acts as a surrogate regulating the market power of the operators in the interest of the consumer. Tariff regulation is a classical example of the regulator balancing the financial interest of the operator on the one hand and the consumer expectations of the best possible service at the least possible cost on the other. Given the background and the context of infrastructure reforms, the investors expect the regulatory commissions to be instruments for a tariff regime that reflects the cost of service plus an assured return on investment. Since the existing tariffs are largely below cost, there will initially be a steep escalation to meet the investors' expectations. This is likely to shock the consumers and may even derail the nascent process of reform. The regulatory process must find a balance between the commercial and financial viability of the investments and customer affordability. In principle, it is desirable to link any increase in tariffs to improvements in the quality of service, but considering the present run-down state of infrastructure, it is neither desirable nor possible to insist on such improvements as a pre-condition for tariff increase. Below-cost tariffs have to be raised to approximate to the cost of supply before any link between quality and cost of service is established. Consumer and investor concerns have to be moderated to this extent.

Cost efficiency: Closely linked to affordability as a consumer issue is the cost efficiency of operations. It is essential to critically examine the elements of cost so that inefficiencies in it do not burden the consumer. While tariffs are being revised, various items of expenditure of the service operators have to be critically examined to trim down imprudent and inefficient costs. In the electricity sector, the purchase of power constitutes about 70% of the operator's total annual cost. The paying consumer bears the burden of high T&D losses in the system. This is an important area where consumers have to bring home the need to reduce losses and the regulators have to insist on a fool-proof accounting of power purchased, supplied, and billed so that the paying consumer is not made to subsidize the theft, inefficiency, and corruption in the system. The regulatory process offers immense scope for an open, transparent, and detailed examination of hitherto hidden issues.

Redressal of Grievances: Redressing the grievances of individual consumers is a critical area in the regulatory process. Regulators prescribe codes and standards for ensuring quality of service, and

monitor the operator's performance. Regulators also prescribe standards of performance for individual consumers to indicate the minimum level of service a consumer is entitled to, the failure of which will invite penalties or compensation. In the UK, these standards for individual consumers in the electricity sector are guaranteed. If the operator fails to adhere to the standards, he automatically compensates the consumer. The orthodox legal opinion in India is that the electricity reorganization law in the UK specifically mandates the regulator to frame regulations for automatic compensation in case of failure to adhere to individual standards. In the absence of such a specific mandate in Indian reform statutes, the consumer has to approach the regulator through a formal petition. There are more forward-looking interpreters who are of the opinion that since the law does not prohibit any proactive consumer-friendly measure such as this, regulators are not constrained to adopt this practice. However, the very complexity of filing a petition and appearing before such a quasi-judicial authority as the regulatory commission would deter any ordinary consumer.

Regulatory opinion is also divided on the question of whether individual consumer grievances can be addressed by the regulator. A very large body of regulatory opinion supports the view that it is neither possible for the regulator to handle the flood of individual consumer grievances nor its responsibility to be the initial forum for consumer grievances. However, the regulator may entertain an individual grievance if it reveals any serious deficiency in supply or contravention of any conditions of supply or any regulations prescribed or any other consumer service. In short, the regulator can offer only a limited opportunity for consumer protection to prevent being swamped with individual grievances and getting sidetracked from its main function of regulation. A more orthodox view holds that the regulator need not entertain consumer grievances at all as for are set up under the Consumer Protection Act, 1986, to deal with them. They are also of the view that entertaining grievances by a group of consumers is also not desirable as it may be used as an instrument of politicization and demonstrative intervention by non-representative groups.

Consumer Protection: Regulation is the heart of governance whether that of an individual, institution, or state. Regulatory processes are mechanisms through which regulation is exercised and an efficient regulatory process is one that is rule-based, non-discriminatory yet flexible, and is effectively *enforced*. *It is said that the consumer is king. Since it is the consumer who brings business to a business house, the business house must pay attention and give respect and recognition to the consumer.* According to the International Organization of Consumers, a consumer has the basic rights. *Right to safety* Right to be protected against the marketing of goods and services that is hazardous to life and property. *Right to information* Right to be informed about the quality, quantity, potency, purity, standard and price of goods or services so as to protect the consumers against unfair trade practices. *Right to choice* Assurance, wherever possible, of access to a variety of goods and services at competitive prices. *Right to be heard* Assurance that the consumer's interest will receive due consideration. *Right to redressal*, Right to seek redressal against unfair/restrictive trade practices or unscrupulous exploitation. The Indian Consumer Protection Act, 1986, *inter alia*, seeks to achieve the basic rights for a consumer as evolved by the International Organization of Consumers. A consumer is a user of goods and services produced, supplied, and distributed by trade and industry, and, therefore, the fulcrum of all activities relating to trade, industry, and commerce. The consumer and his welfare need to be ensured through state

intervention. It is in this context that states have been intervening through regulatory processes which have a direct bearing on consumer issues. Bangladesh is yet to promulgate the consumer Protection Act covering different groups of consumers.

In Bangladesh, the newly created utility commissions started their work, in particular, the Bangladesh Telecom Regulatory Commission and the Bangladesh Energy Regulatory Commission is working on different areas with lot of logistics problems. These commissions needed to be strengthened in terms of defining the functions and responsibilities, developing work process, meet the institutional requirements, address the consumer and stakeholder issues and finally protection of consumers.

The need for information for regulation goes beyond accounting data. Regulation also requires information related to physical aspects of the service (employees, productive units) and various dimensions of the quality of the service (number and duration of outages, water pressure, variations in voltage, ruggedness of roads, and punctuality of services).

This information is not costless. The regulator must define precisely the acceptable bases for cost allocations and the formats and content of information presented, as well as detailed processes for sharing and validating that information. Validation is itself a demanding process. Most private operators think that because their accounting data have been validated by their auditors and their board, the regulator is not entitled to re-assess the data. This belief is a major point of possible misunderstanding of the regulator's role. Accounting data that are valid from a legal and fiscal point of view are not necessarily valid from an economic point of view. One of the duties of a regulator is to validate the operator's data economically (proper allocation of revenues and costs, efficient level of costs). However such requirements should be cost effective and no more stringent than necessary.

In summary, regulatory accounting should be considered an important element within a system of regulatory information. This system would include the firm's own information - both accounting and extra-accounting - and external information that is also necessary for regulation. Moreover, the design of the requirements should have regard for existing accounting systems and the cost of compliance.

Information Exchange and Participation: The Need for Processes and Mechanisms

In addition to the quantitative information described above, the regulator requires information about the preferences and opinions of the regulatory system's players (users, firms, investors, government, unions). As regulation must deal with competing objectives and multiple trade-offs, the process used to collect the information and to make decisions is as important as the technical know-how for tariff setting. In this respect, the various mechanisms for public consultation and dispute resolution play a leading role. Consultation documents and public hearings are two instruments that regulators can use to learn about the opinions and preferences of stakeholders in the regulatory process. These instruments contribute not only to information collection, but also to public perceptions of the regulator's performance. An open, transparent, and participatory process is essential for public legitimization of regulation. The long-term nature of the regulatory relationship between the firm and the regulator implies that information problems

will recur. From the outset of the regulatory process - ideally before private participation takes place - considerable effort should go into determining the rules that will govern the management and interchange of information. To maintain value, that initial investment in information gathering must be regularly updated, improved, and optimized throughout the life of the regulatory contract.

In the same way that managers of a company rely on cost accounting in making their planning and control decisions, regulators rely on cost accounting in making decisions related to their regulatory responsibilities. When a company supplies more than one product or service, managers and regulators need to relate the price of each product and service to its costs. They need to estimate the cash flow generated by each product or service and the value of the assets required by each activity. They use this information to calculate the internal rate of return of the activity and to compare it to its cost of capital. Then managers can determine whether developing that activity is worthwhile, and regulators and competition agencies can detect excessive or insufficient profits.

Managers and regulators rely on the same basic financial indicators to measure the profitability of an activity, but regulators have different and wider objectives than managers, so they need management accounting formatted to those objectives. Regulators need to define their specific cost objectives and their own allocation rules and methodologies. Like managers, regulators use the company's information to guide the setting of prices (tariffs) of the products and services sold by the company.

Regulators also have to deal with monopolies or significant market power situations, usually associated with utilities or other network industries such as transport. These specific needs require specific accounting arrangements: regulatory accounting. Because of these specific market situations, regulators have to ensure that prices are fair and reasonable and that they reflect efficient costs. Therefore, regulators are particularly concerned with issues such as cross-subsidization and economic and efficient management.

Uniform Accounting and its Objectives: Uniform accounting is a set of principles and rules of presentation of information for regulated companies. These rules enable an allocation of companies' costs, revenues, assets, and liabilities in a way that facilitates control of the regulatory objectives. The practical objective of regulatory accounting arrangements is to provide information to assist regulators in dealing with the particular market situation of utilities and transport. This information should allow regulators to verify compliance with the basic regulatory objectives: sustainability, allocative efficiency, productive efficiency, and equity (or distributive efficiency). The principles underlying implementation of regulatory accounting are strongly related to these four basic objectives. Most legal texts or guidelines related to the regulatory framework state the rationale for regulation in terms of: Monitoring performance against the assumptions underlying price controls; Detecting anti-competitive behavior (for example, unfair cross-subsidization and undue discrimination); Assisting in monitoring the financial health of the operator and Setting prices. Regulators have to make trade-offs among these objectives. In prioritizing objectives, regulators need to consider the intrinsic characteristics of the industry network they regulate (the degree of competition, the amount and type of investments needed); the economic, social, and political environment of the country; and so on. In network industries such as electricity and water, the main focus is often on monitoring performance, setting fair and reasonable prices, and ensuring that prices reflect efficiency costs.

In telecommunications, the major preoccupation is often detecting anti-competitive behavior, such as cross-subsidization and undue discrimination. In addition, regulatory accounting arrangements serve three practical objectives: are to assist in benchmarking and in comparative competition (by promoting the submission of comparable information by the different companies regulated by the same authority). Improving transparency (and help all parties understand the regulatory authority's information requirements and regulatory functions) and reduce regulatory risk. Ensuring that regulated companies report to the regulatory authority on a timely, consistent, structured, and accurate basis.

A different presentation of data is not the only way cost accounting used by companies differs from regulatory accounting, however. While facing some important restrictions in assuming this exercise, regulators should also have the right to reject some costs judged to be “imprudent” or “inefficient.” Costs should not be excluded lightly, but the right to exclude them in some circumstances is a common element in regulation. Therefore, in the definition of regulatory accounting, allocation of cost is understood to mean *‘the allocation of prudent and efficient costs’*.

General Presentation of Information Needs: This section introduces information needs in a general way by presenting the main elements for defining that information. Basically, regulators have to define their information needs in terms of the *perimeter of the information*, such as the overall coverage of the regulated activities to be reported, separation of information on sub-activities, and disclosure of information on un-regulated activities; *content of the information*, both financial and non-financial; *format of the information*, such as the classification of accounts and appropriate level of disaggregation; and *periodicity of reporting*, depending on the nature of the information and of the operator's obligations. Regulators also have to define their own *allocation and valuation rules*.

Perimeter of Information: Regulators have to define the perimeter of information they will need to verify compliance with regulatory objectives. The perimeter of information includes most data of the regulated companies, which are required to separate regulated activities from un-regulated activities. In addition, companies are usually required to segment the regulated activities into sub-activities, such as production, transport and distribution. The allocation and segmentation of costs enables the regulator to check for unfair cross-subsidization and undue discrimination (see chapter 6, on Separation of Activities). The financial data on un-regulated activities need to be delivered to the regulator to enable reconciliation with standard statutory accounts and to facilitate the check for unfair cross-subsidization. The regulator might not use only the financial (accounting) information received from the operator to determine tariffs. The regulator's role is also to ensure that the costs used to set up future tariffs are “efficient” cost. The regulator requires non-financial data related to the company's regulated operations to monitor the operator's efficiency. Although treatment of the information needs related to non-financial data is beyond the scope of this section, several points are worth mentioning here. First, the regulator needs to be able to match financial and non-financial data on a common basis. Therefore, the cost and revenue separation imposed on the regulatory accounting has to be compatible with the disaggregation of the non-financial data (for example, number of employees and time devoted to each activity). Second, in many cases non-financial data will be useful in

defining and checking the criteria for allocations among activities. A common and consistent framework for treating financial data and non-financial data is thus crucial.

Content of Information: Regulators, to meet their objectives, have to specify the information to be provided to them: financial information (balance sheets, profit and loss accounts, cash flow statements, and so on) and non-financial information (economic, environmental, users' consumption, technical indicators related to efficiency and quality, and so on). Specifying the content is a key requirement. Information reported by companies using standard statements does not allow the regulator to verify compliance with regulatory objectives.

Format of Information: Regulators must specify not only the content, but also the format of the financial and non-financial information. For example, regulators need to define the classification of accounts and the appropriate level of disaggregation of the chart of accounts for all relevant financial statements.

Periodicity of Reporting: Regulators have to specify the periodicity of information to be provided. The periodicity is based on the nature of the information and of the operator's obligations (investments). For general financial information, annual or biannual periodicity might be appropriate. But regulators may require shorter periodicity - often quarterly reporting - for primary technical and efficiency indicators (such as interruption of service) and for capital expenditures. For some critical variables, monthly reporting may be required. The key issue is to detect efficiency problems or failure of compliance with an investment obligation as early as possible. For services that show a seasonal pattern (in demand or cost conditions), more detailed information might be used for properly allocating costs (peak-load pricing). Service interruptions or efficiency problems send negative signals about operation of the service. Their cause should be analyzed as soon as possible to rectify the situation and to reduce any further occurrence. Failure to meet investment obligations or forecast capital expenditure is a more delicate situation. It may reflect changes in circumstances (such as slower-than-expected demand growth) or efficiency improvements by the operator. If the company has no justification for its lack of investment, the regulator may act to 'recuperate' the amount of unmet investment obligation through reduced future tariffs (after interaction with the operator and process of dispute and arbitration if necessary). In practice, however, this situation is complex to analyze and becomes even more so if handled a year later because of the particular periodicity of reporting.

The regulator also needs to consider carefully the impact of such steps on incentives. If the regulator penalizes the operator—deliberate unmotivated noncompliance is rare—it will not encourage the operator to seek future efficiency and cost reductions relative to the original contractual investment plan. To avoid problems, the operator will simply incur the forecast expenses instead. Detecting and dealing with noncompliance as soon as possible is preferable to avoid more difficult conflicts and legal procedures.

Allocation and Valuation Rules: Regulators usually define general allocation and valuation principles such as: Causality. Costs, revenues, and capital employed should be allocated to the activities (services offered or user category served by the regulated company) that incur the costs or revenues. Objectivity. Allocation and valuation methodologies should be designed on an

objective basis and not in a way that unfairly benefits the regulated company or any other party. Consistency. Allocation criteria should remain same over time, to the extent that is feasible and reasonable. Transparency. Allocation methodologies should be clear, and the various included parts of the costs should be clearly differentiated from one another. The spirit of these principles is similar to that underlying the generally accepted accounting principles (GAAP) for statutory accounts and the principles used as cost allocation guidelines in cost accounting, though GAAP do not strictly apply to cost analysis (see chapter 3) and regulatory accounting requirements can differ from GAAP. The principles and rules for valuation methodologies will usually be detailed. Valuation of assets is central to regulation, because one of the main cost elements that will determine the revenues allowed to the operator is the authorized return on these assets.

Limitations of Traditional and Management Accounting of the Regulated Company:

The information provided by traditional financial accounting does not meet the needs of regulators for two primary reasons. First, costs cannot be separated by regulated and unregulated activities. Second, regulators need historical data to forecast costs and revenues for future tariff setting. Moreover, if regulators rely only on statutory financial statements, they will have only very limited ability to compare operators because of the heterogeneity of information reporting. Can regulators use the information provided by management accounting and implemented by the company? The answer is not obvious, because of several limitations:

- The cost and managerial accounting system was put in place to meet the specific objectives of the company's managers. Regulators do not have the same objectives. Thus the specific needs of the regulator and a cost accounting plan will have to be defined in accordance with these objectives.
- The information in a cost and managerial accounting system is usually considered internal "confidential" information. Thus information exchange procedures and mechanisms will have to be implemented within a legal regulatory framework.
- No standards relating to management accounting exist. For example, in the case of cost analysis and allocation, methodologies might differ from one company to another. Thus, for the regulator to monitor several regulated companies in the same sector and to compare the costs of their services, the companies' cost accounting plans would have to be mutually defined in accordance with these objectives.

Consistency between Statutory Accounts and Regulatory Accounts: The specific needs of regulators and their various objectives will require elaboration of specific regulatory accounting statements, which are defined further in chapters 6 and 7. This section lays out some principles about these statements and how they relate to statutory accounts. Regulatory accounting statements are (a) additional to any statutory financial reporting obligations of the companies under the general accounting law; (b) must be prepared on the basis of GAAP, unless explicitly specified; (c) are based on the same source of information as statutory accounts statements (regulatory accounting statements should always be reconciled with statutory accounts

statements); and (d) will follow regulatory accounting guidelines over accounting standards wherever the two conflict.

It must be emphasized that regulators rely on the same sources of information as managers and use data derived from the same information systems. Regulators must ensure that their needs are specified well in advance so that the cost accounting plan and the data recording processes can be defined to follow their information requirements.

Regulators' behavior and principles to follow: Regulators have to balance the interests of various groups—government, operator, and users—to meet the goal of the public interest. The tension among these interests can be overstated. It is not in consumers' interest, for example, for prices to be below efficient costs, including a commercial rate of return. But day-to-day tensions are part of the regulatory process. Companies will be concerned to ensure that the regulator does not squeeze profits too much or interfere in the running of the business. Customers may have strong expectations that the regulator will squeeze out any cost padding or unfair prices sooner rather than later. The two extreme positions that a regulator could adopt when monitoring a regulated operator are ignorance and interference.

Ignorance: Ignorance can arise from various situations: (a) The operator delivers no information, whether because of shortcomings in the legal framework or the contract, or because the regulator is not sufficiently active in enforcing it. (b) The regulator does not use the information provided by the operator appropriately (no rigorous and systematic analytical work). (c) The regulator relies too much on the incentive properties of the regulations adopted and is less concerned with price structures or anticompetitive behavior. Due to the lack of information, the regulator will be unable to verify that the regulatory objectives of sustainability, allocative and productive efficiency, and equity (distributive efficiency) are achieved. Whatever the causes, the government and the regulator should remedy the situation through dialogue with the operator, new decrees or laws addressing the issue, sanctions, or other means.

Interference: Interference or micro-management refers to regulators' constant questioning of managers' decisions. When regulators behave as though they were part of the company's management, accountabilities are confused and incentives are poor. Such action is detrimental to the interests of all stakeholders. Furthermore, it can undercut the government's policy objectives and intentions for sector reform, because the decision to turn a public utility over to private sector management (management contract, concession) or control (privatization) to improve efficiency and services is being undermined.

Risks: Both ignorance and interference involve risk. The main risk of ignorance is that objectives are not met because of the impossibility of verifying compliance with regulatory objectives. This situation puts the public interest in danger (Estache, Wodon, and Foster, 2002). The main risk of interference is the abuse of regulatory powers and overregulation. By increasing perceived risk in the name of efficiency, interference results in a higher cost of capital required by the operators and, probably, in greater inefficiency. The regulator has to adopt a responsible position between these two attitudes. Although it appears obvious that a regulator should neither ignore information nor interfere constantly in management of the regulated operator, experience

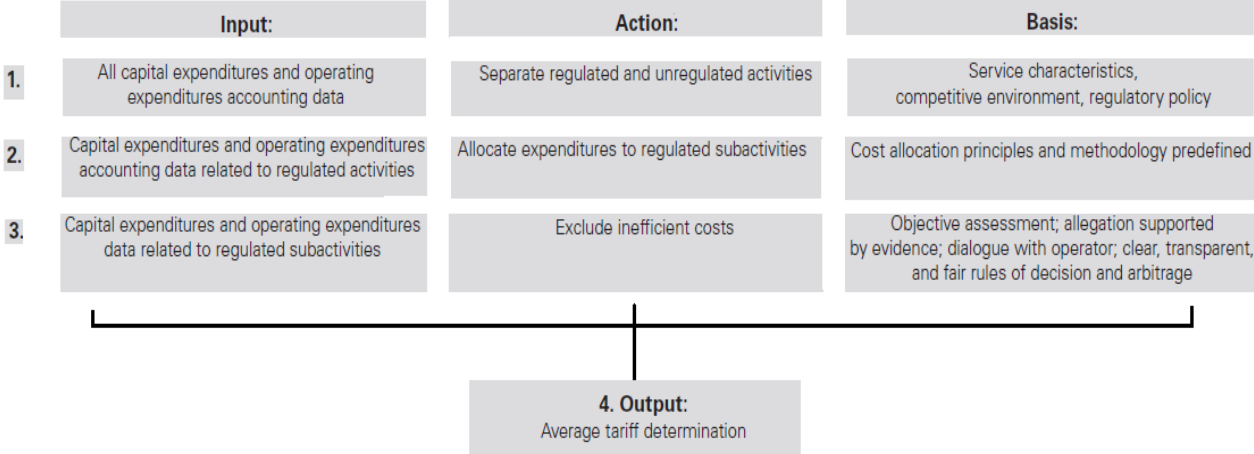
shows that this balance is difficult to achieve. Initially there may be a need to improve information systems, but the tendency to demand more detailed and complex information is strong. Regulators also have to be realistic and adapt their regulatory work to their capacity and competence.

Using Accounting Costs in Tariff Determination: The relationship between an operator's accounting costs and the operator's tariffs depends to a large extent on the regulatory regime and the specific rules of each service. As long as the regulator has a duty toward the economic and financial sustainability of the regulated firm, the operator's costs will be an important element to take into account in a tariff determination. Nevertheless, accounting costs do not necessarily go directly into the determination of tariffs. As much as possible, the rules and criteria to be used by a regulator in reviewing accounting costs should be carefully spelled out in advance. Some general principles, such as a presumption of prudent management, realism, and materiality (discussed below), should guide the regulator. A well-defined sanction still entails risks for the operator; these risks should be factored into the overall regulatory framework and the rewards provided.

Excluding Costs: As mentioned in the discussion of the perimeter of information, the original accounting data provided to the regulator by the operator should not necessarily be used as they are for tariff determination (even when correctly allocated). Regulators not only have the right to audit the data (see discussion below), but can exclude some lines of costs or approve only partially incurred expenses. One of the main roles of the regulator is to ensure that companies have an incentive to operate as efficiently as they would in a competitive environment. Inefficient costs should not be recovered from customers through tariffs. The sanction of some inefficient costs—even excluding them completely—can be part of the incentive regime and has parallels with outcomes in un-regulated markets. To avoid unnecessary and inefficient increases in the risks perceived by investors, these cost exclusions should adhere to clear and predictable rules.

The regulator might decide to exclude inefficiently incurred costs in full or in part. Full lines of costs (specific cost items) may be excluded, because they are not considered useful (within a reasonable planning horizon for delivering the regulated service). Even if the cost is conceptually related to the delivery of the regulated service, regulators may partially exclude incurred expenses where they are shown to be clearly inefficient. Regulators want to avoid the risk that the regulated companies incurred expenses at a cost higher than their market value. If the regulator decides to exclude what are considered inefficient costs, regulated operators want to know the legal grounds for this action. In the United States the basic authority for a regulatory agency insisting on prudent costs (including investments) relies on the “just and reasonable” standard. If common regulatory law protects consumers with the statement that “just and reasonable” tariffs have to be charged, imprudent expenditures are inconsistent with that law, and no further notice is then required under applicable law. This statement is quite powerful when considering the legal status of regulatory methodology.

Figure 5.1. Average tariff determination process



Source: Authors

Full Exclusion of Cost Items: Examines the possible full exclusion of some costs incurred for regulated activities. From an economic perspective, only expenses useful for delivering the regulated service should be recovered through tariff charges to the users of the regulated service. Typically, regulators might exclude ex ante lines of costs such as sponsorships, lobbying expenses, donations, or some advertising costs not considered useful for delivering the regulated service. In a 2000 price review of electricity distribution, the Office of the Regulator-General, Victoria, Australia, excluded all advertising and marketing costs related to campaigns that do not specifically include customers’ information or incentives to use energy more efficiently.

A more sensitive issue relates to management fees or related-party transactions. The regulated operator pays these fees to companies belonging to the same group for specific services (legal, financial, technical, marketing). The rationale for the provision of these services is that operators often belong to large international groups. They consider it more efficient to purchase specific services (services requiring expertise that cannot be found within the operator’s company) from the mother company or another company within the group than from an outside company. Because of the size of these management fees (in some cases as high as 3 percent of revenue), some regulators argue that they should be assimilated to return on capital or should be limited in time. Regarding the latter treatment, the argument is that the operator should organize a proper transfer of knowledge to the local regulated operator. This means that, in time, the operator should lower its reliance on the mother company’s expertise, progressively reducing payments to the mother company. The regulatory position varies from country to country and even from sector to sector. Chapter 6 presents more detail on this cost item and related issues. As a general rule, regulators should have (a) A clear and public position on management fees, (b) Review in detail the nature of the services performed under management fee arrangements, and (c) Assess the rationale for these arrangements in view of the characteristics of the local company and its environment. Marginal and incremental costs are not historical costs. Rather, they are estimates of the future cost of the service. Therefore, estimating them involves estimating future demand for the good or service in question, future capital costs of production facilities, future costs of raw materials and energy, and so on. In that sense, their estimation can be complex.

Partial Exclusion of Incurred Expenses: The partial exclusion of incurred expenses relates to the delicate issue of “excessive” expenses. In a competitive environment a company operating under inefficient management would produce or deliver goods or services at a cost that would put it out of business very quickly because of the presence of competitors operating more efficiently. The objective of regulation is to simulate the positive effects of a competitive environment, so that the benefits of efficiency can be passed on to users through lower tariffs. This objective is enforced through the level of costs that will be allowed by the regulator for tariff determination. The regulator excludes all excessive costs such as excessive capital expenditures, excessive salaries, excessive costs of energy or water purchases, and so on. Excessive expenses result from poor management. More specifically, they arise from

- (a) “Gold-plating” behavior, or investing in the most expensive equipment or producing the most expensive service regardless of the need or efficiency of the operation to maximize returns without diminishing sales;
- (b) Lack of good technical analysis; or
- (c) Lack of appropriate organizational procedures.

The issue of excessive costs is complex. Consider the case of excessive costs of energy or water purchases by a distribution company in the utilities sector. Excessive costs can arise through failure to optimize purchasing contracts or through use of expensive energy without consideration for cheaper alternatives. These problems can occur because of bad management or because of poorly designed cost pass-through mechanisms or indexation formulas that can undercut the incentive for replacing some costly energy sources with lower-cost alternatives (Arizu, Maurer, and Tenenbaum, 2004).

In many countries, however, the price of energy and other inputs bought by a distribution company could be excessive not because of a non-optimized contract or failure to consider alternative sources, but because of the lack of competition upstream. A regulator who compares prices with those in other regions or countries and excludes a percentage of incurred expenses on that basis could be making the wrong decision. The excessive price is exogenous to a cost-minimizing regulated firm. In this situation, the regulator might need help from other agencies (for instance, competition agencies) before deciding whether a cost is imprudent.

The principles, process, and methodology that the regulator uses to decide to exclude some inefficient costs should be clearly established and made public before the license to operate the regulated company is awarded. The regulator cannot exclude inefficient costs as a discretionary exercise.

A few Criteria and Guidelines:

Regulators should take into account several criteria and guidelines when assessing an operator's data to verify compliance with the operator's obligations and operation under efficient management.

1. **Presumption of Prudent Management:** The regulator's work should not interfere with day-to-day management of the firm. For example, the regular review of capital expenditures should not lead to constant second-guessing of management decisions. The regulator should avoid overregulation and micro-management, which create excessive risks and uncertainty that can deter investment. It should always express its doubts on the basis of rational and quantified information. In the United States there is a legal presumption in favor of utility management. The burden of proof lies with the regulator or the party challenging management decisions. In countries with no explicit legal texts or jurisprudence, this issue is a sensitive one, especially given the problem of asymmetric information and the absence of proper release of information. How can the burden of proof lie with a party (the regulator) that lacks access to detailed information regarding the decision it challenges?
2. **Realism:** The financial situation of the operator should be taken into account. Even if motivated, disallowance of costs might be limited to maintaining the operator's solvency and investment capacity, thereby avoiding the greater damage to rate-payers that would result from the operator's insolvency and bankruptcy. The regulator should ensure that the operator implements appropriate management systems and controls to avoid imprudent costs in the future.
3. **Materiality:** Regulators have to restrict their analysis to significant amounts that affect tariffs, because they have limited capacity for intervention and analysis.
4. **Objective Assessment:** Findings of Mismanagement - Regulators should base their conclusions on objective and quantitative analysis. Avoidable costs should be estimated on a rational basis. An allegation of management imprudence should be supported by evidence. Assessment of management decisions should always be performed on the basis of the specific context in which the decisions were taken - under the same circumstances, would reasonable managers have incurred the same expenses?

Regulators should use a comparative and benchmarking approach to make their point. They could look at medians of other local comparative businesses or, if such data are not available, at comparable businesses in the region. They should compare cost percentages, tariffs, and similar data, always taking into account local and regional differences (initial state of assets, specific geographical conditions, and the like). Regulators can use historical information for evidence of abnormal expenses by comparing cost budgets with real expenses and asking for explanations of differences (over-budgets).

The detailed organizational flowchart of the company is a good source of information. It can help regulators understand the chain of control for expenses and check that proper management

control and processes are in place (methodologies in project management, construction, quality assurance, and quality control). In measuring efficiency, regulators can compare operators' performances in many ways. The main methods are:

- (i) Price-based index numbers for measuring productivity as a ratio of output and input price index;
- (ii) Stochastic frontier analysis, an econometric method that estimates a production or cost frontier; and
- (iii) Data envelopment analysis, a linear programming method that constructs a non-parametric production frontier (Coelli and others, 2003).

● ● ● **Section Three** ● ● ●
● ● ● **Core Issues in Uniform Energy Accounting** ● ● ●

This section discusses on the core issues in regulatory accounting: separation of activities, regulatory asset base determination (concept and valuation and depreciation), depreciation policies of the regulatory asset base, and related-party transactions and transfer pricing.

Separation of the activities of regulated operators into regulated activities and un-regulated activities is the core motivation of regulatory accounting. Such separation is essential for facilitating control of regulatory objectives. This chapter shows how each regulatory alternative - single till regulation, separation of companies, and accounting separation of activities within a company - has different implications for information requirements. Valuation of the regulatory asset base and specification of depreciation profiles are also critical tasks of the regulator. This section explains how the valuation and depreciation options of the regulatory asset base are at the core of tariff determination, and how regulatory options could diverge from what is implemented in standard statutory accounts. For most topics, regulators can choose from a wide range of alternatives, depending on the characteristics of the sector, the legal framework, and the weight given to various regulatory objectives, among other factors. These alternatives are to a large extent interdependent.

Therefore, the need for consistency among the options chosen for each topic is great. Consistency must be maintained over time as well. Adherence to the same criteria from year to year helps to reduce uncertainty and perceived risk among investors.

Separation of Activities: As a result of technology change in many infrastructure sectors and restructuring to introduce competition, regulated activities and un-regulated activities coexist in most companies. The regulatory treatment applied in this situation is particularly important. Treatment of un-regulated activities should be framed to meet general regulatory objectives, particularly preserving incentives for productive efficiency, avoiding distortions in competitive markets, and ensuring that users benefit from efficiency gains. Before analyzing the alternatives for addressing un-regulated activities, regulators will need to identify different types of activities and situations to develop a more complete framework for their analysis. Different criteria may be used for this analysis. Un-regulated activities could be separated according to whether or not they use assets of the regulated service. Un-regulated activities could be separated according to whether their markets are competitive or separately regulated monopolistic activities. Activities could be separated on the basis of the degree of vertical integration of the un-regulated activity with the regulated activity and the extent to which that integration is part of the industry's value chain.

The *first distinction*, between un-regulated activities that use the assets of the regulated service and those that do not, is crucial to the productive efficiency objective. In general, the performance of un-regulated activities using assets of the regulated activity assumes the existence of some degree

of economies of scope. A typical example is an electricity distribution company's use of the electric company's poles to lay down television cables. Using the poles as a common asset is more efficient than employing two separate sets of poles.

Economies of scope imply that the joint production cost of regulated activities and un-regulated activities is lower than the sum of the costs of both activities performed separately. When this is the case, development of the un-regulated activity by the regulated operator increases efficiency; hence, a net welfare loss would result if the regulated operator were banned from carrying out the un-regulated activity. The problem is to clearly determine how greater efficiency in the use of assets will be shared by the operator and the users (who pay for it in the long run through regulated service tariffs).

Now consider the *second distinction*, wherein un-regulated activities are separated according to whether their markets are competitive. If the un-regulated activity develops in a competitive market, the operator has strong incentives to distort the allocation of costs, increasing them for the regulated activity and reducing them for the activity in the competitive market. In this way, the operator recovers costs through the regulated tariffs and improves its position in the competitive market, obtaining extraordinary gains. An electricity transmission company using its system to lay down fiber-optic cables and enter the telecommunications business is an example of a regulated utility entering a competitive market. This move not only affects the regulated activity, but may also distort the competitive market, because a bad allocation of common costs might bestow an unfair competitive advantage on a service provider that can recover part of its costs in a captive market. If the regulated activity is carried out in another regulated market, no such incentive exists.

Finally, consider the *third distinction* - the degree to which the un-regulated activity is vertically integrated with the regulated activity. If the un-regulated activity is vertically integrated with the regulated activity, the firm has greater incentives to influence the un-regulated market by manipulating the regulated activity. An airport operator's ownership of substantial interest in an airline is an example of vertical integration of a regulated activity into a competitive sector.

Such integration gives rise to the regulatory access problem: what to do when a regulated company is to provide a service-access - to its competitors in an un-regulated market. The tariff criteria for the essential facility (the one competitors need as an input to provide the service) are crucial to avoid distortions in the competitive market and to achieve the regulatory objectives of sustainability and allocative efficiency.

When both activities are not part of the same value chain, as in the electricity and telecommunications example, the problem is less serious, because competitors are not also customers of the regulated operator. However, the incentives of the regulated operator to allocate more costs to the regulated activity in order to improve its competitiveness in the un-regulated market remain.

Regulatory Alternatives: This section deals with the alternatives that can be used with regulated operators in treating un-regulated activities. It covers the alternatives' advantages and disadvantages in terms of the regulatory objectives mentioned above.

Single-Till Regulation: Single till regulation assumes that all revenue from un-regulated activities is considered on the revenue account of the regulated activity. In many cases, because of inadequate information, the costs of the un-regulated activity are assumed to equal its revenue, and that consequently separating un-regulated activities for regulatory purposes is unnecessary. This approach was proposed for regulating airports in the United Kingdom. All revenue arising from un-regulated activities within the airport, such as shops and restaurants, would be taken into account in estimating the revenue requirements of the regulated activity. The main advantage of this approach is its simplicity. Only information on the total revenue and costs of all activities is required. Separation of regulated activities and un-regulated activities is unnecessary. The drawbacks of this approach, though, clearly exceed the advantage of simplicity. First, the approach clearly goes against the objective of productive efficiency, because it takes away any incentive for the operator to develop un-regulated activities under the concession. As long as all of the additional revenue from un-regulated activities results in a reduction of regulated revenue, the company has no incentive to generate revenue. Second, this alternative results in extremely unattractive incentives for allocative efficiency. In the airport example, the revenue from un-regulated activities increases with the degree of congestion of terminals, driving down the regulated tariffs for the terminals' use. This phenomenon sends the wrong signals for efficient allocation of resources.

Separation of Companies: An alternative is to require that regulated activities and un-regulated activities be developed by different legal entities. This separation can take two forms. The less strict form of separation requires that the un-regulated activities are performed by a separate legal entity but does not prohibit common ownership. Thus a regulated operator or its shareholders can own a subsidiary company performing un-regulated activities. The stricter form of separation imposes restrictions on cross-ownership of regulated activities and un-regulated activities. The regulated company, and in some cases even its shareholders, cannot own companies that render services or sell products in un-regulated activities. Under this stricter form of the approach, the problem of un-regulated activities disappears for the regulator—but at the cost of preventing the company and its shareholders (and indirectly its customers) from taking advantage of potential economies of scope between activities. In summary, the regulatory load is minimized at the expense of the company's productive efficiency.

Separation of Activities and Accounting: The two alternatives discussed above are extreme cases that either ignore or prohibit un-regulated activities within the regulated company. In general, these alternatives are not efficient, and most countries decide instead to demand separate accounting of regulated activities and un-regulated activities. This separate information becomes the basic input for regulatory allocation and determination of the operator's revenue requirement. This input can be supported by "behavioral requirements," such as limits on sharing of information between regulated entities and non-regulated entities and provision of information to customers. Box 6.1 provides an example of an approach that combines various ring-fencing requirements.

The next section deals with some of the key elements needed to create a basic framework of information for regulatory accounting and the regulatory alternatives for use of that information.

Accounting Separation of Activities: Accounting separation of regulated activities and unregulated activities appears to be the most common alternative used by regulators to treat unregulated activities. This alternative requires a cost accounting system, as defined in chapter 3, but one adapted to the regulator's needs. The regulator will need to specify segmentation of activities (functions) and to specify classification and segmentation of costs (to assess the efficiency level of particular lines of costs). Using the concepts of cost classifications presented in chapter 3, costs could be separated, from a regulatory point of view, in several ways. They could be divided into operation costs and maintenance costs, categorized by function (for example, in the case of a vertically integrated electricity company, by generation, transmission, distribution, and supply), divided into controllable costs and uncontrollable costs (some regulatory schemes focus incentives on controllable costs and adopt pass-through mechanisms for uncontrollable costs), or divided into central costs (for example, head office) costs and functional costs.

Regulators usually require clear identification of other specific lines of costs, such as regulatory fees (fees paid to the regulatory authority), concession fees (if any), and management fees (all related-party transactions above a certain amount). Energy purchases are of specific interest to the regulator, particularly when cost pass-through mechanisms or inappropriately designed indexation formulas undercut incentives to replace costly energy sources with lower-cost alternatives.

The following table presents an example of the classification of an electricity operator's operating costs. These costs are divided into functional costs and central costs. Items in boldface represent typical uncontrollable costs that should be aggregated to allow an analysis of controllable costs and uncontrollable costs as well as an analysis of total operating costs. This example assumes that the company is involved in two regulated activities (electricity transmission and distribution) and two unregulated activities (electricity generation and trading). The first separation requires identification of the direct (or functional) costs of each phase. In general, these costs are relatively easy to identify, because they are directly incurred in development of the activity. With respect to these direct costs, regulators will require details on cost nature, such as personnel, intermediary products, third-party services, and so on. For regulated activities, a second level of disaggregation will allow for more detailed analysis of sub-activities. Following Table shows a possible classification of sub-activities in electricity production.

Table 6.1. Classification of costs for an electricity operator

	Unregulated activities		Regulated activities		Total
	Generation	Trading	Transmission	Distribution	
<i>Functional costs</i>					
Personnel					
Goods and materials					
Contracted services					
Lubricants					
Fuels					
Total functional costs					
<i>Central costs</i>					
Management					
Trading					

Source: Authors.

Table 6.2. Subactivities in regulated and unregulated activities of an electricity operator

Phase	Subphase	Function	Investment
Generation		To turn primary energy into electricity	Power stations (hydroelectric, thermal, gas powered, coal powered, nuclear, wind, solar); capacity from 1–1,000 megawatts
Transformation		To turn electricity generation voltage level into transmission voltage level; to allow long-distance transmission of large capacities	Transformers, bars, protection, metering and control equipment, and civil works
Transmission		To transport electricity from generation sites to the boundaries of large consumption centers; usually mesh system	Networks of 115–765 kilovolts, with capacity of 50–2,000 megawatts
Distribution	Transformation	To turn very high voltage electricity into lower voltage to facilitate transmission in a certain geographical area	Transformers, bars, protection, metering and control equipment, and civil works
	Subtransmission	To distribute the electricity received from very high-voltage/high-voltage transformer stations to high-voltage/medium-voltage transformer stations for regional distribution	Networks of 66–220 kilovolts, with capacity of 35–200 megavolt amperes
	Transformation	To receive electricity from subtransmission systems and turn it into lower voltage to allow local distribution; usually, more than one distribution level	Transformers, bars, protection, metering and control equipment, and civil works
	Transformation posts	To receive electricity from feeders and distributors and convert it to the primary voltage level of direct users	Transformer (three phase, two phase, and single phase), civil works (air, land, underground), and protection equipment; capacity of 3–1,000 kilovolt amperes
	Secondary distribution in low voltage	To distribute energy from medium-voltage/low-voltage transformation posts to users; always radial from the standpoint of operation; from the standpoint of construction, usually sections between circuit ends for reconfiguration	Networks made by conventional overhead lines, preassembled, and underground wires; voltage levels of 110–400 volts
	Invoicing	Meter reading and invoices to customers	Installation and maintenance of meters and invoicing and collection systems
Trading		Purchase and sale of electricity by contract or in the spot market; potentially competitive activity	

Source: Authors.

Regulatory Asset-Base Determination: From an economic perspective, tariff determination should meet several regulatory objectives, including sustainability, allocative efficiency, productive efficiency, and equity. Economic and financial sustainability require that tariffs generate enough revenue to cover the economic cost of service provision, including a return on capital. The rate of return must be determined on the basis of the opportunity cost of capital - what could be earned from the best alternative investment with similar risk. However, this approach covers only one part of the problem. The regulator must also determine the composition and value of the regulatory asset base to which this rate of return would apply. This key part of the regulatory process raises two related problems. First, the regulator must determine which investments by the regulated operator are specific to the service and also meet efficiency and prudence criteria. Second, the regulator must decide how to value these investments for regulatory purposes. In the context of regulatory accounting, the relation between the regulatory asset base and the book value of the operator's assets is important to consider, as is the matter of how to reconcile the two if they do not match.

Asset-base Valuation: Regardless of the approach selected to quantify the asset base, certain general principles apply, such as that the asset base should reflect mainly the value of the assets engaged in the public service. In most cases the approach focuses on the entries under the assets account in the balance sheet, updated as necessary, for example, for depreciation (Goodman 1998, 732). Discussion of the most appropriate way to value the asset base is not new. At the end of the nineteenth century, in *Smyth vs. Ames*, the U.S. Supreme Court ruled that, *'the basis of all calculations as to the reasonableness of rates to be charged by a corporation maintaining a highway under legislative sanction must be the fair value of the property being used by it for the convenience of the public. And in order to ascertain that value, the original cost of construction, the amount expended in permanent improvements, the amount and market value of its bonds and stocks, the present as compared with the original cost of construction, the probable earning capacity of the property under particular rates prescribed by statute, and the sum required to meet operating expenses, are all matters for consideration, and are to be given such weight as may be just and right in each case. We do not say that there may not be other matters to be regarded in estimating the value of the property. What the company is entitled to ask is a fair return upon the value of that which it employs for the public convenience. On the other hand, what the public is entitled to demand is that no more be exacted from it for the use of a public highway than the services rendered by it are reasonably worth'* (Goodman 1998, 755).⁷

Three approaches for asset base determination can be identified in this court decision:

- (a) Historic value (original building cost),
- (b) market value (amount and market value of the firm's bonds and stocks), and
- (c) replacement value (current building cost).

The following sections briefly examine the advantages and disadvantages of these methods, which remain the most frequently discussed in the literature and applied in regulatory practice at international levels.

- (a) **Historical Cost:** Traditionally, companies have recorded the value of their fixed assets on a historical cost basis, which continues to be the basis applied in most statutory

accounts (see chapter 3). The use of a historical cost basis is consistent with the role of statutory accounts in allowing investors to review the quality of stewardship of their investments by management. Investors are interested in the return earned on their actual investment rather than on some notional asset base.

- (b) **Market Value:** When a stock is listed, the market value provides the best guide to expectations of future revenues derived from the company's assets—and therefore the company's economic worth. In a regulated environment, however, this market value introduces a circularity problem, whereby future revenues depend on prices that in turn depend on the asset base derived from future revenues.

When companies are not listed on a public stock exchange, regulators must use estimates of the discounted cash flows arising from that asset in the future. Again, the circularity problem limits the usefulness of this methodology for regulatory purposes.

- (c) **Replacement Cost:** An alternative form of valuation is to consider the cost of building the infrastructure at current prices, but even a replacement cost measure is not a true reflection of the economic worth of the assets. It fails to take into account technological change and thus to capture the extent to which more efficient modern assets can substitute for existing assets. It also assumes that the existing asset configuration is the most efficient configuration.

Two refinements of the replacement cost methodology seek to address these issues.

- The first is revaluation of assets on the basis of modern equivalent asset values - for example, by substituting a gas-fired power plant for an equivalent size coal-fired plant.
- The second refinement is creation of depreciated optimized replacement cost estimates. This refinement extends the first refinement by modeling the optimal asset configuration to deliver the service at the current time. For example, one large plant might replace two smaller generation plants under such a valuation.

When multiple values are possible (for example, when the depreciated optimized replacement cost differs from the market value), the appropriate rule to apply from an efficiency point of view is the *deprivation rule*, which states that '*the value of the assets to their owner is lower than their replacement cost (however defined) and higher than their market value or scrap value*'. Essentially, this value represents the value that an investor could obtain for the assets and therefore the value at which the investor should be compensated for being deprived of these assets.

Regulatory Asset-base Composition: In dealing with the asset base composition, the regulator must consider principles that may not arise in asset base valuation in un-regulated companies.

Assets: In regulated companies, the rate base reflects primarily the assets in public service rather than a quantity of stocks or bonds devoted to the public service. The focus is on properties on the asset side of the balance sheet adjusted only as needed by reference to various reserves on the liability side. In deciding whether particular assets should be included in the rate base calculation, regulators may apply the principle that only assets in service in the test year or the near-term period should be included. Whatever the method of rate base valuation, investors are entitled to a return only on that portion of their investment that is used and useful in the public service, assuming a reasonable planning period.² Intangible property is rarely includible in the rate base.³ For example, the Massachusetts Regulatory Commission held that intangible costs that benefit rate-payers over more than one year are appropriately capitalized and included in the rate base. Such costs would include, for example, computer software and organization costs related to mergers involving the regulated company.

Goodwill: Goodwill can be described as a global concept that captures a set of company activities related to superior earning power, such as customer loyalty, employees' expertise, management capabilities, and all the other intangible factors that motivate people to do business with the company. The U.S. Federal Communication Commission noted that traditionally such excess acquisitions costs are partly or wholly excluded from rate bases, because these costs typically benefit the seller, not the ratepayer, and do not contribute to the plant supporting the regulated service. In arguing for inclusion of goodwill in the rate base, the regulated operator bears the burden of showing that its costs result from arms-length bargaining and that the net efficiency gains result in concrete, tangible benefits to rate-payers.

Whether the costs of obtaining a franchise, as distinguished from the value of the franchise itself, should be included in the rate base is debatable. Regulatory commissions uniformly reject capitalized values of company franchises. When government confers the right to operate a utility, the only assets that can be capitalized are the land, equipment, and buildings for which capital outlays have been made, even though a market for the franchise may exist.

Deferred Operating Costs and Regulatory Assets: When the operator, with the regulator's approval, postpones the collection of a cost from rate-payers, it may be allowed to create a deferred cost or a regulatory asset on its books for a stated period. It thereby capitalizes the cost and will thereafter amortize the cost through charges to rate-payers, with or without inclusion of the unamortized balance in the rate base. Deferred costs are included in the rate base only when rate-payers have not yet been called on to bear the costs in any of the rates. If rate-payers have already paid the deferred cost, that cost may not be included in the rate base. A utility typically uses deferred costs and regulatory assets to account for the period between the in-service date of a major generating plant and the time that its costs can be reflected in new rates.

Leased property: Regulators generally distinguish between a capital lease and an operating lease. Only the properties under a long-term capital lease qualify for inclusion in the capital structure and rate base. Such inclusion does not automatically follow for every capital lease. Lease payments under operating leases are included in operating expenses on the operator's income statement and taken as an allowable expense for ratemaking purposes.

Third-party Contributions: Most agencies will deduct from the rate base any part of the capital that either has been donated (or deposited) and bears no capital cost to the company, or is otherwise maintained on the company's books at no cost to investors. The widely followed rule is that the property account shall include no cost or value for facilities or land contributed or paid for by government agencies, individuals, or others. Alternatively, such sums can be carried as booked investment—but at a zero cost of capital or deducted from the allowance for working capital and hence from the rate base.

Working Capital: The regulatory asset base includes not only physical assets but also liquid funds needed for the operation of the business. These funds are known as working capital and are based on the funds that the operator must keep on hand to continue day-to-day operations. The working capital allowance takes into account short-term assets and liabilities. It assumes that a well-managed company will have a reasonable margin of current assets over current liabilities (that is, net working capital) on hand at all times. Typically, working capital requirements are assessed through a lead/lag study that analyses the time between the utility's provision of a service and receipt of revenues (the "lag") and the time between the utility's receipt of goods or services and payment for those goods or services (the "lead"). The resulting working capital requirements are then included in the rate base on which the operator will be given the opportunity to earn a fair return.

Other Principles: In dealing with the asset base composition, the regulator must also consider the following principles:

- (a) The rate base is usually a net valuation figure after deduction of the current depreciation reserve, including all past accumulated depreciation on the same assets. The depreciation reserve must be deducted from the rate base, because a depreciation charge is a financial transaction between consumers and the operator. Because consumers contribute revenue for the investment amortization, the recovered depreciation should be deducted from the property valuation. Otherwise, consumers pay returns on property values that are already amortized.
- (b) Losses on the sale of property or on purchases made by the operator that it recognized by a reduction in retained earnings are not properly included in the rate base.
- (c) A regulated company cannot properly attempt to recover prior operating losses through inclusion of such losses in the rate base.
- (d) An electric utility is entitled to include a reasonable allowance for coal, oil, and diesel fuel inventories in the rate base.
- (e) In recent years a major issue has been whether deferred taxes on utility books should be included or excluded from the rate base. Most utility regulators exclude those sums, finding that they have been contributed by rate-payers rather than by investors in the regulated company and so carry no associated cost of capital. Alternatively, a treatment equal or equivalent to removal from the rate base would be treatment of deferred taxes as zero cost capital in the rate of return and capital structure computations.

(f) Regulatory treatment of the differences between forecast and actual capital expenditures depends directly on the regulatory regime adopted, but some cases are worth mentioning. For example, in the United Kingdom capital expenditures larger or smaller than forecast receive asymmetric treatment. If the operator invests more than the capital expenditure approved in the five-year tariff review, the amount over the approved expenditure is not included in the asset base. Thus, the regulator prevents users of the regulated service from paying for excessive capital expenditure—which might be caused by the operator’s lack of efficiency. If the capital expenditure is lower than forecast, the regulator allows the forecast value to be incorporated into the asset base to provide incentives to improve efficiency. When companies spend less in delivering the required outputs than the amount determined at periodic reviews, they may keep the benefits of these capital efficiencies for a specific period of time, after which the benefits are passed on to customers.

Depreciation Policies of the Regulatory Asset Base: Depreciation is an important issue for the regulator, for several reasons: (a) Regulated utilities are capital intensive, and depreciation is a major component of the costs. (b) The approach to calculating depreciation is considerably flexible, and the choice of the depreciation profile can smooth prices and cash flows and reduce risks for the investor. (c) Changes in depreciation profiles can result in windfall gains and losses if not handled carefully.

Regulatory Approaches to Depreciation: The regulator needs to consider the full range of regulatory objectives in setting depreciation requirements. Economic objectives are important, but which of the most commonly used approaches most closely approaches economic depreciation remains unclear. Thus, flexibility in the depreciation profiles is considerable, and the choice of these profiles should be guided by such non-economic objectives as administrative simplicity, certainty, price stability, and intergenerational equity. The key requirements for the regulator are:

(i) Total (accumulated) depreciation over the asset’s life equals the difference between the asset’s un-depreciated value and the residual value; (ii) Any changes to the depreciation profile have a net present value–neutral effect on prices and the income stream (this insight should follow from the point above); and (iii) The approach is transparent, administratively simple, and consistent with inter-generational equity.

Alternative Approaches to Depreciation: A range of depreciation methodologies, which vary in complexity and profile of depreciation charges and prices over time, is available to the regulator. Straight-line depreciation: A constant percentage of the un-depreciated asset value is deducted from the opening asset value in each year. This approach is simple and easily applied but may not reflect economic depreciation. Declining balance depreciation: Depreciation is a constant proportion of the opening asset value. Thus depreciation is front-end loaded (the dollar amount of depreciation is larger in the early years of an asset’s life). This approach may better match the economic depreciation of some assets (such as cars) than others (such as buildings). Annuity depreciation: For constant annual revenue the net present value of which equals the cost of the asset, the depreciation in each period is the amount left after the deduction of a normal return on the opening value of the asset for the period. This approach, which is similar to

repayment of principal on a mortgage, is not often used in business, but it yields a constant price over the asset's life.

Estimation of Asset Lives: In principle, an asset should be depreciated over its expected productive life. Estimating asset life accurately may be difficult. The condition, even the age, of current assets may not be well known. The long life of infrastructure assets also means that their useful economic life may be difficult to estimate. Some assets (such as water mains or aging gas pipelines) may not be replaced but may instead have their service lives extended through maintenance and renewal technologies. For these assets, a renewal accounting approach may be most appropriate. There may be circumstances, in which the regulator wishes to change the assumed economic life of assets, but the regulator should do so carefully and only when the new assumed life would have a purely prospective impact.

Treatment of Depreciation on Variations from Forecast Capital Expenditures: As noted in the discussion of the regulatory asset base, actual and forecast capital expenditure will almost certainly vary. Treatment of the difference between the two has important implications for the operator's incentives and should be taken into account in the overall decision about how to roll forward the asset base.⁴ One option is to roll forward the asset base between reviews by adding capital expenditure to assets as incurred and depreciating those assets from that point on using the standard depreciation lives. For the operator, this strategy increases incentives to pursue efficiency gains but imposes higher risks. Alternatively, the asset base could be rolled forward through the addition of actual capital expenditure to the asset base and the deduction of forecast depreciation. This strategy reduces incentives for efficiency improvements, but it also reduces risks from unexpected variations in capital expenditure requirements. The regulator's primary obligation is to clearly specify the proposed treatment of depreciation in the roll forward of the asset base at the start of the regulatory period and to incorporate this treatment in the accounting rules.

Principles for Depreciation: The following principles should guide treatment of depreciation. A simple, easily implemented approach to calculating depreciation, such as the use of straight depreciation, is to be preferred. Such an approach is unlikely to coincide with economic depreciation, but no single approach is necessarily more likely than another to reflect the economic depreciation of individual assets. Applying a uniform approach (but not uniform asset life) to all assets is clearest, simplest, and most easily verified, and it avoids the need to monitor the demarcation between asset classes. Maintaining a consistent approach to and assumptions about depreciation over time helps to avoid uncertainty and windfall gains or unexpected losses. The option to revise the depreciation profile and assumed asset lives should be left open in light of changing information about asset conditions and lives, market risks, and the need to manage potential price or cash flow shocks. Changes in assumed asset lives or depreciation profiles should have a prospective impact: for example, the opening asset value prior to the change should be estimated on the basis of the previous depreciation assumptions.

Related-Party Transactions and Transfer Pricing: Related-party transactions are becoming increasingly common as utilities adopt more complex, and often more efficient, structures. The challenge for the regulator is to determine when two entities are related and what powers the

regulator has with regard to related-party transactions, as well as the appropriate bases for cost allocation and pricing. The regulator's objectives will be the same as those that drive other aspects of regulatory accounting. Obtaining better information on the costs of regulated monopoly services for future determinations, ensuring the equitable allocation of costs to regulated activities and un-regulated activities, assessing the performance of the operator, improving the transparency of cost allocations and regulation, and protecting users against anticompetitive behavior.

Often, an operator will have a financial relationship with a related party. It may be as simple as sharing costs with a subsidiary providing un-regulated commercial engineering or consumer services. Increasingly, however, relationships are more complex. The regulated operator may be part of a multi-sector company in which costs are shared across sectors, jurisdictions, and regulatory regimes. The regulated operator may pay a management fee to a holding company with diversified interests, or it may have structured itself as an asset-owning trust with a separate, un-regulated service company managing the assets. Or a company may have put assets into a separate asset-owning trust in which the company owns as little as 20 percent of the shares but provides most of the management and operational service through a separate wholly owned subsidiary.

Such complex structures are becoming more common as competition is introduced into utility sectors and as utilities seek efficiencies through economies of scale or scope and placement of greater competitive pressures on their own activities. This makes dealing with related-party and transfer pricing more difficult. Without undermining incentives to improve efficiency, the regulator needs to ensure that the benefits of more efficient means of providing services are fairly shared and that no profit shifting or cost padding occurs.

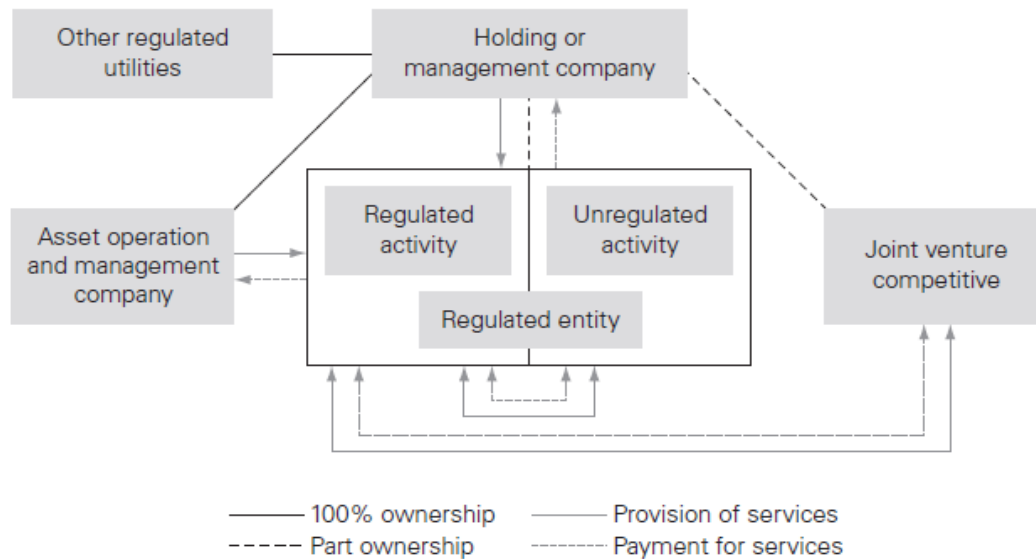
Whether a regulator needs to incorporate related-party provisions in the accounting code is an open question. If the current structures are simple, the issues may be entirely academic, according to the materiality principle (see chapters 3 and 7), and no provision is necessary. This is more likely to be the case where the entity remains entirely in government ownership. In other cases, it will be impossible to avoid the issue, because the structures already exist, or the regulator may wish to provide greater certainty to operators for the future by anticipating the issues and providing clear guidelines.

Definition of Related Parties: The definition of related parties is likely to focus on one or more of the following elements: ownership, control, and common economic interests. Ownership can be quantified and clear rules can be set, but control and common economic interests are more nebulous concepts. U.S. Financial Accounting Board Standard 57 incorporates all three elements. Included in this standard are transactions between an entity and its principal owners, wherein a principal owner is defined as having more than 10 percent of the voting interest in the entity. The UK equivalent, Financial Reporting Standard 8 (FRS 8), does not specify a percent- age ownership share in its primary definition, which focuses on the capacity to control or influence.⁵ However, it does indicate that where a shareholder exercises control over 20 percent or more of the voting rights or where the entity is managed under a management contract, the regulator will assume that the entities are related, unless demonstrated otherwise.

Often, the existing structures may be simple, consisting of various wholly owned or majority-owned entities. In these cases, a simple definition based on ownership of a set percentage of voting shares may be sufficient. In other cases, more complex definitions may be required.

The UK energy and water regulators start from the definition of related parties in FRS 8. The Office of Gas and Electricity Markets (Ofgem) has modified FRS 8 so that if an entity is considered a related party of any company within the group, it is considered a related party of the regulated entity. Ofgem has a general power to deem any entity or person a related party (Ofgem 2002, 29). In Australia, the Queensland and Victorian regulators adopted definitions based on whether an entity “has control or significant influence” over another entity (QCA 2003, 26–27). In a draft accounting code, the Independent Pricing and Regulatory Tribunal of New South Wales proposed a test based on common economic goals (IPART 2001, 7–8). The proposed interpretation of this test mirrored many aspects of the tests for control or influence under FRS 8, including the indicative 20 percent shareholding test. Tests that rely on subjective judgments of control, influence, or common interests cope better with emerging structures, but they create challenges for the operator, because anticipating future obligations is difficult under different structures, and for the regulator, because subjective case-by-case decisions may be hotly contested.

Figure 6.1. Possible structures and relationships affecting a regulated entity



Source: Authors.

Specified Transactions: The regulator needs to specify the transactions of interest as well as the definition of related parties. The regulator may determine that all transactions between related parties are of interest, but this need not be the case. Some transactions may involve purchasing services at an arm’s-length regulated price. For example, the engineering division may provide services at a customer’s site on a competitive basis and as part of the service arrange for

connection with its related utility. Other transactions may be too small to be of concern. Ofgem's requirements do not cover transactions with a total expected value of less than 0.25 percent of the regulated business turnover, or £500,000.

Information Disclosure: The accounting standards that apply generally to related-party transactions specify the requirements for disclosure and auditing of those transactions. Regulators have typically set similar, or more stringent, requirements for the disclosure of information on related-party transactions in regulated utilities. The regulator may require disclosure of the name of the related party involved, amount paid, services provided, method by which the price was determined (details of the cost allocation or market testing adopted), and means by which the transaction is reflected in the regulatory accounting statement.

Table 6.4. Types and examples of related-party transactions

Type of transaction	Examples	Issues
<p>Service provider: unregulated associate</p> <p>Service consumer: regulated activity</p> <p>Competition: none in service provision</p>	<p>Gas services are provided by a local subsidiary of an international firm that funded the original bid and provides financial and management support. The subsidiary pays a management fee for this service.</p>	<p>Are the management fees reasonable relative to the costs and risks? What is a reasonable cost attribution? Are there comparators for these fees? What are the powers of the regulator in regard to these fees?</p>
<p>Service provider: unregulated associate</p> <p>Service consumer: regulated activity</p> <p>Competition: actual or potential competition</p>	<p>A gas distribution trust owns the network assets and is the regulated license holder but contracts out asset management and operation to a company that owns 30 percent of the trust.</p>	<p>Are the costs charged to the trust reasonable, or are they padded to transfer profits to the contractor? Is the contractor a related party? What are the regulator's powers? Are there benchmark prices? Was there competition to provide the services?</p>
<p>Service provider: regulated activity</p> <p>Service consumer: unregulated associate</p> <p>Competition: none in service provision</p>	<p>A regulated electricity utility gives access to its network assets and easements to a communications service joint venture in which it has a 50 percent interest.</p>	<p>Communication services are competitive but the input (access to network assets) is not. Although additional costs may be small, what share of the fixed costs should the communications activity pay for?</p>
	<p>A regulated gas distribution utility gives access to its pipes to its subsidiary for retail supply of gas.</p>	<p>If access is at standard regulated price, terms, and conditions, no issues arise.</p>
<p>Service provider: regulated activity</p> <p>Service consumer: unregulated associate</p> <p>Competition: actual or potential competition</p>	<p>The engineering staff of a regulated water utility provides advice to a joint venture bidding to build a water treatment plant outside the utility's monopoly territory.</p>	<p>Are the resources used properly tracked and costed? Is the price received comparable to competitive benchmarks? Does the revenue received exceed the costs incurred?</p>

Source: Authors.

Basis of Cost Allocation: The objectives in determining acceptable cost allocations or prices for related-party transactions are no different from those for transactions within the utility between regulated services and un-regulated services. The regulator wants to be sure that the regulated utility pays no more than is reasonable for the services provided by related parties and is fairly compensated for services it provides to related parties. In principle, the same cost allocation and pricing methodologies that are deemed appropriate for internal transactions could apply to related-party transactions. In broad terms the regulator can specify the basis of the cost allocations from the operator and related parties for the services provided or compare the prices charged for the services with market benchmarks. Specifying the basis of cost allocations is a common approach. As noted in chapter 4, several approaches to the allocation of costs are feasible. Although the regulator may find that it can specify cost allocation methodologies and information requirements when the regulated operator provides a service to a related party, its powers with regard to services provided by related parties to the regulated operator may be much more limited. For example, the operator may purchase management services from a related company that provides similar services to other companies within the group. Whether the regulator can request information on the cost allocations underpinning the services provided to the regulated operator depends on the powers its legislation provides.

Ofgem and Ofwat prefer to compare prices with market benchmarks wherever possible. Transfer prices are to be based on the market price, and market testing is to be used to establish the market prices for supplies. Where no market exists, transfer prices are based on costs allocated in relation to the way resources are consumed.⁶ Many approaches can be used for market testing: competitive letting, comparison to published prices, third-party evaluation, and benchmarking. The problem is that for some services a service in the market may not be readily identifiable. An example may be a single-line contract for the management and operation of a water supply system. In summary, specifying the requirements for transfer pricing and assessing the reasonableness of prices is among the most difficult challenges facing the regulator.

For clarity and transparency, international best practice recommends that the regulator publish regulatory accounting guidelines summarizing the regulator’s requirements, motivation, legal background, principles, and processes. These guidelines and the information they provide are discussed in the first major section of this section. Regulatory processes require utilities and possibly other stakeholders to provide substantial volumes of information over long periods of time. The processes and mechanisms, competencies, tools, and time and methodology required for this exchange are covered in this section.

Contents of Regulatory Accounting Guidelines: Regulatory accounting guidelines (RAGs) usually include the - purpose of the guidelines, legal basis and authorities, definitions of terms, general principles reflected in preparation of the guidelines, principles for preparing regulatory accounting statements, and information reporting requirements.

Purpose of Regulatory Accounting Guidelines: RAGs define principles and directives to be followed by the regulated operator in preparing regulatory accounting. As described by the Essential Services Commission of Victoria (Australia; 2004), “The RAGs specify the Regulatory Body’s requirements for the collection, allocation and recording of business data by the Regulated Operator and the reporting of that data to the regulatory Body.”¹

RAGs usually open with the principles underlying regulatory accounting: sustainability, productive and allocative efficiency, and equity (distributive efficiency). For example, infrastructure regulators in the United Kingdom (Ofgem and others 2001) commonly cite the objectives - Monitor performance against the assumptions underlying price controls, Detect anticompetitive behavior (unfair cross-subsidization and undue discrimination), Assist in monitoring the financial health of the operator, set prices, Assist comparative competition (by promoting the submission of comparable information). The first three objectives are essential in regulatory practice. The first two implicitly require an allocation of costs and revenues to: verify that there is no discrimination among users of the regulated services, verify productive and allocative efficiency, and look for evidence of possible cross-subsidization of services. Regulators can add other more general or specific objectives. One might be to improve transparency and help all parties to understand the regulator’s information requirements and regulatory functions. Another objective might be to ensure that regulated operators report to the regulator on a timely, consistent, structured, and accurate basis.

Legal Basis and Authorities: The regulator’s (independent body or ministry department’s) rights and duties as defined by laws or decrees must be identified. By what legal authority is the regulator issuing guidelines? What are the regulator’s powers of investigation, control, and auditing? The issue of the legitimization of the regulatory process is addressed in this chapter’s last section.

Disclosure and Confidentiality Rules: A position should be taken on the issues like, ‘What is the status of the information provided by the regulated operator to the regulator? What kind of information should be kept confidential, and in what circumstances (acknowledging that some information might be commercially sensitive)? Can the regulator eventually decide to disclose any kind of information if it thinks the information is in the public interest?’²

Definitions of terms: As is common in contract design, RAGs should provide accurate definitions of all terms they use.

General Principles of Preparation of the Regulatory Accounting Guidelines

There are several general principles apply in preparation of RAGs.

General Accounting and Allocation Principles: The general accounting and allocative principles most commonly listed in RAGs are causality, objectivity, transparency, consistency, and materiality.

Causality: Costs, revenues, and capital should be allocated to the activities (services offered by the regulated operator) that cause those costs or revenues to arise. Review each cost and revenue item. Identify the process that caused the cost to be incurred or the revenue to be earned (the driver). Use the driver to attribute the cost or revenue to the relevant product or service and, accordingly, to the appropriate accounting separation segment.

Objectivity: Allocation and valuation methodologies should not be designed in a way that benefits the regulated operator or any other party. This principle should be applied to identification and treatment of costs to product, service, component, business, or disaggregated business.

Transparency: The allocation methodology chosen by the operator should allow a breakdown analysis of the information for identifying types of costs, revenues, and capital. Where changes are made, the operator should restate the previous year’s separate accounts on the new bases. Any change in accounting policies has to be explained in detail, and the effects have to be documented as well (in some cases, an authorization of the regulator will be needed before the change is implemented).

Consistency: The bases of allocation of valuation should preferably be the same from year to year. Any change should be motivated and documented.

Materiality: An item is considered material if its omission, misstatement, or non-disclosure has the potential to prejudice understanding of the financial position and nature of regulated business activities. To determine whether an item is material, the nature and the amount of the item should be assessed and compared to the regulated activity’s basic financial figures, such as net worth, operating result, revenues, and costs. Some regulators, such as Ofwat (2002a), specifically mention a materiality threshold as a percentage of total income, costs, or profits.

Conformity of Regulatory Accounting with National Accounting Standards: RAGs should be considered obligations additional to any other general accounting obligations imposed by law (publication of statutory accounts).³ RAGs usually require information that is not normally provided under a country's generally accepted accounting principles. Nevertheless, where applicable, regulatory accounting principles and policies should be adopted in compliance with national accounting standards. Some guidelines also require an explicit reconciliation of general statutory accounts and regulatory accounts, which also serves the objective of comparability (Ofwat 2002a, clauses 3.4.2. and 3.4.3): Where a Statutory Account amount has been consolidated or disaggregated in the Regulatory Accounting Statements, a worksheet must accompany the Regulatory Accounting Statements reconciling the Statutory Account amount shown in the Regulatory Accounting Statement to the Statutory Account amount in the Statutory Accounts of the Entity. The movement from Statutory Account to Regulatory Account will be clearly reported in the Regulatory Accounting Statements. RAGs should also address potential conflicts with national accounting standards and take a position on whether these standards or RAGs take precedence. In the United Kingdom, a working group on the Role of Regulatory Accounts in Regulated Industries has indicated that RAGs should take precedence in the event of a conflict (Ofwat 2002a, footnote 1), whereas Ofwat's (1992, 2003a) RAGs state that "where the RAGs do not specifically address an accounting issue, then [UK] Generally Accepted Accounting Principles should be followed."

Substance to Prevail Over Legal Form: UK and Australian RAGs often state specifically that regulatory accounting statements should report the commercial substance of transactions. Where substance and form differ, the commercial substance rather than the legal form of a transaction or event shall be reported.

Related-party Transactions and Third-Party Benefits: The treatment of related-party transactions is likely to be one of the most difficult and controversial elements in the RAGs.

Related-party Transactions: Related-party transactions occur between the regulated operator and legal entities affiliated with it (holding companies, branches, or subsidiaries of the same group) or commercially linked to it (through commercial agreements or common economic goals). The motivation for identifying these transactions separately is to allow the regulator to assess whether the transactions were recorded on a fair basis or under competitive conditions and to ensure that there was no unreasonable transfer of profits between the parties or between the operator's regulated activities and un-regulated activities.

The Independent Pricing and Regulatory Tribunal (IPART) of New South Wales went into considerable detail in establishing the existence of related-party transactions (IPART 2001). First, IPART proposed to assess the regulated businesses independently of the legal structures used by the operators and bases its approach on the concept of common economic goals. It defined a related party as "any business that, operating with a Regulated Network Business or Regulated Retail Business, pursues objectives that are consistent with those of the regulated business (termed Common Economic Goals)" (IPART 2001). To establish the existence of common economic goals, several factors were proposed: ownership structure, options to purchase shares, control, decision-making capacity, economic dependence, inter- company loans and guarantees,

and tax optimization. When related parties are different legal entities, IPART defined the existence of the relationship as the holding of 20 percent of voting rights or as the possibility of a party exercising “substantial influence over the policies and actions of the regulated business even though the influence is not based upon shareholding, shareholders, directors or officers”(IPART 2001).

Most regulators require that the principles and policies for trading between the regulated operator and related parties be documented. The regulator could even propose that the regulated operator adopt specific methodologies for “transfer pricing.”⁴ Regulators commonly use the following methodologies : ⁵ fully allocated costs, incremental pricing, prevailing market prices (through competitive tendering), tariff-based pricing, negotiated pricing, and asymmetric pricing. Five methodologies are taken from the guidelines of the Organization for Economic Co-operation and Development (1995): comparable uncontrolled price, resale price, cost plus, profit split, and transactional net margin method.

Third-party Benefits: Transactions associated with subcontracting, purchasing, or other arrangements that cause the regulated operator or any related party to enjoy a materially beneficial interest in income or another value that accrues to a third party should be fully documented (value of transaction, description of arrangement and its purpose, details of involved parties, and so on).

Directors’ Responsibility: The regulator requires that the regulated operator attach a directors’ responsibility statement to the regulatory accounting statement. This statement confirms that the regulatory accounting statement is fairly presented in accordance with RAGs and with regulatory and corporate legislation.⁶ Typically at least two directors of the regulated company sign and date the document.

Audit: The regulatory accounts provided by the regulated company will have to be audited (see chapter 5). Debate about who should audit the regulatory accounts is ongoing. In most cases, the auditors of the regulated operator’s statutory accounts will also audit the operator’s regulatory accounts. To verify compliance of the regulatory accounts statements with RAGs, the auditor must understand the regulatory framework and the obligations derived from the RAGs. The audit should be conducted in accordance with the auditing standards in force in the country. RAGs will specify the procedure for appointment and acceptance of the auditor (the auditor will have to be approved by the regulator). The regulator can provide a pro forma regulatory audit report in the RAGs annex.

Principles for Preparing the Regulatory Accounting Statements: Regulatory accounting statements are derived from the statutory accounts (the regulated operator should reconcile the amounts from the regulatory accounting statements with the statutory accounts). The regulator will indicate how to treat items related to un-regulated activities, consolidated amounts, and disaggregated items (which should be explicitly described in the “information requirements” section), as well as items related to separation of activities (such as production, transport, and distribution).

Cost and Revenue Allocation: Costs and revenues should be allocated to the different services from which they arise.⁸ To allocate the different account items on a causality basis, the operator must identify one of the following relationships: a directly traceable cause-and-effect relationship with provision of the service; a verifiable relationship between the item and the output of the service; and a revenue or cost having a direct causal relationship with a pool of common costs or revenues and allocation of that pool on the basis of a relevant, reliable, and verifiable factor such as relative use. Thus, regulated operators can attribute cost and revenues using the following categories: *direct or directly attributable revenues or costs* (revenues or costs solely generated by a particular service—for example, the cost of chemical products allocated to water production), *indirectly attributable revenues or costs* (revenues or costs that are part of a pool of common revenues or costs but that can be attributed to a particular service through a non-arbitrary and verifiable cause-and-effect relationship—for example, the cost of a team that performs maintenance on assets belonging to different services), and *un-attributable revenues or costs* (revenues or costs that are part of a pool of common revenues or costs and that cannot be attributed to a particular service, asset, or function through a non-arbitrary and verifiable cause-and-effect relationship—for example, administration or marketing costs). *Indirectly attributable revenues and costs* will be allocated using an appropriate “driver.” Non-attributable revenues and costs will be allocated using an appropriate factor.

Revision of Methodologies: The regulator should make clear its right to change an allocation methodology that it considers does not meet its information requirements.

Qualification of costs: Qualification of costs could be a source of misunderstanding for operators unfamiliar with regulatory environments. Operators may not understand why some expenses, accepted from a statutory accounts or fiscal point of view, are not accepted by a regulator. The main reason is that the regulator bases its decision on an economic perspective and defends the interests of users. If the regulator judges, on a rational and motivated basis, that some costs are imprudent, unnecessary, or inefficient, it would deem recovery of these costs though tariffs paid by users (see chapter 5) to be economically inefficient and would exclude the costs from the calculation basis for future tariffs. The rules for qualifying expenses proposed by the National Electricity Regulator of South Africa (NER 2002) are illustrative:

- (a) Expenses must be incurred in an arm²-length transaction; where possible suppliers are treated equally without prejudice.
- (b) Expenses must be incurred for the production and supply of electricity.
- (c) Expenses must be prudently incurred after careful consideration of available options.
- (d) Expenses must be incurred in the normal operations of the business. Where an expense is incurred under abnormal or extraordinary circumstances, consideration shall be given to spreading the expense over a number of years to match the time periods over which the benefit is derived.

- (e) The regulated entity shall have the onus to justify to the Regulator that the expenses incurred conform to the above criteria.
- (f) The regulator shall have the final discretion in allowing or disallowing an expense based on the above criteria.
- (g) Expenses on research and development, charitable donations, lobbying expenses and advertising may or may not be included, in part or as a whole, as part of costs of supply at the regulator's discretion.
- (h) The utility shall, in its price increase application, highlight all transactions with subsidiaries and sister companies.

Regulatory Asset Base: The regulator has to define the regulatory asset base (treatment of capital work in progress, inclusion of working capital, and the like). The regulatory asset base should include all assets necessary for efficient provision of the service. Long- or short-term financial investments, for example, will be excluded from the regulatory asset base. The regulator must also define the cost accounting principles (current cost accounting, historical cost accounting, modern asset equivalent, market value; see chapter 6) to be used to determine asset values, depreciation policies for the regulatory asset base, and its position toward revaluation of assets and goodwill or intangible assets. The regulator should state that it has the ability to exclude some parts of the capital base of the regulated services if it considers that the parts are not necessary, efficient, or prudent.

Information (reporting) Requirements: The information requirements section of RAGs defines the contents and structure of regulatory financial statements and repeats the accounting periods and delivery dates. RAGs will impose a specific format of presentation. Ideally, the regulator provides the operator with an electronic worksheet each year for setting out detailed statements. The worksheet stores historical data and requests medium-term (usually five-year) projections of revenues, costs, capital expenditures, and other items (see this chapter's annexes for examples of reporting templates).⁹ RAGs will indicate the level of disaggregation of items as well as the main asset categories, activity areas, and cost categories. In addition, they will provide instructions on how to identify and treat specific items, such as customer contributions, tax effects, and related-party transactions.

For example, a standard structure proposed for regulatory financial statements (Essential Services Commission 2004, issue 3): (1) profit and loss statement, (2) balance sheets, (3) revenue data (by tariff class and customer type, by region), (4) operating and maintenance expenditure, (5) capital expenditure, (6) fixed assets and depreciation (book values, tax values, regulatory values), (7) interest rates and borrowings, and (8) non-financial data (general operating statistics and indicators, technical, physical, commercial).

Information Exchange Processes: Detailed information is required to ensure that operators do not earn excessively high or excessively low profits, operations are run efficiently (run with allocative and productive efficiency), and users and all participants in the sector are treated fairly. More specifically on information exchanges between the regulator and other parties, while also

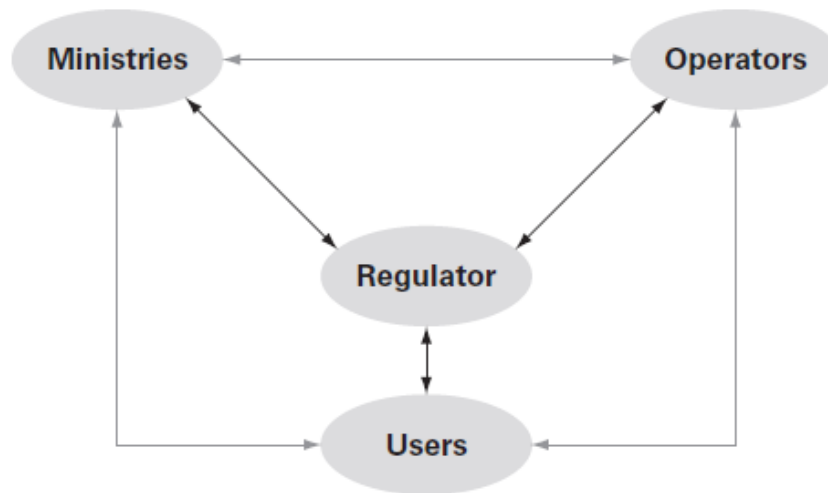
addressing relationships with the regulated operators is very important. Because its role is to defend the interests of all parties, the regulator can occupy a critical position in information exchange, but the regulator's precise role will depend on the design of the regulatory framework and methodologies. The regulator can play a credible and efficient role only in the following circumstances: Its role, rights, and obligations are legally defined and enforced. It is independent. It has the financial capacity and the specialized competencies to perform its role. It has clear and transparent processes for information exchange, validation of information, and dispute resolution.

The Utility Regulators Forum of Australia (1999) has listed nine best-practice regulation principles: communication consultation, consistency (across market participants and over time), predictability (reputation that facilitates planning by players) flexibility, independence, effectiveness and efficiency (cost-effectiveness emphasized in data collection and policies), accountability (clearly defined processes and rationales for decisions, with appeals), and transparency (openness of the process). Eventually, adherence to these principles will reduce the regulatory risk that figures in operators' perception of the cost of capital.

Institutional issues are not covered here, but it should be clear that the regulator should avoid political interference and that its role should be clearly defined.

Accountability, communication and dissemination, consultation, and transparency are key principles in information exchange.

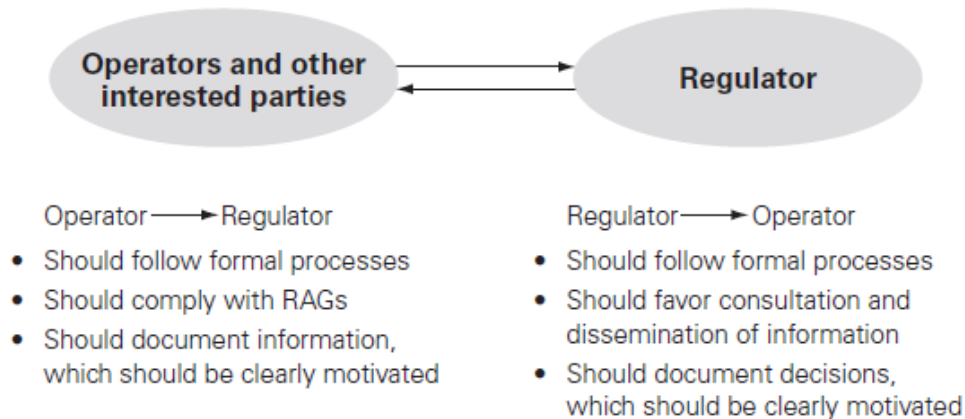
Figure 7.1. Information exchanges between regulator and regulated operators and other parties



Source: Authors.

Accountability: Information exchange processes have to be clearly defined, both the operator’s obligations regarding the delivery of information and the regulator’s obligations to operators and other involved parties. A formal process for communication and dissemination of information should include explicit deadlines, consultation periods, and dispute resolution processes.

Figure 7.2. Accountability of regulator and operator in the information exchange process



Source: Authors.

Deadlines: Clear deadlines should be specified for formatted and scheduled information, x days after the end of the month, quarter, or year, depending on the nature of information; responses to questions, x days after question was raised; publication of main decisions; and reactions to consultation documents or final decisions.

Consultation Period: During the consultation period, the various parties will have an opportunity to provide comments on the document made available for consultation by the regulator. The regulator will have to respond to each comment.

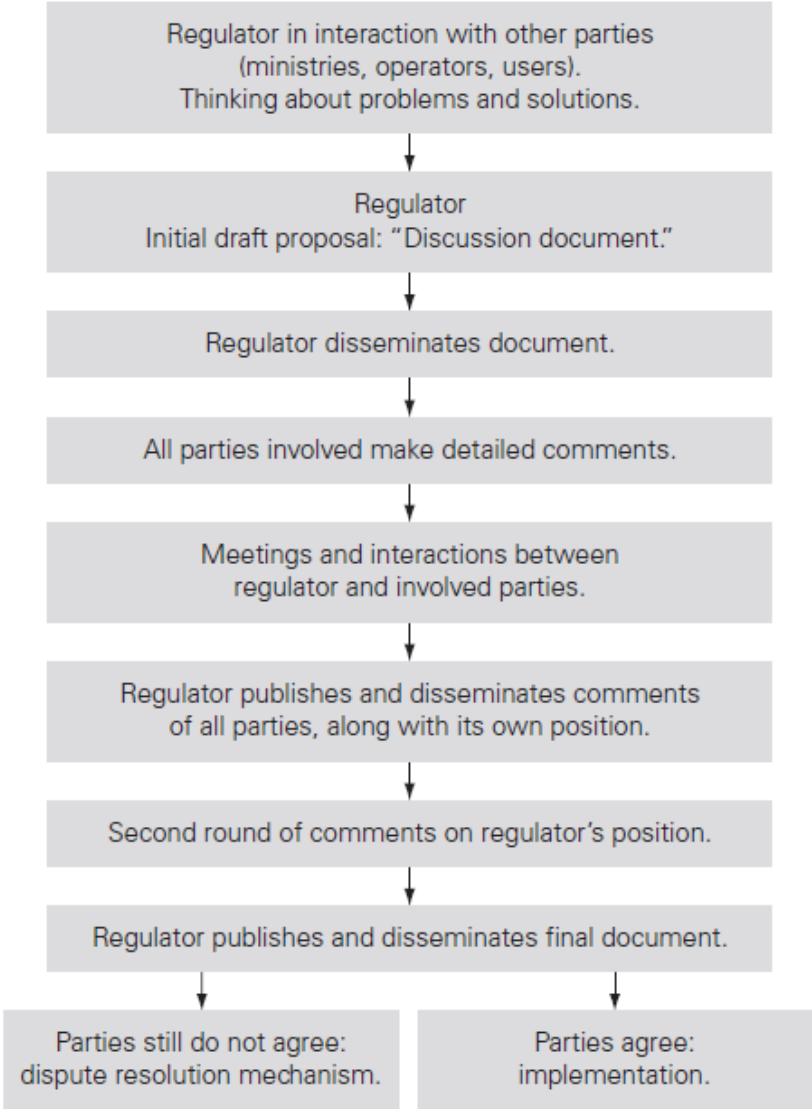
Dispute Resolution: Disputes should be resolved in a reasonable timeframe¹⁰ Disputes can be resolved by litigation in court, arbitration, or alternate procedures (such as structured negotiations between parties; mediation involving a neutral third party; mini-trials with a hearing before a neutral legal adviser, such as a retired judge; or an expert determination). Arbitration and alternative dispute resolution procedures are common for managing conflicts for several reasons: Conflicts among operators, government, and regulators usually require considerable technical expertise. Compared with judges, arbiters with such expertise can be easier to find. Procedures (including the use of “fast track” mechanisms) are more flexible and convenient in arbitration and alternate dispute resolution than in national courts. Confidential information is better protected. Applying appropriate dispute resolution procedures can save money and time. Procedures should be well designed, clear, simple, and transparent to all parties, and they should take place within a reasonable timeframe. Affordability is important. The expense of arbitration

by international courts or organizations (in the millions of dollars) can penalize or discourage some parties.¹¹

Communication and Dissemination: The information gathered by the regulator should be public and at the disposal of consumers and other interested parties. The only constraint to availability should be specific confidentiality rules on commercially sensitive information or obligations derived from national information acts. (RAGs will address this matter and define criteria for confidentiality.) For dissemination of information, the regulator should use the Internet (to post reports, laws, decrees, resolutions, opinions, and decisions; an open library on its premises, and public audiences and press conferences.

Consultation: Interested parties should be allowed to participate in regulatory decisions. Use of discussion documents is recommended. When planning to take important decisions on major regulatory topics (regulatory regime, tariff determination, accounting guidelines), the regulator should first seek the opinions of involved parties (operator, ministries, users associations) in consultation meetings. It should then draft a consultation document on the topic, which should be made public (through letters to parties and Web posting). Involved parties should have a specified period in which to comment on the document. The regulator should then make public all comments and its reactions. After a second round of reactions and possible adjustments, decisions can be taken or formally challenged. Figure 7.3 summarizes this process, and box 7.3 provides an example of the process for revision of a regulatory framework.

Figure 7.3. Regulatory decision-making process



Source: Authors.

Section Five

Development of Uniform Energy Accounting in Bangladesh

Bangladesh Power Development Board (BPDB) was responsible for the generation, transmission and distribution of electricity to the people for a long time. With increase in the size of demand a wave of reform touched the electricity and energy industry as a whole. Public perception about the price of energy and industry was not clear. Consumers and politicians were under the misconception that energy delivered to the people is price-less or at a minimum and to some extent below the cost of generation, transmission and distribution.

Since 1990s the seed for reform in the industry was planted by the policymakers. This shifting of paradigm from command to market facilitated the unbundling of energy industry in Bangladesh. Separation of generation from transmission and distribution occurred in the late 90s. Corporatization took place by creating separate company for transmission and distribution. Not only this, but these transmission and distribution companies went for IPO (initial public offerings) and got listed in the Stock Market. In parallel, GoB (Government of Bangladesh) went for independent power projects (IPP). The multi-national joint AES established two power plants with approximately 900 MW generation capacity. Power purchase agreement was executed between GoB and power producing companies.

Following this chain of events, in March 2003 the ‘Electricity Regulatory Commission Act 2003’ was passed in the parliament to establish an independent and impartial “commission” to regulate electricity, gas and the petroleum sectors and its products in Bangladesh. Thus under this Act, on 27 April, 2004 the Bangladesh Energy Regulatory Commission (BERC) was formed and commenced operations.

The GoB has received support from USAID’s funded project ICEA (Improved Capacity for Energy Access) in setting up of the BERC along with the formulation of the BERC Act 2003. Currently ICEA is partnering with IRG (International Resources Group) and BERC in strengthening Bangladesh’s energy regulatory regime as well as helping to build a sustainable capacity at the BERC. Since early 2010 the IRG-ICEA and BERC has been working collaboratively with BERC stakeholders in the power generation, transmission and distribution sectors to develop a ‘best practice energy regulation’ as well as improve energy regulatory governance through practical due process of implementing a “Uniform System of Accounts” or commonly stated as the ‘USoAC’.

IRG-ICEA and BERC have arranged four collaborative workshops with BERC stakeholders in the electricity generation, transmission and distribution sector from January 2010. It was followed by three more similar workshops every month with a final ‘Regulation-Making Hearing Session’ The main objective of the workshops had been to introduce the Utilities to a ‘prescribed system of accounts’ which was designed to segregate assets from liabilities and expenses from incomes and is known to be practiced in the United States, successfully for the last 100 years or so. The need for the USoAC is to allow the regulators, creditors, investors, auditors, and other

stakeholders of the financial information of the Utilities to get a clear, reliable, transparent and comparable financial statement and reporting information.

The first workshop, dated 16 January 2010 featured the *Introduction of the USoAC* and the *100 Series (all assets & other debit accounts) of Accounts*. Each workshop was day-long and involved presentation and dialogue between BERC members, external consultant Dr. Jamaluddin Ahmed from Hoda Vasi Chowdhury & Co. (Chartered Accountants) and Utility participants. The sessions were highly successful as it not only involved great interaction between the participants, but it was also followed by queries and suggestions from the utilities that were previously e-mailed and shared in each workshop. The second workshop took place on 18 February and highlighted the *200 Series (all liabilities & other credit accounts)* and the *400 Series (income accounts, revenue accounts and retained earnings account) of Accounts*. On 24th March, 2010 the third workshop ended with introductions to the *300 Series (plant accounts)* and *500 Series (production, transmission and distribution expenses accounts) of Accounts*. Finally the fourth and last collaborative workshop concluded on 26 April 2010, which featured the *900 Series (customer accounts, customer service and general & administrative expenses account) of Accounts*.

After all the collaborative meetings with the Utilities and discussion of their suggestions, a final ‘Regulation-Making Hearing Session’ took place on 26 August, 2010. This session was jointly carried out by BERC and the IRG-ICEA consultants. It was done in order to establish the validity of the USoAC which had been formulated through the collaborative workshops in the previous months. The draft USoAC had been published by BERC in its website for further comments from the electricity companies of Bangladesh. Once the USoAC is finalized it will be sent to the Ministry to be legislated as BERC Act 2010, allowing all public utilities in the power generation, transmission and distribution sectors to follow and issue precise and transparent financial statements for better regulation. This is a significant step in achieving ‘uniform energy accounting in Bangladesh’ and with the success of this initiative, not only will the energy sector be benefitted but also those who are involved in its stake-holdings enjoy organized and concise accounts which will be understandable even in a Layman’s eye.

Independent regulatory commission has been established to control the monopolist behavior of utility traders of reducing quantities and increasing prices thus reducing total welfare in the society. A solution to this market failure is to impose restriction on the behavior of the firm through direct or indirect regulation of profits, prices and service conditions. Regulatory or uniform accounting system is an important source of reliable information for regulators to use adequately in fulfilling their duties. Good, accurate and consistent information provide the basis of effective regulation. Regulatory accounting can help to establish a reasonably defined and stable reporting regime. Accounting in general classifies economies events occurring in a business. Economic theory states that the use of the firm's own economic and financial data creates incentive problem. The nature of traditional financial accounting information and some basic underlying principles of accounting in general makes these data useful from a regulatory standpoint but far from sufficient. Regulatory purpose differentiates the regulators need from needs met by traditional accounting information in several areas. Financial accounting focuses on the information of firm whereas regulator focuses on regulated activities of the firm. Regulatory accounting separates costs of regulated and un-regulated activities whereas in contrast the traditional accounting fails to provide that. Financial accounting information is focused to single firms but regulation accounting looks for more than one firm applying regulatory rules. Traditional accounting is based on temporal cost imputation rule which does not always meet regulatory needs for tariffs. General accounting principles are inadequate for dealing with common costs that need to be allocated among regulated and un-regulated services. A regulated firm would have strong incentive to allocate common costs to its regulated activity rather than to its competitive activities.

Independent regulatory agencies are crafted for pricing premised on social welfare, in particular electricity pricing tends to be a highly political process, un-supported by national economic policy. Regulatory accounting emphasizes on the consumer protection issue by ensuring transparency, quality and reliability, afford ability, cost efficiency, redressal of grievances in pricing of utilities. The regulator needs to verify information in compliance with basic objectives of sustainability, allocative efficiency, productive efficiency and equity or distributive efficiency.

Core issues in 'uniform energy accounting' includes separation of activities, regulatory asset-base determination, concept, valuation and depreciation. Depreciation policies of the regulated assets base, third party and related party transaction and transfer pricing. The scope of regulatory/uniform accounting includes guidelines are crafted transparently, following international best practices to provide substantial volume of information over long period of time.

The scope of regulatory accounting includes regulatory accounting guidelines purpose, legal basis of authorities, disclosures and confidentiality rules, conformity of regulatory accounting with the national accounting, detaining principles of regulatory accounting including qualification of costs and regulated asset base and reporting requirements to the regulator.

In the 1990s the reforms in the energy sector started gradually through the unbundling the generation, transmission and distribution. Bangladesh Energy Regulatory Commission (BERC) was created with the help of international consultants.

In 2010 the BERC initiated the 'Introduction of Uniform Energy Accounting' with the help of foreign and local consultants. Licensee company employees were invited in the seminars and training programs on the uniform energy accounting. In line with international best practices, survey of energy companies accounting practices were evaluated and a draft code of accounts were prepared and is in the process of finalization.