

Rethinking reform in the electricity sector: Power liberalisation or energy transformation?

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Introduction

After electricity was first introduced in the 1880s in the United States and Europe, its use expanded dramatically throughout the world, transforming almost every aspect of daily life. It is now essential to the operation of most modern technological systems, and, for this reason, has attained the status of a 'metatechnology' (Schon cited in Zimmerman 1992). The inner logic of this metatechnology has shaped contemporary development patterns – grid expansion and urbanisation are nearly synonymous; national and local politics – pro-growth and pro-electrification coalitions significantly overlap; social values, culture and identity – to be modern is to be electrified; and community life – our connection to one another (in industrial countries especially is often electrical (telephone, television, e-mail). It is not surprising, therefore, that electricity supply is often viewed as an essential public good in contemporary society.

The electricity systems developed over the last century mainly rely on large-scale power plants and extensive networks of transmission and distribution that deliver electricity at affordable prices (at least, in most industrial countries). However, these systems have also created a host of environmental, social, and economic problems. For ex-

ample, increasing electricity consumption in industrial countries has caused major air pollution problems. In fact, power plants are estimated to account for almost two-thirds of sulphur dioxide emissions in Europe and North America (Brennan et al 2002; Fox-Penner 1997); and pollution from them has been linked to urban smog, forest loss and freshwater contamination in industrial and developing countries (see Reddy et al 1997). For developing countries, adding large-scale power plants is very costly. Still, elites usually succeed in demanding investment priority for their construction, which can lead to a widening of social inequity as sizable portions of developing country populations (especially in rural areas) are often left unserved.¹

Starting from the early 1990s, a set of institutional reforms – including unbundling, privatisation of ownership, and the introduction of competition into the generation sector – began to be promoted as a global solution to the problems of the electricity industry (IEA 2001; Littlechild 2001; Patterson 1999; Joskow 1999; Bacon 1995). The concurrent movements of unbundling, private ownership and competition (or at least demonopolisation), which hereinafter we will call *power liberalisation*, aim to rationalise the sector's development by treating electricity as a commodity in need of optimal allocation. Advocates maintain that governing the electricity industry according to market dynamics, rather than socio-political considerations, promises to result in its more efficient operation (Bacon & Besant-Jones 2001; IEA 2001; World Bank 1999; International Chamber of Commerce 1998; Joskow 1998; World Bank 1993). Some further promise important social and environmental benefits if the sector is liberalised (Lovei & Gentry 2002; Powell & Starks 2000; Joskow 1998; see also Smeloff & Asmus 1997, especially chapter 4).

The experience with power liberalisation around the world, however, has frequently included price hikes, unreliable service, employment loss, and reduced access, particularly for the poor (TNI 2002; Coyle 2000; Higley 2000; Hall 1999). This chapter offers an analysis of the initiative based on what are argued to be commonly embraced tenets and commonly witnessed results. The analysis is informed by a theoretical distinction between *commodity* and *commons* as platforms for energy policy development (see Byrne and Mun (2001) for an earlier discussion of this distinction). Below, we argue that power liberalisation follows a commodification agenda that is socially, politically, economically and environmentally problematic. As an alter-

¹ The high cost of grid extension to distant rural communities and the relative lack of investment in small-scale power resources that can serve the rural areas in a cost-effective way (see Zhou & Byrne 2002; Byrne et al 1998) can lead to service inequities.

native, we propose an *energy policy commons* approach that can lead to transformation of the sector in a manner that is responsive to the aims of democratic, equitable and sustainable development.

2. Anatomy of power liberalisation: Historical context, ideology, and agenda

2.1 Historical context

For nearly a century, electricity around the world was typically produced by vertically integrated utilities, which operated facilities for all three stages of electricity service: generation, transmission, and distribution. In many cases, utilities were state-owned monopolies. When private ownership was present, the companies nonetheless operated as monopolies in designated franchise areas regulated by governments that set rates and oversaw investments (Patterson 1999).

The involvement of the public sector in the electricity industry is partly explained by the sector's technical and economic evolution. As utilities pursued economies of scale both in supply and in demand, electricity systems became highly centralised, large-scale technological networks (see Hughes 1984; Messing et al 1979). Creating such a network is a highly capital-intensive project with long payback periods (but significant society-wide benefits), and, as a result, has required public sector oversight of electricity supply in many countries. Even where private firms were active from the outset in the electricity business (e.g., the USA, Germany, and Japan), governments have played an important role in building electric networks – sometimes as a supporter of, and at other times as a competitor to, private power (Patterson 1999).

While electricity systems built by public and/or private monopolies made large-scale production and consumption of electricity possible in many parts of the world, their operation also created serious problems. For example, mega-projects such as large-scale hydro dams, nuclear reactors and coal-fired power plants have become sources of serious ecological degradation and have crowded out public spending on other social projects, especially in developing countries (Durosomo 1994). In many developing countries, a phenomenon known as 'electricity poverty' emerged in which urban elites enjoyed service at the expense of large majorities of the un- or under-served rural poor. These problems were exacerbated by the undemocratic mode of governance often characterising electricity decision-making. Too often, important decisions regarding electricity supply were made by a closed circle of technical experts, government bureaucrats, and large corporate clients. Such a governance structure, coupled with the

monopoly status of utilities, resulted in electricity industries developing into powerful organisations with their own political and economic agendas. In the absence of effective public supervision, moreover, electric utilities in many countries became a source of corruption, cronyism and pork-barrel politics rather than guardians of the public interest (Patterson 1999).

A series of proposals during the late 20th century sought to address such issues, as well as capital shortages suffered by developing country public sectors. Power liberalisation has differed by country, but common elements of an agenda for sectoral change can be identified (IEA 2001; Littlechild 2001; Rosen et al 2000):

- Vertically integrated utilities are broken up, either by sale of generating plants, or by placing generation assets in separate unregulated generating companies that remain utility subsidiaries.
- Markets are created into which the generating companies can sell, and from which others can buy.
- Capital investment in the sector is increasingly decided by market actors and forces.

Reforms in the institutional framework of the electricity industry that are associated with power liberalisation are justified by advocates on several grounds. It is argued by many that the merits of monopoly in electricity generation have disappeared because economies of scale associated with centralised power plants have been exhausted (see Joskow 1998; Flavin & Lessen 1994; Kahn 1991). Continued monopoly supply under these circumstances would only hinder the introduction of new technologies (Hirsh & Serchuk 2000). Others point to the fact that governments in many countries are experiencing financial strain in mobilising capital for investments in electricity infrastructure (see World Bank 1999 and 1993).

Where state ownership is not prevalent, state interventions in electricity price-setting and capacity planning are blamed for 'distorting' markets, thus creating artificially low prices (in developing countries) or high prices (industrial countries). In both cases, sub-optimal conditions for electricity supply and demand are possibly created (IEA 1999a; IEA 1999b). Additionally, some suggest that pressures are escalating from increasingly globalised capital sectors for the electricity industry to be more open to new investments, competition, and capital mobility (see Flowers 1998; Graham 2000; Tellam 2000).

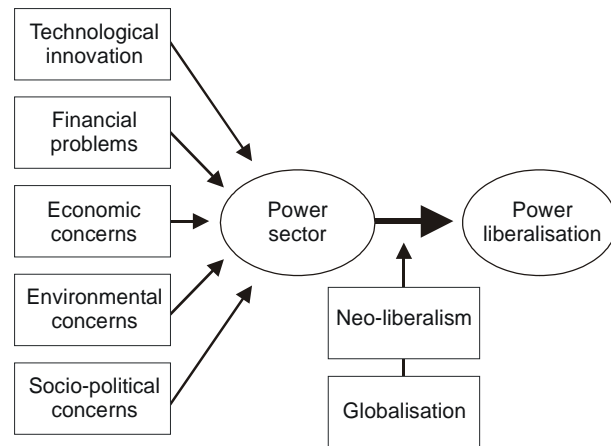


Figure 1: Power liberalisation

2.2 Efficiency ideology

An almost universal justification for electricity privatisation and/or the introduction of competition has been the claim that reform will yield an economically more efficient sector than regulated monopoly arrangements. The International Energy Agency (IEA), for example, argues that electricity market competition offers significant potential benefits through improved economic performance, lower prices, and an expansion of choices available to consumers (IEA 1999a and 1999b). Following the same line of argument, other multilateral institutions such as the World Bank, the International Monetary Fund, and the Asian Development Bank (ADB) also are calling for power sector reform as a key condition for loans and other forms of financial support (see Dubash 2002; and Tellam 2000). In this regard, power liberalisation is increasingly expressed in the form of an ideology, that is, a belief (with cited empirical support) in the ability for specific institutional changes to create societal improvement, in this case, via advances in efficiency. Key beliefs underlying this ideology include:

1. the view that the private sector is more efficient than the public sector in matters involving resource allocation (Lovei & Gentry 2002);
2. the assumption that greater competition and less regulation will increase economic efficiency (Bacon & Besant-Jones 2000);
3. the conviction that market-oriented policies will enable the electricity system to be subject to democratic pressures

through the choices that consumers make (Smeloff & Asmus 1997); and

4. the presumption that liberalisation will enhance environmental quality by driving out old technologies (Lovins et al 2002; Joskow 1998; Flavin & Lessen 1994) and/or by facilitating 'green' consumerism (Wiser 1998).

2.3 The agenda of power liberalisation

Power liberalisation aims to free electricity from the constraints of public control by permitting it to be auctioned largely as a commodity. As Offner (2000) points out, the policy emphasises private markets and ability to pay, and regards public support and cross-subsidies as sources of social and economic distortion. In other words, power liberalisation is centered on an agenda of commodification 'in which progress is determined by increased social capacity to produce and purchase goods and services' (Byrne & Rich 1992: 271). As explained below, commodification of electricity supply advances trends toward centralisation and marketisation in not only the techno-economic but also socio-political contexts that give structure to the sector.

2.3.1 Increasing centralisation

In discussing the origin of electricity restructuring, many note that recent technology innovation in electricity generation has made obsolete the logic of scale economies, which had earlier justified monopoly status for suppliers (Fox-Penner 1997; Hunt & Shuttleworth 1996). Improvements in smaller-scale, natural gas-fired, combustion technology have arguably diminished the economic edge that large plants once had. As a result, advocates believe that a key hurdle to supply-side competition, namely, high initial capital costs to enter the market, is no longer present (see Fox-Penner (1997) and Brennan et al (1996) for details). In fact, power plants built by independent power producers in the USA, which typically account for over 50% of new capacity additions, averaged just 25 MW by 1992. Similarly, the average size of utility-built plants declined from more than 600 MW in the mid 1980s to an average of about 100 MW by 1992 (Flavin and Lessen 1994: 17). This trend is seen as a decisive factor in explaining the rapid increase in restructuring efforts during the 1990s.

While it is true that smaller-scale gas turbines have played a role in challenging the 'natural' monopoly economics in generation, this does not necessarily mean that power liberalisation will lead to decentralised electricity systems, in which small-scale, community-based technologies flourish, and management of the electricity systems becomes localised. To the contrary, centralisation is being further rein-

forced especially in the form of utility mergers and acquisitions, and in the operation of transmission and distribution (T&D) networks.

For example, since wholesale competition was established in 1992, the number of private utilities in the USA has shrunk dramatically because of increasing merger and acquisition activity. As a result, while the ten largest utilities in the USA, ranked according to generation capacity, owned 36% of all investor-owned-utility generation capacity in 1992, the share had increased to 51% by 2000. Evidence of consolidation among the sector's top 20 companies is even more compelling. In 1992, the 20 largest companies owned 58% of total investor-owned-utility generation capacity; their share had increased to approximately 72% by 2000 (USA EIA 2000). British experience likewise suggests that centralisation of the electricity business is likely, notwithstanding advances in small-scale generation technology. While the U.K originally had 12 retail supply companies operating in its competitive movement, six large generation companies now dominate. The 12 distribution companies created under the country's restructuring plan are also beginning to merge. As of 2002, eight firms own most of the distribution business (Thomas 2002: 3).

For developing countries, a relatively modest number of overseas companies have competed to enter their electricity markets. For example, Cameroon received just foreign six bids when its market opened and Mauritania and Senegal each attracted only four foreign bidders in their liberalisation processes. Final participants were even smaller in number (one or two) (see Wamukonya, 2003a). According to a recent World Bank survey, moreover, most private investors are losing interest in developing country power markets (Lamech and Saeed 2002: 2). This is hardly convincing evidence that liberalisation and technology change are promoting competition in the electricity sectors of developing countries.

Power liberalisation initiatives put great emphasis on the role of transmission networks as 'common carriers' and try to ensure 'open access' to the transmission network by competitors. Transmission operators also typically manage the bidding markets for the supply of electricity when competition in generation is introduced. While the language may resemble that of a 'commons' argument, the actual implications are quite different: the transmission system is operated as a 'common' carrier of electrons generated by large electricity companies, and 'open' access to the transmission system is guaranteed mostly to those companies and large-scale electricity consumers. Rather than being used as a means to reflect economic, social and environmental priorities of diverse communities connected to the electric grid, T&D networks are operated mostly as highly sophisticated technocratic institutions that enable the transfer of large vol-

umes of electrons (and private gains) among a small number of sizeable companies. Compared to the Internet, for example, there are only a modest number of participants, and their market power is substantial.

Centralisation of the generation business and T&D networks has to do with the commodification of electricity spurred by liberalisation. A key action of reform in this respect is the lifting of restrictions on electricity trade. A 'free' market for electricity calls for competition in so-called bulk power supply (i.e., the delivery of large volumes of electricity to large, interconnected grids). Winning a bid in this market (at regional, national and international geographies) ensures a company that it can operate its plants at high capacity factors, thereby driving down unit costs. Merger and acquisition activities reflect this logic. Thus, even if smaller scale generation is now affordable, the generation business is likely to increase in scale. Similarly, an 'open' market depends on freer movement of electrons, which in turn requires increased interconnections between existing systems over wider geographies. Indeed, the extension and interconnection of transmission lines to facilitate the free movement of electric commodities is commonly presented as a key requirement for a more efficient electricity sector. The phenomenon is also readily observed in Europe, where the prospect of a multinational grid is being vigorously pushed.

Another important element of the further centralisation of the electricity system is the concentration in ownership of electricity systems on a regional and global scale. As discussed by Thomas (2002), Flowers (1998) and Patterson (1999), for example, mergers and acquisitions across national borders are a distinct feature of power liberalisation. In fact, opening the electricity industry to global capital is one of the key imperatives of power liberalisation, since its proponents believe that competition among electricity suppliers and carriers will generate the most efficient and optimal outcomes. Thus, liberalisation is likely to expand the geographical reach of the already large electricity suppliers, which will be justified under the guiding logic of commodification as the necessary result of the market's drive for efficiency.

2.3.2 Marketisation agenda

Faith in the marketplace constitutes another keystone of the policy framework underlying power liberalisation. Based on neo-liberal ideology that associates markets with freedom and governments with repression (see Somers (2001) for a discussion of the origins of this ideology), free market advocates elevate trade as the centerpiece of civil society, and assign secondary status to non-market values and interests. In fact, some proponents regard markets and consumerism

as preferable alternatives to political activism and the aggressive exercise of citizenship because, arguably, society's members can participate in markets directly and individually, whereas citizens participate in the polity only indirectly and collectively (Crouch et al 2001). Such a tendency to 'marketise' or 'privatise' citizenship (Somers 2001) is noticeable in the debate over power liberalisation. In line with the 'Citizens' charter' formulated by the British government to celebrate individual choice (Freedland 2001: 100), providing individual consumers with 'the right to choose' electricity suppliers is often described as equivalent to securing civil rights and 'democratising' the electricity system (MOCIE 2001). The advocates of this view argue that citizens, who hitherto had little influence in decision-making on electricity policy, can now realise their preferences and values in the electricity market using their power to choose and change electricity suppliers (see Smeloff and Asmus 1997).

Based on the belief that market mechanisms are more efficient than social regulation or planning, proponents of electricity restructuring also argue that important public policy goals such as the promotion of renewable energy can be realised by expanding consumer choice. For example, 'green pricing,' which allows electricity companies to sell renewable energy at a higher price than other power (see Rabago et al (1998) and Wiser (1998) for details), has been proposed as a key mechanism to make the electricity sector sustainable. Proponents of green pricing base their optimism on survey results showing that consumers are willing to pay more for electricity produced in an environmentally friendly manner. According to a US study, however, only 1-2% of consumers have actually switched to a green power provider even in the states with the most successful green pricing programmes (Swezey & Bird 2000). Nonetheless, liberalisation's proponents often promise a less polluting future if electricity is governed by markets rather than governments.

3. Contradictions in power liberalisation

3.1 Economic contradictions

Experience with liberalisation so far has revealed that creating a genuinely competitive electricity market is an extremely difficult task. After initially unbundling electricity monopolies into several firms, for example, many countries have seen those companies vertically and horizontally reintegrate. In many cases, therefore, the result of power liberalisation has been the creation of electricity oligarchies, which tend to be dominated by large multinational corporations (Thomas 2002).

Table 1: 'Winners' in the California electricity crisis: merchant plant owners*Source: Public citizen (2001)*

	<i>Price paid for CA plant (\$m)</i>	<i>2000 est. gross CA plant profit (A)</i>	<i>Rate of return on CA plant (\$m)</i>	<i>Company 2000 profit (B) (\$m)</i>	<i>% of co's 2000 profit from CA plant sales (A/B)</i>
Southern	801	212	26%	1 313	16%
AES	781	235	30%	657	36%
Duke Energy	501	344	69%	1 776	19%
Reliant Energy	280	261	93%	819	32%
Dynergy	59	59	100%	452	13%
TOTAL	2 422	1 111	46%	5 017	22%

The experience with California's Power Exchange, moreover, suggests that policy-making based on a belief in 'the genius of market-place' (CPUC 1996) can lead to surprising results. For example, day-ahead, hour-ahead, real-time electricity markets in California succeeded in boosting, rather than lowering, prices. The economic value and profits of some generators such as Reliant Energy, Duke Energy, and the AES Corporation improved dramatically (see Table 1), but without any tangible increases in efficiency of generation. Indeed, these companies largely profited from the purchase of power plants that utilities in the state were required to sell under restructuring in order to increase competition. The costs to California of power liberalisation included high wholesale prices (reaching a monthly average of 37 cents per kWh in December 2000² – more than 11 times higher than the previous year – see EIA 2001), exceptional service disruption rates (CPUC 2001), the emergence of profitable 'dirty power' plants (especially beyond California's borders) and the necessity of a government bailout of the industry (which totalled \$12.0 billion in bond sales – see the Foundation for Taxpayer and Consumer Rights (2002) for details).

In analysing the causes of the California electricity crisis, many point out that market participants were able to 'game' the system to maximise short-term profits (CPUC 2002). This is attributed to California's policy requiring all wholesale transactions to occur via 'spot markets' and its restrictions on the use of long-term contracts to hedge risks that would accompany market speculation. Capitalising

² On December 12 2000, the daily average PX price in California exceeded 60cents per kWh. On the following day, the average wholesale price in the day-ahead market jumped to \$1.20 per kWh (Smith 2000a; 2000b).

on such a market design in California and the distinctive characteristic of the electricity system, namely, that demand and supply must be precisely and continuously matched in real time (due to the inability to store electricity), some generators withheld supply from the day-ahead market, and instead bid capacity into other markets in order to collect high premiums for real-time energy and ancillary services (FERC 2001). In essence, power generators in California created an artificial scarcity of electricity and drove up prices by adjusting their bidding strategies – without collusion (World Bank 2001). The ‘genius of the marketplace’ (CPUC 1996), with which California entrusted the management of its electricity system, ultimately provided new opportunities for profit creation in the electricity sector and little else.

Under such circumstances, the claim that markets produce efficient allocations of resources is problematic. Why would one presume that rapid increases in profit collected by energy traders who withheld, rather than expanded, capacity is efficient? Why would the need for billions in bond sales to bail out the industry and the occurrence of rotating blackouts be regarded as efficient? In reply, some market proponents have argued that rate caps on residential consumer bills doomed the California policy to failure (e.g., Berg et al 2001). But is it reasonable to argue that results would have been efficient if the utility sector could have passed on 400% increases in wholesale prices to residential users? Why would the transfer of billions of dollars in profits to energy traders by residences count as an efficient allocation of resources? Others explain the California crisis as the consequence of a flawed market design (e.g., World Bank 2001). However, this begs the question. If markets require policy design to succeed, why wouldn’t it be appropriate to recognise policy – and importantly, the chosen aims of policy – as the key factor, rather than markets. Obviously, acceptance of this point would deny markets the presumption of inherent benefits. Instead, economic benefits would accrue in relation to the design of market policy, thereby requiring explicit goal-setting as to those who should gain how much, and how the gains should be accumulated, invested, and shared.

Rather than relying on ‘genius’ strategies, it would perhaps be more apt to argue that our policy challenge involves the creation of a decision-making process that can produce a collectively valued restructuring strategy. Seen in this light, markets could be tools for meeting public aims, but it would be inappropriate to use market economics to preempt public policy choice.

3.2 Environmental contradictions

The impact of power liberalisation is not confined to the economic realm. By subsuming societal goals under the promise of economic

efficiency, power liberalisation tends to leave existing environmental problems unaddressed and creates new challenges in meeting sustainability goals. Power liberalisation promotes an electricity system that is geared toward short-term profits, compared to its monopoly predecessor. While this can mean that innovation is encouraged, it may also mean that a long-term public interest in sustainable alternatives, such as conservation and renewable energy, can be neglected. Treating electricity as a commodity drives economic actors to focus on selling more kWhs – rather than providing more services with fewer kWhs. For example, utility spending on demand-side management programmes in the USA fell 45% between 1993 and 1998, and fell 57% from projected levels (Union of Concerned Scientists 2000). This is the period during which electricity restructuring was initiated in the USA. Further, much of the revenue from policy tools created by states during restructuring to capture public benefits (those tools include system benefit charges, set asides for conservation and renewables, and renewable portfolio standards) has mainly substituted for funds from utility-sponsored programs, rather than expanding the level of a social commitment to sustainable energy options.³

In the case of renewable energy investment, a dramatic reversal from a steady upward trend in development has been the clear result of USA restructuring. According to a recent report (Union of Concerned Scientists 2000), renewable energy generation in the USA fell from 66 billion kWh in 1993 to 49 billion kWh in 1998, as utilities bought out contracts and shut down or reduced output from renewable energy plants. While renewable energy investments are increasing in Europe, growth in these options is the result of clear government policies to promote renewables in an effort to reduce greenhouse gases (Commission of the European Communities 2000).

In countries that choose to begin power liberalisation by inviting the participation of independent power producers (IPPs) – a common approach in developing countries as observed by APERC (2000) and Hunt and Shuttleworth (1996), the situation can be worse. Many countries have learned that IPPs require power purchase agreements with take-or-pay clauses. Such clauses provide little incentive to improve demand-side efficiency, since a country must pay a fixed fee regardless of whether full use is made of the electricity supply pledged by an IPP (Wagle 1997). In short, the commodification of electricity tends to further divorce the value of electricity from the actual uses to

³ In any case, these tools find their rationale in environmental, not efficiency, terms and, therefore, any achievements associated with them cannot properly be attributed to liberalisation.

which it is put, thereby impeding an integrated approach to meeting energy needs at least cost to both the economy and the environment.

Experience to date indicates that electricity commodification tends to speed up, rather than slow down, the 'race to the bottom' in terms of environmental profiles of electricity generation (Higley 2000 and RAGE, no date). Since prices in electricity markets do not include environmental costs, older, highly polluting power plants can have competitive advantages compared to other modes of power generation, especially when markets become enlarged through increasing interconnection of grids. In the absence of stronger environmental regulations, therefore, liberalised electricity markets appear likely to add to environmental harm in the search for a cheaply priced electricity commodity. In fact, carbon dioxide emissions in the USA electricity sector jumped 20% to 2.6 billion tons in 2000 from 2.1 billion tons in 1995, exceeding the worst-case forecast of the Federal Energy Regulatory Commission (FERC) for environmental impacts of power liberalisation in the USA (FERC 1996). The unexpectedly high increase is attributed to a cutback in energy conservation measures by utilities (Carlton and Smith 2002).

3.3 Political contradictions

While power liberalisation initiatives aim to substitute self-regulating markets for political governance, the new markets have turned out to be far from self-regulating. Regulatory measures needed for adequate supervision of market activities have proved to be more complex than those required under regulated monopoly regimes. For example, system coordination – making different components of the system balanced in real time in terms of voltage and frequency – has become much more challenging in a liberalised market environment and more sophisticated in terms of central controls than many had expected (see Brennan et al (2002) for details).

The process of establishing regulatory agencies or other kinds of controlling bodies needed for liberalised electricity markets has tended to date to reinforce the authority of centralised and largely autonomous organisations. These include power exchanges, independent system operators, and regional transmission organisations, all of which diminish the range of local decision-making and governance. In the USA, for example, federal government agencies have assumed much more critical roles in a liberalised electricity market. Whereas state and local governments were primarily responsible for the supervision of electric utilities during the era of regulated monopoly regimes, FERC has recently assumed a large portion of the regulatory obligation. Moreover, partly because of the complexity involved in adequate management of liberalised electricity systems, technical

knowledge tends to be further empowered at the cost of citizen-based political deliberations. Thus, local USA jurisdictions had the authority to decide the balance between demand-side management and utility generation until liberalisation. Now that balance is lost in the whirl of independent system operators and power exchange machinations about transmission congestion pricing, 'must-run' versus 'bidded' supply, and detection of market gaming strategies.

Without explicit efforts to reinsert democratic principles in the process of power liberalisation, electricity markets are likely to be controlled by and serve the interests of already powerful economic and technical entities. Nonetheless, advocates of power liberalisation often de-legitimise political interventions in electricity markets, arguing that societies should 'let the market work' (Berg et al 2001). By doing so, they effectively diminish the space for public decision and action and leave the market 'open' to the needs of special interests (particularly those with large financial stakes). As a result, political and regulatory bodies face increasing challenges in establishing the legitimacy of interventions into market operations to protect the public interest.

The preference under power liberalisation for individual consumer choice to political intervention is fundamental to the claim that electricity decision-making is more democratic with restructuring. However, consumer choice of electricity suppliers or products is only one of the many choices that societies have traditionally exercised with regard to electricity. In fact, many values important to a society's electricity future are decided outside the context of consumer choice of electricity providers. Universal service, environmental sustainability, social equity, and democratic governance of infrastructure investment are examples of commitments that societies have often embraced concerning the operation of their power sectors. By promoting neo-liberal ideology, which places individual above socio-political choice, power liberalisation sizably diminishes the space for collective, deliberative decision-making. Even in cases where consumer choice matters, marketisation of citizenship ultimately tips the balance toward more powerful economic interests, since one dollar is one vote in markets.

3.4 Social contradictions

Some researchers have raised concerns that power liberalisation would further entrench the unequal power relationship in the electricity sector, aggravating inequity between producers and consumers, and between affluent and poorer consumers (Coyle 2000). For instance, Ratepayers for Affordable Green Energy (RAGE), a USA consumer group, notes that even if efficiency improvements lowering

the cost of electricity generation were to occur with liberalisation, the benefit would not necessarily be distributed equitably. Because large energy consumers may be able to negotiate low prices with competitive providers, residential and small business consumers could experience price discrimination (due to their comparatively lower price elasticity) and pay higher unit prices (RAGE no date). Based on the experience in Brazil, Silva (2000) also reports that because of the uneven contest for low-cost electricity generation, the price of electricity has risen by nearly 320% for those using less than 30 kWh per month, whereas those consuming more than 1 100 kWh per month experienced a 16% decrease in prices.

In a similar context, Guy et al (1997) discuss the practices of 'cherry-picking' and 'social dumping,' witnessed after liberalisation in the UK. They argue that privatisation and liberalisation reward companies who accurately gauge market potential and profitability, and this has led British companies to carefully target socio-economic groups and locations through various techniques such as geo-demographic analysis and consumer-profiling (Guy et al 1997). The consequence of such cherry picking is the dumping of unprofitable consumers (Graham & Marvin 1994). With the gradual removal of cross-subsidies and an erosion of the commitment to universal service, utilities have sought to cut the cost of serving so-called 'cold spots' by either 'levering poor domestic customers off their networks or by installing prepayment cards' (Guy et al 1997). Since electricity provides an essential service for social and economic development, disconnection of unprofitable communities will eventually divide society into 'haves,' 'have nots,' and those who 'have little.' As information and communication are digitised and transferred by means of electrical networks, the social divisiveness of power liberalisation will ultimately mean not simply an inequality in service, but in the capacity to participate economically and politically. In sum, what may be rationalised on microeconomic grounds of allocative efficiency could undermine justice at the macro- or societal level.

4. Redefining the path for power sector reform

Growing trends of economic globalisation and political neo-liberalism have spread ideals of economic and technical efficiency throughout the policy arena, including those addressing energy (Winner 1982). Power liberalisation is a recent reflection of this phenomenon. In many cases, the question before governments has not been 'whether' but 'how' to liberalise the electricity sector. Yet, the contradictions in power liberalisation, at the theoretical level and in empirical experience, warrant a more critical assessment of the reform imperative.

While eventual outcomes of power liberalisation depend upon the type of social regulation that guides a particular reform process, it seems clear that as long as policymakers adhere to the belief that the market will deliver the optimal outcome for sustainability and democracy, policies that could explicitly seek to ensure those goals are unlikely to be developed or implemented.

Although private initiatives and competitive pressures may have a role in addressing fundamental problems of the current electricity industry, delinking reform efforts from the neo-liberal belief in market optimality is needed if alternatives are to be constructively discussed. Markets can serve societal interests only when clear public preferences are reflected in their operating structures (see Reddy, forthcoming, for a discussion of this issue). In this respect, the proper relationship between markets and society is one in which the former is informed by the needs and aims of the latter, not the reverse (as neo-liberalism and globalisation advocate).

4.1 Commodity policy or policy commons

Experience with power liberalisation suggests that its promises of efficiency, environmental improvement, greater equity and more democracy are overdrawn. Several explanations can be offered for the worldwide embrace of what has turned out to be a poorly performing policy strategy (see, e.g., Wasserman 2001; World Bank 2001). A key factor surely is the effectiveness of the ideology of market efficiency, which directs policy attention to the benefits of unsubsidised prices and competition. In formulating a public benefits agenda as an outgrowth of market processes, this ideology conceives social need in commodity terms, that is, as a good or service whose value is determined by individuals being able to afford more or less of it. In the case of electricity, an efficiency-based strategy expects to increase service and lower short- and/or long-term costs, thereby enabling more people to consume more electricity. It is the empowerment of individual choice, coupled with the promise of expanding consumption, that is the hallmark of commodity policy in electricity.

In this respect, a *commodity policy* relies for its claim of being a distinctive source of public benefits on two premises – cornucopianism and individualism. Specifically, a commodity policy's public benefits are the result of the production of 'more,' on the logic that 'more is better' (cornucopianism); and/or the result of a greater exercise of individual choice, on the logic that individual choice is the only true expression of freedom or, at least, its principal expression (individualism).

The experience with power liberalisation described above has underscored the existence of vital public values that are neither cornu-

copian nor individualistic. These include the value of reducing energy use in the interest of sustainability – a direct contradiction of cornucopianism; the value of social equity that can only be realised by a collective commitment to, for example, universal service even when it is ‘inefficient’ – a direct contradiction of ‘individualism; and the value of democratic deliberation and participation, which can interfere with individual choice but may build long-term confidence in the efficacy of the process. Because these values inescapably conflict with the norms of commodity policy, it is not reasonable to expect them to be effectively considered under existing liberalisation strategy. Furthermore, adding ‘policies’ to address them in some manner, while maintaining the basic architecture of power liberalisation, can only promise to heighten awareness of the conflict between commodity and non-commodity values in electricity reform.

What might be an alternative base informed by the specific experience of power liberalisation? A *policy commons* approach (Figure 2) replaces liberalisation’s marketplace – an economic space – with public discourse – a socio-political space. It does this in recognition of the fact that non-commodity values are not intended to be efficient – instead, they most often are intended to correct failures of democracy, equity and sustainability. These values are lost when the decision space is economised. Invigorating the socio-political character of the decision space is therefore essential if a public benefits agenda is to be pursued.

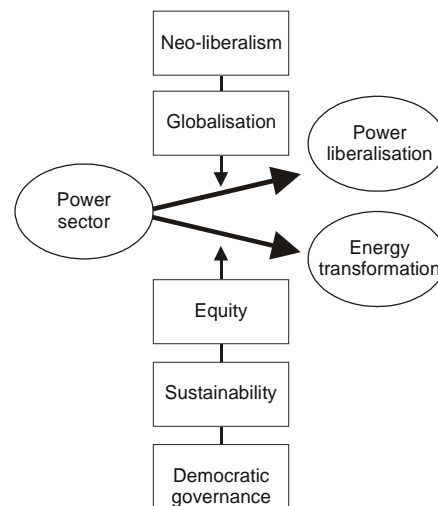


Figure 2: Electricity liberalisation or energy transformation

The pre-liberalisation era of electricity supply hardly offers guidance in this matter. Relying on a mixture of technocracy and monopoly, the era preempted public discourse and responded to social and political criticism only in moments of crisis. A vigorous public discourse would require that technology choice, investment commitments, social impacts, and ecological implications would all be routinely considered in an 'open access' regime of ongoing evaluation. As discussed below, a policy commons would be distinguished by a process of evaluation unavailable in either the marketplace or technocracy.

As well, the content of decisions should differ, since a policy commons would authorise policy actions that are responsive to a range of values incapable of being valorised within the realm of commodity production and consumption. These values stand apart from the cornucopian and individualist norms of power liberalisation. Broadly, their content is to be found in the emerging ideas of an electricity system governable by communities and responsive to criteria of equity and sustainability. While specific policy content will be shaped by the particulars of each societal context, the evolving discourse on sustainable energy strategy (Reddy et al 1997; Byrne & Rich 1992; Goldemberg et al, 1988) is likely to contribute ideas about the attributes of a new energy-environment-society relationship. In this respect, a policy commons approach will be less likely to yield reform of the power liberalisation model than a transformation of the electricity policy agenda. Moving beyond the 'genius of the market' appears to be unavoidable. What then might be elements of process and content that could help to transform the policy agenda? We first examine the question of process.

4.2 Democratisation of electricity

A fundamental problem of power liberalisation and its commodity policy is that it tries to build consensus around a model of reform rather than to build a model of reform based on social consensus (PRAYAS 2000). A policy commons approach to electricity reform emphasises a democratic governance process, in which diverse elements of society can participate in decision-making on capital investments, price setting, technology development and environmental and social goals relating to electricity provision. When participation of all stakeholders – not only from the government and business sectors but also from civil society – is institutionally encouraged and supported, and diverse concerns of different stakeholders are discussed in an open and transparent manner, the needs and aims of society regarding electricity service can be better clarified, and the possibility of reaching social consensus can be advanced.

In fact, such an approach has been tried in actual electricity decision-making in some countries. For instance, what has come to be known as an integrated resource planning (IRP) approach, while having been adopted in different countries in different forms, embodies the idea of democratic governance of the electricity sector quite well. Rather than leaving decisions about electricity service exclusively in the hands of utility companies, IRP aims to create a mechanism by which power development plans can be scrutinised by the public. The process enables civil society to propose alternatives that can be analyzed to see if there are less costly and socially more preferred means of meeting needs than simply building large-scale power plants (see, e.g., Reddy et al (1991) for a least-cost planning approach applied to India). By requiring utilities to examine demand-side as well as supply side options and small-scale as well as large-scale alternatives, IRP seeks to reduce system-wide costs (often including environmental costs) of energy service provision while ensuring that society's wider interests are represented in the allocation of capital (Regulatory Assistance Project 2001; Kreith 1993).

IRP was implemented in the USA to enhance the public capacity to intervene in the regulatory process (Kahn 1991). Relevant information about utility planning was made available to concerned parties, and regulatory proceedings were held in an open and transparent manner using an administrative process to decide policy action. In order to counterbalance the resources and expertise available to utilities and business sectors, moreover, financial and analytical support was made available to public interest groups (e.g. consumer groups and environmental NGOs – see CEEP (1999)). Additionally, 'public advocates' were created to ensure an institutional voice for ordinary citizens and small businesses who, otherwise, would not have been represented in the planning process. Using such mechanisms, non-conventional actors in electricity planning were able to articulate their concerns and visions, often based on independent research and alternative energy plans. In short, IRP was an effort not only to hold utilities accountable to the public but also to create and enrich the policy commons, by sustaining a public space for new ideas and innovations.⁴

⁴ Although IRP has mostly been adopted in a regulated monopoly system, it can be readily employed in the context of market competition. For example, using an integrated resource plan generated by its staff as a benchmark, for example, an ISO can initiate a competitive bidding process to see if bidders can offer demand- or supply-side projects that lower the cost of electricity service and increase public benefits. Such projects can then be incorporated in an operational plan for electricity service (Regulatory Assistance Project 2002).

Establishing a democratic governance process such as IRP is as important in developing countries as in industrialised ones. This is well illustrated in the contrasting stories of two states in India: Andhra Pradesh and Karnataka. While the electricity sectors of both states suffered from technical inefficiencies and financial crisis in the 1990s, their approaches to the reform process were quite different. The state government of Andhra Pradesh implemented a so-called 'World Bank model,' including unbundling and privatisation of its electricity board without extensive public consultations. As a result, when steep tariff hikes were imposed on the residential and agricultural sectors in 2001, mass protests erupted (Raghu 2002). In the state of Karnataka, where access to information and the right to representation were institutionalised through enactment of the Right to Information Act and the Transparency in Government Procurement Act, however, the situation was quite different. When two tariff increases were proposed by the newly created Karnataka Electricity Regulatory Commission, over 9 000 objections were received from the public. Those objections were examined seriously through extensive dialogues between the Regulatory Commission, its consumer advocate office, and the Electricity Consumers Network, an independent citizens organisation. The dialogue resulted in a compromise including a lower level of tariff increases, low-income consumer protection measures, and programmes for efficiency improvements in the electricity sector. Instead of protests, citizen groups organised to promote conservation and renewables in order to make electricity affordable and its provision environmentally less damaging. Since most citizens in the state depend on the rural economy for their livelihoods, this approach proved to be economically, socially, and environmentally superior to the commodity approach of Andhra Pradesh (Muralidharan 2002).

Democratising electricity decision-making – including decisions regarding industry structure and the investment of capital – is critical in creating an energy policy commons. While it is difficult to form a consensus on any issue in a complex world where conflicting interests exist, the politics of open dialogue based on the principles of transparency, accountability and participation can better align the aims of power sector reform with a broader agenda of public benefits (PRAYAS 2001).

4.3 An equitable and sustainable power sector

The creation of an electricity policy commons would represent a paradigm shift from the commodity-focused strategy of existing reform. While commodity policy narrowly focuses on economic efficiency, a policy commons approach calls for explicit commitments to

identified societal goals. Among others, *equity*,⁹ which recognises a universal right to service, and *sustainability*, which commits society to ecological balance in the provision of electricity service, are key to the successful transformation of the content of the electricity system.

Communities seeking to scale their electricity sectors to achieve universal access, for example, would need to grapple with the centralisation and marketisation tendencies of commodity-oriented reform. In cases where a sizable part of the population relies on rural institutions for development, conventional grids designed for urban users are seldom affordable or technically rational. Electricity networks designed to produce bulk power in order to serve small, dispersed loads among rural communities hardly make sense and this explains why such 'urban' systems underserve rural needs. Thus, in Uganda, only 2% of rural users receive grid electric service; in Cameroon, 6%; and in Zimbabwe 7% (Wamukonya 2003b). Commodification of the sector can only amplify the dilemma.

However, the 'distributed utility' concept (Weinberg et al 1993) offers a new framework for delivering needed energy services to communities in a way that minimises environmental impacts as well as economic cost. Fundamental to the concept is the idea that small-scale and modular generation, demand-side management projects, and efficiency improvement programmes can be distributed throughout – or instead of – the transmission and distribution system (Feinstein 1993: 3). This strategy can be applicable to both rural and urban communities. In rural communities, it offers an alternative to high-cost extensions of the bulk power grid system. In urban communities, the distributed utility can furnish least-cost solutions to transmission and distribution upgrades and to siting problems associated with large-scale central power plants (see Lovins et al 2002; Sant & Dixit 2000; Flavin & Lessen 1994). In particular, renewable energy, which is widely available in all parts of the world (while fossil and nuclear energy are not) and is flexible in its application and size (from several hundred Watts to several MWs), potentially provides an important opportunity in realising the distributed utility concept (see TERI 2003; Zhou & Byrne 2002; Byrne et al 1998; Letendre et al 1996).⁵

⁵ Although some renewable energy technologies (such as wind, small-hydro, and geothermal) are competitive in bulk power markets (see, e.g., Flavin & Dun 1997), others (e.g., photovoltaics and certain biomass applications) are not. Yet, this can be a false dichotomy in rural settings since renewables would not normally be competing with conventional grid power – the prohibitively high cost of grid extension typically means that rural households distant from the grid are unserved. Instead, renewables compete with small, high-maintenance generator sets that require fuels which must be fetched from distant town markets. When lifecycle costs

The distributed utility concept embodies efforts to utilise 'energy income' that can be regenerated, instead of consuming depletable 'energy capital' such as fossil fuels and nuclear energy (Lovins, 1977: 39). The architecture offers opportunities for universal service that do not require rural communities to 'urbanise' their energy consumption (i.e., utilise high levels of electricity in order to serve the logic of scale economies). At the same time, this architecture can provide an ecologically balanced and socially equitable solution to urban energy needs, especially when it is combined with community or municipal management and/or ownership..

The principal failing of the distributed utility in the present context is that it undermines commodity economics. While commodity costs depend on the volume of supply, the economics of conservation and end-use efficiency is built on reduced supply, focusing instead on quality of service. Similarly, microturbines and appropriately scaled power plants (often less than 50 MW) may have higher unit costs, but their advantages in being more easily sited near loads than large power plants – thereby saving transmission and distribution losses, and their much lower capital and environmental risks, can offset higher generation costs. Every step taken to reduce dependence on energy capital (e.g., through efficiency improvements and conservation, and the use of appropriately-scaled power plants), and to create a space for a distributed network based on local energy resources, could be counted as progress toward the goal of turning the current energy system into an energy commons. Such a transformation could make electricity available to more people, could distribute the benefits and costs of electricity generation more equitably, and could lower the ecological footprint of the power sector.

are compared, small wind, photovoltaic and biomass systems can be a much less expensive means of rural electricity supply (Byrne et al 1998). There is an additional factor to consider with regard to the rural potential of renewables for electrification. Renewable technologies often have rural roots and offer the opportunity for development of energy infrastructure that is endogenous to rural economies (in contrast to the 'input' of electricity from conventional power plants and transmission-distribution systems that are possible only where urban manufacturing platforms are present). In the case of urban markets, renewables may be lower in cost than conventional grid power options when social costs are considered and when grid congestion is present (see, e.g., Letendre et al 1996; Hohmeyer 1992).

5. Beyond power liberalisation

Experience with power liberalisation over the past decade offers an important lesson for social strategy: a metatechnology must operate within and be subject to institutions of collective evaluation – a policy commons – if it is to serve society. When disconnected from such an institutional context, metatechnologies are prone to produce the equivalent of a public benefits ‘blackout.’ The painfully earned awareness of the potential for public benefits ‘blackouts’ from the crises of liberalisation witnessed in California, Brazil, India and elsewhere should caution those interested in electricity reform against neglect of the special obligations of a metatechnology.

Built on a commodity orientation toward policy and intending mainly to promote cornucopian and individualist values, the current agenda for electricity restructuring is destined to ill- or under-serve the aims of equity, sustainability and democratic participation that have been prominent elements of public evaluation of this metatechnology for decades. Liberalisation’s nearly exclusive reliance on decision-making in market settings preempts meaningful public discourse on the appropriate trajectory for the sector. When considered in conjunction with this reform effort’s parallel promotion of globalisation, the observed contradictions in the power liberalisation agenda with important values of society destined the initiative to fail from the standpoint of public benefits.

At the same time, a hopeful sign can be identified from global experience with power liberalisation. Consider, for example, that in the wake of a very costly fiasco, California was able to extricate itself from high prices and power shortages in just eighteen months. What policy actions reversed the crisis? A combination of democratic planning and the adoption of distributed resource tools. California closed its PX and returned to an IRP style of decision-making. Via this forum, it found public benefit investments in energy conservation that shed 6 359 MW of load (CEC 2002a) and added 300 MW of new renewable energy capacity in 2001 (CEC 2002b). The strategy lowered costs to consumers, restored balance to the supply-demand relation, improved environmental performance and substantially better served the aim of social equity. Most important, the embarrassment and anger that power liberalisation spawned has been replaced by a heartened and reinvigorated civil society unafraid to govern this metatechnology according to public values. As California learned, a real and substantial choice lies before society: power liberalisation or energy transformation. It is a lesson well worth the thoughtful consideration of all societies seeking to reform their electricity sectors.

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