

Chapter 11^v

Epilogue

(Re-imagining Nepal's Water: Institutional Blind Spots, Developmental Blind Alleys and the Lessons of the Century Past)

Dipak Gyawali

It is indeed ironical that this epilogue – to a book whose contributors are all senior figures of Nepal's water and energy establishment – is being composed by hand because of power cuts. A country that has long boasted being one of the richest in the world in hydroelectric power potential is reeling under eight hours of daily load shedding in the month of March 2008. Such officially announced and enforced blackouts are, however, not new: they have, like the yearly seasons, regularly followed the commissioning of new hydroelectric plants. A few years of excess capacity have inevitably been followed by several years of shortages in the national grid since the 1970s. The story of scarcity amidst the plenty so frequently propagandized in the media repeats itself in other subsectors of domestic water supply and irrigation as well. Is there a rational explanation, a method to this madness?

This book helps answer that question: it provides much of the raw data, historical information as well as accounts of political and institutional shenanigans that underpin Nepal's hydro travails. The writers are all now-retired senior civil servants whose collective experiences in Nepal's hydrocracy spans the last half century. There is hardly an irrigation, power or flood control scheme in the country that one or the other of them has not been in during their aggregate careers. Some of them have written their chapters in the first person singular, providing a personal testimony of crucial events, difficult negotiations, and crises in riparian relations that will be of immense value to those studying transboundary water issues and, more generally, water management problems in a country that is a latecomer to development.

Nepal's encounter with capitalism and the modernity it entails has been mediated through the praxis of development; and it has been of the reactive rather than the pro-active kind. First, the reaction was through a century of self-imposed isolation with Nepal being a 'forbidden kingdom' similar to the Japanese Tokugawa shogunate where all contacts with things foreign or modern were shunned. Following the Second World War, southern neighbor India's independence and the overthrow of the Rana shogunate in Nepal that drew political sustenance from its good relations with the British Raj, the pendulum has swung towards the other extreme: Nepali skepticism has been replaced with over-hyped expectations of what cornucopian largesse hydropower development may bequest Nepal's economy and everyday living. Hard-headed economic realism has, in this phase of euphoria, always taken a backseat to effusive dream-mongering by the policy class. 'Nepal is the second richest country in the world in hydropower after Brazil', goes a very popular saying without anyone asking if Brazil has ever said it is number one. 'Nepal's will become, if not an Asian tiger, at least an Asian leopard economy if high dams are built and power exported to India' is another ingrained belief.

The chapters of this book lay bare the labour pains of giving birth to a modern Nepal experienced by the midwives of the water sector. While that experience base is its great strength, it is also its inherent weakness: bureaucrats, like others, too have their own blind spots and institutional blinkers. The sociology

^v Chapter in Dhungel, DN and Pun SB. 2009. *Nepal India Water Resources Relationship: Challenges*. Amsterdam: Springer Publishers.

and politics of knowledge tell us that each social solidarity comes with its own unique set of filters that readily lets in one type of data – that which enhances its own position – and filters out the rest. It is only when another social solidarity, for instance the environmental greens or an aggressive market, comes forward with counterfactual contentions that the filtered-out information is reluctantly re-examined by the mandarins of the water establishment. Such has also been the case in Nepal, especially after the restoration of multi-party democracy in 1990. Indeed, the decade of the 1990s has been the decade of water controversies, with the Tanakpur afflux bund, the Mahakali Treaty and the Arun-3 hydroelectric project being seared into public memory.

I have been actively involved in these controversies as an activist academic, and have jostled with many of the authors of this volume, who were then government officials on the other side of the fence. This kind of fundamental difference on issues is all the more interesting because Nepal's professional class is small and moves in tight-knit circles. My own professional life and its trajectory have intertwined with those of many of the contributors to this volume. Santa Bahadur Pun, one of the editors of this volume and the writer of Chapter 6 was five years my senior and Damodar Bhattarai (Ch 3) was a year behind me in the same American Jesuit-run school, St. Xavier's Godavari. Dr Hari Man Shrestha (Ch 8) was finishing his PhD thesis on Nepal's hydropower potential at Moscow Energy Institute when I was finishing high school. As fate would have it, I too ended up in the same institute in Moscow several years later and studied under the same teacher, Prof. Dzhaifarr Omarovitch Seifulla. Upon returning to Nepal, I joined the Department of Electricity under the Ministry of Water Resources, where I lasted only seven years (two of those for study leave under a Fulbright fellowship at UC Berkeley); but it enabled me to interact and work with many of the authors, including the then 'baron' of the irrigation sector and first executive secretary of the Water and Energy Commission, Bhubanesh Kumar Pradhan (Ch 9). Incidentally, his brother-in-law, a respected power system control engineer, was a very close hostel mate of mine in Moscow!

I resigned from government service a year after my return from Berkeley because of the sheer frustration of being unable to effect any change in thinking within a moribund hierarchic structure. The water ministry was dominated by construction-oriented 'project mindset', where there was little patience for either sound economics or strategic thinking about this vital resource and its regional implications. My last assignments in government service that were memorable were writing the minutes of the only tripartite Nepal-India-Bangladesh meeting which took place in 1986, and in serving as a member of the 'Pokharel Commission' (chaired by former chief engineer and member of the then legislature, the Rastriya Panchayat, Birendra Keshari Pokharel) formed to investigate the problems in the World Bank-funded urban water supply projects. From then on, I have been an 'independent, interdisciplinary analyst', a critic of conventional approaches not only of water resources but also other sector developments, whether foreign-aided or unaided.

It is this public role as a civic voice for alternatives that propelled me to being Nepal's minister of water resources during a very difficult time in the country's history; and personally, short though my tenure was, I have been quite pleased with the policy changes I have been able to achieve or at least introduce into the hierarchic structure. My attempts were born of a different paradigm and sets of global and local concerns than what Nepal's hydrocracy had been weaned on ever since the modernization period (and what I have called 'the Age of Aid') that followed the end of the Second World War (Sharma et al. 2004). What is therefore of interest in this epilogue is that my ministership came at the end of the careers of most of the contributors to this volume and, in a sense, is also an epilogue to an entire chapter in Nepal's water resources development. Of the new chapter that will be written in the future, even the outline is still very vague.

What follows, therefore, will be a look at the issues that the various chapters have raised, but from the perspectives of a different social solidarity, that of the civic egalitarian critic, as well as that of a minister running against the tide of conventional thinking. It has been said that a witty Scottish parson, observing two women shouting at each other from windows across the street, remarked, 'They will never agree: they are arguing from different premises!' As an example of premise differences, I would disagree with most of the writers in describing the impasse behind the Mahakali Treaty as a Nepal-India problem. Both Kathmandu and Delhi hydrocrats *agreed* on the Treaty's primary aim of building possibly the world's highest rock-filled dam on this border river. On the other hand, the social and environmental activists of both Uttaranchal in India and in Nepal's Far West (including some of us in Kathmandu) think nature and society are both being bilked by the 'run amok' technology of high dams: such an approach is too risky and not really addressing the current developmental problems in both the countries. Mahakali is thus, to the socio-environmental critics, not a transboundary problem among nation-states but fundamentally a deep-seated rift in perception between upholders of different development paradigms irrespective of the countries concerned.

And Nepali activists also hold the position that an excessive obsession of Nepal's hydrocracy these last decades with 'exporting power to India' or cajoling lower riparians with the hype of regulated waters providing massive flood and irrigation benefits to the lower Ganga plains has not helped the Nepali domestic and industrial consumers of electricity nor the Nepali farmers either. Their position is that bargaining with others will be only as effective as one is strong internally, that Nepal should consider exports only after her internal needs are met. They are not at all convinced by the 'Bhutan model' (Gyawali, 2001).

With these egalitarians Green beliefs, my approach (and that of my other activist colleagues in Nepal) towards Indo-Nepal water issues is diametrically different, in terms of concept, approach and programs. The problems that have been described as Indo-Nepal issues by long-serving bureaucrats in this volume are, to many of us, inevitable consequences of moving along a wrong path. Even well-meaning efforts to iron them out will only find us digging ourselves deeper into a hole. The solution, therefore, is to dump the old paradigm and move along a new one—an agenda of the democratic development as opposed to the export-led one—where the old problems will simply not arise. Hopefully, the reader will find this epilogue's shift in refractive index from that of the previous chapters both thought-provoking and elucidative: Indo-Nepal water relations need to move away from the hype of the past and address the more pathetic reality that exists at the grassroots. Such an approach may benefit India too, as the situation in Bihar and Uttar Pradesh (UP) is not much better (Gyawali 1999).

Flood-Drought Syndrome

What I have earlier called the 'flood-drought' syndrome refers to the few years of power and energy glut in the Nepali power system upon the completion of a major hydel project followed by years of load shedding. Cultural Theory, or as it is also called 'the theory of plural rationalities' of which I am a strong proponent (see Thompson *et al.* 1990 and Gyawali, 2003), would argue that this state of affairs suits the bureaucratic solidarity fine. Hierarchism is, after all, primarily concerned with control and its proclivity is towards the choice of such technologies as would allow it to better control the overall process and thus consolidate its expertise-based structure. Large hydropower projects, often times larger than the entire power system, become the natural choice for the hydrocrats rather than a mix of small and medium projects built by the private sector or local communities. The latter option would 'follow the load curve', matching supply with demand, while the former 'single large project' path would be genetically encoded to assure alternate cycles of electricity glut and scarcity. This is true not only in Nepal but also in India

with its *dirigisme* of bureaucratic control over water and power; and the net result has been that state structures in both countries have maintained and managed scarcity while the tedious commission agent politics of development merchants and donor agencies holds local market-led innovation hostage till the next big project is bagged by the right constellation of vested interests.

Nowhere is the perceptual rift regarding the proper manner of developing Nepal's water resources as wide between the hydrocrats and the activists as it is in the power sector. The controversy over the Arun-3 was, for the activists, all about bad economics and not really about the environment or resettlement (it was after all not a storage dam and it was located in a remote, practically uninhabited area). The 201 MW project on the eponymous river was slated for construction at an estimated cost of \$5,300 per kW, which, together with the conditionalities associated with the project, was considered outrageously unfair by activists. They cobbled up an international coalition of protest and were successful enough to force the World Bank and its bevy of bi- and multilateral donors to back out of it in August 1995 *on economic grounds*.

Today the activists have been vindicated by the fact that Nepali private entrepreneurs have succeeded in building the Puluwa Khola hydel project in the same Arun valley, still with no road, at only \$1,400/kW even after Maoist bombings; and the Nepali integrated power system has subsequently gained a slew of alternative projects, the bulk of them utilizing the funding committed for Arun-3, that are providing the national grid a third more electricity than Arun-3 would have, and at half the cost and half the time (Gyawali, 2003)! Neither PMS Pradhan (Ch 5) nor Pun (Ch 6) adequately explains this anomaly between the cost-effective path propounded by Nepali activism (and successfully implemented in the latter half of the 1990s since the collapse of Arun-3) and the expensive route pursued by bureaucratic hierarchism over the last decades. Nor was Arun-3 purely a Nepali matter : its earlier version of 402 MW could not move forward—and was scaled down to the 201 MW 'baby' version—after it became apparent that India would never agree to buy its excess power at such expensive rates.

The institutional mistakes of Arun-3 were many, of which two of the most significant lie in surrendering to an external agency (World Bank) the lead role in its development instead of retaining it with a national institution (including agreeing to the infamous 'conditionalities' requiring the Bank's approval of the national budget in advance of its presentation to the sovereign parliament!), and in the FIDC-type contracts (as opposed to fixed-price contracts). So bad was this surrender by the national bureaucracy that when the issue of Chinese water withdrawals upstream of the Arun-3 in their Pengchoe irrigation project came up (which would reduce the flow of the Arun at the damsite by an estimated 13 to 39 per cent), rather than discussing the matter with the Chinese in a spirit of good neighbourliness, the Nepali authorities asked the World Bank to do so on its behalf. The FIDC arrangements mean that the client (Nepal government) surrenders all project decision-making powers to its consultants and accords them a privileged position. This allows for open-ended contract variations leading to massive cost escalations in projects, which were repeated in the ADB-led 144 MW Kali Gandaki as well as in the German-led 69 MW Middle Marsyangdi, both of which were projects utilizing the funds originally slated for Arun-3. In contrast, the private sector 60 MW Khimti project had fixed-price contracts that saw its completion ahead of schedule and under cost, even after the tunnel had collapsed during excavation.

The errors made in the agreements regarding electricity pricing, fairness in international contracts, equity over water rights and valuation of regulated water have been repeated in the case of the 750 MW West Seti. They have returned to haunt the water establishment some 16 years after the initial decision was made in 1994 to develop West Seti as an exclusively hydro-electricity export project: social and environmental activists have moved the Supreme Court seeking redress on these issues (Raajdhani, August 13, 2007). Indeed, it does seem unfair that Nepal should be asked to develop storage energy for

export at a price that is half of what she is paying private power producers within Nepal for run-of-river electricity such as from Khimti and Bhote Kosi. The cost of undelivered power to Nepali industries (i.e. load-shedding) is four times the proposed export price, and Kathmandu's shops are running portable Honda generators at five times that price.

There is a vibrant debate within Nepal among contending views regarding water resources development: will the export of hydropower make the country rich (and is thus in its 'national interest' to follow an export-oriented path), or is hydropower an input to national production which will make national commerce and industry more competitive (thus developing cheap hydropower not for export but for domestic use)? Laos followed the first path, but is now having second thoughts (Gyawali, 2006a); Norway followed the second path and used water resources development for what she termed 'nation building', as did the United States in the immediate years following the Great Depression for a similar national imperative. No consensus has as yet evolved in the Nepali political sphere regarding the virtues and pitfalls of these two divergent paths, and the debate is quite fierce among the different protagonists. The egalitarian activist view, however, is quite emphatic on this point: export of power does not help Nepal's economy either in terms of forward or backward linkages. Using the example of West Seti, the stalled 750 MW export hydro-electric project in West Nepal, Shrestha (2008) has shown that, as it stands, the current agreement on West Seti achieves only 13 marks out of 300 in terms of contribution to Nepal's national development.

Unlike Euro-American NGOs and environmental activists, whose concerns lie more in stopping excess development of water structures, Nepali activists like their other Southern counterparts are more concerned with stopping bad developments but promoting good ones. Indeed, given that much of the population in the Southern countries still do not have access to electricity, clean drinking water, basic flood protection and reliable irrigation, storage and diversion dams have to be built: the debate in the South is really about how good ones can be built and bad ones avoided. This has been expressed as the slogan of 'No Bad Dams!' rather than 'No Dams' of the northern NGOs. To this end, an interesting exercise was begun in Nepal in January 2003. As with the hydrocrats of India and China, Nepali hydrocrats too had rejected the recommendations of the World Commission on Dams. My contention as minister with our senior officers was that big countries like China and India could get away with it, but Nepal was too small a country, very dependent on both foreign aid and foreign investments, to reject the guidelines proposed by this international study.

Since I was opposed to setting up a formal government commission, which to my mind would be a straight highway to complacent impasse, we worked out an interesting 'constructive engagement' arrangement. IUCN Nepal would coordinate a meeting of Nepal's dam builders (private developers), dam managers (officials of the Ministry of Water Resources) and dam critics (activists). The government would send high-level officials to participate in the deliberations aimed at examining all Nepali laws in the light of the WCD's guidelines. Slated to be completed in four months, the engagement between these three contending social solidarities was exciting enough for this diverse group to continue for over a year and come to some startling conclusions (Dixit, 2007): over a quarter of Nepali laws were actually in conformity with, or in some cases much more progressive than, the WCD's guidelines and defining issues, while almost half could easily be made to confirm to WCD guideline standards with some minimal legislative tweaking within five to ten years! Thus there was no reason for Nepal to reject the WCD recommendations with the exception of the Seventh strategic priority, which was felt by all the three social solidarities as being against upstream riparians. On the contrary, there was every reason to crow about these achievements to international development agencies funding the building of dams.

A major positive outcome of this constructive engagement between the contending social solidarities has been that the old debate of 'large versus small' scale water projects has become a non-issue in public discourse. The focus is now on what are called 'second generation issues' such as those of risk (even small projects can have large risks to small communities), who bears (or should bear) the risks, how are benefits to be shared, what are the legal and institutional remedies to be pursued, and how is equity to be assured across the board. While the global debate remained focused on 'integrated water resources management' (or IWRM), the Nepali example showed that this much sought-after 'integration' could only be assured through a pluralized policy terrain that provides space for democratic contesting between the dam building market, the dam managing government bureaucracy and the dam-critiquing civic movement. It was not going to come about through procedural means of conventional 'tool kits' and 'best practices' (Gyawali, Allan et al. 2006). This happy state of affairs was the result of the water debate of the 1990s, mainly the Arun-3 and Mahakali controversies, where civic voices challenged hierarchic bureaucratic diktat, and where the legal system responded ever so reluctantly. Even so, it was a major vindication of Cultural Theory (Gyawali, 2006) and its concept of institutional pluralism. Pakistanis are currently trying to repeat this Nepali experience to sort out their water controversies.

Pluralizing the Power Terrain

Institutional pluralism, with contending social solidarities of the state, the market and the civic movements constructively engaged in a contested terrain, is equally needed within the power sector for it to be economically vibrant and free of the fatalist 'flood-drought' syndrome. This means that the vertically integrated national monopoly utility – the Nepal Electricity Authority (NEA) – needs to be unbundled into generating, transmitting and distributing units. The bundling was done under donor pressure in the 1970s to facilitate large loan volumes to hydro projects sometimes bigger than the entire power system (Gyawali and Dixit, 1999). Most of the contributors do not seem to sympathize with this view; indeed Pradhan (Ch 5) emphatically states that unbundling of the NEA should not even be thought of until 2015!

One of the tasks I did initiate as minister and ex officio chair of the NEA in November 2002 was the 'internal unbundling' of the NEA, internal because – as an interim cabinet formed by the king after the parliament had imploded itself from party in-fighting with the parties therein unable to hold the elections within the constitutionally stipulated six months – we were in no position to change the NEA Act (which could only be done by an elected body or through a royal ordinance which would have a life of only six months and subject to unsure approval by a subsequently elected parliament). Hence, any element of economic or institutional reform had to be within the elastic limits allowed by the law, and unbundling had to be internal to the overall NEA structure envisaged by the Act. There was, however, the flexible precedence that had been set during the process of 'bundling' in 1985: despite the NEA Act's explicit recognition that it was to be the sole authority in matters electrical within the Kingdom, bureaucratic shenanigans had conspired to resurrect in 1994 the erstwhile Electricity Department as a separate entity, first as the Electricity Development Center (EDC) and eventually as a full-fledged Electricity Development Department (DOED), within ten years of the ostensible 'bundling', completely sabotaging the 'authority' concept of the NEA Act.

My experience in pushing this through was instructive in understanding the mindset of Nepal's hydrocracy and the culture of control and procrastination it has been weaned on – in the absence of strong consumer pressure – through decades of debilitating dependence on foreign aid. On initiating the policy of internally separating the functions of generation, transmission and distribution, I was told it was a good idea but would it not be better to wait for the outcome of an Asian Development Bank's to-be-funded technical assistance consultancy on the subject? On further questioning the senior managers, I learnt that it would take at least six months to select the expatriate consultants, and perhaps two more years to complete the study, implying that it would certainly not be done during my tenure. It required some serious arm-

twisting to tell them that I wanted it completed for board decision 'next month': we missed the target by a month but the board did approve the unbundling and 18 semi-autonomous urban distribution centers were created with contractual performance indicators based on loss reduction and other factors. Within two months, the reduction in loss through theft was significant; but subsequent years of political uncertainties have meant that the reforms have been rolled back because of pressure from the trade unions of political parties.

I recall an interesting event a year or so after my tenure as minister ended: I ran into a senior ADB staff responsible for the power sector loans in a New Delhi hotel. I had worked together with him in the newly formed WECS in the early 1980s then doing system planning and optimization for the integrated Nepal power system. He told me that my decision to unbundle the NEA had sent shockwaves in Manila and there were frantic emails flying in from Kathmandu saying that 'they are already unbundling the NEA and we have not even got our technical assistance through yet'. He realised, he said, that I was up to some tricks and sent back a message saying, 'If Nepalis have found the political will for it, try not to stop them!'

If unbundling of the urban distribution system was a challenge of its own kind, the vast rural hinterlands of Nepal, much of it still in darkness, presented a different sort of test. It had always bothered me that within the next eight years, we would be celebrating the centenary of electricity in Nepal: Nepal's first hydroelectric plant, the 500 kW Pharping powerhouse, was commissioned in 1911 during the reign of Rana Shogun Chandra Sumshere. A village opposite the power plant, Danuwar Gaon, had been looking at that electricity for over nine decades but itself lived in the dark, and situations like these across the country would provoke a lot of soul-searching in 2011 with questions asked about the slow pace of electrification. If we as hydropower professionals were called to answer, what would our *mea culpa* be?

The generation end of the business had already seen structural reform with the entry of private power producers in developing run-of-river plants; and the results had been impressive: almost a doubling of capacity in 10 years since the restoration of multiparty democracy in 1990 compared to the previous 80 years. The new need was to encourage more participation from Nepali private investors for developing up to 50 or so MW range run-of-river plants, while in parallel the public sector NEA (or at least the government-owned generation company that would have to be carved out of it) would focus on building storage projects which entailed issues of water rights and resettlement that were beyond the ken of the private sector. Four medium-sized storage projects suitable for the Nepali system were identified across the country and preliminary studies to further their future implementation were initiated; this effort, however, fell victim to subsequent political changes and has remained stalled.

It was the oft-ignored distribution end of the business, that too *rural* electricity distribution, which concerned me the most and this task was less about hardware than proper institutional software. NEA had been created as a fully-government venture that, by its very mandate, had to be commercially viable. Rural electrification is an infrastructure-building venture and, by definition, infrastructure is something felt to be absolutely necessary by the body politic but cannot be justified commercially. Nepal's experience with community forestry as well as community-operated water supply had already demonstrated that villagers were quite capable of running their own systems, often more responsibly than government bodies mandated to do that task. It was time to bring this concept into rural electrification, a relatively high-tech field compared to forests and water supply. When the Rural Electrification Bylaws 2060 (2003) were finally passed by the NEA board in May 2003, it had taken over two dozen drafts, much haggling between officials, and frequent public consultations with those interested in such an ignored issue.

Initially 18 groups were 'communitised', but today after four years of experience, there are almost 400 groups formed across the country involved with community managed rural electrification. Of these, 180 groups in 40 districts have some form of agreement with NEA and are involved in managing their systems or expanding the coverage. A national federation – the National Association of Community Electricity Users Nepal – has 127 groups as its members in 21 districts and functions as a policy lobbying as well as a training and safety instruction body. Since they buy electricity from the NEA at a bulk rate and retail by themselves, there is a double accounting system that comes into effect and forces user groups to crack down heavily on pilferage.

In the junction town of Mugling on the highway between Kathmandu and Pokhara, communitisation of electricity has meant that all NEA backlog dues have been paid, the community itself has raised money for the expansion of the distribution network, it has introduced new technologies such as lift irrigation and electrically driven fodder chaffing, and the town's overall electricity loss has come down to a mere 8 per cent. To put things in perspective, the overall system loss within the NEA is about 25 per cent, constant for the last so many years, and the town of Bhaktapur has recorded close to 60 per cent ! If, through institutional measures such as unbundling and communitisation, NEA's 25 per cent loss could be brought down to that of Mugling, the 600 MW utility would be, in effect, 'generating' almost 102 MW currently wasted or unpaid for! This effective measure does not require expensive hardware: it only calls for that elusive 'political will' to tinker with institutions.

My efforts at reforming the power system as an institution would not be complete without mentioning a failed battle, that of electricity tariff restructuring. It is a truism in economics, but often ignored by the politics of the day that demand and supply have to be matched by the price mechanism. In times of excessive demand (evening and winter peaks) or poor supply (the dry season between December and May) price has to act as the policeman herding consumers towards conservation. In times of excess supply (night time as well as the monsoon season), consumers have to be encouraged to use as much electricity as possible, which would otherwise be water spilled instead of being sent through the turbines. Furthermore, given that the system suffered from seasonal and peak shortages, it was important to give investors the correct price signal that storage and peak electricity would fetch a better price, and hence encourage them to invest in peaking pondage and even storage reservoirs. In the current tariff setup, where peak and off-peak rates are evened out, there is no reason for a rational investor to opt for more expensive storage over simple run-of-river schemes (Dixit et al. 2004).

After four months of intensive exercise, in May 2003 the NEA board approved a differentiated seasonal and daily off-peak structure to allow price to be the policeman, rather than exhortations on TV to 'save electricity'. Estimates showed that the NEA, by reducing the electricity price for off-peak irrigation to mere NRs.1.90 and nighttime charging of batteries of electric vehicles at NRs. 2.10 and thus selling some of its spilled energy, would actually be earning an extra two billion rupees per annum! Unfortunately, the drafters of the 1992 Electricity Act had envisaged an 'independent tariff fixation committee', which was allergic to public hearings (there is no record of it ever holding one) and seemed unanswerable to any official body outside of itself. It never produced annual reports to the parliament or the cabinet, and never asked the NEA to come up with tariff revisions. So when the NEA came up with a tariff proposal of its own, the tariff commission's reaction was to stall. Reacting beyond its mandate, which was to merely judge whether the proposed tariff was 'fair' to various classes of consumers and approve the proposed version accordingly, it lamely mentioned that the NEA would find implementing a seasonal tariff difficult, when the NEA itself was saying it could. This reform initiative too fell by the wayside with subsequent political uncertainties; and, while inflation has grown, the electricity tariff has not been revised for almost a decade, and the financial health of the utility continues to decline.

I need to close this section by re-iterating what was stated earlier: Indo-Nepal hydro-power issues, whether export of seasonal surplus or dedicated firm power, will find resolution only when Nepal strengthens her own domestic base. And these internal Nepali efforts described above were means towards that end. If Nepal ignores them she will be on her knees while negotiating with a bigger and more powerful India!

Irrigation's Irritations

One aspect that strikes a reader of egalitarian persuasion about the different authors who write about irrigation (e.g. Bhattarai in Ch 3, Paudel in Ch 4 or Pradhan in Ch 9, is the near absence of their addressing what can be called 'subaltern water', or water as actually used by farmers at the very grassroots (see Baviskar, 2007). The authors present, and rightly as well as meaningfully so, very impressive data and analysis of the national and regional importance of Nepal's water; but the focus is upwards and outwards, not downwards and in-looking where the struggle to grow crops in a fertile but semi-arid land has seen heroic efforts over the centuries by village communities to harness whatever spring sources lie in their vicinity.

As water resource minister, I was always perplexed by official briefings during inspection visits: the presentation by the irrigation officer invariably began with the sentence, 'This is a scheme/project of X million rupees'. And my equally inevitable question would be: 'That aside, how much water did you actually deliver in which season and for what crop?' Their confused looks seemed to ask, 'Crop? Water? What we deal with here are cement and earthworks contractors!' And equally perplexing to me has been a simple observation: why is it, not just in Nepal but all over South Asia, that one does not find a civil engineer selling, and a farmer group buying, his modern irrigation skills? Why is it that their services are only bought either by state hydrocracies or foreign development agencies? In my short tenure as water minister, coming with these questions that I had, I was less successful with new policy initiatives in the irrigation sector than with the power utility; but what little I did attempt still has relevance as I will try and argue below.

The history of irrigation in Nepal is paradoxically both very old and completely new. As a student of water management, I have visited farmer-built and managed irrigation schemes in the hills of Nepal that are hundreds of years old and still running, producing a second and even third crop every year. The famed stone water spouts of Kathmandu Valley are still functioning after centuries, and are dependent for their flow on the transport of water from irrigation canals that originate from spring sources in the surrounding hills. On the other hand, as minister, I was chief guest at a function marking the 50th anniversary of the government's Department of Irrigation. Was there no irrigation to manage then a hundred years ago? Actually, we are talking of two different worlds, that of the farmer pursuing his inherited craft and that of the modern engineer reacting to contemporary events since the overthrow of the family autocracy of the Rana Shoguns in 1951. It is this striking gap that the new Irrigation Policy 2060 (2003) sought to address.

The irrigation policy document was a negotiated text: it was required by the multilateral lending institutions as a precondition for further aid to the irrigation sector, but the agenda that was being pushed was the Washington Consensus of opening up southern markets, privatisation, removal of subsidies to farmers, etc. Strange indeed it was that removing subsidies to Nepali farmers was being pushed by European and North American governments whose own domestic record (i.e. an EU cow receiving more subsidy than the income of marginal Southern farmers) is mind-boggling. This was a topic that had been of mild academic interest to me, but as minister I found myself suddenly facing raw power. An interesting incident occurred when I spoke once at a public meeting about Nepali farmers having to compete against Indian farmers who received free electricity for pumping, heavily subsidised fertiliser and loan write-offs.

Almost the next day, I was facing an agitated delegation of donors led by the resident representative of the Asian Development Bank with Canadian and other bilaterals in tow. Their concern, expressed in the finest diplomatese, was that the agenda of removing agricultural (and irrigation) subsidies, followed dutifully by the previous governments led ironically by democratic socialists and communists, should not be tampered with, or else!

In countering this hegemony, the irrigation department officials were not of much help: on the contrary, given that their interests lay more with new constructions that would be enabled by aid flows, than with irrigation and crop productivity management, they were happy to sign along any policy that would keep the donors happy. I had to look for allies elsewhere and they were found in the National Federation of Irrigation Water Users' Association-Nepal (NFIWUAN). This was an association of farmer-managed irrigation users, which was able to raise farmer concerns at the national level better than the construction-oriented irrigation department. NFIWUAN had submitted a list of demands to the elected governments earlier but their concerns had not been entertained. I brought them together with the irrigation officials and hammered out issues point by point¹; and these were some of the issues that I was able to weave into the new irrigation policy.

The primary point was to make the government's irrigation policy farmer-friendly and away from the previous primary focus on 'command area development', i.e. new constructions. The old Rana administration used to classify land in four categories for tax purposes, depending upon its productivity, with *abbal* (mostly irrigated) land as the highest. This system, instead of being reformed, was allowed to fall into disuse, with the result that land tax amounts to a negligible portion of the government's revenue. The devastating consequence of this neglect for irrigation management in the country was that government-run schemes too delinked themselves from questions of productivity increase. The primary focus of the new irrigation policy therefore was to restore the equilibrium; and the instrument to achieve this was to officially declare irrigated land as such as well as to give irrigation users a role in raising revenue from such lands. Furthermore, government irrigation offices were to produce an annual 'status of irrigation' report under their jurisdiction highlighting the quantity of water supplied per season for particular crops as well as to try and link them to possible indicators of productivity increase. Such reports have not been produced to date due to subsequent political uncertainties, but eventually will have to be in the future if any intelligent policy discussion is to be conducted about irrigation's contribution to Nepal's development.

Nepal's monsoon dominated climate meant that, of the 80 per cent precipitation that falls during the four wet months, half falls as cloudbursts in as little as 15 hours. So, while we may be rich in water resources on the average, we have virtually drought-like conditions for much of the year. All this requires that water be collected where it falls through a scattered network of ponds and tanks, and not just where it concentrates in narrow river gorges through- reservoir impounding high dams. This kind of thinking demands a policy shift towards conserving (or more often reviving) traditional water-harvesting ponds. Unfortunately, no government body, least of all the irrigation department, looked after this aspect of local water storage in a semi-arid climate. It was introduced into the new irrigation policy and will hopefully sometime in the future precipitate some shift in conventional thinking.

Another important change in approach was related to multipurpose projects. While there has been much lip service on this count, it has not really been seriously implemented in any water project by the government establishment; and the reasons have to do more with turf battles between power and irrigation

¹ The meeting took place at the Irrigation Department's meeting hall on December 12, 2002; and the signed agreed minutes between the two bodies was published by NFIWUAN in their annual publication *Smarika* in 2003.

agencies than with any unsoundness in the idea. Projects are planned and developed as either power or irrigation or flood protection schemes, and professionals guard their turfs with zeal against any encroachment from other engineers. This institutional weakness can be discerned immediately in the chapter on multipurpose projects by Bhattarai (Ch 3). It begins by claiming that developing multi-purpose storage dams in Nepal would 'greatly contribute to promoting regional economic development'. What one wants to see first are examples of successful multipurpose projects in Nepal for the benefit of its citizens before one's arguments of regional-level benefits can be taken seriously.

One positive example that struck me was the 5 MW Andhi Khola hydro-electric project constructed by the Norwegian missionary group-inspired Butwal Power Company (BPC)². It has a strong irrigation component as well and is a good example of a multi-purpose project; but this fact is also systematically ignored in all government reports. In sharp institutional contrast, equally striking was the negative example of the 4 MW power house on the canal of the 66,000 ha Sunsari-Morang irrigation project. Instead of managing the powerhouse as an integrated part of the canal operations together with the water users' association, the powerhouse was handed over to the NEA. Because the canal operations, including its gates and dredging, were under the control of the Department of Irrigation, the NEA load dispatcher was never sure when the turbines would come on line. During my inspection visit, neither of the institutions seemed interested in operating it and both put forth flimsy technical excuses.

To me it was a national loss of power and hence of revenue, and was quite excited when the local water management association of Sunsari-Morang farmers came forward asking that it be handed over to them for operation. I initiated the process of that happening, along the same model as the 250 kW Nigure microhydro near Tumlingtar (in the eastern hill district), which had been bombed by the Maoists. Three local campuses of Sankhuwasabha had gotten together under the leadership of their former MP Hari Bairagi Dahal, approached the NEA for a long-term lease, borrowed money from local banks and rehabilitated the plant. Today the three campuses earn significant revenue from the sale of electricity from this rehabilitated powerhouse, and the phenomenon has earned the sobriquet 'hydro-powered education' (Basnet, 2007). It worked for Sankhuwasabha, but not, unfortunately, for Sunsari for subsequent lack of equally committed policy support. Water storage, whether by means of high dams, rain water harvesting ponds, wetlands or as groundwater, depends on a good understanding of South Asia's monsoon meteorology; and this—from an egalitarian perspective—is one fruitful area for Indo-Nepal and regional cooperation but has sadly been downplayed so far. We in Nepal could make a beginning by improving our hydro-meteorological understanding and proposing cooperation to co-riparians of the basin in its furtherance for water storage through wetlands, groundwater and tanks.

Another example of local (or national) multi-purpose development that should have happened, but did not for reasons of inherent bureaucratic blindness, is the 225 MW Sapta Gandaki project. It should have followed the 69 MW Marsyangdi hydro-electric project in the late 1980s, but was scuttled by the politics of Arun-3. When I went on an inspection visit of this site in March 2003, it quickly dawned on me that the very concept behind it was wrong. It had been planned and designed with help from the Japanese aid agency as a *hydroelectric* project, when it should have been conceptualised as a *water supply* scheme. Nepal can always generate 225 MW from almost any number of places around the country, but it can only supply water to the plains of Chitwan and Nawalparasi (and the growing industrialisation therein) from

² The BPC, 'nationalized' in 1979 by the government was privatized to a consortium of 11 Nepali business houses and one Norwegian partner in 2003 under my tenure as minister. Its 12 MW Jhimruk plant had been bombed by the Maoists and would have been turned into scrap had it not been thus privatized, since the government had no money for rehabilitation. To date, it is the largest privatization in Nepal's history, confirming my Cultural Theory credentials of advocating a balance of privatization (generation), communitization (distribution) and nationalization (national grid).

this site. Moreover, Nawalparasi groundwater has serious arsenic problems and should be replaced by surface water from Sapta Gandaki. In addition, the existing Chitwan Lift Irrigation scheme in the district of Chitwan in central development region, which badly needs some solution to the heavy electricity costs and siltation difficulties associated with the pump, would benefit if surface flows could be had from the upper pondage of the weir at Devghat. And the burgeoning town of Narayanghat – the crossroads junction of all Nepal – desperately needs a second bypass bridge on the east-west highway to ameliorate traffic congestion, which a properly designed Sapta Gandaki project could provide. All these multi-purpose benefits could be provided by the Sapta Gandaki project if planned and designed right. I do not believe that Nepal can ever sort out its benefit sharing woes with India on proposed mega-schemes until it first manages to do so within Nepal among different Nepali beneficiary sectors.

It was to give such a venture a try that I took a ministry team to the dam site at Devghat just after the confluence of the Kali Gandaki and the Trisulganga before the river becomes Narayani or Sapta Gandaki. A serious difficulty in Hindu Nepal is that an ideal dam site at the confluence of two rivers is also an ideal holy site, and so it is with Devghat, as well as Barahakshetra on the Sapta Kosi, Ridi on the Kali Gandaki as well as Chobhar or Gokarna on the Bagmati. One argument developed against Sapta Gandaki during the Arun-3 debates was that it would submerge holy sites at Dev Ghat. Inspection showed that it was not true: the only significant holy spot at the lowest point was what was known as 'Sitaji Ko Gufa', which would be well above the full supply level of the pondage, especially if the project was designed as primarily a water and only secondarily as a power project. Minor deities and recently built *ashrams* could easily be re-located from the revenue stream that would flow from such a project; and there was appropriate precedence at Hardwar in India where the Dalhousie barrage has actually improved the ambience at the Ganga temple site. I was subsequently told by the officials concerned that quick recalculations done with such a paradigm shift showed a viable multi-purpose Sapta Gandaki with reduced but still significant power benefits to the tune of 90 to 135 MW. This effort too fell by the wayside with subsequent political uncertainties, but the good news is that the astute business community of Narayanghat is considering picking it up.

What the new irrigation policy introduces is precisely such a possibility. It requires that the Irrigation Department promotes storage projects on its own for the sake of dry season irrigation, and if there are power generation benefits, they should be treated as secondary and sold to the national grid through appropriate power purchase agreements. The success of such a policy rests on committed professional leadership within and without the Irrigation Department capable of taking up the challenge. Given that the most experienced irrigation engineers had retired or were about to from government service, I used the occasion of the 50th anniversary celebrations to convince some of them to set up an outside-the-government association of irrigation engineers. Electrical, mechanical, civil and water supply engineers already had such professional associations, and irrigation engineers eventually did set up a society of their own with the former Director-General of Irrigation B. K. Pradhan (Ch 9) as its first president. Such a professional civic leadership outside the governmental set-up was additionally needed to provide wholesome counterbalancing guidance to the often populist policy advocacy of the irrigation farmers' association such as NFIWUAN. Since the government irrigation establishment, rife with partisan political interference, has not lived up to expectations and since markets are a long way from seeing profit in an infrastructure-heavy and water rights-bedevelled sector such as this, hopefully civic voices within the irrigation fraternity, through their professional association, will provide the catalysing leadership this sector so badly needs. It would also be, from a theoretical perspective, applied Cultural Theory creating a pluralised institutional context within the irrigation sector. It is my considered position that only such a plural policy terrain will allow Nepal to negotiate effectively with India.

Riparian Rumpus

The prime purpose of dwelling on Nepal's internal water and power travails, despite the fact that most chapters of this compendium address mostly bilateral issues with India or regional development possibilities, is to make the case that Nepal's bargaining position with India will only be as strong as her own developments are internally strong (Gyawali, 2000). Water rights and power trade are never negotiated as elements of charity; and one cannot get a fair price for either if one's domestic market is not strong, one's experts do not have hands-on experience with real development issues, one's lawyers have no corresponding experience with sophisticated contracts and one's financial sector has not mastered the intricacies of project risks. Nepal has focused excessively on the outside and not much on the inside when it comes to planning the harnessing of her myriad rivers.

As seen in the chapter by Dhungel (Ch 2) and also described elsewhere (Gyawali, 1994), the modern Nepali state's involvement in irrigation as a subject of government intervention was provoked in large part by developments across the border in British India. It was the Raj that wanted to develop, in the early part of the 20th century, the Sarada irrigation scheme on the Mahakali river that forms the western border of Nepal with India; and Nepal, after some intense haggling, acquiesced to the proposal after its needs for some cash up front and land swap (mainly for forest but possibly some agriculture) were satisfied. Water resources were not valued by the Nepali state to the extent that they were by the Raj in India. As regards power, it was in 1937 after the first industrial fair, when Rana Shogun Juddha Sumshere proposed that Britain help Nepal industrialise to absorb her excess young population, that the Raj wanted Nepal to develop hydropower for export to India (Gyawali, *ibid.*)

This legacy of action by the lower riparian and reaction (often quite naturally irate, but also equally often effusively optimistic) has repeated itself right down to the present. Dhungel, Pun and Adhikari (Ch 10) describe India's unilateral building of dams and embankments along the Nepal border submerging crops and settlements in Nepal. Shrestha (Ch 8) describes how Indian plans for river linking envisage utilising reservoirs and canals in Nepali territory (as it did in the infamous Tanakpur case in the 1980s). These Indian agendas, which could be mutually beneficial if jointly planned in a transparent manner but which lead to rancor and ill-will if done unilaterally, are not shared with Nepal until all the constructions on the Indian side have become a *fait accompli*. Subba (1994), who was Bhutan's director general of power and negotiated the Chukha deal with India (and subsequently was forced to be a refugee in Nepal for a decade), complains that India plans for projects in Nepal and Bhutan as if they were 'routine additions to her own utilities'.

Despite my conviction that Nepal should first learn to keep its own house in order and not waste precious institutional resources by keeping national agencies too preoccupied with exporting power or developing storage dams for regional benefit, given the historical baggage of past treaties and agreements, I could not avoid this issue. The first order of business therefore was to do what the Supreme Court had ordered during the judgment on Tanakpur: the government should develop the criteria to be followed in implementing Article 126 of the 1990 constitution. The Article stipulates that any water sharing agreement be approved by a two-thirds majority of the parliament if the matter is 'pervasive, serious and of long-term nature'. Otherwise the agreement could be ratified by a simple majority. What the parties in all the three parliaments since 1990 failed to do was to develop such a set of criteria.

The Mahakali Treaty was conjured up as a jack-in-the-box surprise during the Tanakpur imbroglio and was rammed through parliament with over a two-thirds majority without first defining the criteria for calling for a two-thirds majority voting (Gyawali and Dixit, 2000). Even though building perhaps the highest rockfill dam in the world at Pancheshwar and generating over 6,000 MW of power would undoubtedly qualify as a matter of 'pervasive, serious and of long-term nature', failure to first define the

criteria was a serious procedural lapse that would plague every development agreement with India, be it a high dam or a small embankment. For healthy cooperation and development of water resources between two riparian neighbours, it is absolutely essential that no ambiguity should be left (especially for hydro-technical efforts that take decades to materialize) which would be prone to any kind of misinterpretation.

At a reception following a Royal Nepal Army presentation to the King and his cabinet on the security situation (November 2002), I found myself in a separate moment with the monarch and mentioned that I was planning to have a criteria set developed to define the use of Article 126, which to my mind was one of the most 'democratic' provision of the 1990 constitution. Incidentally, democratic India does not need such a public approval of its political or bureaucratic decisions. The King was very supportive of the idea, and his words as I still remember them were: 'You understand the intricacies of the problem; if you don't get it done, no one else will; but remember when you do it, on national interests, especially long-term national interests, no giving up even an inch!'

I assembled a tight-knit team of the best minds on the subject, and we worked on the problem of defining the criteria for four months before coming up with a *Sthiti Patra* or 'situation paper'³. It postulated that not just water but also a damsite such as an appropriate gorge or a storage valley was also a resource. The Article would be attracted if a resource (i.e. regulated water, not natural flowing water) or a product borne out of the use of a natural resource such as a dam site (i.e. electricity) crossed an international boundary. If it did not, if all the products were used within Nepal, the Article would not be attracted, which meant that which country's company developed a dam, where the money came from and in which denomination, etc., were irrelevant questions. The primary question was whether a resource crosses a border, and if it does how and to what extent; and a set of nine criteria were developed, which if applicable, would trigger the application of the two-thirds provision⁴.

While working out this framework, it was important to keep in mind the fact that these criteria could change over time as Nepal developed her capacity to handle these issues; and it was equally important to allow some latitude to whatever government of the day there was to move ahead with some cooperative projects. One cannot require that everything be passed by a two-thirds majority, just as one cannot allow governments too much freedom to approve projects that would have large macro-economic or inter-generational impact. This point is important in today's debate where it is argued by some proponents of the export paradigm that electricity is not a resource, or that development of a dam site by a private company and export of electricity is not resource sharing, or even that flowing water, even if it has been regulated by a dam, is not a resource.

Before taking this 'situation paper' for cabinet approval, we decided to have a public hearing of sorts. The paper was circulated to some 74 experts from the academia to political parties and civil society with the

³ The 'situation paper', after it was circulated for comments, was published in full by the Nepal Workers' and Peasants' Party (of Comrade Rohit of Bhaktapur) in its party newspaper *Majdoor*.

⁴ The nine trigger criteria (which can be found in Dixit (2008) as well as Dixit *et al.* (2004), were: 1) if a project is greater than 1000 MW capacity, 2) if there is going to be trans-basin transfer of water, 3) if more than 10,000 people were to be potentially displaced, 4) if more than 25 km² of agricultural, grazing or forest lands would be submerged, 5) if the ratio of foreign investments (to Nepali investments) is greater than 80:20, 6) if the investor asks for sovereign guarantee, 7) if there are possibilities of inter-sectoral (water for water) or cross-sectoral (water for something else) benefit sharing, 8) if more than 50 per cent of the electricity produced is to be exported across the border, and 9) if the river on which the reservoir has been built produces regulated water that increases the dry season flow at the point where the river crosses the national boundary by 10 per cent or similarly reduces peak flow by 10 per cent.

signature of the secretary of the water resources ministry. Unfortunately, on the day the large consultative meeting was slated to be held at 3 pm, my prime minister submitted his resignation to the King at 1 pm on the grounds that, despite bringing about a ceasefire with the Maoists, we were not able to get the political parties to go for elections. Since we were still a caretaker government until a new arrangement was made, I was willing to continue discussions on this subject but was advised by senior bureaucrats not to do so. They argued that the matter rests safely in government files and it would not be seemly to be perceived as pushing such an important matter with undue haste under the circumstances. It has been almost five years since I left, but the King seems to have been right: if I did not do it, no one else would.

This issue of parliamentary ratification of water-sharing treaties refuses to go away, but refuses to get resolved either. After the street agitations of April 2006, the parliament dissolved by political in-fighting was resurrected by the King as per the demands of the alliance of seven parliamentary parties. In one of its first acts of defining a new order, it framed a new set of rules for parliamentary regulations where Article 126 of the constitution was brazenly violated. Rules 230, 232 as well as those from 105 to 136 allow for ratification of water-sharing treaties by as little as 44 per cent of the parliament ('two-thirds of a minimum two-thirds present'). It led to an uproar among cadres of left political parties when this was pointed out (Gyawali, 2006a), and prompted the Maoists as well as the more moderate United Marxists-Leninists to demand that the interim constitution drafting committee include Article 126 without fail. It was included fully as such, only its nomenclature is now Article 156; but the parliamentary rules still remain in the statute books in complete violation of the interim constitution. Meanwhile, the interim government has awarded licences for plum sites ('low hanging fruits') of Arun-3 and Upper Karnali to Indian companies for export to India without voting in the interim parliament. The matter is currently *sub judice*, having been challenged in the courts by the activist community as well as Indian companies not awarded the contract.

After the question of Article 126, the next big issue I faced was the matter of previous agreements, on the West Seti and Upper Karnali, which to my mind had then been done improperly, but for proceeding ahead with which strong pressure was being applied by the business companies or India. The license to begin developing the West Seti for export had been given to an Australian developer (in violation of Article 126); but it had not managed to secure a power purchase agreement with India or arrange financing. When its license period was about to lapse, it put in an application for extension, which I was in no mood to approve. Then interesting things started to happen. As with the subsidies issue described above, donor representatives started arguing that it would send a bad signal to investors, and hinting that it may also therefore affect donor support for the government. And my prime minister, who was from the western part of Nepal where the project was located, came under strong pressure not to have this ostensible developer sent packing.

My concern was of a different nature: it was to see if we could get this company to develop this attractive storage project for Nepal instead of export. We badly needed storage electricity for our power system that was getting overwhelmed with excessive run-of-river capacity. However, over the nearly decade-long holding of the license for 750 MW West Seti, it transpired that the company had, through what is known as 'salami slicing tactics', managed to sign MoUs with a succession of unstable governments denying Nepal the originally agreed benefits, i.e. 10 per cent free electricity. The last MoU had Nepal receiving money in lieu of power, and even that was to be given after the company had paid off all its debtors and there was some profit left! To keep my prime minister happy and to achieve what I believed was in the better national interest than export, viz. allowing the company the chance to develop the project for Nepal, at the ministry we took the following line: the license would be renewed if we received 75 MW of free storage power and there was recognition that the regulated waters of West Seti (which could irrigate up to some 90,000 additional hectares of land in the dry season) would be Nepal's to own and develop in the

future. In case the developer could not provide 75 MW at West Seti for whatever technical reason, it would have to develop and provide Nepal with equivalent storage power from some other alternative site.

Our expectation was that, given that we were willing pay a higher price for storage energy than India, the developer would ultimately chose to supply all the power to Nepal eventually. The developer did go to examine the 122 MW Damauli Seti (or as it is mistakenly called 'Upper' Seti), and did sign the MoU as per our terms. The irrigation department was asked to figure out how to use the regulated waters within Nepal and to also figure out the price of per cubic meter of regulated water in case it had to be traded with India. However, as with other innovative ventures, this one too came to nothing: the subsequent governments went back to re-signing another MoU asking for money instead of power under similar unfavourable terms. However, the interim parliament's natural resources committee has directed the government to renegotiate for receiving power instead of money. It is yet to be seen if the political will to uphold the national interest can manifest itself.

On Upper Karnali, the challenge was of a different nature. When the King had made his first visit to India after the completion of the mourning period following the Royal Massacre, it was agreed that Nepali and Indian businesses would cooperate in establishing in Nepal primarily for Nepal's benefit, a 200 to 300 MW run-of-river project (which would only have one product, i.e. electricity, and would not be encumbered with other difficult-to-handle products such as regulated water with water rights issues, etc.). I took this up as a primary challenge and put my full support behind the Federation of Nepalese Chamber of Commerce and Industry (FNCCI) which began serious cooperation with India's CCI. Unfortunately, there was no cooperation from the Indian embassy and when confronted, the ambassador admitted that the policy in New Delhi was not to allow even the Indian private sector to enter Nepal until the Government of India-owned National Hydro Power Corporation (NHPC) was given the license for Upper Karnali⁵! It proved the fears of many who have been following water related conflict issues between the two riparians that Delhi is less interested in the development of, and more interested in control over, Nepal's water resources.

Taken aback, I had to quickly think on my feet and responded by saying: 'I understand, as a country weaned on Nehruvian socialism, you love your public sector corporations. Please allow us the right to love ours: NHPC can come to apply for a license if it comes in partnership with our NEA.' As with West Seti, this was also to be developed primarily for Nepal's needs, with export only if there was surplus and only through the Nepali national grid. I also remember telling the ambassador that, if hauled before an elected parliament in the future, as any decision-maker like me would probably be, this was the only arrangement that I could defend. We could develop this as a public sector to public sector collaboration, while at the same time developing another site, possibly Arun-3, as a private sector to private sector collaboration. The ambassador seemed satisfied, but I later learned that junior functionaries of the Indian embassy would come to the NEA and argue that there could be no joint venture, that NHPC should be the sole licensee.

I immediately informed the prime minister and the Royal Palace of what had transpired, and received the message from the King's secretary that His Majesty thought it was a good counter proposal. However, my fear was that, though I did propose a joint venture, NHPC might reject the idea. I ordered the managing director of the NEA to quickly dash off to Delhi without informing anyone and find out what the NHPC chairman thought of it. The managing director returned the next day, beaming. He told me that the NHPC

⁵ Some of these events have been described by an investigative reporter from interviews with FNCCI. See (Aryal, 2005). When I mentioned this incident to India's former water resources secretary Mr Ramaswamy Iyer, his surprised reaction was: 'This is not the stated policy of the Government of India!'

chairman was more than delighted to collaborate in a joint venture with the NEA ('How can I work in Nepal without a strong Nepali partner?' is what he had said), but was perplexed why the Indian Embassy in Kathmandu and the External Affairs Ministry in New Delhi kept telling him to go it alone.

In the complex web of people-to-people relations between Nepal and India, the best plans of what Karl Wittfogel would call 'hydraulic despotism' can go awry. Thapa (Ch 7) describes the tremendous benefits of water transport over land-based haulage not just for Nepal but also India, especially in the Age of Climate Change. Access to the sea has been a national dream for land-locked Nepal, but it has been for long thwarted by the Indian (irrigation) establishment's arguments that it is impossible. The story of how they have come around to at least agreeing to it being studied is also a tale of people-to-people relations.

It was in May 1992 soon after the 1990 peoples' movement that saw the demise of the Panchayat system and the restoration of multiparty parliamentary democracy that academic colleagues in Patna had organised an Indo-Nepal 'Himalaya-Ganga' water conference that has since been recognised as the Patna Initiative. I was there with my colleagues from the Nepal Water Conservation Foundation (NWCF) and the Indian participants' list was full of stellar figures. When the Nepali delegates mentioned the importance of navigation and access to the sea, senior figures from the water establishment in New Delhi immediately rejected the idea as impractical. Before we could counter with our views, our Bihari colleagues took the stage and chided Delhi bureaucrats for being so myopic. They argued that Bihar was as land-locked as Nepal and, if navigational access to the sea were developed, she would benefit even before Nepal! It took another five years for that to find itself in the Kosi memorandum that Thapa signed with his Indian counterparts. This goes to prove the egalitarian activist arguments made at the outset of this epilogue that water problems are easier to define as a clash of paradigms among differently constituted contending social solidarities than as international Nepal versus India issues.

Beyond the Age of Aid

It is clear that water resources development in Nepal and between Nepal and India are at a cusp or a turning point in history. The past has not worked, but the future has not revealed its features with any clarity. What might that future look like can only be speculated upon at this stage, but speculated with some reason and some hope. Conca (2006) argues that international regime formation, which takes the nation state as the only socio-institutional unit of concern, is but one institutional vehicle currently on the global scene, and even then not the most successful one, where the future of water governance is being forged. The others vehicles are transnational water marketization initiatives led by multi-national companies and supported by multi-lateral aid agencies; the very effective transnational egalitarian protests against large dams, globalization, Third World debt, etc; and finally international networks of water professionals with a presence in all these sites but coming together on their own to develop a consensus about good water management through such programs as IWRM (Integrated Water Resources Management).

While the presence of the Nepali state agencies in the regime formation site (e.g. the United Nation's Convention on the Law of the Non-Navigable Uses of International Water Courses, 1997) has been weak, it is almost non-existent in the other three non-conventional ones described above, where many of the non-state actors play an increasingly assertive role. In the case of Nepal and her water resources development, these actors are the investors and financiers of water technology as well as the international brotherhood of protestors and critics. The international bankers control the capital and hence the technology linked to it: without their willing cooperation, the larger grandiose water schemes that are constantly dreamed of cannot be contemplated based only on accumulated Nepali capital.

The critics cannot be ignored either because no international banker will lend money for a dam project, already an endangered enterprise, if there are ground to believe that it is plagued with social and environmental problems. In the past, activists have successfully led to effectively painful boycott of products as well as disinvestments from companies and banks engaged in ungreen or anti-social business; and, despite the talks of bravado by Third World hydrocrats, corporate boardrooms in the financial capitals around the world are extremely sensitive to this new form of moral pressure.

Within such a plural terrain, what does water resources development in Nepal and between Nepal and India mean? Let us reflect on the three sound reasons for investing in Nepal's hydropower sector (one can think of similar reasons for irrigation too): almost two-thirds of the population does not have access to reliable, grid-supplied electricity; national energy security demands that the country move fast towards a non-petroleum based economy; and global concerns with climate change require that we reduce our carbon footprints. With all these valid reasons, why are investments not happening to the extent possible and the degree required?

One reason is that we have spent much of the last half a century chasing a mirage, that of earning hydrodollars by exporting hydro-electricity the way countries of the Middle East have earned petrodollars. At the national scale – at least in political speechifying – there is also the feeling that, when 'our colossal potential' is developed, hydropower will replace fuelwood and 'every Nepali will cook his or her *daal-bhaat* (rice and lentils) with electricity'. Fortunately, there are far more productive end-uses for high quality energy such as hydro-electricity, and both community forestry schemes as well as biogas programs have provided much cheaper cooking alternatives on a sustainable basis. These delusions are the wrong reason for developing Nepal's hydropower, and are ghosts that have to be put to rest if we intend to break the shackles of the past.

Hydro-electricity cannot give hydrodollars the way petroleum gives petrodollars for a slew of reasons. The three most important of them are that consumers of Nepali hydro-electricity will pay only in rupees; that the economics of hydropower projects, given their capital intensity as well as hydrometeorology, does not allow for surplus storage (like oil in bunkers) that can be sold in the global market; and that hydropower has to be harvested on a sustained basis unlike oil which can be extracted from the ground. The economics of harvesting requires sustained socio-economic involvement as well as mass consent, while oil extraction does not have to contend with the messiness of having to deal with society and social issues. If we examine the history of countries with predominantly hydro-based systems, we find that they have used this natural resource endowment to develop upstream-downstream linkages in their economies rather than exporting electricity as primary raw material input for production.

Tied with this myth is another that too needs to be laid to rest: the idea that India can be a supplier of electricity in Nepal's hour of need (as during the present crisis) or that it is a market with 'potentially infinite demand' for Nepal's hydro-electricity. Let us first examine this idea of importing power from India. It needs to be safely excluded because India is a heavily power deficit country: it has no significant surplus electricity capacity for its own internal need, let alone to share or export to neighbours.

Furthermore, since water and electricity are state subjects and not union matters as per the Indian constitution, even if Delhi agrees to supply electricity to Nepal, the heavily power deficit states of UP and Bihar and their state electricity boards are not likely to oblige beyond diplomatic tokenism, nor will the quality of electricity, if received from Bihar and UP, be guaranteed to maintain the minimum standards. One only has to look at how members of the Bihar Legislative Assembly have approached Nepal to supply their border areas with Nepali electricity – 'Yes, you may have load shedding, but at least it is regular and

announced: in the rural areas of Bihar and small towns, if electricity is interrupted, one does not know if it will come back in four hours or fourteen days!' – to realise this basic fact of life.⁶

The third persuasive reason arises from current global concerns regarding greenhouse gas- induced climate change. Investing in Nepali hydropower development means moving away from burning fossil fuel to powering one's economy with renewable energy. This is a path that now has, internationally, the same moral imperative as poverty alleviation and ridding the world of hunger. It has also demonstrated tremendous success: electrically driven ropeways hauling goods in the mountains between two points are three times cheaper to build than an equivalent unmetalled motorable road, eight times quicker to install, and twice as energy efficient (Gyawali *et al.* 2004). The milk carrying Bhattedanda ropeway (in Kathamandu valley), funded by the EU, used to require Rs. 34,000 per month of diesel cost to operate. Once it was able to hook on to community electricity, it shifted to Nepali hydro-electricity that cost only Rs. 7,000 per month! There is a different future, and it works.

However, to access funds for hydropower projects based on this moral (and also economic) logic, Nepal has to play a much more pro-active role in the various forums and sub-committees within the climate change community. If Nepal's Biogas Support Program can access funds through the Clean Development Mechanism (CDM), there is no reason, except procedural, why Nepal's hydropower should not qualify. Unfortunately, our social mindset seems to be so stuck in the old paradigm of foreign-aided development that we have not even noticed that the Age of Aid has ended. If we wish to develop Nepali hydropower (or irrigation), we have to pursue new financing instruments, nationally and globally, as well as new institutional modalities for doing business in the sector.

It is also detrimental to Nepal's water resources development to remain stuck - as we have for the last half-century—with the export led paradigm. It has led to developmental impasse at best and political rancour at worst. Until Nepal's hydrocracy is weaned away from export- oriented development to a Nepal-centric one, impasse and rancour may well bedevil this sector much longer into the future. Indo-Nepal cooperation in water resources will have to be re-imagined with these egalitarian concerns in mind.

⁶ Request made to the author when visiting Bihar in India as Nepal's Minister of Water Resources in 2003.