

## CCRP Working Paper Series

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### *Evaluating Infrastructure Regulators: Developing UK and International Practise*

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Centre for Competition and Regulatory Policy (CCRP)  
The City University, London

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**OCCASIONAL LECTURE 17**



**EVALUATING INFRASTRUCTURE  
REGULATORS**

**~ DEVELOPING UK AND  
INTERNATIONAL PRACTICE**

**Jon Stern**



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**EVALUATING INFRASTRUCTURE  
REGULATORS  
~ DEVELOPING UK AND  
INTERNATIONAL PRACTICE ~**

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*A CRI occasional lecture*

*held at the Royal Society on 26<sup>th</sup> September 2006*

*Chaired by Professor Ralph Turvey, Chairman, CRI*

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# PREFACE

The CRI is pleased to publish *Evaluating Infrastructure Regulators ~ Developing UK and International Practice* as Occasional Lecture 17. The lecture was given by Jon Stern, Research Director, Centre for Competition and Regulatory Policy (CCRP), City University London, and Cambridge Economic Policy Associates (CEPA), on 26<sup>th</sup> September 2006 at the Royal Society.

The lecture comes at an important time, given that the UK government's regulatory framework is facing new, and daunting, challenges. The standard of regulatory governance required to tackle climate change and other resource limits effectively is of a new order, and regard must be paid to other principles, not just the five articulated by the Better Regulation Task Force, now the Better Regulation Commission. Aims such as objectivity, coherence, credible commitment, polluter pays and precaution come into play, and these need to be over-arching principles within which the existing five principles of good regulation can sit.

The World Bank's new handbook is to be commended on establishing a hierarchy of 'meta' principles and operational principles of good regulation, and demonstrates one part of the way forward for the UK government if it is to effectively codify and institutionalise such higher level principles. The OECD has, in effect, been saying the same thing in its reviews of regulatory reform with respect to the inability of many governments to 'speak with one voice', such that regulatory policies are often inconsistent and incomplete. We are therefore very grateful to Jon Stern for coming and setting out his vision of good regulation and those principles and practices which are necessary to achieve it.

**Peter Vass**  
Director, CRI  
January 2007

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## Jon Stern

Jon Stern is Research Director at the Centre for Competition and Regulatory Policy at City University, London. He also works with CEPA (Cambridge Economic Policy Associates) as an economic consultant. From 2000-2005 he was Associate Director of the Regulation Initiative at the London Business School. He has worked with the World Bank and other agencies in over 20 developing and transition countries on infrastructure reform and regulation, particularly in electricity. He has published a number of academic and other papers on regulatory governance in developing countries, covering issues such as the criteria for good regulation and the impact of governance regimes on investment levels.

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# EVALUATING INFRASTRUCTURE REGULATORS ~ DEVELOPING UK AND INTERNATIONAL PRACTICE

*Jon Stern*

## Introduction

Over the last ten to fifteen years there has been a huge growth in the number of infrastructure regulators established in developing countries, as well as countries in Europe, Australasia and elsewhere in the OECD. Worldwide more than 200 have been created since 1995, primarily for telecommunications and electricity (and/or natural gas), and a smaller number in water and transport. Telecommunications is typically the first sector for which countries establish a regulatory entity. However, more than 100 countries have established energy/electricity regulators since 1995, including a number of sub-Saharan African countries, as well as a number of countries in Latin America, Central and Eastern Europe and Asia.

This raises the question of whether these new regulatory bodies are ‘doing any good’. Has the effort involved in establishing these agencies been worthwhile? Are the resources they use well-deployed or is there a low or zero net benefit? However, to answer these questions, we first need to define what we mean by ‘doing good’. Then we need to establish criteria and evaluation methods so that we can establish whether or not the agencies are ‘doing any good’.

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This lecture draws very heavily on joint work with Ashley Brown and Bernard Tenenbaum and written up in the June 2006 World Bank publication: ‘Handbook for Evaluating Infrastructure Regulatory Systems’ by Ashley Brown, Jon Stern & Bernard Tenenbaum. However, what is written here is my interpretation of material in the Handbook for which I take sole responsibility. The views expressed in this lecture should not necessarily be ascribed to either of my co-authors or to the World Bank.

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**Jon Stern, Research Director, Centre for Competition and Regulatory Policy (CCRP), City University London, & CEPA**

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# EVALUATING REGULATORS

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These questions are important not just to judge the effectiveness of infrastructure regulatory reform programmes but also so that country authorities (legislative bodies, policy auditors, ministers and ministries) can periodically review and improve performance. Perhaps most importantly of all, establishing well-founded methods of *ex post* ('after the fact') evaluation allows regulatory agencies to establish learning procedures that build in and reinforce good practice as well as identifying and rooting out bad practice. Hence, establishing a framework so that we can identify whether or not, and why and how, regulatory bodies are – or are not – 'doing any good' (ie, at least providing positive net benefits) is critical in building up an effective learning process for infrastructure regulatory bodies as well as for all other major players in the regulatory framework.<sup>1</sup>

These questions are the topic of a book recently published by the World Bank - 'A Handbook for Evaluating Infrastructure Regulatory Systems' - of which I am a co-author, together with Ashley Brown and Bernard Tenenbaum.<sup>2</sup> The handbook covers three main topics. These are:

1. A full statement of 'best practice' regulatory governance which is set out via:
  - (a) three meta-principles;
  - (b) ten principles; and
  - (c) a set of detailed standards.

The combination of a) – c) is intended to provide a practically usable best practice benchmark for the evaluation of regulatory governance of the infrastructure regulatory bodies.

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<sup>1</sup> In this lecture, the focus is exclusively on *infrastructure* regulators and almost entirely on the *economic regulation* of these industries. However, the general problem applies to all forms of regulation and all types of regulatory body. I hope that the general approach set out in this lecture is likely to be useful for the general class of regulatory body and not just for economic regulation of infrastructure industries.

<sup>2</sup> Brown A C, Stern J and Tenenbaum B (2006), Handbook for Evaluating Infrastructure Regulatory Systems, The World Bank, Washington D.C.

2. The evaluation of infrastructure regulatory agencies' impact on the performance of the regulated industries and how this relates to regulatory decisions (primarily in the context of electricity).
3. An analysis of 'intermediate and transitional regulators', ie, how best to make progress with infrastructure regulation in difficult institutional environments.

The handbook also provides various questionnaire tools, literature surveys, etc.

In this lecture, I will concentrate on the evaluation of regulatory outcomes, ie, the issues arising from 2) above. I will briefly cover the other topics but the question of whether infrastructure regulatory bodies 'do any good' is focused primarily on topic 2), although how and why they do or do not do so clearly involves matters from the other topics.

To summarise the argument of the lecture and of the handbook , I am going to argue that 'doing good' by infrastructure regulators means that outcomes for current and future consumers in terms of the volume and quality of supply are improved as a result of actions and decisions by the regulator. Note the following critical issues for any evaluation, all of which I will discuss in more detail below:

- it is crucial that these *ex post* evaluations include the welfare of future and currently unconnected consumers, as well as of current consumers. A key role for the regulators is the 'sustainability' of quantity and quality of supply for the future – and that means appropriate (but not excessive) protection of investors;
- any such evaluation must take account of all other relevant factors including industry and market structure, legal enforcement issues, internal and external shocks, etc;
- if the evaluation can show that actions by the regulator have improved outcomes for consumers as defined above, then we can reasonably conclude that there are net benefits to society from having the regulator and we may well be able to make some estimates of the size of the net benefits;

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- it is not just the ‘results’ of this type of evaluation that are important. The ‘process’ of carrying out such an evaluation can reveal a wide range of insights and potential improvements.

The plan of the rest of the lecture is set out in the following sections:

**The evaluation context - the new infrastructure regulatory agencies** - where I discuss the evaluation context for infrastructure regulatory systems;

**Critical evaluation issues for infrastructure regulatory bodies** - I discuss some critical evaluation issues;

**Regulatory effectiveness and regulatory governance** - discusses the evaluation of regulatory governance and its relevance for industry outcomes;

**Evaluating the impact of regulatory decisions on sector outcomes** - discusses the evaluation of regulatory decisions and their contribution to the outcomes for regulated infrastructure industries;

**Evaluating regulatory arrangements in countries with less developed institutional frameworks** - focuses on the particular issues of regulatory frameworks and their evaluation in developing countries that have regulatory capacity and/or commitment problems;

**Concluding comments.**

Throughout the lecture, the electricity industry is the focus of the discussion, unless otherwise specified. However, the arguments apply and the methods can readily be generalised to the regulatory framework for all other infrastructure industries – and potentially to other types of regulation.

## The evaluation context: the new infrastructure regulatory agencies

To carry out effective *ex post* evaluations, it is crucial to understand what types of body the new infrastructure regulators are and whether or not do they do the same things.

*Types of agency: similarities and differences*

Although the many new infrastructure regulatory bodies have very similar names across a range of countries – they are typically called regulatory ‘agencies’, ‘commissions’ or ‘authorities’ - the names can mean very different things in different countries. Some of the new regulatory bodies make only advisory recommendations and ministers or presidents retain the power to make final decisions, while other agencies have wide-ranging final decision making powers. Even when regulatory agencies do have decision making powers, some have decision making powers for a wide range of issues, others for only a few. In particular, regulators frequently only have advisory powers for retail prices charged to households. This is particularly common in electricity and other regulated energy industries (eg, natural gas and district heating) – as well as in other politically sensitive infrastructure industries, such as water, railways and urban transport. For electricity, this pattern is found not just in many developing and post-communist countries but also in some rich, institutionally well-developed countries (eg, France).

Secondly, although many of the new regulatory entities are partially or fully autonomous/independent, others have little or no genuine autonomy. Indeed, many are still located inside ministries. However, at least for electricity, even for ministry regulators there has been a strong trend in developing countries towards setting out their powers and duties formally via a primary law, and this seems to make a considerable difference to regulatory effectiveness.<sup>3</sup>

Thirdly, some of the new regulatory bodies are primarily concerned with regulating private companies while others are mainly involved in the regulation of public entities. In general, formally established and autonomous regulatory agencies are almost always found where

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<sup>3</sup> See Cubbin and Stern (2006), *The Impact of Regulatory Governance and Privatization on Electricity Generation Capacity in Developing Countries*, World Bank Economic Review, March 2006, pp115-141 for evidence and discussion concerning electricity regulators in developing countries, including the effect of enacting a primary electricity law explicitly covering regulation.

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infrastructure industries have been privatised – their explosive growth is strongly associated with the spread of privatisation of telecom services and some or all segments of electricity. However, at least for electricity, many regulators have been established where state ownership remains (eg, France, South Africa and many others).

In some of these cases the publicly owned electricity companies are relatively commercialised – as is the case both in France and South Africa. But, in other countries (eg, India and many other developing countries) the industries are still operated on a relatively non-commercialised basis with pervasive implicit and explicit subsidies, extensive cross-subsidies, an acceptance of high employment levels, a toleration of costs higher than the cost minimising level, etc. The last of these require monopoly protection which is typically present in electricity, at least for retail sales.

For a number of reasons, economic regulation is more difficult with state-owned enterprises and the more non-commercialised they are the harder the problems for the regulator. Indeed, at some point along the spectrum away from commercialisation, it becomes virtually impossible for the regulatory agency to have any real impact on industry outcomes or consumer welfare. In such cases, there is typically either no designated regulator or a ministry regulator with zero effective autonomy (eg, Indonesia, at least until very recently).

In this lecture, following the example of the handbook, I focus primarily on the evaluation issues arising from the economic regulation of relatively commercialised infrastructure industries where, typically, there is substantial private ownership or at least substantial private financing of new investment.

### ***The focus of the new infrastructure regulatory agencies: what they do***

In terms of what the new infrastructure agencies do, the list of items that they cover is reasonably similar for any given infrastructure industry.

In all countries in the world, whether or not there is a designated regulatory entity, some agency or senior political figure has to decide, first, on the prices to be charged in the next period (eg, next year or over the next 3-5 years) to customers, at least to customers of a monopoly supplier; and, secondly, to approve/authorise levels of investment in monopoly networks. Beyond that, even where competition is in place (eg, in electricity generation), infrastructure regulators typically exercise some degree of oversight over investment, eg, in the UK, Ofgem publishes each year a list of potential generation investment and projected demand. In many developing countries, regulators have to approve power purchase agreements (PPAs) before they can be implemented.

Looking more generally, economic regulation implies government authorised controls on a range of actions carried out by regulated enterprises. So, what type of controls do we observe, eg, for electricity? We find some or all of the following:

- maximum price rules;
- minimum quality of service rules;
- competition decisions - entry and exit;
- network access and pricing rules;
- investment oversight rules, etc.

Similar sets of controls are found in water, railways and – to a decreasing extent as network competition evolves – in telecoms, at least in fixed line telecoms. However, the amount of time and effort devoted by regulators to these issues varies considerably by industry, country, degree of industry unbundling, size of agency, etc. Looking across countries, the number of professional staff available, as well as their levels of skill and experience, is a major determinant of what is covered and in how much detail.

In general economic regulation is achieved by a ‘regulatory entity or agency operating within a regulatory system and legal framework’. The regulatory system and/or framework is the set of laws and processes that gives the entity/agency formal and informal control over operating and investment decisions of infrastructure entities. The regulatory entity or agency then applies these laws and processes

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to reach its regulatory decisions. Hence, evaluation must cover both the quality of the laws and processes as specified on paper and the operating practices of the entity/agency. Note that the range of regulatory entities includes concession contract monitoring and enforcement bodies that operate for many infrastructure industries. These are common in Latin America and are also common in Africa, eg, the Ugandan electricity regulator which acts as a contract monitoring and enforcement agency for electricity distribution.

### **Critical evaluation issues for infrastructure regulatory bodies**

Previous evaluations of infrastructure regulators have concentrated primarily on regulatory governance and, in practice, on regulatory governance as specified in legal and related documents rather than on how agencies operate in practice. There have been many such evaluations of infrastructure regulators in EU countries and EU neighbouring countries as well as of developing countries.

Some evaluations have gone further and looked at how infrastructure regulators operate in practice (eg, the Prayas Report on electricity regulators in Indian States). More significantly, there have been a few case studies with policy reviews of regulatory decisions and outcomes. These have tended to be of the form of 'policy audits'. For instance, in the UK, the National Audit Office (NAO) reviewed in 2001 the Ofgem decision to introduce full retail competition in electricity and gas and, in 2003, reviewed the Ofgem decision to introduce NETA (the New Electricity Trading Arrangements).

As the NAO examples demonstrate, there are a number of fundamental problems that need to be addressed in carrying out evaluations of regulatory decisions and outcomes that do not exist when evaluating the outcome of a discrete public expenditure project. The most important of these are:

*1. Regulation provides only one part – and typically a small part – of the determinants of regulated industry outcomes*

The general position is that ‘regulation follows structure’. Hence, the industry and market structure of the regulated industry (eg, whether and how far monopoly segments are separated from competitive or potentially competitive segments) is the dominant factor in industry performance. The regulatory framework and focus has to reflect the industry structure but it is the industry and market arrangements that most determine industry and consumer outcomes – regulation can assist or hinder but is rarely the dominant factor. This is shown (a) by the Californian electricity reform debacle where market and industry structure arrangements were crucial for the outcome; and (b) by the contrasting history and regulatory focus in the UK of Ofgem for electricity and gas relative to Oftel/Ofcom in telecommunications.

**Infrastructure regulation and its relationship to industry and market structure**

For electricity and natural gas in England and Wales, there has been full separation of monopoly network facilities from other industry segments. For electricity, transmission and distribution were separated out at privatisation in 1989; for gas, the separation occurred (after considerable argument) in the late 1990s. Conversely, in UK telecoms, although there has been vigorous competition (including growing competition between networks), BT, the dominant telephony incumbent privatised in 1984, was allowed to continue operating in all segments and only in 2005 was it obliged to implement a substantial separation between network and other services. These different industry histories have had a major role in determining the concerns of Ofgem relative to Oftel/Ofcom and – for better or for worse – on a range of industry outcomes.

*2. It is neither sensible nor possible to assume the counter-factual of there being no regulator*

When assessing a public expenditure project, it is appropriate to take as the comparator position the ‘counter-factual’ that the project would



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not have taken place. For instance, in the UK, the costs and benefits of road projects are evaluated *ex post* by comparing traffic flows with the new road (including their environmental, safety and other consequential) as compared to the predicted flows had the new road not been built, given aggregate traffic growth over the period. This is not an easy exercise but it is both feasible and sensible and provides useful results. Conversely, it would be neither feasible nor sensible to try to carry out such an exercise for all roads built over the last 10 years, let alone the last 50 years.

When evaluating an infrastructure regulator, it is neither feasible nor sensible to make the comparison with or without a regulator. *Ex post* evaluations need to consider ‘marginal’ choices not ‘average’ choices. For regulators, the marginal choice is a specific regulatory decision (eg, whether or not to impose competitive tendering in generation investment, or whether or not to require full retail competition). The specific regulatory decision is the analogue of the specific project.

The main consequence for the evaluation of infrastructure regulators is that any evaluation needs to lodge regulatory decisions within a history of the regulated industry and the flow of issues arising. Hence, regulatory evaluations have to be structured, analytic narrative case-studies of key regulatory decisions, carried out with explicit reference to recorded developments in government policy and in the evolution of the regulated industry. The objective of the evaluation is to establish whether key regulatory decisions helped or hindered achieving ‘good’ regulatory outcomes, and helped minimise/mitigate or contributed to ‘bad’ outcomes. These issues and their implications in practical terms are discussed in some detail in the World Bank handbook on infrastructure regulation which includes specific evaluation tools for the recommended narrative case-study type of evaluation.

Note that econometric and other formal, statistical models can be used to investigate the impact of regulation on specific regulated industry outcomes. Such studies can be used to provide useful multi-country evidence that can provide important corroborative information for

analytic, narrative case-studies.<sup>4</sup> However, these methods do not and cannot explain ‘how’ or ‘why’ good or bad outcomes are achieved nor can they be readily used to investigate the consequences of particular regulatory decisions.

## Regulatory effectiveness and regulatory governance

The World Bank handbook on infrastructure regulation discusses regulatory governance and its importance for effective regulation in some detail. In this lecture, I will summarise the key issues. The effectiveness of infrastructure regulators depends on two key aspects:

- the quality of regulatory governance;
- the quality of regulatory decisions (which make up the ‘substance’ of regulation).

I discuss governance issues in this section and regulatory decisions and outcomes in the next section. The quality of regulatory governance depends on the institutional and legal design of the system. For instance:

- is the regulatory agency established by a primary law?
- is the regulator genuinely independent and accountability?
- do specified regulatory processes exist?
- how transparent is decision making, etc?

This is discussed at length in chapter 3 and appendix A of the handbook which provides a full statement of best practice regulatory governance. The three main elements of this are:

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<sup>4</sup> See Cubbin & Stern (1996) for an electricity related example, Gutierrez L H (2003), The Effect of Endogenous Regulation on Telecommunications Expansion and Efficiency in Latin America, *Journal of Regulatory Economics* 23 (3), pp257–86 for a Latin American telecoms example and Edwards G E and Waverman L (2004), The Effects of Public Ownership and Regulatory Independence on Regulatory Outcomes: A Study of Interconnect Rates in EU Telecommunications, *Journal of Regulatory Economics*, March 2006, 29 (1), pp23-67 for an EU telecoms example.

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- (i) three regulatory meta-principles;
- (ii) ten key principles;
- (iii) a full list of critical standards for regulation.

These three provide a ‘hierarchy’ of attributes in which each is derived from the one above. In combination they provide a ‘benchmark’ for the evaluation of regulatory governance. The benchmark chosen, for reasons set out in the handbook, is the best-practice version of the independent regulator model. This is not to say that this model should be implemented in all countries but, as discussed in detail in chapter 3 of the handbook, the best practice benchmark provides the only usable governance criteria against which any evaluation can be made. This is true both when assessing governance changes over the past 5 or 10 years and whether they have improved or worsened; or for assessing the potential and priorities for improvements over the next 5-10 years.

But why is assessing regulatory governance important for establishing the effectiveness of infrastructure regulators in terms of outcomes? The short answer is that international experience shows strongly that better regulatory governance leads to better decision making by regulators and better outcomes for regulated electricity and telecoms industries. Regulatory agencies with better governance are:

- less likely to make mistakes;
- more likely to correct mistakes speedily;
- less likely to repeat mistakes;
- more likely to develop procedures and methodologies that involve participants and develop good practice;
- more likely to copy and implement best practice from other countries.

But, regulatory governance must be assessed by how infrastructure industry regulatory bodies operate ‘in practice’ as well as at their legal specification. For evaluating regulatory governance, it is important to look at the gap between what is written in law and what happens in practice (the implementation gap).

In many countries, regulatory practice fails by some margin to achieve the governance standards as laid down in law. In consequence, we find that mandatory annual reports are not published, adequate consultation does not take place, that regulatory commissioners who are ostensibly protected from dismissal in fact are persuaded to quit or fail to complete their terms of office, or that the government finds some way of preventing or over-ruling decisions it dislikes. Examples of such outcomes can be found across the world, particularly in developing and transition economies. Sometimes they are part of the learning process in setting up a new regulatory framework (as in some central European economies); other times, they demonstrate that governments are not really committed to the regulatory frameworks that they (or their predecessors) have established (as in some Latin American countries and elsewhere).

Exploring the practice of regulation and whether or not regulatory entities have major governance problems is a crucial initial step in regulatory evaluations. This includes, for instance, finding out about government actions to reduce regulatory agencies' powers or to dismiss office-holders, large cuts in funding, etc. Conversely, one may find actions by governments to improve regulatory autonomy and the transparency of regulatory processes, as has happened in many EU and EU neighbouring countries, as well as some African and other developing countries.

### ***Hierarchy of meta-principles, key principles and critical standards***

The three meta-principles are as follows:

***Meta-Principle 1: Credibility*** - Investors must have confidence that the regulatory system will honour its commitments.

***Meta-Principle 2: Legitimacy*** - Consumers must be convinced that the regulatory system will protect them from the exercise of monopoly power, whether through high prices, poor service, or both.

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*Meta-Principle 3: Transparency* - The regulatory system must operate transparently so that investors and consumers ‘know the terms of the deal/rules of the game.’

The ten key principles are as follows:

- independence;
- accountability;
- transparency and public participation;
- predictability;
- clarity of roles;
- completeness and clarity in rules;
- proportionality in application;
- requisite powers;
- appropriate institutional characteristics;
- integrity of conduct.

Critical standards include a variety of elements listed under the following headings:

- legal framework;
- legal powers;
- property and contract rights;
- clarity of roles in regulation and policy;
- clarity and comprehension of regulatory decisions;
- predictability and flexibility;
- consumer rights;
- proportionality;
- financing of regulatory agencies;
- regulatory independence;
- regulatory accountability;
- regulatory processes and transparency;
- public participation;
- appellate review of regulatory decisions;
- ethics.

It is, of course, the case that regulatory institutions with good governance sometimes make bad decisions but experience suggests

that they make fewer of them – and do not make the same mistake again. In consequence, good regulatory governance, in practice as well as in terms of formal legal design, is a necessary if not a sufficient condition for good regulatory decision making. Hence the need to evaluate regulatory governance together with, and alongside, regulated industry outcomes.

## Evaluating the impact of regulatory decisions on sector outcomes

As set out above, a good regulatory system achieves good industry outcomes by taking good decisions. Good decisions are those that improve the performance of the industry and provide benefits to consumers (including future consumers) and investors. However, in addition, good regulatory decisions are those that do this while also helping achieve specified government goals. These issues are discussed in some detail in chapter 5 of the handbook.

### *Government policy objectives and regulatory decisions*

Governments typically have a range of policy objectives for infrastructure industries. In the UK and other EU countries, we find targets for energy industry emissions, fuel diversity in generation and renewable energy use, broadband penetration, railway use within total transport, etc. In developing countries, we find targets for rural electrification, piped water and sewerage availability, etc. In many countries, we find targets for quality (eg, supply interruptions), investment, prices and affordability and subsidies (including cross-subsidies).

Where government targets are explicitly stated and published, regulators should try to achieve them – ‘provided that’ they are not in conflict with other legal obligations that they may have towards consumers and investors. But, governments often have multiple objectives and they may conflict with one another. In those

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circumstances, a major function of the regulator is to identify potential conflicts and to discuss with governments how they might be resolved.

The most common problems are where governments have policy targets which require substantial industry investment but the government is unwilling to allow prices to be raised to cover the expenditure. In some cases, this may be resolved by specific subsidies (eg, railway subsidies, rural electrification subsidies). However, the most difficult problem is where governments have implicit, unpublished or vague policy objectives. Contrary to some suggestions, the regulator's task is always easier the more clearly and fully governments state their policy objectives. Whether and how far this is done is an important issue in evaluating the performance of regulatory agencies.

### ***Regulated industry outcomes and regulatory decisions***

From the discussion above, we can identify good regulatory decisions as those that:

- (a) Protect consumers (current, potential and future) and help establish and maintain sustainable commercial operation; and
- (b) Help achieve government policy objectives (eg, connection targets, fuel diversity goals, efficiency targets, etc).

Conversely, bad regulatory decisions are those that fail or even hinder the achievement of these objectives. But this requires agreement on what is meant by a regulatory 'decision', an issue discussed in the following table.

### **Regulatory decisions**

What can we usefully classify regulatory decisions? A regulatory decision can be either:

- (i) A positive decision which is formally published (eg, a tariff order, or issuing a regulatory asset base accounting framework, etc); or
- (ii) A decision not to take an action (eg, a decision not to intervene when there is potential market abuse in wholesale markets, or a decision not to pursue mandated competitive procurement of generation, etc).

Regulatory decisions refer to ‘any action or inaction’ by the regulator that materially affects the interests of participants in the regulated sector – consumers, producers, investors or governments.

#### **- Relevant industry outcomes for regulatory evaluations**

Given evidence on government policy objectives for the relevant infrastructure industry, how should the evaluator investigate whether or not the industry has provided good outcomes for consumers, companies and investors? The handbook identifies eight headings for industry outcomes. These headings are:

1. output and consumption;
2. efficiency;
3. quality of supply;
4. financial performance;
5. capacity, investment and maintenance;
6. prices;
7. competition;
8. social indicators.

The list above is a summary list. A more fully elaborated list with sub-headings under each entry is set out at Annex 1 of this lecture.

It is worth pointing out that some of the variables listed are ‘final’ outputs of the industry (eg, consumption levels, quality of supply).



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Most of the other variables listed are ‘intermediate’ outputs (eg, efficiency, costs and prices, competition indicators). However, investment and financial performance have elements both of final and intermediate output because of their impact, firstly, on the sustainability of output and consumption levels; and, secondly, on other aspects of economic management (eg, the government’s fiscal position and inflation).

### **- Good and bad regulatory decisions**

In any *ex post* evaluation, the focus will inevitably be on what went badly or, in cases where regulation has been generally successful, on what went less well than it could or should have done. As the handbook expresses it, the evaluator should praise the good but focus on the bad. This is because the objective of case study evaluations is to help the organisation improve its operations - and that means identifying and understanding the reasons for poor or ill-judged decisions. But, the purpose of this is to understand the reasons for actions or decisions that are regretted, even if the action or decision looked sensible at the time and appears mistaken only in retrospect.

This perspective emphasises that the purpose of the evaluation is to understand and help improve performance and not to blame organisations and individuals. Bad decisions are typically clear, at least in retrospect. Conversely, most good decisions are relatively routine and uncontroversial and only particularly important or path-breaking good decisions are readily identifiable. It is possible to identify examples of significant good decisions and trace through their consequences (eg, the decision of the Jamaican utility government and regulator to liberalise the Jamaican telecom industry and introduce a second mobile operator), but not really possible to do so for the pipeline of normal, competent, not-noteworthy decisions.

In all cases, the key to successful outcome evaluation is to identify ‘key’ regulatory decisions. These are the ones that create major precedents for future regulation and/or are decisions with a sufficiently large impact to allow an analysis of their impact on industry outcomes as specified above. This analysis should, as far as

possible be in ‘quantitative’ terms. However, that requires the existence of relatively detailed, comparable statistical data for 10 years or more on the industry in question – and preferably on comparable industries in other countries.<sup>5</sup>

Bad regulatory decisions can be divided into:

- sins of omission; and
- sins of commission.

Sins of ‘omission’ are actions or decisions that regulators should have made but have failed to do. Examples from around the world include:

- failure to investigate and understand cost structures before setting tariffs;
- failure to institute adequate quality of service indicators;
- failure to define regulatory methodologies, etc.

Conversely, sins of ‘commission’ are actions or decisions that regulators have done which were mistaken. Examples of these include:

- setting unreasonable benchmarks;
- allowing growing divergences between costs and prices;
- setting low penalties for serious offences, etc.

A fuller list of potential sins of omission is given in Appendix 2a and, for sins of commission, in Appendix 2b.

In general, the handbook suggests, the evaluator should praise the good but focus on and explore the bad – but for the purposes of understanding and learning, not for assigning blame. In doing this, the evaluator must be aware of all relevant factors besides regulatory decisions. A fundamental reason for this, as discussed above, is that these other factors often have a rather larger impact on industry outcomes than regulatory decisions. Examples of these other major factors include, among others:

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<sup>5</sup> An example of such a study using the handbook methodology is in the PPIAF commissioned study of infrastructure regulation in Jamaica, the report of which will be published in 2007.

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- the appropriateness and coherence of the chosen industry and market structure (or lack of coherence, as in the 1990s electricity reform structures adopted in California and the Ukraine);
- problems arising from inconsistencies in government policy and/or government unwillingness to allow the regulatory agency to carry out its functions (eg, Russia and India over the last 10-15 years);
- external pressures, particularly the impact of macroeconomic and exchange rate crises on costs and prices (eg, Argentina and South East Asia in the late 1990s).

The evaluator should draw attention to these factors and how the regulatory system responded to the difficulties. Did the regulator assist or hinder responses to them? More importantly, was the regulator allowed to respond? In the case of the exchange rate crises identified above, the response of the governments above was not just to suspend effective regulatory decision making but also not to use the regulator to help achieve sustainable debt ‘workouts’.<sup>6</sup>

These issues can create difficult problems for infrastructure framework evaluators and suggests the following guidance motto:

“Good regulation does not necessarily produce good outcomes for the regulated industry, but bad regulation almost always contributes to bad outcomes.”<sup>7</sup>

I think that this motto is almost always true and I note that it always brings nods of agreement and smiles of recognition.

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<sup>6</sup> In Argentina and other Latin American and Asian Countries, infrastructure industry investment is often financed by debt denominated in foreign currency but with services sold in home currency prices. Following a major depreciation of the home currency, these debt contracts become unviable and need major renegotiation or replacement. Such renegotiations are known as a ‘debt workout’ process.

<sup>7</sup> See p.148 of the handbook for the original less motto-like statement.

### *Summarising the evaluator's task*

Summarising this section, the task of the evaluator of infrastructure regulators with respect to outcomes can be expressed as follows:

- identify obviously good and bad regulatory decisions – particularly key decisions;
- estimate qualitatively and, where possible, quantitatively the impact of key decisions on industry outcomes;
- review the contribution of regulation to the performance of the regulated industry and specific outcomes;
- provide a critical analysis of regulatory performance with recommendations for improvement;
- provide a basis for learning by the regulator, the government, consumer groups, companies, investors and others.

The handbook suggests that this be done primarily via a set of structured interviews with all relevant participants and stakeholders in the regulatory process. This, together with background data and other information, can provide the basis for properly reasoned judgements on the effectiveness of regulatory bodies. Wherever possible, these should include the use of quantitative analysis, at least with sufficient supportive data and with more fundamental analysis/research where time and resources permit. To help achieve this goal, much of the handbook is taken up with appendices containing questionnaires, outline terms of reference and other practical tools for regulatory evaluators.

A final word. The discussion above has focused on infrastructure regulators. However, the general framework seems to me relevant to other types of regulation, eg, financial regulation, health and safety regulation, consumer protection regulation, etc. In the UK and many other countries, there is an increasing concern that regulation in

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general is often not well targeted on objectives. In consequence, the UK government and others are pursuing strategies to reduce the burden of regulation on business wherever possible. The type of outcome evaluation considered above may well be a useful analytic component of such work.

### **Evaluating regulatory arrangements in countries with less developed institutional frameworks**

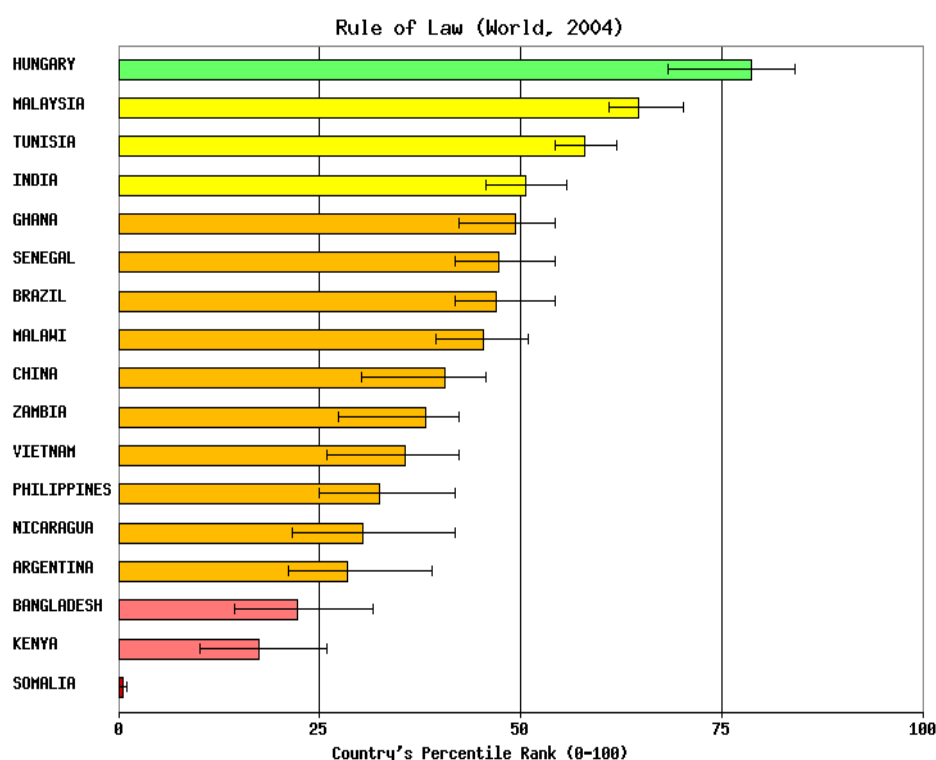
Many developing and transition countries have courts, commercial law systems and other institutions that are poorly established, have inadequate staff resources or, for one reason or another, operate dysfunctionally. In some cases, the powers and duties of institutions are ill-defined or they are poorly funded and have inadequate resources; in others, the problem is of endemic corruption. These issues have been widely discussed in recent years and we now have, in the Kaufmann Index, a country governance index regularly updated and published measure for almost all countries in the world.<sup>8</sup>

The Kaufmann index has six elements of country governance. In general, the scores on the different elements are relatively similar (eg, between government effectiveness and control of corruption); although there are, of course, countries with (say) high political stability and low voice and accountability. In the context of infrastructure regulation, the best single Kaufmann country governance index element is the rule of law and in **Figure 1** below I set out 2004 country scores on this indicator for a sample of developing and transition countries.

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<sup>8</sup> See Kaufmann D, Kraay A and Mastruzzi M (2004), *Governance Matters V: Governance Indicators for 1996-2005*, World Bank, 2006 for the latest version.

Figure 1: Kaufmann Rule of Law Indices 2004



Source: D. Kaufmann, A. Kraay, and M. Mastruzzi 2005: Governance Matters IV: Governance Indicators for 1996-2004 (<http://www.worldbank.org/ubi/governance/pubs/govmatters4.html>)

The importance of this for infrastructure regulation and its evaluation is that it is absurd to believe that the type of well-staffed, independent infrastructure regulator we see in rich OECD countries can readily be transferred to low income countries or to countries with poorly functioning policy and legal institutions. For these countries, if their general governmental, legal and related institutions operate sufficiently well, the regulatory design issue is how to begin introducing effective infrastructure regulation, particularly in ways that enable it to move towards best practice over time.

This topic – the question of ‘intermediate and transitional’ regulatory frameworks – is the subject of chapter 4, the longest chapter in the handbook. In addition, there is an appendix on infrastructure regulation in failed states and post-conflict countries – how to get the show on the road. The latter includes some fascinating findings from Somalia and similar countries.

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## **Intermediate and transitional infrastructure regulatory systems**

These include a wide range of arrangements, including, among others:

- i. Ministry regulators – sometimes a separate Department within the Ministry and increasingly operating under a primary law;
- ii. Concession contract monitoring and enforcement agencies – found frequently in Latin America and increasingly in Africa and elsewhere, especially for water and transport infrastructure as well as for electricity/energy networks;
- iii. Advisory regulators and expert panels – which may be ‘weak’ in just providing advice or ‘strong’ in that governments have to provide reasons for modifying or rejecting their advice;
- iv. Combinations of contracts with regulatory bodies (‘hybrid’ regulation) – there are a wide range of these that have emerged over the last 5 years or so. Besides the concession contract monitoring and enforcement agencies, we find discretionary regulation after an initial fixed regulatory period (Romania, Moldova, Delhi electricity distribution), contracts with defined dispute resolution/arbitration within or outside the country, etc.

In this lecture, I do not have the space to cover the issue of intermediate and transitional infrastructure regulation in detail. I will, however, briefly discuss some of the major points, in particular as they affect the evaluation of infrastructure regulatory systems.

In the handbook, we classify countries into four generic types, according to (a) their ‘commitment’ to effective infrastructure regulation and (b) their ‘capacity’ to implement and operate effective regulatory frameworks and agencies.<sup>9</sup> The four generic types are:

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<sup>9</sup> This commitment-capacity typology can be found in Torres M M and Anderson M (2004), *Fragile States: Defining Difficult Environments for Poverty Reduction* by DFID, United Kingdom, August 2004.

**1. Countries with strong commitment and strong capacity**

(eg, UK, Germany, Canada, Chile, South Africa)

**2. Countries with weak commitment and strong capacity**

(eg, Argentina, India and Russia)

**3. Countries with strong commitment and weak capacity**

(eg, Brazil, Ghana, Romania, Turkey and Uganda)

**4. Countries with weak commitment and weak capacity**

(eg, some small low income African and Latin American countries as well as failed states and conflict countries such as Afghanistan and Somalia.)

Countries in type 1 should be able to implement and operate good practice infrastructure regulatory bodies. Conversely, countries in category 4 are unlikely to be able to operate even the most embryonic regulatory institutions, although, as Somalia and other examples show, that does not necessarily mean an absence of infrastructure services supported by some highly informal quasi-contractual arrangements (this is shown in the provision of mobile telephony and also of electricity in the main cities eg, in Somalia and Democratic Republic of Congo). However, the areas on which I concentrate below are countries in categories 2 and 3, particularly the strong commitment-weak capacity countries in category 3.

There are some important pre-requisites to be able to develop and operate even relatively basic intermediate or transitional infrastructure regulatory systems. These include the following:

- (i) legislative bodies that can enact adequate primary and secondary laws;
- (ii) a functioning court system (or an equivalent dispute resolution or appellate process);
- (iii) policy-making institutions (that is, ministries) with the administrative capability to make policy decisions and implement them;



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- (iv) a reasonable overall quality of country governance (for example, a country score above the bottom quarter of the Kaufmann index);
- (v) commercialised utility service industries or, at the least, a clear policy objective of moving in the short to medium term to commercialization;
- (vi) governmental bodies that can prepare and bid out franchise or concession contracts in an honest and transparent way.

Of these, (iv) and (v) are particularly important. Looking at the Kaufmann scores on the rule of law in 2004 shown in Figure 1 above, we find Somalia in the bottom 5% of countries, Kenya and Bangladesh in the bottom 25% and Argentina just above. None of these countries have been able to establish and consistently operate effective electricity/energy infrastructure regulators. Conversely, of higher ranking countries on the rule of law (ie, in the top two-thirds or better), Hungary now does have good practice autonomous infrastructure industry regulatory entities (at least since making the required changes to join the European Union in 2004) while Ghana, Brazil and Senegal have all made significant progress in recent years towards establishing commercialised industries with predictable and effective regulatory arrangements that have contributed to good industry outcomes.

But, a commitment to commercialisation is at least as important. Most of the category 2 countries – strong capacity but weak commitment – are in this band because they are unable or unwilling to operate their electricity and often other infrastructure industries on a commercialised basis. This is most obviously the case in India (which in 2004 was (just) in the top 50% of countries on the rule of law criterion) but where it has proved immensely difficult to charge retail prices that approached the costs of supply and where ‘non-technical losses’ (ie, fraud and theft) continue to run at 30-40% or more.

India is the most publicised example of the problems arising from an inability and/or unwillingness to run the electricity industry on a commercial basis in maintaining and expanding electricity supply or in developing effective regulation. There are, of course, many other

developing countries in this position, although there are also many that have made strong efforts over the last 5-10 years towards commercialisation, including a number of low income sub-Saharan African countries.

The difficulties in achieving commercialisation are much greater in the water and sewerage and transport (particularly urban transport) industries. Hence, for these industries, autonomous regulatory entities are found rarely in developing or transition economies and, in water and sewerage, management contracts are increasingly replacing concession contracts. Conversely, for telecommunications – particularly mobile telephony – commercial operation is rarely a problem and so establishing and maintaining effective regulatory oversight has been much less difficult.

The implication of the discussion above is that effective country governance is a necessary but by no means a sufficient condition to establish credible regulatory entities, even intermediate or transitional ones. To do that also requires a genuine and maintained commitment to commercial operation of the relevant infrastructure industry. Countries in category 3 (weak capacity but strong commitment) like Ghana, Uganda and others are in this position but need external assistance in building up regulatory capacity. *Ex post* evaluation is an important tool in helping them do so and in helping establish priorities for developing and improving their regulatory capacity and abilities.

Category 3 countries seem to be the ones where progress is most likely to be achieved in this area in the near future – at least unless weak commitment countries are able to change their position as India has tried to do in recent years and China has managed to do to a significant extent.

In considering the ‘design’ of effective regulatory institutions in countries with the features discussed in this section, the key point is to find good ‘regulatory fits’ in countries with limited regulatory capacity. Best practice regulatory arrangements are the target for the future but not the priority now. For countries with limited capacity, the question is to find viable, functioning arrangements that ‘gets the

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show on the road’ and offers the potential of enhancement and improvement. Hence, it is vital to match regulatory (including contract) solutions to the specific problems of the country and infrastructure industry. The table below provides some examples of matching regulatory problems and the solutions that have been tried for electricity regulation in various countries.

## Matching Regulatory Solutions and Problems

<i>Impediments and problems</i>	<i>Possible solutions</i>
Unwillingness or inability to commercialize the regulated enterprise	<ul style="list-style-type: none"> <li>•Explicit timetable supported by transitional subsidies with secure funding support (Delhi electricity)</li> </ul>
Unwillingness or inability to transfer regulatory powers	<ul style="list-style-type: none"> <li>•“Strong” (not “weak”) advisory regulator - advisory regulator where Government obliged to publish reasons for rejecting recommendations (Mozambique?)</li> </ul>
Regulatory appeals to weak general law courts	<ul style="list-style-type: none"> <li>•Arbitration</li> <li>•Specialized appeal tribunals advised by expert panels (India, Belize)</li> </ul>
Uncertainty about the strength of regulatory commitments	<ul style="list-style-type: none"> <li>•Regulatory and infrastructure contracts (Bolivia, Peru)</li> <li>•Regulatory PRGs and similar external risk-mitigation measures (Uganda, Romania)</li> </ul>
Limited regulatory resources and capacity	<ul style="list-style-type: none"> <li>•Contracting out of regulatory staff functions on an advisory basis to consultants or other entities (Botswana)</li> <li>•Contracting out of regulatory decisions on a binding basis to other entities (for example, expert panels and regional regulatory bodies)</li> </ul>
Consumer mistrust of reforms or regulation	<ul style="list-style-type: none"> <li>•Openness and transparency (Andhra Pradesh)</li> <li>•Emphasis on early quality of service improvements</li> <li>•Service expansion to unconnected customers (Burkina Faso)</li> <li>•Protection of low-income customers (Chile)</li> <li>•Open bidding for licenses or concessions</li> </ul>
Macroeconomic crises	<ul style="list-style-type: none"> <li>•Involvement of the regulator in post-crisis “workout” discussions</li> </ul>

As our knowledge increases as to what works, when and how (and what does ‘not’ work, where and why), so country policy makers and advisers can better tailor solutions to country design with a bigger ‘kit-bag’ of regulatory design elements. *Ex post* evaluations can and should play a major role in this. In consequence, the evaluator of intermediate regimes needs to consider:

- (i) How well the solutions adopted fit the circumstances of the industry and country;
- (ii) How far they are an improvement on previous arrangements;
- (iii) How far they contain the potential **and** incentives to move towards best-practice regulation.

This means tackling issues like the following: How well is the regulatory system performing in its own right (eg, on governance properties and on industry outcomes)? Does the system have the potential and the likelihood to develop towards a best practice regulator? Are there adequate incentives and pressures to prevent the reform from getting stuck or unravelling?

To address these questions requires a proper consideration of regulatory governance, decisions and outcomes as discussed in previous sections. But, it also requires taking full account of the additional problems that arise. Hence, it involves a careful consideration of the additional problems that arise, including a recognition that many of the solutions have their own limitations and difficulties. Among the difficulties are:

- how to moving successfully from initial transitional arrangements (eg, on subsidies and regulatory guarantees) to a sustainable long-term basis);
- how to ensuring and maintain consistency between regulatory legislation and contract provisions and procedures;
- how to manage and sustain mutually acceptable expectations of consumers, investors and governments on quantity and quality of service and improving access.

Some of these have created significant problems in the reform programme examples in the table above, as they have done in the past, while others are clearly looming. We certainly have much to learn but analytic, case study *ex post* evaluations can – and, I fervently hope, will play a major role in improving our knowledge. This offers the real potential for better regulatory policy design in the future and in countries with difficult as well as those with easier institutional environments.

## Concluding comments

The title of this lecture is about developing evaluation practice for infrastructure regulation in the UK and internationally and draws very heavily on the recent World Bank Handbook on this topic. I cannot conclude this lecture better than by quoting in full the final paragraph in the handbook text:

“Finally, we would be delighted if practitioners were to find our evaluation tools useful in judging and improving the performance of infrastructure industry regulatory systems. We would be even more delighted if in 5–10 years, the methodology proposed in this handbook had been field tested, built upon, and significantly improved. We have identified some specific areas where we think more work is necessary. However, we are also aware - and look forward to - future developments in evaluation methods and practice that will help improve the performance of regulatory systems in providing improved access to infrastructure services that are of better quality and that are produced more efficiently by enterprises that are commercially sustainable. A regulatory system that helps to achieve these goals can make a genuine and lasting contribution to the alleviation of poverty in developing countries.”

That statement underpins everything in this lecture. And, of course, the proposed methodology for evaluating the outcomes of regulation for current and future consumers, investors and governments applies just as much to the UK, European and other rich OECD countries as it does to developing countries. I believe that this approach can make a significant contribution to improving the economic welfare and life chances of all our citizens.

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## **ANNEX 1: INFRASTRUCTURE INDUSTRY OUTCOMES FOR EVALUATION PURPOSES**

Regulatory decisions help affect electricity industry performance on the following outcomes:

### **1. Output and Consumption**

household and business access levels;  
consumption levels and growth rates per head and per unit of GDP;  
levels of unsatisfied demand;  
emission and pollution levels.

### **2. Efficiency**

productivity levels and growth rates;  
cost levels and changes;  
capacity availability & utilisation; losses (technical and commercial).

### **3. Quality of Supply**

continuity of supply;  
quality of supply and customer service.

### **4. Financial Performance**

financial surpluses and losses, achieved rates of return;  
measures of indebtedness and interest burden.

### **5. Capacity, Investment and Maintenance**

capacity levels and margins;  
levels of investment and share of private and foreign investment;  
levels of maintenance expenditure.

### **6. Prices**

relationship of prices to full economic costs (including a reasonable rate of return on assets);  
explicitness, transparency and efficiency of subsidies and cross-subsidies;

tariff design that promotes technical and economic efficiency in production, fuel use and consumption;  
degree to which environmental costs included in economic costs and prices.

### **7. Competition**

well-functioning bid auction markets for concessions and IPP contracts with a sufficient number of bidders;  
well functioning generation and supply competition markets (equivalent indicators can readily be constructed for infrastructure industries other than electricity).

### **8. Social Indicators**

affordability of supply – particularly for low income consumers;  
impacts on economic development.

Three points arise:

(i) This list is, of course, not exhaustive and can be extensively elaborated depending on the depth and detail of evaluation required.

(ii) The list above has been devised as reflecting the major issues for electricity/energy evaluation. It can readily and straightforwardly be amended for other infrastructure industries; indeed, most of the individual entries would stay the same.

(iii) As stated in the text of the lecture, some of the variables listed are ‘final’ outputs of the industry (eg, consumption levels, quality of supply, impacts on economic development). Most of the other variables listed are ‘intermediate’ outputs (eg, efficiency, costs and prices, competition indicators). Investment and financial performance have elements both of final and intermediate output. This is because of their impact, firstly, on the sustainability of output and consumption levels; and, secondly, on other aspects of economic management (eg, the government’s fiscal position and inflation).



## **ANNEX 2: BAD REGULATORY DECISIONS: SINS OF OMISSION AND SINS OF COMMISSION**

This annex sets out examples of both types of bad decision. The check lists below should help provide a helpful starting point for evaluators of regulatory frameworks and bodies. Many of the specific points relate primarily to electricity but some examples are given for other infrastructure industries and, in general, the examples can readily be adapted to other contexts.

### **Annex 2(a): Sins of regulatory omission**

- No uniform system of regulatory accounts;
- No regulatory methodologies in place;
- No quality-of-service standards, or seriously ineffective monitoring of regulatory standards;
- No monitoring of competitive behavior or market abuse in electricity generation or telecom markets which are intended to operate competitively;
- Absence of access charges and rules for industries where there is competition over networks (primarily telecom, electricity and natural gas, but also to a lesser extent, water and railways);
- Failure to adequately address consumer complaints and monitor performance;
- Failure to monitor costs;
- Failure to provide effective competitive tendering procedures for new capacity;
- Failure to take action to raise retail tariffs that are far too low to support financial viability and justifiably necessary levels of investment;
- No clear standards for tariff setting for future tariff periods (eg, absence of clear standards for power purchase costs or distribution costs; no definition of the regulatory asset base);
- No mechanism to relate payment or non-payment of government subsidies into tariffs;

- No attempt to make transparent cross-subsidies between customer classes even when the law supports it;
- Failure to efficiently target cross-subsidies;
- Failure to deal with non-payment issues.

### **Annex 2(b): Sins of regulatory commission**

- Setting unrealistic benchmarks for efficiency or operational improvements;
- Unreasonably re-opening investment decisions or privatisation agreements *ex post* (eg, following a change of government);
- Setting prices on the expectation that governments will deliver promised subsidies even when it is highly unlikely that governments can or will do so;
- Allowing growing divergence between prices and costs;
- Creating perverse incentives (eg, high returns for poor performers; socialising all efficiency gains);
- No differentiation between customer classes (eg, rural and urban; grid and off-grid) in terms of quality standards;
- Establishing low caps on power purchase prices that eliminate incentives to build new generation stations;
- Taking emergency decisions that are damaging to long-run market development (eg, on dispatch of hydro plants, or on limiting exports of electricity or fuel inputs);
- Asymmetry between price caps and price floors.

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