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“Dismantling the Big” Critiquing the Western Development Model and Foreign Aid and Analyzing Alternatives for Domestic Development of Dams in Nepal

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“Dismantling the Big”

**Critiquing the Western Development Model and Foreign Aid
and Analyzing Alternatives for Domestic Development of Dams in Nepal**

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Professor Sarathy
&
Professor Herrold-Menzies

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Abstract

This paper argues for the importance of scale, management and sovereign-led development in considering a more human-centric model for Third World development. It begins by reviewing the history of the mainstream Western development model through the evolution of modernization theory and foreign aid. It explores general critiques of this model offered by scholars, focusing on unequal power relations, the high cost of aid, and problems with ‘cookie cutter’ style development projects that don’t take into account disparate environments. As the paper progresses, focus shifts more specifically to hydropower development and ‘Big Dams’. Nepal is the main case study for exemplifying the problems with foreign-aid-funded dam projects and for proposing the alternative model of smaller scale, management-focused, nation-led development projects. While the scope of this study is limited, the growing success of these projects in Nepal suggests that more focus should be paid to applying these methods in other developing countries.

Chapter I: Introduction

“For some time past...I have been beginning to think that we are suffering from what we may call ‘the disease of gigantism.’ We want to show that we can build big dams and do big things. This is a dangerous outlook developing in India... the idea of big- having big undertakings and doing big things for the sake of showing that we can do big things- is not a good outlook at all... It is... the small irrigation projects, the small industries and the small plants for electric power, which will change the face of the country far more than half a dozen big projects in half a dozen places.”

– Jawaharlal Nehru, the first Prime Minister of India

One of the first things visitors to Kathmandu see on a trip into the crowded capital city of Nepal is a sign, visually shouting “WELCOME TO YOU IN THE LAND OF CONTRAST.” What an accurate description for a country the size of California, squashed in between the two most populous countries in the world, India and China. Nepal’s relative development stagnancy lies in sharp contrast to the industrialized metropolises and growing global power in these two countries. Zooming in on the country itself, independent of its powerful neighbors, reveals a nation filled with its own stark contrasts in abounding cultural diversity, varied topography and political upheavals.

In the narrow span of 124 miles, Nepal drops from the sheer faces of the Himalayas to the subtropical forests and grasslands of the sun-baked Tarai to the South. Glacial rivers crash through steep canyons in the hilly regions between the Tarai and the mountains. Torrents of icy water signal a seemingly endless supply of water from the glaciers and peaks above. Yet, rivers from the same sources turn into turbid trickles of trash-choked muck in the populous city of Kathmandu.

Nepal's seasonal monsoon brings a cleansing influx of water to these rivers for about four months each summer, washing away the buildup of filth. During the dry season—eight months of perpetual drought—the rush of glacial water coursing through the mountain rivers is frustratingly close and yet unattainable for the thirsty cities and farmers in the parched Tarai plains. The high cost and technology necessary to pump water to the cities and dry plains requires dams and reservoirs that Nepal has struggled and failed to build over the last century since the introduction of hydropower. Dipak Gyawali, a former minister of water resources in the Nepali cabinet, believes that the popular idea that Nepal is second in the world in terms of water resources is hogwash, to put it mildly (D. Gyawali, Interview, May 2011). The UN actually listed Nepal around 70th in the world in terms of water resources (D. Gyawali, Interview, May 2011; A. Dixit, Interview, May 2011; R. Shrestha, Interview, May 2011), considering that four months of floods and eight months of drought don't make a country rich in water. Gyawali's comparison: "one foot in the stove and one in an ice bucket won't keep a person comfortable" (D. Gyawali, Interview, May 2011). The problem is in the cyclic pattern of extreme abundance and scarcity: unless water can be stored in times of plenty, the country will continue to suffer from lack of clean water and reliable electricity.

A puzzling contradiction reveals itself in Nepal's apparently bountiful supply of glacial and monsoon water versus the observed scarcity during the lengthy dry season. The rushing rivers I saw in the mountains while studying abroad in Nepal in 2011, along with popular talk of Nepal's wealth of water, contrasted strikingly with what I observed of the almost total lack of rural infrastructure for regulated water. For most of the spring I watched the city rivers of Kathmandu fill up with trash until I could no longer see any water. Every day, Kathmandu has planned electricity blackouts called 'loadshedding' because of the scant supply of hydro-powered electricity during the dry season. Due to this paradox, one of the most high profile issues during the last two decades of frequent political turmoil in Nepal has been the topic of hydropower development as the key to boosting the country out of poverty.

When people are going thirsty in a country with abundant natural water resources, the popular solution in our modernized world is 'development'. According to the Western model of development, the primary solution to all water resource problems is to build Big Dams. Big Dams are a Big solution for a Big problem. With a Big Dam, reservoirs can provide adequate water to scores of people, even in times of drought. The concept makes sense at a superficial level, considering that one in every six people on Earth lives without access to adequate freshwater. But the development mantra to "just build Big," comes with a host of consequences that are not a worthy means to the end of Third World Development. Simply building Big will not raise living standards in developing countries or boost their economies to First World industrialized status. Big Dam development does not even achieve its original goal of providing clean water to the estimated 894 million

people in the world who lack access. (UN Water Statistics: Graphs and Maps n.d.) The limits and challenges of effective dam projects will be a central focus of this thesis.

Big Dams might still seem like the perfect solution for a country like Nepal- with plenty of water resources, only lacking the means to harness it. Almost 18 million people in Nepal (60 percent of the population) live without access to electricity (D. Gyawali, Interview, May 2011; A. Dixit, Interview, May 2011) despite seemingly plentiful water resources in Himalayan rivers. Even worse, 95 percent of the population has no irrigation (which would require regulated water flow from storage projects) and 75 percent of Nepalis have no electricity that boosts industrialization, leaving only about 25 percent of the population connected to the national grid (D. Gyawali, Interview, May 2011).

Why would anyone, therefore, object to developing as many dams as possible, by any means necessary? What is standing in the way of dam development? Hydropower and water resource experts in Nepal gradually revealed a complex world of development theories, the “dubious politics of foreign aid” (Roy, 1999, p. 8), and what often boiled down to human corruption and greed. Development projects in Nepal are engineered at the cost of the country’s poorest, for the benefit of the rich.

No easy answer to the question “why doesn’t Nepal have enough electricity?” exists. Instead of continuing to search for an answer to ‘why doesn’t it yet’, it’s better to focus on what changes Nepal can make to provide more electricity and regulated water to its people. One of the central conclusions I made in Nepal is that positive development will have to stem from within the country itself. Nepal has the ability to develop its water resources on small and intermediate scales using its own financial, material, and human resources. This development can occur through community management of rural and

peri-urban small-scale water resource projects, participatory mechanisms for investment in state-led larger scale hydropower projects, and pluralism in development decisions. Nepali people themselves have their country's best interests at heart; the inherent human trait of self-interest, with the right checks and balances, can be used positively. The key is group decision-making, which community management, decentralization, plurality, and participatory investment, all rely on. In short, Nepal can develop its own water resources without the muddled input and convoluted ties associated with accepting gigantic loans from the World Bank or allowing its powerful neighbor, India, to build Big Dams for export in Nepal.

To support this alternative theory of development, this paper will more closely examine the flaws of the Western development model and patterns of foreign aid investment in large development projects, and contrast these with successful nation-led development efforts, with a specific focus on hydropower and irrigation projects in Nepal. While hydropower represents only a fraction of the world's focus on industrial development, it is tied to two of the world's most highly sought after and coveted resources: energy and water. The ubiquity of water and humanity's common need for it have led to hydropower representing a possible renewable source of long-term energy for a global population with ever-increasing energy demands.

The central claim that developing countries have the means for economic development, without depending on foreign aid, hinges on evidence from community management techniques of micro-hydro projects. Building many of these small-scale projects is far less environmentally destructive than one Big Dam, and micro-hydros are additionally important because electricity and regulated water go directly to serve the

people affected by a project site. Sovereign development can also rely on local distribution of electricity from the national grid through decentralization of state-level industrial monopolies, resulting in better management of existing electricity and water. Participatory mechanisms further allow for a more people-centered approach to development (over a traditional construction-centered approach) by providing a cooperative balance in decision-making. Lastly, policy framework that allows for domestic investment from all economic classes, opens up financial resources within the nation that aren't in state coffers. These approaches are important and necessary because they avoid large loans tied to specific development projects. The latter often stall economic growth more than spur it along, and end up causing more human suffering.

Research questions

- What are the problems with the Western paradigm of development?
- To what extent is nation-led development that focuses on management and building smaller scale projects an applicable model for hydropower development beyond Nepal?
- How can foreign aid be incorporated better into developing country's plans and be people-centered and management-driven, rather than construction-centric?

Research methods

This thesis addresses the powerful forces at work in today's mainstream development model, critiques "Big Dams" as a plausible method for healthy water resource development, and expands on possible alternatives, building upon findings from an Independent Study Project (ISP) in the spring of 2011 during the Pitzer in Nepal

program. The main basis of this research is through scholarly critiques of modernization theory and development as well as the written work of several activists who have focused on the local effects of large-scale hydropower development in India and Nepal.

I have also incorporated primary research from interviews I conducted in Nepal, about the complex development relationship between India and Nepal and from the growing support for alternative modes of nation-led hydropower development. My field research in Nepal focused on the following three questions: Why is there “load-shedding” (planned nation-wide power cuts)? Why have big hydropower projects consistently failed to come to fruition in Nepal? And how can the 60% of Nepal’s population still living without electricity gain access to it? I pursued answers to the first two questions by interviewing hydropower engineers, policy experts, cultural theorists and hydro-resource economists in Kathmandu- the political hub of the country. I trailed the heated conversation about hydropower development in newspapers like Himalayan Times, The Nepali Times, and the Kathmandu Post.

To answer my third research question- what can be done?- I focused on a government policy shift that allows for community management of electricity and three nation-led hydropower development projects: a micro-hydro in the village of Simigaau, a private sector 10MW project called the Siprin Khola Hydroelectric, and the first domestically funded mega dam under construction, the Tamakhosi. These three case studies vary greatly in scale and management, exemplifying how a nation can adapt methods of hydropower production to the needs of specific locations and groups, without relying on large international loans. These case studies will be explored in the fourth chapter on alternatives to the foreign aid dependent Western development model.

This question of how the majority of Nepal can gain access to electricity has led to further pursuit of the larger problems in development. Some of the over-arching problems that have caused large-scale development to stagnate in Nepal are problems on a wider scale. Therefore, I have continued to research if the possible solutions and changes to increase electricity production and improve management that I observed and learned about in Nepal- at different scales, from government policy to community management- are applicable alternatives to mainstream development patterns across the Global South.

Overview of Chapters

To understand the present need for alternative development methods, the coming chapter (II) will first explore the evolution of mainstream development theory since Third World development became a global focus after the end of World War II. This chapter will also introduce critiques of the dominant Western development model and the associated issues with foreign aid. The last part of this chapter focuses on the limits and challenges of 'Big Dams' specifically, in hydropower and water resource development.

The third chapter will discuss India and Nepal's historic relationship and struggle for control over shared water resources. It explores the dynamic of the more politically and financially powerful lower riparian, India, pushing project proposals and loan packages on Nepal. The component of foreign aid and the large scale of projects proposed has led to several failed projects, which Chapter III will explore. Contemporary points of conflict in joint projects between Nepal and India will also be a central focus of this chapter.

The final chapter (IV) opens up the possibilities for alternatives to Big Dam development, reliant on foreign aid, focusing on the case of Nepal. The chapter reviews recent government policy changes in Nepal that have allowed for ‘communitization’ of electricity in decentralized rural cooperatives. It also illustrates the three case studies of Simigaau, Siprin Khola, and Tamakhosi to address the matter of scale and sources of funding in sovereign development. This chapter aims to demonstrate how these methods result in more human-centric development with less environmental destruction and social harm than the Big Dam model. It further exemplifies how independent development, without foreign aid, results in project returns benefiting the national economy and local people.

Chapter II: Critiques of large-scale development in the Global South

Defining Development

In order to understand the global conversation on development and discuss the Global North's responsibilities for involvement, the first question must be: how is 'development' defined in this context? Global decision-makers in the Global North see development as synonymous with 'national progress' in industry and the growth of a consumer economy. They define development through the lens of Western market ideologies, focused on construction and technology and the formation of consumerist capitalist economies. "Development was—and continues to be for the most part—a top-down, ethnocentric, and technocratic approach" (Escobar, 1995, p. 44). In contrast, an alternative definition focuses on development that is human-centric rather than construction-centric. This alternative understanding of development can also refer to infrastructural and economic growth in technologies or through new methods of community cooperation that boost the home economy of the country or region being 'developed'. The difference is not necessarily in the means to achieve development but in adjusting scale and approach to fit the place and people, and in the basic goal: to improve the quality of human lives.

Consider the example of a 100 MW reservoir dam built in a developing country by a foreign company, with funding from the World Bank. First of all, a dam of this size would displace thousands of people and submerge a valley. In spite of the displaced villages and environmental damage, the dam may still look like productive development for the country. However, if most of the energy and regulated water produced is exported

to other countries for economic revenue, even the benefits of electricity and irrigation are given away. Building a dam where the only positive quality is an economic return to the government does not qualify as human-centric development. All of the economic factors in such a project would not benefit local people and society directly; in fact it would be socially detrimental when considering the lives that would be disrupted and uprooted for the dam.

This idea is one of the basic tenets of nation-led development schemes, and is often referred to as the theory of ‘backward and forward linkages’. Backward linkages in hydropower development are the benefits a society accrues during the building process of a project: support to allied industries (electrical, mechanical, and construction related companies), as well as increased economic activities, and boosted employment. Forward linkages are the benefits to a society from a finished project using the new electricity and water: for agriculture, industry, transportation, tourism, health, education, water supply, and again, increased economic activities and employment (A. Dixit, Interview, May 2011). For any developing country to enjoy both the backward and forward linkages of a project, it needs to hire domestic contractors, builders, and engineers. Additionally, all the benefits of a project (for electricity and regulated water either for domestic use or irrigation) need to be used within the country.

Unfortunately a human-centric definition of ‘development’, which incorporates the idea of backward and forward linkages, is not the dominant model of development. Rather, most development projects are based on the first definition, a Western paradigm of construction. Development is based on economic and technological growth; the building of cities, industries, and growth of consumer markets mark the successful rise of

Third World countries to First World capitalist economies. The rest of this chapter explores the history of the dominant development pattern and some of the critiques aimed at its construction-centric, foreign aid-dependent focus.

Evolution of the Western development paradigm

Numerous scholars assert that the Western Development model began with the end of World War II, which marked both the end of direct colonialism and a time when most of the world was picking up after the ruins of war. A famous point marking the onset of the “development era” was President Truman’s famous 1949 inaugural speech where he initiated the “launch of a global effort to assist ‘underdeveloped areas’” (Sorenson, 2010, p. 5). This spark and three key conditions led to the birth of modernization theory, which is at the root of the Western development model.

The first key to the evolution of modernization theory was the end of the colonial era. Most of the ‘underdeveloped’ regions Truman spoke of were previous colonies of Western nations. The dissolution of these colonial empires led to a flood of new “Third World” nation states that were “in search of a model of development to promote their economy and to enhance their political independence” (So, 1990, p. 17). Ironically, the call to help these nations develop led directly to international trade relationships that only furthered their economic and social exploitation through neocolonialism and imperialism. The second condition that gave rise to modernization theory was the rise of the U.S. to the status of the world’s greatest superpower. In the 1950s, the U.S. “practically took over the responsibility of managing the affairs of the whole world” (So, 1990, p. 17). The last reason for the birth of the Western development model was the spread of communism. During the Cold War period, the Western and Soviet blocs raced not only to

build superior military power, but also to pull other countries to their 'side'. To the Western bloc (predominantly the U.S.), preventing underdeveloped and economically weak countries from falling prey to communism became integral to national security. Providing aid to developing countries thus became a means of insurance for Western democracies- enforcing a 'you're either with us or against us' ideology.

The developed West sought to perfect a development model that would encourage new nation states to emulate the Western U.S. model of development rather than fall prey to communism. Walt Rostow, who describes five necessary stages of development for all human societies, best encapsulates the premises of this theory. All societies begin as traditional and simplistic. This first stage is marked by limited productivity in agriculture and little to no industry because of a lack of technology. Societies evolve over generations of technological development through the stages of 'preconditions for take-off', 'take-off', and the 'drive to maturity, and emerge as modernized societies in the highly industrialized final stage of 'high mass consumption' (Rostow, 1960, p. 4-10). This last stage of a fully mature society is marked by "real income per head [rising] to a point where a large number of persons gain a command over consumption which transcends basic food, shelter, and clothing" and an increase in urban populations (Rostow, 1960, p. 10). The end goal of modernization is inherently capitalist: for all societies to reach a level of wealth and industrialization that can sustain a bustling consumer culture. Increasing living standards in developing countries is only a means to the end of creating a consumer class.

Three inherent assumptions underlie Rostow's five evolutionary stages of modernization: the model assumes that any society's development will be unidirectional,

progressive, and gradual (So, 1990, p. 19). From the first through the fifth stage, the modernization model assumes that all societies move invariably from primitive to advanced, traditional to modern. Moreover this modernization is ‘good’ and represents ‘progress’ which includes a subjective value judgment. Rostow also believed that progressing through these stages of development takes generations and often centuries; it is an “evolutionary not revolutionary” process (So, 1990, p, 19). The defining characteristics of the modernization model through this evolutionary theory are the basis of many critiques of mainstream development. The very qualities of homogenization, Americanization, and dissolution of traditional cultures, that the modernization theorists tote as the model’s greatest strengths are seen as flaws in the human-centric model of development. The following section will explore flawed aspects and popular critiques of the Western development model.

Critiques of mainstream development and foreign aid

One clear problem with the mainstream development model is that it often focuses on the agendas of First World aid-givers rather than the most pressing needs of Third World nations. The security motivation for development aid, beginning with the Western fear of communism, is one driving force of the mainstream development model. This motivation for development is selfishly Western-centric: the goal of the security-nexus benefits the Global North, not the underdeveloped countries of the Global South. In a collection of essays titled *Challenging the Aid Paradigm: Western Currents and Asian Alternatives*, Jens Stillhoff Sorenson (2010) claims that the post-World War II development model was “an instrument for security; it was a security technology designed both to prevent areas

from falling into the communist camp and as a new way of managing populated territories that had earlier been under colonial administration. Development [aid] has always been... used to manage or contain the potential danger posed by the poor” (p. 5). The perceived security risk posed by poverty in the Third World has evolved since the Cold War. In the 1970s development aid evolved to preventing shadow economies and illegal drug trade in much of South America and Africa. In the 21st century, development aid has been channeled through fighting the “War on Terror”, as underdeveloped nations are seen as potential breeding grounds for anti-western terrorists (Sorenson, 2010, p. 5). The fact that none of the above motives for development in the Third World are based in a desire to eliminate poverty or raise living standards raises serious questions about development’s presupposed association with ‘help’.

While security motivations for development aid are not directly rooted in a desire to help underdeveloped countries, modernization theorists do truly believe that their model is the best way to boost development in the Third World, through encouraging developing countries to emulate the West. Modernization assumes there is global agreement that the West is best. Western nations in Europe and the United States “are viewed as having unmatched economic prosperity and democratic stability. And since they are the most advanced nations in the world, they have become the models the latecomers would like to emulate” (So, 1990, p. 34). Thus, mainstream development theory targets domestic and ‘backwards’ indigenous factors as the main causes of underdevelopment in the Global South (Sorenson, 2010, p. 7) rather than accepting responsibility for exploitative colonial and neocolonial relationships that effectively suppress the domestic economies of Third World countries. Mainstream development

“seeks to explain the situation of underdeveloped countries as a product of their slowness or failure to adopt the patterns of efficiency characteristic of developed countries” (dos Santos, 1996, p. 166).

By blaming underdeveloped countries for their own ‘backwardness’, modernization theorists see relationships with the West as the key to development and can justify imposing their ideologies on developing nations in exchange for loans and other aid. First World ideologies behind development are linked to domination (a relic of colonialism) and carried out by international lending institutions like the International Monetary Fund (IMF) and the World Bank (WB) (Sorenson 2010, p. 7) The neoliberal market ideologies behind the IMF and WB have led to these institutions imposing Structural Adjustment Programs (SAPs) on Third World countries in the name of progress. SAPs impose conditions for receiving development loans, requiring developing countries to implement ‘free market’ policies: namely, deregulation, privatization, and elimination of trade barriers. The ‘good governance’ instilled by these programs is synonymous with democracy (Sorenson, 2010, p. 9). The goal is remaking culturally distinct nations into homogenized images of Western consumer societies. By placing the nexus of blame for ‘underdevelopment’ on the developing countries themselves, it’s easy to see why Western development theory insists that building international trade relationships with the West will pull these economies into the modernized world.

The idea that trade with the West will help the Third World develop is the source of one of the major critique of mainstream development, resulting in the emergence of an alternative theory in the early 1970s, advocating for market separation from the West. Proponents of ‘dependency theory’ claim that the capitalist system of global trade is on

inherently unequal terms and maintains the hierarchy of colonial relationships through imperialist expansion. The Brazilian economist, dos Santos, noted that market relationships between developing countries and the West leads to development that is “unequal and combined—unequal because development of parts of the system occurs at the expense of other parts... and combined... because it is the combination of these inequalities and the transfer of resources from the most backward and dependent sectors to the most advanced and dominant ones which explains the inequality, deepens it, and transforms it into a necessary and structural element of the world economy” (dos Santos, 1996, 166). Resources are extracted from developing countries on the periphery to invest in the industrial development of the dominant Western countries at the core, undermining the resource base for domestic development in Third World countries. Thus, dependency theorists argue that ‘de-linking’ with Western countries by relying on local production and trade with other developing countries is the key to development (Sorenson, 2010, p. 8).

While dependency theorists advocated for market separation from the West and local production in the ‘70s, a new economic model of neoliberalism rapidly came to dominate the global market in the ‘80s, touting ‘free market’ ideology as the key to healthy development. The original transition from Keynesian economics to a globally dominant neoliberal system is another purported strength of the mainstream development model that doesn’t produce the development results it claims to. The post World War II model of development existed within a Keynesian economic system where national governments were considered a necessary regulating force to balance market inequalities and promote the state’s welfare. The Keynesian solution to capitalism’s contradictions

“was to acknowledge the inevitable role of social structures, in this case through government intervention, to obviate market distortions” with the goal of closing the development gap (Vandermeer, 2011, p. 22). This period allowed Japan, followed by South Korea, China, and many South Asian countries, to ascend toward First World industrialized status through “export-led growth”. With Keynesian market controls, individual governments were able to use tariffs to protect their growing industries (e.g. Japan’s Toyota exports to the U.S.) and compete in First World markets.

Unfortunately for the new success of these developing countries, Keynesian thought began giving way to neoliberalist ideology in the 1980s, marking a new stage in the evolution of development and foreign aid. Neoliberalism is generally characterized by drastic reduction of the state’s involvement in the economy “to an absolute minimum and unleash[ing] the forces of the market and promote privatization, outsourcing and deregulation” (Sorenson, 2010, p. 9). Starting with Reagan’s administration, neoliberal economics, advocating for extremely limited state control of markets, began to dominate in international trade- effectively nullifying developing countries’ best method to protect and encourage growth in their industries using government tariffs. The neoliberal system has been “very successful in transferring wealth from poorer sectors (social classes and countries) to richer sectors, but devastating to the aspirations of countries on the lower slopes of the development mountain” (Vandermeer, 2011, p. 23). Backlash against the destructive forces of neoliberalism has led to an alternative model of “South-South cooperation” that dependency theorists first suggested. The clear failure of the neoliberal model to assist in Third World development led to the formation of the BRIC block—a

cooperation between Brazil, Russia, India, and China—to return to Keynesian principles of trade between countries in the Global South (Vandermeer, 2011, p. 23).

While Keynesian economics seemed to be a step toward closing the wealth gap between the First and Third Worlds, neoliberal free-market ideology has allowed private industries to widen the wealth gap more than ever before. Neoliberalism's influence on development lies in enforcing a free enterprise system where the corporations who can make the most profit, win. What is the motivation for continuing with programs as seemingly generous as the World Bank in a neoliberal 'dog eat dog' world? Giving aid to developing countries will supposedly help develop their consumer markets- thereby increasing the profits of the world's large corporations (largely controlled by the developed countries of the West). With this model, it seems fair to judge development success based on a population's shopping power and consumer drive. Economic security, rather than political security, drives development aid today.

In the wake of havoc wrought by neoliberal policies on developing countries, a new alternative called post-development theory evolved in the 1980s, critiquing the global hierarchy of Western hegemony in mainstream development that earlier dependency theorists also focused on. Post-development theorists, like Arturo Escobar, argue that the entire concept of the 'Third World' is a notion created and perpetuated by the First World. The Western development model maintains power relationships through the notion of the Third World by classifying the world's nations into a subjective hierarchy based on concentration of wealth and economic power. "Development relies on setting up the world as a picture, so that the whole can be grasped in some orderly fashion as forming a structure" (Escobar, 1995, p. 56). Only within the Western framework that

prioritizes modernization and industrialization does the “Third World” have to be considered worse off. Post-development theory holds that the practice of ‘development’ maintains Western hegemony over the Global South in ways that are destructive rather than constructive to the Global South’s development. By ‘unmaking’ development ideals we can release Third World countries from the persistent exploitative control of the West.

One way, Escobar argues, that the First World maintains control is through the image of the Third World portrayed by popular media. He points to ubiquitous images seen in magazines, of malnourished Africans or over-worked South American children, as examples of the ‘violence of representation’ (a phrase coined by Teresa de Lauretis, 1987). Mostly these images are meant to evoke pity in viewers, so they will donate money to a certain organization to feed or educate Third World children and give them opportunities for ‘a better life’. The important aspect to grasp is that this narrative of need results only in an exchange of money- not a sharing of culture or any true understanding between donors in the Global North and would-be Third World recipients of aid. Escobar claims that these emotive images are “the most striking symbol of the power of the First World over the Third. A whole economy of discourse and unequal power relations is encoded in that body... This violence, moreover, is extreme; scientific representations of hunger and ‘overpopulation’ (they often go together) are most dehumanizing and objectifying” (Escobar, 1995, p. 103). By evoking pity responses and objectifying human lives, the Western-centric media ensures a steady flow of financial aid through NGOs and reinforces the relative ‘otherness’ of the Global South- maintaining a distinction between First and Third World.

Post-development theory holds that this understanding of development, where Western aid is the solution to Third World poverty, only reinforces the three main assumptions of modernization: 1) that tradition must be snuffed out in order to achieve modernity, 2) that all countries exposed to Western societies will want to emulate them, 3) and that any society can modernize following the same steps (and through the same five stages) as the developed West. Post-development theory completely discounts the idea that developing countries are backward and primitive; that they are trapped in the first stage of development and need to shed tradition in order to ‘progress’ and become more like the Global North. It also critiques the ethnocentric assumption that the rest of the world necessarily desires or should desire to be more like the West.

Most importantly, this critique of mainstream development challenges the very basis of the Western development model: that what worked for the West must work for everyone. While the general conception of modernization theory behind the mainstream development model holds that all Third World societies can follow the same stages of development that Western countries went through, post-development theorists argue that the development pathway followed by the Global North is not a viable cut and paste model for the Third World. “Even a modest acquaintance with history shows that underdevelopment is not original or traditional and that neither the past nor the present of the underdeveloped countries resemble in any important respect the past of now-developed countries. The now-developed countries were never *underdeveloped*, though they may have been *undeveloped*” (Frank, 1970, p. 5). The modernization model doesn’t take into account how these undeniable discrepancies in the economic and social histories of Third World countries gave rise to the condition of ‘underdevelopment’. After all,

“most of our theoretical categories and guides to development policy have been distilled exclusively from the historical experience of the European and North American advanced capitalist nations” which leads to the false assumption that underdeveloped nations’ “past[s] and indeed their present[s] resembles earlier stages of the history of the now-developed countries” (Frank, 1970, p. 4). The fatal misconception here relates back to the dependency theory critique that Western development relied heavily on exploiting the resources of other countries through colonialism and imperialism, and now through neoliberal ‘free market’ policies. This past and current economic exploitation has resulted in the underdeveloped state of the Third World. This critique ties back to the central argument that development which truly benefits Third World countries “can now occur only independently of most of these relations” with the now-developed Global North (Frank, 1970, p. 5) through nation-led development.

While dependency and post-development theorists promote the exclusion of the Global North in the development of the Global South, other alternative development theories that showed promise have unfortunately been assimilated into the mainstream neoliberal model based on Western involvement. In the 1970s, waves of activism gave rise to ‘participatory’ and ‘sustainable’ development theories to combat the perceived neglect of local voices in the development process. While these are, by themselves, critiques of mainstream technology-driven development, they work mostly within the model of neoliberal development practices. Funneling foreign aid through non-governmental organizations (NGOs) has realized a shift in development aid policy “to operate directly on populations; this is reflected in radical interventions in the South and in the promotion of NGOs that can operate in societies directly rather than through states

(Sorenson, 2010, pp. 12-13). ‘Participatory’ and ‘sustainable’ are catchwords of many NGOs whose goal is to include local people in the decision making process and “sustain local lifestyles through non-material development” (Sorenson, 2010, p. 10). There is nothing wrong with this; in fact, it seems like a positive step toward the alternative human-centric definition of development offered at the beginning of this chapter. Unfortunately, foreign NGOs are often more focused on the desires of their financial donors than the actual needs of the aid beneficiaries (D. Gyawali, Interview, May 2011; A. Dixit, Interview, May 2011). Even well-intentioned development aid can go awry when the decisions are being made by people in the First World, without first hand knowledge of a culture or the most pressing needs of a people. Most NGOs have a specific area they claim to provide funding to, whether it is putting an end to child trafficking or building health care outposts in rural villages. The point is that many NGOs, and the donors who provide their funding decide where the money goes, instead of the aid recipients getting to decide where funding is needed most. Local people are not given sovereignty over their own development decisions even under these so called ‘sustainable’ and ‘participatory’ development models.

In addition to the largely unintentional harm wrought by not giving people in developing countries the right to make their own development decisions, NGOs are also subject to the same distorted perception of what counts as ‘successful development’ that afflicts the World Bank and IMF. They tend to share the belief that wherever money is given, positive development will ensue. As many critics of the top-down aid approach acknowledge, “Since the 1950’s, aid organizations have exhibited an enduring tendency to define outputs in terms of money disbursed rather than services delivered” (Easterly,

2002, p. 288). Moreover they've demonstrated a vulnerability to "institutional amnesia": where the same modernizing approaches to development are repeated over and over despite their often observed lack of success. Because of this "institutional 'Groundhog Day' ... every decade or two similar pronouncements are repackaged by a new generation of policy-makers and presented afresh as the way forward" (Duffield, 2010, p. 26).

The problem with repeating the same tried and untrue development patterns over the years boils down to the unacceptable expectations of sacrifice: from the cost to people's livelihoods, to marginalized indigenous cultures, not to mention the overwhelming financial cost of most foreign aid funded development schemes. The worst thing about the price of development is the ignorance that international lending institutions and leaders have sustained through the decades, sweeping hidden costs to people and the environment under the rug in favor of touting the projects built. The United Nations Department of Social and Economic Affairs published a report on "Measures for the Economic Development of Underdeveloped Countries" over sixty years ago. The report acknowledges the hidden costs of development that the mainstream development model ignores: "There is a sense in which rapid economic progress is impossible without painful adjustments. Ancient philosophies have to be scrapped; old social institutions have to disintegrate; bonds of caste, creed and race have to burst; and large numbers of persons who cannot keep up with progress have to have their expectations of a comfortable life frustrated. Very few communities are willing to pay the full price of economic progress." (UN Department of Social and Economic Affairs, 1951, n.p.) This report demonstrated a clear understanding of major flaws in the mainstream

development approach, vouching for how few communities can actually withstand the full cost of development. Over half a century later, those words still haven't sunk in.

As long as Third World countries have their development pathways decided for them by wealthy outsiders, a message is perpetuated that the people of these countries are inferior and incapable of making their own development decisions. Earlier discussion of post-development theory explained how this message is perpetuated in Western countries, but it is equally important how people in developing countries are made to feel that their cultures and lifestyles are sub-par. The functionalist modernization model assumes that all development must be transformative: "in order for a society to move into modernity, its traditional structures and values must be totally replaced by a set of modern values" (So, 1990, p. 34). Western development not only strips countries and people of their sovereignty, but also legitimizes governments allowing any project that will increase economic production, regardless of scale and dismissive of human costs. Through mainstream development, Escobar argues,

It became acceptable for... rulers to subject their populations to an infinite variety of interventions, to more encompassing forms of power and systems of control; so important that First and Third World elites accepted the price of massive impoverishment, of selling Third World resources to the most convenient bidder, of degrading their physical and human ecologies, of killing and torturing, of condemning their indigenous populations to near extinction; so important that many in the Third World began to think of themselves as inferior, underdeveloped, and ignorant and to doubt the value of their own culture, deciding instead to pledge allegiance to the banners of reason and progress. (Escobar, 1995, p. 52).

In one sentence, Escobar elucidates many of the main problems associated with Western, construction-centric development. The traditional focus on "Big" development projects in the Western model leads directly to suppressing and ignoring the needs of

local people most affected by development projects. Governments subjecting their own people to impoverishment for the sake of the ‘common good’ and national progress is also a central theme in the writing of other development critics. In opposition to the giant Sardar Sarovar dam on India’s Narmada River, Indian activist, Arundhati Roy, asks about who definitely controls decisions about natural resources- the people who live with them or the government? Who has the right to develop them or not? The fact that this dam, the Sardar Sarovar, came to represent a larger political battle for control led the Indian government to take especially brutal action in the 1990s to demonstrate its might and squash protests. “For the people of the valley, the fact that the stakes were raised to this degree has meant that their most effective weapon—*specific* facts about *specific* issues in this *specific* valley—has been blunted by the debate on the big issues “ (Roy, 1999, pp. 9-10). Modernization discussions driving mainstream development decisions occur at a “highly general and abstract level. Since their aim is to explain general patterns, universal trends, and common prospects for Third World Development, they do not want to be preoccupied with unique cases and historically specific events” (So, 1990, p. 35). This development model treats human beings as numbers, weighing statistics instead of lives. Most importantly, Escobar emphasizes, when development offers a path to increased production (of energy, food, industry, etc...) developing countries see only opportunity, “cloud[ing] the awareness of the impossibility of fulfilling the promises that development seemed to be making” (Escobar, 1995, p. 52).

The worry that Western development makes impossible promises is taken a step farther by the critique that modern development and associated foreign aid are actually worsening the problems they claim to address. Through the capitalist political economy,

Escobar argues, “modern people [have come] to see life in general through the lens of production” (Escobar, 1995, p. 60). One example of how mainstream development actions exacerbated an already existing problem by focusing too narrowly on production is in the Green Revolution’s response to the global food crisis. The Food and Agriculture Organization of the United Nations (FAO) statistics from 2010 show that 925 million people in the world are ‘food insecure’ and don’t have enough to eat. 98 percent of this population lives in developing countries (FAO news release, 2010). This number was proportionally even higher in the 1950s when development decisions began to increasingly target the need for food, inciting a Green Revolution. The movement was hailed for helping to provide for a growing global population by boosting agricultural yields—supposedly preventing the starvation of millions—but it also undermined locally adapted techniques for farming and marginalized the poorest farmers. Susan George coined the phrase ‘more food, more hunger’ in *How the Other Half Dies* (1976), revealing the paradox wherein development strategies intended to alleviate hunger have simply aggravated the problem.

The focus on increased crop production led to replacing traditional crops and irrigation with Western crops and technology. Indian activist and physicist, Vandana Shiva, discusses the consequences of replacing traditional with modern, noting that the Green Revolution-funded “miracle seeds” actually displaced local drought-resistant crops in favor of genetically modified, water-guzzling crops (Shiva, 2002, p. 9). Not only were these homogenized crops more vulnerable to being wiped out by a single disease or pest, they only deepened water issues when traditional human and animal-powered irrigation techniques were thrown out in favor of more ‘efficient’ Western technology: “oil engines

and electric pumps that extracted water faster than nature's cycles could replenish the groundwater" (Shiva, 2002, p.10). Mainstream development typically assumes that traditional technologies, despite specific adaptations to locale and culture, are worthless compared to Western technology. As economist Mark Duffield notes, modern "development is able to insist on being judged by a yet distant future, rather than a past that has been lived and experienced" (Duffield, 2010, p. 27). The tried and true methods that farmers had developed over centuries to maintain their water supply couldn't stand up to the mighty knowledge the West sought to impart.

In spite of the development paradigm's blindness to the value of culture and locally adapted technology, there is still a contingent of development theorists who believe that international lending institutions like the World Bank and IMF have a valuable role to play in helping the Global South develop. These theorists critique the 'Americanizing' blanket approach to project planning rather than the core of the development paradigm itself. They suggest that although the World Bank uses flawed practices and historically neglects its responsibility to follow through on projects in addressing human needs, these problems aren't inherent in the World Bank itself and could be fixed. The theory claims, as many development critics do, that many World Bank projects have had the exact opposite effect of their intent to alleviate poverty, but it disagrees with the dependency and post-development belief that the WB maintains colonial power dynamics between the Global North and South. Instead these projects' overall failure is attributed to the World Bank's lack of follow through and attempts to replicate Europe and America's development techniques "in cookie cutter fashion around the world despite compelling differences in resources, culture, economic structures and

educational levels” (Moore, 1998, n.p.) While Moore refers to these giant flops as “big projects with small results” many of these big projects might actually inflict more harm than good.

The point here is not that a global food crisis does not exist, or that the West doesn't have a responsibility to help; the issue is that the modern development model goes about change the wrong way. Escobar, extrapolating on Susan George's famous quote, 'more food, more hunger,' pointed out that “countries that were self-sufficient in food crops at the end of World War II— many of them even exported food to industrialized nations— became net food importers throughout the development era” (Escobar, 1995, p. 104). Something is amiss with world food programs that leave developing countries increasingly dependent on foreign aid. The goal ought to be decreasing foreign dependence and strengthening traditional agricultural systems, not tearing them down. How have these development systems been grinding in reverse without anyone calling a halt to the process? The answer lies again in the development model's focus on statistical outputs rather than actual effects on people, a problem that results from the large scale of development projects.

Smaller projects are a much safer scale for development. Small development projects cost less and affect fewer people so they allow room to learn from mistakes and to experiment with different development technologies, instead of hinging all of a country's development hopes on a few large-scale projects. A prominent economist and development critic, Ernst Friedrich Schumacher, “worried that foreign aid was making people ‘poorer by giving them Western tastes’” (Pupavac, 2010 p. 57). Schumacher firmly rejected the material values of modern Western consumer society that the

mainstream development model seeks to spread to the Third World. Instead, Schumacher's model advocated for decentralized, locally adapted, community-centric development in Third World countries. This alternative is based on 'teach a man to fish' ideology: "The gift of material goods makes people dependent, but the gift of knowledge makes them free" (Schumacher, 1974, p. 163). The warning that Western development conflates 'growth' with true development and places too high an estimation on technological solutions is a sound critique. Moreover, the alternative options offered in *Small is Beautiful* (1973) have shown great promise and success in developing countries. But, it is easy to see where Schumacher's critics poke holes in his arguments with claims about misplaced romantic ideals of pre-industrial societies and idyllic rural lifestyles. "The cultural critic Raymond Williams notes how the very distance of affluent urban dwellers from the realities of rural hardship facilitates their urban romanticizing, which may hinder the development of policies to improve rural lives" (Williams, 1973, cited in Pupavac, 2010, p. 61). Schumacher deserved some admonishment at least, despite his best intentions, for failing to see the hypocrisy in how his philosophy prescribed a lifestyle of backbreaking labor with no material aspirations on Third World countries that he never had to live with himself.

These popular views on the Western development model and critiques of foreign aid lay out a framework to understand why so many grand-scale development projects have stuttered and failed in Third World countries. Even the projects that are finished are often fatally flawed in design or longevity and far more costly than initial estimates from international lending institutions. To look at some of the specific obstacles and pitfalls of

Western development projects, the second half of this chapter will focus on specific issues associated with Big Dams for irrigation and hydropower.

Critiques of hydropower: Challenges and limits of Big Dams

There's a good reason why dams are such a large consideration in development decisions for the Global South. Water is arguably our most vital natural resource and the biggest limiting factor in where humans can survive. Harnessed correctly, our freshwater rivers can provide power, grow our food and sustain entire cities with drinking water. Best of all, humans can't use up all the water on Earth- at least not permanently. There will always be an equal amount of water cycling through our atmosphere, oceans and land no matter how we use or degrade it. In this sense, it is a more sustainable resource for energy than our finite supply of fossil fuels. It is logical, within Western development ideology, to want to regulate water for human use. Dams are a clear way to take a resource that is often damaging to human societies because of cycles of floods and droughts and harness it for power and agriculture. Dams can additionally protect human settlements and provide a valuable resource for human sustenance. Even Big Dams, that are up to hundreds of meters high, have proven their value time and time again in the development of many of the U.S.' major cities. The tallest dam in the United States, the Oroville Dam in California at 234 meters high (California Department of Water Resources (CADWR), 2000), provides vital water to the city of Los Angeles and supports agricultural production in the Central Valley. Oroville's size allows it to hold back more than 3.5 million acre-feet of water in its reservoir (CADWR, 2000), to provide regulated water for irrigation, municipal use, electricity, and flood control to over 40 million people

in California. The great reservoirs on the Colorado River, including the 110-mile long Mead Lake created by the Hoover Dam, and Lake Powell of the Glen Canyon Dam, provide necessary water to the desert states of the Southwest. Dams have clearly accomplished development that has been integral in the West, but at what cost?

Despite their benefits for regulating water, dam building is incredibly controversial in the global conversation on Third World development. It's not that dams are inherently bad. They have a vital purpose for controlling and regulating freshwater for our increasing global population. Only 3 percent of Earth's water is fresh water (the other 97 percent is in oceans) so as infinite as our water resources initially seem, they do need to be preserved. In fact, only .3 percent of that 3 percent freshwater is surface water that is available for human use (most freshwater is frozen in glaciers). To see the effect of dams, the available water is narrowed even further because only 2 percent of that .3 percent surface water is flowing in rivers (United States Geological Survey (USGS), 2012). Our sustainable resource, shed in this light, begins to look rather finite.

Even with such a finite amount of freshwater available for human use, the main problem with water is not how much we have globally, but its uneven distribution across the Earth. As our global population grows, we continue to extract water from aquifers through groundwater mining, faster than precipitation can recharge these sources. This problem is especially dire in deserts and densely populated regions where water shortages lead to famines. Humanity turned to building dams in order to capture more water from rivers and seasonal rains, rather than extracting more water from diminishing aquifers. There are now more than 45,000 dams taller than 15 meters high in the world. Combined,

they can hold back 6500 km³ of water, which is about 15 percent of the total annual river runoff globally (Nillson et al, 2005).

Recognizing the importance of dams, it is important to clarify that the purpose of this thesis is not to argue against all dam technology but to shed light on the problems with the way the Western model approaches dam development. Most of the social and environmental consequences of dam building are related to the matter of scale: the bigger the dam, the more environmental and social repercussions it inflames. Big Dams' risks and negative consequences far outweigh economic gains from electricity produced or irrigation benefits. The goal here is, as Arundhati Roy (1999) said, "dismantling the Big: big dams, big ideologies, big contradictions, big countries, big wars" (p.12). To focus only on the technology of dams and their potential benefits ignores the underlying problem of what the true costs are. Arundhati Roy's experience interviewing people in cities that benefited from hydropower illustrates how little general populations (who are not directly affected by the dam site) understand a Big Dam's repercussions. Urban people in India admitted that the submergence of valley villages for reservoirs was sad, but necessary because of the 'greater' need for electricity. Where did the value judgment stem from? Is electricity worth more than homes, forests, and farmland? This type of ignorant demand entitlement has led to socially engineered famines in most of the developing world in the past century. Most people have some opinion on Big Dams but very few know anything significant about them. To elucidate the true repercussions of building Big Dams, the following section will generally explore the conflicting purposes of dams, consequences of irrigation, and environmental impacts of Big Dams. Additionally, it will analyze social and economic problems caused by the World Bank

and national governments, including displacement of rural people, politicization of water rights, the high financial and social cost of foreign funded dam projects, and how these projects fall short of expectations.

- Conflicting purposes

Dams serve a multitude of purposes: for hydropower, flood control, and to provide regulated water for irrigation purposes. Unfortunately these three major purposes don't coincide well. While this is a paradox applicable to all dams, when considering Big Dams, their greater size and overall inefficiency because of these conflicting purposes leads to greater environmental and social consequences. To produce hydropower, water must always be flowing; that means a dam for hydroelectric power has to release water constantly to turn its turbines. Dams meant to protect against floods create reservoirs that are maximally effective if kept at low level or empty so that they can contain sudden influxes of rain or snow melt. On the other hand, dams for regulated clean water and irrigation purposes are most effective if their reservoirs are always kept as full as possible, to provide enough water during dry seasons and droughts. Multipurpose projects can never serve all three purposes at maximum efficiency: "a water project designed to provide multiple benefits cannot provide optimal benefits on all counts" (Dixit, 2002, p. 370). But dams built for a single purpose are a waste- so dam managers tend to mix purposes to increase profit. For flood control, a reservoir should ideally be empty but "the operators of multi-purpose reservoir tend to keep the flood moderation space full to generate electricity because it fetches direct revenue, whereas flood avoidance benefits are indirect" (Dixit, 2002, p. 374).

The common problem with all three dam uses is that they are either more efficient with or inherently require large reservoirs to be built for water storage. While ‘run of the river’ projects (which are only applicable for hydropower production) are cheaper and less environmentally destructive- they rely entirely on the flow of water and therefore lose their efficacy during dry seasons. In order to provide reliable electricity and certainly to provide any flood control and regulated water benefits, reservoirs are necessary. The main reason development decision-makers haven’t simply jumped on the reservoir building bandwagon is because of the higher social and environmental cost of building storage projects: “if a project includes a reservoir, which is a body of water collected in a valley not designed by nature to hold one- [it] inundates the flora and fauna of the valley” (Dixit, 2002, p. 370) including any human settlements that get in its way. Reservoirs are permanent floods that displace people and destroy valuable forest and river ecologies.

- Perennial irrigation

For many developing countries in the Global South, monsoons are their main source of precipitation for agriculture. In these countries, like India and Nepal for example, most rivers are monsoon fed. More than 80 percent of the river’s flow occurs between June and September so irrigation during the long dry season is a critical issue. Regulated water from dams is proven to turn unproductive agricultural land that could only support one crop per year into land that produces three or more crops per year! Think of the huge financial gain to poor farmers in drought-wrought developing countries; think of the huge amount of food that irrigated land can provide to starving populations! It’s a beautiful idea, but an unattainable dream. Adding huge amounts of water into an ecological system that isn’t adapted for steady water flow year round (e.g.

areas with short bouts of monsoon rain and long dry seasons) has other consequences beyond the desired increase in soil productivity. The most important negative consequences of increased irrigation from dams are waterlogging and salinization of soils that stem from the rising water table underground. Rising groundwater levels dissolve salts that were previously well dispersed throughout the soil horizons and fill up pore spaces in the soil, replacing vital oxygen with a flood of water. Saline water is drawn to the surface through capillary action in plant roots and the soil becomes waterlogged. The increased salt concentrations eventually become toxic to plants; the ‘salinization’ effect that plagues irrigated farmland in desert environments. The accompanying ‘waterlogging’ of soils can effectively drown crops because the soil isn’t well oxygenated.

To explain the effects of long-term perennial irrigation, Arundhati Roy makes an analogy to long term steroid use’s weakening effect on human athletes: “gradually, in the way a steroid-using athlete becomes an invalid, the soil becomes depleted and degraded, and agricultural yields begin to decrease” (Roy, 1999, p. 69). These problems only arise when the new influx of irrigated water from a dam is not coupled with adequate drainage systems. Drainage systems are too often left out of the equation because they are more costly than the irrigation systems themselves- something I will discuss more fully in a section about the high hidden costs of dam building.

Others point out Big Dams’ failure to even deliver the perceived benefits of perennial irrigation. In the Bank’s first 50 years it lent \$44 billion to water resource projects for irrigation and drainage, regulating water supply, sewage and hydropower (World Bank Annual Report, 1994; McCully & Sklar, 1994, n.p.) and in almost half of the irrigation projects, agricultural productivity actually declined! Roy adds that Big

Dams aren't following through on increasing crop productivity in the long run through examples in India: "Over the last fifty years India has spent Rs 87,000 crores (a crore is 10 million rupees) on the irrigation sector alone. Yet there are more drought-prone areas and more flood-prone areas than there were in 1947" (Government of India (GOI) figures cited in Roy, 1999, p. 15).

Beyond the long-term risks of salinization, waterlogging, and slow degradation of soils from over use, there is an unexpected, and more immediate, environmental justice aspect to increasing irrigation potentials with dams. The additional water makes it possible to grow more water-intensive cash crops like sugarcane, cotton, rice, and soybeans in place of traditional drought-resistant crops like millet, barley and corn. The shift in available water leads to a parallel transition from farmers growing what they can afford to eat, to growing expensive crops that they can only afford to sell, in order to make their investment back. "By linking themselves to the market" Roy argues, the farmers "lose control over their lives" (Roy, 1999, p. 68). Small farmers' increasing dependence on the costly regulated water from the dam and shift to growing expensive crops for market can lead to a paradox: India is a leading world agricultural exporter, yet people are starving in this country that produces excess food: "Indians are too poor to buy the food their country produces" (Roy, 1999, p. 22).

- Environmental impacts

Reservoirs permanently flood great swathes of land behind Big Dams. They often displace human communities, but sadly, humans are still the lucky ones in these scenarios. Most species are not as mobile as humans. Valuable agricultural land, old

growth forests, ancient ruins and religious sites, and all the animals that live within these valleys are flooded away. The river ecosystems themselves are also damaged. Dams are devastating to spawning fish- especially anadromous fish that migrate between the ocean and freshwater spawning habitats. If a dam blocks their path to evolutionarily programmed places to spawn, entire populations can die out. Anadromous fish, like salmon in much of Western North America or the hilsa in India, are often keystone species that dozens of other species rely on. Not to mention the fisher communities who also depend on these fish for their livelihoods. “Dams have either eliminated or endangered one fifth of the world’s freshwater fish” (McCully 1998, p. 46). Already, on dammed rivers across the developed and developing world scientists have observed rapid decreases in fish biodiversity. We can’t predict or control all the cascading consequences of this type of river ecosystem devastation.

One argument claims that with more careful planning, dams don’t have to be as environmentally detrimental as they are today. If Big Dam planning included consideration of fish spawning grounds and built dams upriver, some dam specialists argue it wouldn’t negatively affect the currents that carries smolts to sea, nor would any fish have to die trying to get over dams or swept through turbines. One author who studies dams built on the Columbia River in the Pacific Northwest, goes so far as to argue that dams can cool water downstream and block silt that can be detrimental to fish populations (White, 1995, n.p.). The assertion that dams cool water downstream is inaccurate; logically dams decrease the regular flow of any river and slow flow and less water will increase water temperatures to dangerous levels for fish (Miller, 2009, pp. 167-170). In one past water conflict on the Klamath River basin spanning the border of

California and Oregon, where dams and irrigation won out over fishing rights, two consecutive years of drought left 80,000 adult spawning salmon dead; a devastating number without even counting juveniles or future populations that would come from their eggs. Biologists found that these salmon died from a gill rot disease that flourishes in low flows and warm temperatures caused by the dam upstream (Miller, 2009, p. 173). Despite the inaccuracy of the claim that dams can cool water downstream, the point that fish spawning habits could be taken into consideration when planning dam sites is a valid one.

While fish populations suffer beneath dams, the lakes created by reservoirs dramatically change the chemistry of the water behind the dam. The deep, still water prevents oxygenation, creating an intolerant environment for most river life. The warm surfaces of these reservoirs spread disease through bursts of toxic algal blooms (Roy 1999, p. 14) and are also the perfect breeding grounds for mosquitoes, resulting in increases of malaria outbreaks near reservoirs in sub-tropical regions (Roy 1999, p. 49).

Beyond the river ecosystem, the surrounding forests slated for submergence are often clear cut and hauled away for timber prior to the reservoir filling with water. In India, between two Big Dams on the Narmada River, “the Narmada Sagar dam and the Sardar Sarovar dam, 50,000 hectares of old growth, broad-leaved forest will be submerged.” (Roy 1999, p. 64) Somehow, the engineers carefully troubleshooting possible misfortunes that could befall these Big Dams missed a basic biology lesson connecting forests, rivers, and rain. Mass deforestation is partly responsible for decreased water flow in the rivers because barren landscapes attract less precipitation. Deforestation also increases siltation (a major problem for dams) due to soil erosion. The World Bank is a large institution, predisposed to a majorly top-down approach, so it doesn't take into account individual

places or disparate landscapes. For example, the already high silt content of Himalayan rivers makes dam structures that worked well in the U.S. far more inefficient and subject to major disrepair.

Perhaps the most far-reaching environmental damage Big Dams can incur is mounting evidence linking Big Dams to earthquakes. Scientists have known that the weight of water held back by large reservoirs affects seismic activity for over half a century, since scientists started detecting the effects of the U.S.' Hoover Dam (Naik & Oster, 2009, n.p.). The concern became more of a focal point after a 2008 earthquake in the Sichuan province of China killed 80,000 people. While evidence tying the nearby Zipingpu high dam to the 7.9 magnitude earthquake is still unclear, the added weight of 320 million tons of water in a reservoir only 500 meters from the earthquake's fault line could clearly have a drastic affect on the geology of the area (Naik & Oster, 2009, n.p.). At the very least, careful consideration should be given to not placing Big Dams along fault lines. Even better, smaller dams that don't hold millions of tons of water in areas not naturally designed to hold massive lakes could become the dominant model for dam development.

Considering the variety and breadth of environmental devastation that improper planning of Big Dams can result in, it's unforgivable that "the [World] Bank continually focuses on the mitigation of environmental impacts rather than on avoiding adverse impacts in the first place. The latter could often be achieved by altering a project's design or siting it in a different location" (Moore, 1998, n.p.). I have doubts about the supposed ease of simply shifting a site; there are people and valuable ecosystems everywhere so there will always be adverse impacts that should be fully considered. Still, the central

point- that full environmental consideration isn't an important enough piece in the current planning of Big Dams- is on point.

Lest we begin to imagine that the World Bank simply has no way to know about the extent of Big Dam's environmental degradation or hasn't received this widespread information yet- it's time to introduce the Morse Report. Two decades ago, in 1992, the World Bank itself called for an Independent Review team to do a full analysis of the environmental effects of an in-progress mega dam in India, the Sardar Sarovar. Negative media attention brought on by soon-to-be displaced Adhivasi activists was the motivation for the review team rather than any genuine interest on the part of the World Bank. The team's review, called "the Morse Report", examined every aspect of the project: "hydrology, and water management, the upstream environment, sedimentation, catchment-area treatment, the downstream environment, the anticipation of likely problems in the command area—water logging, salinity, drainage, health, and the impact on wildlife. It is the most balanced, unbiased, yet damning indictment of the relationship between the Indian State and the World Bank (Roy 1999, p. 44). The Morse Report, without a hint of doubt, reported back to the World Bank that the Sardar Sarovar project hadn't properly taken into account the true environmental and social costs of displacement from the dam. The Bank couldn't possibly have taken these costs into account, because they hadn't bothered to figure out what they were. In the Morse Report's introduction, the authors summarized their findings that "the Sardar Sarovar Projects as they stand are flawed, that resettlement and rehabilitation of all those displaced by the Projects is not possible under prevailing circumstances, and that environmental impacts of the Projects have not been properly considered or adequately

addressed. Moreover we believe that the Bank shares responsibility with the borrower for the situation that has developed... we think that the wisest course would be for the Bank to step back from the Projects and consider them afresh” (Morse & Berger, 1992, p. XXV). Eventually, after the World Bank attempted to apply superficial fixes to the problems the Morse Report addressed, they did pull their financial backing of the project. At that point, India was already too financially invested and the project was already under construction- so it continued despite the Morse Report’s warnings.

- Displacement

Whenever there is a storage component to a hydro-resource project, the reservoir is likely to displace any people who live in river valleys behind the dam. One of the main factors that the World Bank tends to ignore in its cost estimates for dam projects is the number of people who will be affected and how to remediate them after a new dam destroys their traditional lifestyle. In this case it is easy to see how the bigger a dam is, the more people it can displace. World Bank projects are often at such a large scale that they ignore the specific needs of individuals at ground level; they focus on the technical and statistical analysis at the expense of human misery and the environment. Big Dam projects rarely improve the living standards of the people they displace- rather, all of that new regulated water and power gets sent to still viable (e.g. not flooded) farmland and urban centers. One of the main points addressed by the World Commission on Dams (WCD) is the need for the World Bank to insist upon and follow through in enforcing adequate resettlement plans for displaced populations. Still- an institution of the World Bank’s magnitude cannot easily peer into the internal workings of each country it extends loans to.

In the case of the 3,300 Big Dams that India built between its Independence in 1947 and 1995, only 54 were specifically studied by the Indian Institute of Public Administration to see how many people the dams displaced. The average number of people displaced by these 54 dams was 44,182 (Roy, 1999, p. 17). Roy notes that despite the small size of this sample for extrapolating the total number of people displaced by all the dams built (54 is only 1.6 percent of the 3,300 dams built in India during this period), even if we drastically under-estimate the total, by pretending that on average only 10,000 people were displaced by each dam, the total would still be 33 million displaced people! This figure is already under estimated by a factor of four. Then we have to consider how many people the Indian government didn't consider 'project affected' and didn't include in statistics of displaced people. Moreover, India has "no government records of how many people have been displaced. India does not even have a national rehabilitation policy" (Roy, 1999, p. ix). India is by no means the only developing nation where displaced people from Big Dam development projects have slipped through the cracks or actively been ignored. It is an example of the larger pattern where the World Bank's collaboration with State governments (made up of the wealthy elite of a country) prioritizes imagined returns from technological projects over responsibly addressing and managing the social problems they create.

India's experience in resettling displaced refugees of its dams is a terrifying example of how easily a government can cover up and ignore its own people through loopholes over land titles and who counts as 'project-affected'. The World Bank and IMF offer no incentives or clear follow up procedures to ensure that governments will provide for the all the people a new dam displaces (whether or not they hold titles to the land they

live on). Unfortunately most of the people that are displaced for Big Dams in developing countries are rural, often illiterate, indigenous communities. They don't always hold title to their lands since they may have been living there far before the government ever decided 'titles' and deeds to land were necessary. Even if they do have their land rights, their isolation from the policy workings of national governments means they are more easily duped and cheated out of fair settlements- especially if they can't read the documents.

Even communities that have learned to fight by modern rules with land titles, lawyers, and the media, consistently lose the fight to protect their lands from planned dams. In Brazil, indigenous tribes in the Xingu River basin have been fighting plans for the Belo Monte Dam since the 1980s. The dam is set to be the third-largest dam in the world, after China's Three Gorges Dam and the Brazilian-Paraguayan Itaipu Dam. It would displace up to 40,000 people and submerge a rainforest-covered river basin claimed to have four times the biodiversity of all of Europe (Windh, 2011, n.p.). Even the Brazilian "constitution explicitly prohibits the displacement of 'Indians' from their traditional lands". Unfortunately, it also "provides for one convenient exception: when the National Congress deems removal of people to be 'in the interest of the sovereignty of the country'" (Windh, 2011, n.p.). That's a gaping loophole for any government-supported development project to take any land it wants to, regardless of human and ecological costs.

In India, most of the 'Adhivasi' (indigenous) communities displaced by Big Dam development aren't even considered 'project-affected' so they aren't entitled to any settlement or rehabilitation help. Building dams that displace only invisible people- who

never show up in statistics or require government money to resettle- is convenient for Big Dam developers. Is it a coincidence then that Adhivasis and Dalits (untouchable castes, literally 'oppressed' people), who make up 8 percent and 15 percent of India's total population respectively, make up about 60 percent of displaced populations from India's Big Dams? (Government of India (GOI) statistics, cited in Roy, 1999, p.18) Most of these invisible populations end up in slums surrounding India's urban centers, having lost their ancestral land and their livelihoods. One villager displaced by the Bargi dam on the Narmada River queried a documentary maker, "why didn't they just poison us? Then we wouldn't have to live in this shithole and the government could have survived alone with its precious dam all to itself" (Roy 1999, p.13).

There's a cascading effect of displacement too. Displaced villagers who did have land rights are often given parcels of replacement land, away from the dam site- whether or not the land is already occupied! Thus, the original refugees may displace more people. Land conflicts arise with villagers fighting each other over remnants of land that may not even be agriculturally productive, because they have no way to direct their anger at the real source of the problem: the government and the Big Dam builders. While land settlements face issues of overcrowding or waterlogged, saline soils, cash settlements can be even less dependable. Cash doesn't provide the same lifeline that the displaced villagers' land on the river did. Traditionally, villagers could depend on the river for fish, their crops for grains, and the forest, if all else failed. Being handed a wad of cash puts all of a recently uprooted family's eggs in one basket and puts them "a heartbeat away from destitution" (Roy 1999, p. 53). Other consequences for the luckiest of the displaced who receive aid at all can be: having their communities torn apart and resettled in different

areas, having host communities be hostile to the newcomers, or even not speaking the native language of the new region.

It's clear that both the size of a dam and its distance from vast human settlements are the main factors affecting displacement. Big Dams are bound to displace large groups of traditional river communities in developing countries. At this scale, when dams are dozens of meters high, Roy argues "it is just not possible for a state administration, *any* state administration, to carry out the rehabilitation of a people as fragile as this, on such an immense scale. It's like using a pair of hedge clippers to trim an infant's fingernails" (Roy 1999, p. 55). Big Dams could be replaced by many smaller irrigation schemes to provide equivalent water to farming communities without this kind of mass displacement.

Politicization: Hierarchy of water rights

An in-depth study of the World Bank's history of funding Big Dams reveals what at first appear to be numerous unintentional negative effects of Big Dams on the people they were supposedly built to help. Many of them are already covered above. Many of them could possibly be considered accidental flaws, like displacement of river communities or consequences of rising water tables on agriculture (if ignorance and neglect deserve the term 'accidental'). Still, there might be reasonable doubt suggesting that the Western development model is just sadly misguided in its approach to Big Dam development, not mal-intentioned. When focus shifts to considering who actually benefits from Big Dams, doubt is erased. Clearly the people benefiting are not the millions of people displaced by the dams... so who does their sacrifice benefit?

It's not the people the dam was originally built to help- certainly. Most dams are built with the stated purpose of solving drinking water deficiencies in rural areas. "Of the

one billion people in the world who have no access to safe drinking water, 855 million live in rural areas” (Serageldin, 1994, p. 4). Roy explains that the main reason dams cannot be built to serve this need is that “the cost of installing an energy-intensive network of thousands of kilometers of pipelines, aqueducts, pumps, and treatment plants that would be needed to provide drinking water to scattered rural populations is prohibitive.” She emphasizes, “*Nobody* builds Big Dams to provide drinking water to rural people” (Roy, 1999, p. 76).

These Big Dams are also not benefiting small farmers who need irrigation water. As mentioned above, year round irrigation actually separates small farmers from self-sustaining methods of providing for their families, and makes them dependent on crop prices and the market. Small farmers are also subjected to the dam management’s monopolized control of the price of water, which crops they are allowed to grow, and how much irrigation water they are allowed to use. Thus, Big Dams are increasingly seen as ‘undemocratic’ because “they’re a guaranteed way of taking a farmer’s wisdom away from him. They’re a brazen means of taking water, land, and irrigation away from the poor and gifting it to the rich. Their reservoirs displace huge populations of people, leaving them homeless and destitute” (Roy, 1999, p. 14).

Roy talks about this ‘gifting’ of water rights to the rich in light of India’s Big Dams that she researched on the Narmada River. The politicization of the Big Dams’ water management led to major agricultural companies and luxury resorts receiving water before thirsty rural villages or small farmers ever received a drop. In the case of the giant Sardar Sarovar dam on the Narmada River, the dam’s stated purpose was to bring drinking water to 40 million villagers in the state of Gujarat. Before the dam was even

built, the water had already been promised to rich sugar corporations, hotels, water parks, and wealthy urban centers. These groups would all receive as much water as they needed before it could ever reach the rural villages that need drinking water (Roy, 1999, p. 74). It is this obvious transfer of water rights from the poor to the rich that makes it easy for critics of the Western development model to accuse the World Bank and the governments of developing countries of deliberately taking water from the poor to deliver to the rich- a very clearly not accidental widening of the wealth gap. Big Dams don't raise living standards of the poor people they are said to target, but ruthlessly and deliberately propagate mass inequity. Roy makes the severe comparison that "Big Dams are to a nation's "development what nuclear bombs are to its military arsenal. They're both weapons of mass destruction. They're both weapons governments use to control their own people. Both twentieth-century emblems that mark a point in time when human intelligence has outstripped its own instinct for survival" (Roy 1999, p. 80).

While comparing dams to bombs is too extreme, the idea that technology has exceeded our natural instincts to preserve life reaches beyond humanity. We're throwing our own kind under the bus, certainly, but all other species are perceived as worth even less in the hierarchy of rights. Scientists' last-ditch efforts to impress the importance of biodiversity led to the Endangered Species Act (ESA) (1973) enacting drastic policy change in the United States. For the first time in U.S. history, animals endanger of extinction took priority over most human development goals. A central area of conflict regarding the ESA was in water controversies during times of drought. In the Klamath River basin in the Pacific Northwest, conflicts over water rights came to a head in the dry summers of 2001 and 2002. The Bureau of Reclamation had promised the family farmers

of the basin eternal irrigation rights but the dwindling salmon populations took priority under the ESA. While the small farmers, fish biologists, and Native American groups who relied on fisheries fought over who had primary rights to the water, one culprit was largely ignored. Four major dams on the Klamath River were at least partially responsible for the water shortages. Worst of all, these dams didn't produce enough electricity to be worth continuing to run, so they only remained on the river because of the expense involved in tearing them down (Miller, 2009, n.p.). The fact that even the groups affected by the water shortages were blaming each other rather than focusing on these dams shows just how engrained dams have become in politicizing water rights.

- The high cost of aid

Big Dam projects are usually only possible for developing countries to build with the help of foreign loans. The World Bank is overly happy to comply and it's necessary to question why. It's not because the Bank is altruistic, surely- so how does handing out massive loans benefit them? Joseph Stiglitz's criticisms of the way international financial institutions have instituted globalization and market fundamentalism in developing countries carries special weight because he was the former chief economist of the World Bank. In "Globalism's Discontents", like in Deborah Moore's essay, Stiglitz isn't critiquing the inherent concept of development, just the way these institutions implement it. As he puts it, foreign aid is making a problem into a crisis: taking people in developing countries from low-productivity jobs to unemployment when foreign 'hot' money pulls out suddenly.

It's important to remember that the countries of East Asia were successfully managing their own economic growth through market regulations when Keynesian economics dominated. When the U.S. began to push neoliberal policies of liberalization, the influence of the Western-backed IMF and World Bank caused a parallel shift in developing countries. De-regulating the market prevented equitable diffusion of profits, instead focusing wealth in the hands of the few at the top. While Stiglitz and Moore seem to believe that the IMF and World Bank are unwise to the detrimental effects that liberalization has had on developing markets, it cannot be an accident.

The Bank is not necessarily at fault for offering high interest loans- that's typically what banks do. They are at fault for offering debilitating, large loans that developing countries can't hope to pay back and for jumping into such agreements before considering the full costs to the developing country's economy and people. Once again, it is the scale of Big Dam development projects, and their accompanying astronomical costs that prevents developing countries from ever escaping the cycle of debt and dependence on foreign aid. It makes sense why the World Bank is eager to jump into large loan agreements when the "international dam industry is worth \$20 billion a year" (McCully 1998, p. 274). After all, all banks must make a profit. But banks also have a responsibility to offer loans that careful analyses have shown the borrower will be capable of paying back. Multilateral international banks like the World Bank and IMF have a multiplied responsibility in this regard, since their loans are supposed to facilitate the development of entire nations, not bankrupt them.

The argument for "debt relief" to forgive development loans in the Third World insists that the debt cycle reinforces Western dominance over developing countries. "The

interests of affluent countries, investors and multinational corporations that benefit from the status quo are represented by the major multilateral lenders, the IMF and World Bank” (Makwana, 2006). One report advocating for debt relief mentions how international lenders imposing liberalization on markets through Structural Adjustment Programs (SAPs) “compounds the net flow of resources out of developing countries whilst also facilitating the transfer of control over domestic resources and services to foreign interests” (Makwana, 2006). While it is morally acceptable for international banks to profit from repayments with interest, it is unequivocally wrong for them to represent the interests of their lenders by facilitating the exploitation of developing countries.

It is also reprehensible for the World Bank to approve project loans before the Ministry of the Environment has even completed its impact reports. In an “internal review of 50 bank-financed dam projects, evaluators found that only 13 of 50 were considered acceptable projects, the remainder being unacceptable or requiring extensive remedial action” (Moore, 1998, n.p.). In the case of the Sardar Sarovar in India, “whose reservoir displaces people in Madhya Pradesh and Maharashtra, but whose benefits go to Gujarat” the Bank had cleared a \$450 million loan two years before the Ministry of Environment cleared the project (Roy, 1999, p. 28). Perhaps they jumped the gun because they knew the project would be approved, as it’s almost impossible for environmental consultants to adequately critique dam projects without losing their jobs. The Bank wouldn’t continue to employ people who kept refusing their wishes- it would be bad business. Also, “between 1947-1994 the World Bank’s management had submitted 6,000 projects to the executive board. The board hadn’t turned down a single

one... Terms like ‘moving money’ and ‘meeting loan targets’ suddenly begin to make sense” (Roy, 1999, p. 29). The bank’s priority is passing loans, not choosing projects that will truly help to reduce poverty and raise living standards in developing countries.

Thus, even if the Ministry approves the project (which it always does, without fail) there’s no institutionalized way to follow through after a project is built to see if they are actually achieving what they set out to do, “whether or not the (always phenomenal) costs were justified, or even what the costs actually were” (Roy, 1999, p. 16). The Bank benefits from a system of “global governance without global government” (Stiglitz, 2002) because only the World Bank is regulating the World Bank’s actions. Financial institutions play to the interests of the wealthy who govern the policies of developing countries without democratic accountability. The World Bank’s goal to further progress in the Third World is an empty promise: “how can you measure progress if you don’t know what it costs and who has paid for it?” (Roy, 1999, p. 16)

The financial burden on developing economies to pay back these weighty loans is heightened by projects running far over their estimated costs from original loan agreements. An analysis of World Bank dam projects between 1993-1998 show that the projected boon to the host country’s economy was always overly optimistic in terms of observed returns and the actual building costs were “40 percent higher than initial estimates” (Moore, 1998). Not included in this 40 percent underestimation of dam costs are the astronomical costs of drainage projects, which are left out of the tab for irrigation systems *because* they make the dam costs seem prohibitively expensive. “David Hopper, the World Bank’s vice-president for South Asia [in the late 1990s], has admitted that the Bank does not usually include the cost of drainage in its irrigation projects... because it

costs five times as much to provide adequate drainage as it does to irrigate the same amount of land. It makes the cost of a complete project appear unviable” (Roy, 1999, p. 70). The critical link missing here is if the project’s costs appear unviable, they are! The World Bank plays a manipulative game by giving a separate loan for irrigation projects that they know will eventually have to be followed by a drainage project once waterlogging and salinization of soils set in.

The dramatic social and environmental costs of Big Dams are relatively unknown (or at least not considered fully). Building costs are astronomically high and typically more expensive than project estimates. Finally, large-scale dams tend to break down more often than predicted. Irrigation benefits are already controversial because of the social consequences to farmers and soil degradation. When the huge extra cost of drainage is incorporated- the projects costs become even more unwieldy. The benefits of the regulated water reach rich agricultural monopolies and luxury resorts before they reach villages that lack safe drinking water. The last straw is that some of these Big Dams actually require more energy to run than the electricity they produce (Dharmadhikary, 1995, p. 141)! If all these claims still seem unbelievable, take a look at the host of problems that faced the first of India’s many dams built on the Narmada: the Bargi Dam, built in 1990. It cost ten times more than its budget and submerged three times more land than engineers predicted. A total of 162 villages were submerged without warning (when estimates only predicted evacuating 101 villages) (McCully 1998, p. 87). 114,000 people were displaced and most ironically: “the Bargi dam irrigates only as much land as it submerged in the first place- and only 5 percent of the area that its planners claimed it

would irrigate” (Roy 1999, p. 36). Clearly Big Dams don’t provide enough drinking water, irrigation or energy to be worth their astronomical costs.

Available alternatives to Big Dams

We, as a global population, have outgrown Big Dams. Or rather, Big Dams have outgrown us. The consequences of building dams at such a massive scale are too destructive to inflict on any population in any part of the world. Luckily, the options are not limited to Big Dams or no regulated water storage whatsoever. Small-scale hydropower projects, both for regulated water and energy, continue to grow in developing countries with gradually increasing financial support from state governments. Projects that incorporate local knowledge of the peculiarities of place, adapt to scale, and include local people in decision-making can transform the mainstream development model. These alternative methods focus on direct benefits of hydropower projects to the communities where they are built and beyond, rather than focusing on energy statistics and liters of water delivered. Popular power and pluralistic decision making are keys to making sure that the interests of one group don’t dominate or spur a project that would be detrimental to others. Jawaharlal Nehru, India’s first prime minister, spent most of his tenure pushing development projects for the “Greater Good of the Nation”. During this time, “dam building grew to be equated with nation building” (Roy 1999, p. 13). But even Nehru, who once wholeheartedly believed in the capability of Big Dams to spur national progress, came to regret supporting what he referred to as “the disease of gigantism”. He admitted that India, like much of the developed Global North, has been deluded in thinking that Big Dams will bring real change for the majority. Building Big Dams has become more about showing off a symbol of progress and development to the rest of the

world than about addressing water needs. “The small irrigation project, the small industries, and the small plants for electric power... will change the face of the country far more than half a dozen big projects” (Nehru, 1958, cited in Roy, 1999, footnote 4). While critiques of Big Dams have become more central in the public sphere of development discussion during the last decade, the paradigm has yet to fully shift: Predictions of a “steep decline in dam construction and other ‘mega-projects’ appear to be misplaced. Neither the World Bank nor, evidence suggests, any of the other international financial institutions, are withdrawing from infrastructural investments in general...Even with current concerns about the rising costs of construction, opposition on grounds of environmental and human damage, and poor rates of return on investments (all of which increase risks and diminish profitability), consortia of private institutions are increasingly providing the capital for the building and management of large-scale projects” (McDowell, 1996, pp. 2-3) When there are so many other less destructive ways to continue developing water resources, it is unforgiveable for the Western development model to continue to support the undemocratic Big Dam model.

Chapter III: India and Nepal's dynamic relationship in energy development and the role of foreign aid

While the last section focused mostly on problems attributed to the scale of hydropower development, this chapter will additionally begin to explore the other important factor in moving toward our alternative definition of development: sovereignty over decision-making and implementation of projects. To make a solid case for why sovereign development is optimal for improving socio-economic conditions and reducing scarcity, this chapter will concentrate on the case of Nepal, where I studied hydropower development last year.

Hydropower is not only the biggest energy subject in Nepali politics today but also one of the biggest economic and development topics. Much of the discussion in the hydropower debate is centered around “how much and what Nepal should do to develop its water resources” without first asking the important question, “what is it that the development of water resources will do to Nepal” (Thapa, 1997, p. 37)? The wide consensus is that Nepal needs hydropower to spur its economy and encourage industry investments. But the same arguments have been recycling for decades. How to build: big or small? How to help Nepal best: only allowing Nepali built projects or allowing for international aid from the World Bank or room for Indian developers to invest? Within this muddled conversation, “the critical linkages through which large scale exploitation of water resources leads to more rapid economic growth and structural transformation of the economy is hardly ever specified in detail” (Thapa, 1997, p. 35). There's a missing link, not only for the public who have had very little idea or choice in matters of hydropower development, but for the policy makers and developers who seem to have tunnel vision,

seeing only that more hydropower means more money. Because of the focus on hydropower development in Nepal and the complexity of sharing water resources with India, this is a perfect case study to explore in-depth the successes and pitfalls of dam development in a developing country. This chapter specifically explores a brief history of hydropower development in Nepal, and the problems that have arisen from attempting to build joint energy projects with India and with the help of foreign aid.

The coming sections will help to explain why there is never enough electricity to satisfy demand in Nepal and why plans for large hydropower projects have consistently failed. Part of these project's failures can be attributable to Nepal alone, because of instability and corruption in the Nepali government, where leaders cycle in and out of office with a frequency bordering on musical chairs. Government leaders looking for kickbacks from awarding project licenses to the highest contracting bidder are often undercut by the next person to come into power, thus sizable hydropower projects rarely get off the ground. The political environment is so unstable that foreign investment is also shaky and tends to fall apart- a characteristic problem in many developing countries. Finally, one entity, the Nepal Electricity Authority (NEA) has a centralized monopoly over production, generation and distribution of the entire national grid for electricity- an effect of liberalization imposed by the Asian Development Bank (ADB) in 1984 (Pun, 2008, p. 6). If the monopoly control of electricity weren't enough of a problem on its own, NEA employees are additionally paid government salaries, so the company's overwhelming management failures and financial losses harm the government and the public taxpayers, but not NEA. While Nepal clearly has its own fair share of obstacles hindering development and proper management of existing hydropower, another major

factor in Nepal's failure to deliver adequate electricity and water to its people is interference from foreign actors, primarily India.

Many of the case studies shared in the last section, critiquing Big Dam development, illustrated the negative effects of Big Dams on India's own development. It's true that the major populations of rural poor in India are often victims of irresponsibly carried out development projects funded by foreign aid. The distinction to make here is between the Indian government and its people. The government itself and the wealthy urban centers of India can hardly be considered "Third World" anymore. India is a rapidly growing economy and major exporter of agricultural and material goods in the world market. Thus, India's government is actually a foreign actor perpetuating in other countries the same problems from development projects that its own people face. India has a critical interest, for example, in the development of Nepal's water resources, since all of Nepal's rivers eventually flow to India. The Indian government isn't wrong to want to be involved in this development- as a lower riparian, it has a stake in managing these river flows. However, in any joint development projects undertaken by the two countries to develop hydropower in Nepal, India is looking out for its own agenda first. Nepal's focus needs to shift toward promoting sovereign development in order to also serve its own best interests.

History of Nepal-India joint hydropower and foreign aid funded projects

While Nepal's multi-faceted history with India has on the whole been politically smooth, when it comes to the sharing of water resources along rivers that flow through both countries, India and Nepal have never found much to agree upon for long. A lack of trust that both countries can agree on a fair deal is the primary issue. Their history of

attempted joint projects deeply affects the Nepali government's ability to make big hydropower decisions. On the subject of joint projects with shared benefits in flood control, electricity and controlled water for agriculture "the Nepali position [is] schizophrenic: it is torn between hyped-up propaganda of imagined benefits and almost Freudian undercurrents of buried misgivings" (Gyawali, 2001, pp. 6-7). What caused this bad blood to build up between Nepal and India? What has gone so terribly wrong that two countries with a shared goal for hydropower development cannot find a way to cooperate?

Political controversies over water with India have been continuous since the 1960s, beginning with two irrigation dams that were built in the '50s during King Mahendra's reign in Nepal. These first two bilateral agreements were for the Kosi dam(1954) and Gandak project (1959). Both projects were designed to provide irrigation and flood control benefits solely to India with small quantities of compensatory electricity for Nepal. The Kosi project's Kataiya Hydropower Plant, meant to provide 20 MW to Nepal, only produced 13.6 MW sporadically because of high siltation. Gandak was rated to produce 15 MW but regularly only generated 3-4 MW (Pun, 2008, p. 5). The Kosi and Gandak projects set a precedent for larger future projects where benefits were unfairly distributed to India. Moreover, these projects foreshadowed how in supposed cooperative projects Nepal has been allowed to participate only as a passive bystander. "Kosi and Gandak probably taught Nepal's engineers very little except to have their eyes opened on the inequities of project benefits and the value of Nepal's rivers" (Pun, 2008, p. 5).

The Devighat hydropower, a 14 MW project proposed in 1984, was originally supposed to be a Nepal-led project, with only financial aid contributions from India. The

Prime Minister at the time decided that Devighat should be built with domestic resources in order to “catalyze precious local skills and resources to demonstrate that Nepal, too, has the capacity to build... But the Finance Ministry, already suffering from donor-driven mentality” handed the project over to India instead (Pun, 2008, p. 5). Each attempt to gain experience for Nepali engineers or contribute materials, in order to boost backward linkages and increase local capacity-building, has been undercut by the Nepali government itself selling off project rights to foreign countries.

Many larger hydropower schemes planned for Nepal have involved foreign loans not just from India, but also from international development banks like the ADB and the World Bank. Not only does the World Bank’s development pathway push Nepal to accept big loans that increase its cycle of debt, Nepali hydropower activists estimate that accepting foreign loans to build upon Nepal’s hydropower capacity is ten times more expensive than building with Nepal’s money (D. Gyawali, Interview, May 2011; A. Dixit, Interview, May 2011; R.S. Shrestha, Interview, May 2011). The reason for this cost leap is easy to see: with foreign loans come foreign contractors and high expatriate wages. If the machinery and contracting company come from other countries, as was the case with Devighat, no industry within Nepal can benefit during the building process. Nepal is only able to contribute stones and sand to its own hydropower development and subject to obey all the rules and stipulations that the foreign institution might impose.

One example of this type of hugely expensive foreign project was the infamous Arun III. It was proposed as a run-of-the-river project in a remote valley that required no human resettlement, so “social and environmental issues did not form the bulk of the Nepali activist agenda... With a 201 MW capacity (named ‘baby’ in contrast to the full

402 MW version), it was not in itself a particularly high dam, except that the project proposed to almost double the country's total generation capacity in one go" (Gyawali & Dixit, 2010, pp. 111). Arun III was simply a case of bad economics, at a cost of \$5,400/kW, which is "four times more than that of small plants built by the private sector" in Nepal (Gyawali & Dixit, 2010, p. 109). Indignant over the steep costs of a project that would mostly export energy to India, a group of Nepali activists formed the Arun Concern Group (ACG) to demand project information that should already have been public under the World Bank's information policy. Thus, the Arun III controversy brought to light the "failure of the Bank to explore alternatives and illustrated how the Bank's lack of transparency can undermine democratic institutions in borrowing countries" (Udall, 1998, p. 410). Its illogical cost of \$1 billion for only 201 MW, combined with Nepali activists successfully bringing attention to how little the World Bank looked into more cost-effective alternatives, eventually led the bank to pull its funding for the project in 1995 (Pun, 2008, p. 6; Udall, 1998, p. 408). Suspiciously, the decision to pull out barely preceded a planned review by the "World Bank Inspection Panel to investigate whether the bank had violated its own guidelines for land compensation, resettlement and environmental assessment on the project" (International Rivers, n.d.). Unfortunately, the lessons of Arun III's failure didn't prevent India and international banks from proposing (or Nepal from accepting) future financially and socially prohibitive projects.

Even as Nepal's government was focused on the Arun III conflict, it granted the Australian-based company, Snowy Mountains Engineering Company (SMEC), a license to build the 750 MW West Seti storage project, which planned to export 90 percent of the

energy produced to India, along with most of the regulated water. West Seti is the most prime example of a dam that should never have sparked controversy in Nepal as it should never have been considered in the first place. It provides no backward linkages to boost industry in Nepal since the contracting company is Australian. Most opportunities for forward linkages are lost to India through exported electricity and irrigation water.

Moreover, the project would require 678 hectares of Nepali land for the transmission line alone, and an additional 2,322 hectares for the reservoir and dam site. Over 9,000 people would be displaced from their homes and lose their livelihoods directly, not to mention the impact on fisheries on both sides of the dam (International Rivers, n.d.). Funding for the project was initially provided by the ADB, “despite the project’s violations of the ADB Environmental Policy, Involuntary Resettlement Policy and Public Communication Policy... In 2010 a campaign by Kathmandu-based Water and Energy Users’ Federation Nepal (WAFED) forced the ADB to pull out from the project for its failure to comply with these policies” (International Rivers, n.d.). Despite the clear lack of benefits for Nepal, the potential damages to local people and the environment, and unreliable funding, the project stayed on the table for sixteen years before the Nepali government finally canceled the agreement in 2011.

An even more infamous example of a dam project that has been contested since its start is the Pancheshwar dam, outlined in the Mahakali Treaty of 1996. Rights over water in the Mahakali River (called the Sarda River in India) were contested for the better part of the 20th century, ever since the Sarda agreement of 1920 first outlined distribution of its water between Nepal and India. While Nepal’s rights to the river water were specifically defined as “4.25 cumecs of water in the dry season and 13 cumecs in the wet

season”¹, India’s share of the 650 cumecs that annually flow down the Mahakali were unspecified (Gyawali & Dixit, 1999, p. 553) in the 1920 treaty. In a series of treaties over the following decades, India was able to build the Sarda barrage and the Tanakpur barrage, which both extended into Nepali territory and threatened to flood Nepali valleys in order to save downstream villages in India. The final straw came when the Prime Ministers of India and Nepal ratified the Mahakali Treaty in 1996 without a two-thirds parliamentary majority. The treaty disastrously linked agreements over the Sarda and Tanakpur barrages with a plan for a 315-meter high multi-purpose dam called the Pancheshwar, to generate 6,480 MW of electricity, mostly for the benefit of India (Gyawali & Dixit, 1999, p. 557). The dam’s reservoir would extend up to 65 km into the Baitadi and Darchula districts of Western Nepal, capable of storing 6 billion cubic meters of water for irrigation and flood benefits (although those two purposes require opposite uses of the reservoir).

As entailed in the 1996 Mahakali Treaty, all the costs and benefits of the Pancheshwar project would be split equally between the two countries, with Nepal agreeing to sell part of its share of regulated water and energy to India based on its much smaller need (Treaty of Mahakali, 1996; Gyawali & Dixit, 2001). At an estimated cost of \$2-4 billion dollars, a project of this epic proportion was, and continues to be, financially unfeasible for Nepal. Nepal only has about 700 MW installed to date, and has struggled to build even this limited capacity. Suddenly a project that could potentially quadruple Nepal’s electricity capacity in one leap was agreed upon, without project reports or the full agreement of the Nepali government. Moreover, the ‘equal’ benefits outlined in the

¹ A cumec is a rate unit of one cubic meter per second.

treaty were blurred by excluding “respective existing consumptive uses of the waters of the Mahakali River”, which are skewed in India’s favor (Treaty of Mahakali, 1996).

One current joint project controversy is the Naumuri project (245MW), which India plans to build in Nepal on the Rapti River and fund entirely. India wants only the regulated water from the project, leaving all the electricity for Nepal. A supporter of this project estimates the worth of the project as 6 billion rupees worth of free electricity for Nepal and only ½ billion rupees worth of irrigation for India. Activists on the other, anti-export side of the argument agree that this deal is true but the estimated worth is not. They claim “water is more valuable than electricity,” so if the electricity is worth 6 billion, the water is worth around 18 billion, because of the multiplier benefit in agriculture. (R.S. Shrestha, Interview, May 2011; D. Gyawali, Interview, May 2011).

One economist vehemently denounced Naumuri as the worst possible project for Nepal if all the regulated water is actually exported to India. The Terai plains desperately need irrigation in the dry season and could produce at least three cash crops (meeting Nepal’s yearly demand by 300 percent) with the regulated water from Naumuri. Another reason to insist on Nepal keeping the regulated water benefits from this project is that building Naumuri will make Nepal’s Sikta irrigation project below the new site, useless. If Naumuri is built, there will not be enough water left in the Rapti River to support Sikta, which is currently used for irrigation in the Terai. This is not a problem if Naumuri is built for Nepal’s irrigation purposes, but leaves the drought-prone Terai even more vulnerable if water is exported to India. Still, 245 MW of free electricity is almost a third of Nepal’s entire current capacity. Would risking drought in the Terai possibly be worth the free electricity? Some Nepalis say yes, and others violently disagree. It’s important to

keep in mind one inherent inequality in this disagreement: Bureaucrats and hydrocrats stand to gain a lot from get-rich-quick-now schemes, because of personal kickbacks from licensing projects. Activists don't stand to gain anything directly, only through what is best for Nepal.

Of the dams shared in this brief history of foreign involvement in developing hydropower in Nepal, the Kosi, Gandak, and Devighat dams are all relatively small, so their damaging effects are mostly to the cooperative trust necessary for successful joint projects between India and Nepal. Arun III, West Seti, and Pancheshwar are all examples of projects that have failed to come to fruition, though plans for each dam continue to cycle in development discussions. The Naumuri is one dam that is currently hotly contested for its potential pros and cons in Nepal. While these dams represent only a sampling of all the dams planned for Nepal or already built through cooperation with India and funding from international lending institutions, they paint an accurate picture of the trials that Nepal has faced in developing its water resources.

Positions on exporting hydropower

In defining the arbitrary 'sides' in the hydropower debate on how best to develop Nepal's water resources, it's important to keep in mind that the basic argument is not over whether or not hydropower is an appropriate development path for Nepal. "Even the fiercest dam critics in Nepal do not say 'No dams'! but rather 'No bad dams'!" (Gyawali & Dixit, 2010, p. 108) Defining what qualifies as a 'bad dam' is not a simple black-and-white matter however. Although attempting to clarify the positions on hydropower development will undoubtedly oversimplify the true discussion, it provides a necessary

basis to understand the motivations for nation-led hydropower development versus the benefits of utilizing foreign aid and exporting energy to India.

On one side of the hydropower debate are politicians, private developers dubbed ‘hydrocrats’, and the Nepal Electricity Authority (NEA), who want to increase power capacity fast and now. On the other side are activists and hydropower experts who want it done carefully with maximum benefit for Nepal. These central actors fall along a spectrum of three basic positions on the issue of exporting project licenses to foreign companies and energy to India. The first standpoint asserts that Indian companies should be allowed to develop and export their own electricity in Nepal. Whatever is leftover, Nepal should be grateful to have! People with this view fancy themselves to be realists by acknowledging that India is too powerful a neighbor to exclude completely. The middle position allows that Indian companies should receive contracts to build dams in Nepal under the condition that all of Nepal’s electricity and regulated water needs are met before any is exported to India. The final position advises leaving India out of the equation entirely: Indian contractors shouldn’t get licenses to build projects and Nepal should not export any energy to India. Advocates of this stance want jobs for Nepalis and believe that all benefits of hydropower (from backward and forward linkages) are direly needed in Nepal. They believe that while the water in the rivers may be a shared resource, India has no right to the land through which it flows in Nepal, and attempting to cooperate with such a powerful country will never work out to Nepal’s benefit.

Despite these misgivings, Indian companies are currently working on Nepal’s three major rivers: the Karnali, the Gandakhi, and the Kosi. Since 70% of water in the Ganges flows from Nepal (and 80% of that falls in three months during the monsoon),

it's clear why India wants to build dams and reservoirs to save and control water that alternatively causes severe floods and droughts in Northern India. India is far more interested in water than hydropower: as Kunda Dixit, the editor of *The Nepali Times*, concisely put it, "India's two interests in Nepal are political stability and water," which are inseparably linked (K. Dixit, Interview, May 2011). The Karnali Chisapani (10,800 MW) and Sapta-Kosi High Dam (3,000 MW) are two major projects currently considered for export. Each will cost more than \$1 billion (greater than Nepal's annual budget) and both projects would submerge Nepali roads, valleys and villages. The possible benefits are still huge, but are they worth it?

The pro-export side says of course, and here's why: With India's financial resources and building capacity Nepal can obtain more power just from their free leftovers than it has the power to build on its own. Nepal can only get on its feet and begin developing more domestic-funded hydropower with the boost from India's projects that will bring revenue to Nepal's economy. For example, if India builds the Upper Karnali project (900 MW), without Nepal putting any money in, it will receive 12 percent of the energy (108 MW) (Pun, 2008, p. 7). The equivalent worth of 108 MW is about 13 billion Nepali rupees (G. Lal Pradhan, Interview, May 2011). The free energy could be used to attract more industry and in turn lead to more hydropower development. Moreover, the financial revenue from selling energy to India can be used to invest in health, education and improving transportation access to rural areas of Nepal.

There are examples of past success with the international export model, too. Pro-export hydrocrats cite Bhutan's cooperative relationship with India. The much smaller country, "with a population one-fiftieth of Nepal's, [has] the current generating capacity

of 1488 MW...twice that of Nepal” (Gyawali, 2010b), because of Indian-funded projects. One successful Nepali private power producer claimed that Bhutan takes whatever electricity it needs from these projects and sells the rest to India cheaply (50 pesa/kWh). (G. Lal Pradhan, Interview, May 2011). In actuality, Bhutan doesn’t take all the energy it wants: 80 percent of Bhutan’s electricity is exported to India, leaving only about 300MW for Bhutan’s use. Still, more than 70 percent of Bhutan’s households have access to electricity (Gyawali, 2010b), compared to only 40 percent in Nepal. Pro-export proponents in Nepal tout the Bhutanese model of development and decry Nepal for “wallowing in ‘empty nationalism’ and stirring ‘needless’ controversies over the Mahakali Treaty” (Gyawali, 2010b). They believe that Nepal needs to stop dwelling on what India is getting out of any given project and focus solely on the magnitude of benefits for Nepal. The longer hydropower development stalls, the more money is wasted, while the water in question flows to India freely. As one hydrocrat jokingly asked, “shall we go to India and stop the rivers?” (G. Lal Pradhan, Interview, May 2011).

Another aspect of the pro-export argument is that Nepal needs something to leverage with India. For example, agreeing to export more hydropower benefits could ease the fuel crisis that currently plagues Nepal, since it cannot afford to import fuel from India. Moreover, India could pulverize Nepal politically if it outright refuses to cooperate on joint water resource projects. Less extreme supporters of the export model suggest that Nepal needs to stop fighting India and focus more on “What can be done to get the best benefits out of a deal with India?” (K. Dixit, Interview, May 2011).

The contingent of people who fall in between the two extremes on the export issue believe that Nepal can have it both ways: engage India to help develop its water resources and still get maximum benefits for Nepal. The central idea is that Nepal can take responsibility for deciding which projects to build, and then offer bids to contractors, rather than waiting for foreign companies to approach Nepal with their own agendas. The rush to get hydropower developed has led to Nepali leaders handing out licenses carelessly and allowing India to define the terms. However, private contractors in India can still invest in building dams in Nepal without associated agreements for exporting energy if Nepali leaders would just be pickier about the projects they award licenses to. “The problem is at the political level” because the rules are just not institutionalized to make sure Nepal gets a fair deal (D. Ghimire, Interview, May 2011). With a more thorough and balanced accounting process for choosing hydropower projects, contracting companies can still get returns on their investments, while the benefits of energy and water remain within Nepal. Eventually, after enough projects satisfy Nepal’s needs for irrigation and electricity, Nepal can choose to export energy to India on its own terms. Many advocates of this Nepal-first export position say that despite their position on sharing water resources, they don’t blame India for how badly past treaties and projects have ended up for Nepal. “India is looking out for the best deal for their country, and they are supposed to! So why doesn’t Nepal do the same?” More blame is directed at the leaders of the Nepali government, “who needs to be looking out for their motherland instead of themselves” (R.S. Shrestha, Interview, May 2011).

The last simplified position on exporting hydropower is the group that calls for completely independent development. As one past Nepali minister of water resources proclaimed, “India is part of the problem not the solution” (D. Gyawali, Interview, May 2011). Advocates of this view are not selfishly leaving India to suffer while hogging all shared water resources. They simply acknowledge that Nepal is not the key to fulfilling India’s energy and water needs. After all, Northern India alone has a 15,000 MW energy deficit (A Dixit, Interview, May 2011). Since Nepal cannot possibly solve India’s energy and water problems, developing hydropower independently will provide the most holistic benefits to Nepal.

The central reason this position purports that joint projects of any kind with India will not be worthwhile for Nepal’s development is centered on the firm belief that Nepal lacks the government management and political weight to carry out fair negotiations with India. The two countries are at too disparate development stages for their relationship to be mutually beneficial (a concept related to dependency theory). Rather, their attempts at cooperation resemble the colonizer-colonized relationship characteristic of most top-down development decisions between the developed Global North and the developing Global South. Nepal has plenty of reason to be wary of this power dynamic. India is capable of manipulating the price of Nepal’s own electricity, to make a profit. In the proposed West Seti project (750 MW) that collapsed in 2011, India refused to buy electricity for more than 3 Indian rupees per unit. But in negotiations over how much Nepal would need to pay in order to buy back some of that electricity during the dry season, India refused to sell for less than 7 rupees per unit of electricity (D. Gyawali, Interview, May 2011). As Prem Jung Thapa, a noted development economist, pointed

out: “the raison d’etre of these [large-scale] projects is the revenue to be earned from power sales to India. To me, and I believe to most other development economists, this also makes it the raison d’etre for not investing in these projects” (1997, p. 44).

A final reason for the anti-export model is allowing India to build storage projects for its own flood control and irrigation purposes will never be a ‘fair’ deal for Nepal. Even if Nepal’s own irrigation needs are ever completely fulfilled, Nepal will still “not [be] very anxious to import floods from Bangladesh and India” (D. Gyawali, Interview, May 2011). The reservoirs created to store regulated water will inundate Nepali land. “Dams don’t stop floods, they create more floods...Nepal building large storage dams in the hills, for flood control, is tantamount to Nepal importing the seasonal floods of the lower riparians as permanent features of its landscape... especially because India does not want to pay for it” (D. Gyawali, Interview, May 2011).

Central themes of Nepal’s hydropower controversy

- Downsides of foreign aid

Before studying in Nepal, I had very little idea of how foreign aid (at least in terms of grants, that don’t incur national debt) could be anything but positive for a developing country. I was ignorant of the "extent of institutional distortion that donor policies [can] induce in recipient societies" (Gyawali, 2001, p. 7). Foreign aid in Nepal traditionally comes tied to other countries’ agendas, which strips Nepal of its capacity to make sovereign development decisions. The main issue is that “beneficiary countries give money conditionally: ‘if you do this, you’ll get this’” (D. Gyawali, Interview, May 2011). Nepal often gets pushed and pulled between India, China, and the U.S.’s desires, as a small country between three powerful giants. The U.S. is considered Nepal’s ‘sky

neighbor' because it polices the entire world (D. Gyawali, Interview, May 2011). This analogy to 'policing' Nepal through offering foreign aid is similar to another Nepali political expert's assertion that "foreign aid is the replacement for sending in the marines!" (C.K. Lal, Personal communication, May 2011). Foreign countries attempting to control Nepal's development decisions through aid hinders political stability as well as keeping Nepal financially dependent.

Foreign aid has also thoroughly embroiled the construction-heavy paradigm of the modernization development model in Nepal. Nepal learned to adopt the U.S. model of water management: "engineers [keep] aloof from people. The style excludes users from decision-making... little attention [is] paid to local management practices (Dixit, 2002, p. 48). The paradigm was copied from the west, but the irony is, many projects that Nepal would like to emulate were sovereign-led projects. For example, the Hoover Dam in the United States was built with the explicit purpose of providing jobs during the Great Depression. The link to understanding why the Hoover Dam was so successful is missing, but the emphasis on construction remains. Unfortunately, "a development strategy that promotes growth first and only then deals with human misery is not sustainable" (Ghani, 2011).

- An unlevel playing field

People on all sides of the hydropower debate have to acknowledge the inherent inequality involved in joint projects with India. Even Gyanendra Lal Pradhan, who is one of Nepal's leading private power producers for export, admitted that Nepal's diplomatic capacity (as well as financial and technical capacity) is not up to par to negotiate to negotiate a fair deal with India. (G. Lal Pradhan, Interview, May 2011; D. Ghimire,

Interview, May 2011). The government trying to force deals that don't benefit the Nepali public has been a source of contention for the last two decades at least: "After 1990, one of the main reasons for the downfall of the successive governments in Nepal has been the water related issues especially with India" (Bisht, 2010, n.p.). The disastrous Mahakali Treaty (1996) that Nepal's prime minister signed without consulting public opinion has led to "such a nationalistic fervor that when people talk about treaty with India especially on water and hydropower issues, the prompt comment is "desh bechne" or selling of motherland" (Bisht, 2010, n.p.). One of the main problems for Nepal, as the poorer and weaker nation, is that it doesn't have a lot of power to name the price for sharing its water wealth. "Nepal's ability to extract a fair price from India is severely restricted by several factors. Unlike Middle-Eastern oil, electricity is not an internationally trade-able commodity with an identifiable market price. With India being the sole buyer as well as joint partner in the venture, it is anybody's guess how this price will be determined" (Thapa, 1997, p. 44).

- Government corruption

Government politicians and hydrocrats like Gyanendra Lal Pradhan are on the side that decisions need to be made quickly and put into action; there is more cost on lost opportunities from waiting than to just move ahead with construction (A. Chitrakar, Interview, May 2011). After meeting Gyanendra, a charismatic and extremely optimistic fellow, he almost had me convinced that the Nepali people are so desperate for electricity, the only right thing to do is to develop as much power as possible— no matter who is building or getting the most profit from the project—just to relieve Nepal's misery. With a step back and some alternative perspectives, it becomes clear that this

method makes perfect sense for cabinet ministers and private power producers because it's the only way they benefit. Ministers are in and out of the Nepali government so quickly that if they don't sign off on projects quickly, they'll never see personal payoff. "Playing the blame game of one-upmanship, [politicians] have chosen to measure their success in the size and number of licenses awarded even if they are purely for export and would do nothing to end load shedding in Nepal" (Gyawali, 2010a). Activists who won't benefit at all from kick backs and licenses to Indian companies, *also* believe that action needs to be taken now, but that everything should be done carefully- contracts shouldn't be rushed without making sure that Nepal will benefit first and foremost. The playing field for this debate isn't exactly level. In international discussions, "attempts to introduce social and environmental concerns into the research agenda were rebuffed as 'negativism', while the research as structured without considering these issues was billed as 'forward-looking exercise about development'" (Gyawali, 2010a).

- Lack of consideration for alternatives

In the same minority position as the vocal activists who ask for environmental and humanitarian considerations before building giant dams in populated river valleys, are the people who suggest Nepal look at other alternatives for development. The money for the \$2-4 billion Pancheshwar project could do wonders for Nepal if invested in education or improving healthcare, but these development alternatives are not considered. "In public discourse, there is almost a conspiracy of silence when it comes to practices in water management that are alternatives to the high dam model (Gyawali, 2001, p. 9). What activists worry about is that "with a commitment to undertake water resources Project X, there will always be less donor funds available to Nepal for other purposes than without

Project X. If certain donors or other parties offer concessional funds to Nepal tied specifically to Project X, not being available for anything else, then we should be doubly wary about discovering whose interests are being primarily served by Project X” (Thapa, 1997, p. 37).

The argument in favor of water resources-led development is hard to fight with suggestions to consider other investment options. Hydropower offers an array of benefits that are both more immediate and more moneymaking than investments in education or sanitation and healthcare. The main points put forth in the water-led development model are the benefits to agriculture stimulated by irrigation development, industrial production stimulated by reliable/cheap power, new power intensive industries, water-powered transport, environmental benefits due to reduced need for wood fuel and hydro-carbon based energy use, and most controversially: export revenues to India.

- Why big is bad

A central problem caused by the Western development model’s emphasis on large-scale projects is that Nepal’s economy “cannot tolerate billion dollar mistakes” (Thapa, 1997, p. 37). Cautious critics warn that big projects like the re-vamped Arun III, Pancheshwar, and Karnali Chisapani put too many eggs in one basket. While on one hand, if successful, these types of projects could double and triple Nepal's energy capacity, on the other hand smaller and more spread out projects are less susceptible to all fail at one time. If some fail, others are left, and they aren't as expensive! At an average cost of \$2000/kW (a figure that incorporates investment cost, transmission cost, and maintenance) hydropower is an expensive undertaking with risks of physical obstacles,

such as earthquakes and floods, and long implementation time (D. Gyawali, Interview, May 2011). As the size of the project increases, logically so do all of these factors.

Even Gyanendra Lal Pradhan, the private power producer who usually takes the side of encouraging big project deals with India, said that the much contested, Pancheshwar project “is beyond imagination! [India and Nepal] don’t like each other. We can’t build a huge joint project together! We have to start small and build good blood.” (G. Lal Pradhan, Interview, May 2011). If a project of Pancheshwar’s proportion did come under construction, all of Nepal’s finances would be tied up in it. Even if it turned out as a huge success and faced no obstacles during construction (which is highly unlikely due to the high silt content of Himalayan rivers), it would take a decade or more to be up and running. In the meantime, Nepal would still be facing an energy crisis and have less funds to invest in other areas.

Many hopes rest on hydropower to become Nepal’s “passport out of poverty”, which results in the pressure to build big and quick. This view has become dogma for successive governments, with politicians luring support in campaigns with promises of intangible hydro-dollars boosting industry so that Nepal will no longer be the underdog to powerful India. “The view that Nepal could become a rich country riding on the back of one or two mega hydro-power generation projects, such as Chisapani on the Karnali or Pancheswar on the Mahakali, has become firmly entrenched both in popular perceptions as well as in more learned policy discussions about an appropriate national development strategy for Nepal” (Gyawali, 2001, p. 35). For all of Nepal’s political instability, including a recent communist revolution and the massacre of the royal family, throughout the tumult, the goal of transforming Nepal into a wealthy hydropower nation has

remained a high priority on every government's bucket list. Some people joke that "poverty is Nepal's biggest asset (since it seems to attract so much foreign aid) and hydropower is its biggest problem (since it has led to so much conflict and bad political blood, including the splitting of political parties as happened with the Mahakali Treaty with India regarding the Pancheswar high dam)" (Gyawali & Dixit, 2010, p. 107).

In the end, it is this political infighting within Nepal that has truly stalled all significant projects from coming to fruition. None of these opposing sides can be successful in building water resource projects in Nepal while they are busy fighting each other. A change in focus is necessary, from arguing over who is right to collaborating about what needs to change for cooperation with India to be successful. The first things I heard in this line of thought were still centered on what India has to do, not accepting any responsibility for Nepal: mostly that India needs to accept the huge irrigation and flood control benefits from dam projects and be willing to pay for them. The easy way out is to say that India is not a good neighbor because Nepal is weaker. But Nepal can take action by being more careful about the contracts it enters into with India, and being more steadfast about putting forth what's best for Nepal. Unfortunately, the adjustments required to move toward a responsible process for engaging in cooperative contracts with India are not easy to pinpoint. The problem is "not in the laws themselves" but in the "implementation of, and compliance with, these laws" (Gyawali & Dixit, 2010, p. 106). Nepali law already requires large dam projects to pass by a two-thirds parliamentary majority, which is a lengthy licensing process. The instability of the government and corruption of its leaders are mostly to blame for allowing shoddily thought out dam

projects that don't benefit Nepal to receive licenses. Luckily, attempting to find better ways to include India is not the only option for Nepal in hydro-resource development.

Chapter IV: Alternatives to the Western development model: Sovereign-led hydropower development in Nepal

Decades of foreign aid have left Nepal with the typical inferiority complex instilled by the Western development model. The sad conclusion that Nepal cannot develop its own water resources effectively, independent of India or the help of the World Bank, is fortunately false. Nepal has all the resources and tools for sovereign-led development, applicable to multiple scales of hydropower. There is no single easy method for hydropower development- in fact this cookie cutter thinking is at the root of the problem with the currently dominant development model. It is incredibly important to focus on scale in any discussion of appropriate development- but not necessarily to focus on one scale to the exclusion of all others (the way the Big Dam model does).

While the actual physical construction approach may vary across scale and country based on appropriate context, the basic principles of nation-led development apply across the board. Inherent by definition, sovereign development schemes do not rob a country of its resources in order to benefit the economies of foreign nations. In this way, they address the basic responsibility of any development project to focus on the direct needs of people in the project's host country. Nation-centric development can also provide room for increased participatory decision-making and utilization of national banks, contractors and engineers, since the funding for any project is not tied to foreign agendas. The nation-led model of development is superior to the modernization model touted by the World Bank because of this focus on local capacity building and addressing community needs.

The purpose of this chapter is twofold: first to explore alternatives to the construction-centric foreign aid model for hydropower development, which are rapidly gaining recognition in Nepal. Secondly, this chapter attempts to prove that these solutions are viable across scale and country boundaries, without falling prey to the blanket approach characteristic of the Western development model. In order to exemplify several approaches to nation-led development, this chapter will focus on four specific case studies in Nepal. The key that links these cases is their cooperative nature: none of these approaches to improving Nepal's hydropower situation exclude options for any of the others, and each is appropriate in different settings. The first two case studies are examples of 'communitization': local management of hydropower by a community group. One study explores how community management is applicable to improving electricity access in peri-urban, fringe communities that lack infrastructure to connect to the national grid. The other illustrates how the same management techniques apply to small, rural villages through building and managing their own micro-hydropower stations, with subsidized funding from the state government. While communitization is mostly applicable at a small-scale level, a third case study exemplifies how reliance on private sector investors within Nepal can utilize Nepali banks for loans, Nepali materials and Nepali expertise for medium-sized projects (10-100MW). Private sector investment is especially important for backward linkage benefits in the process of building hydropower. A fourth case study demonstrates how Nepal can fund its own 'Big Dams' (100MW+) where large-scale projects are necessary to address high electricity and irrigation demands. This last case is of a public sector, state-managed dam, involving participatory mechanisms to allow public investment shares. Though Big Dams

necessitate higher social and environmental costs, the benefit of the nation-led model over the Western approach is in revenue returning to the local communities directly affected by the dam.

Case studies of sovereign development in Nepal

- National Association of Community Electricity-Users Nepal (NACEUN)

On the polar opposite end of the development spectrum from complex debates over Indo-Nepal joint projects to develop Big Dams, is the unassuming movement for ‘communitisation’ - to bring electricity to rural Nepal through local management and distribution. Unsurprisingly, most big hydropower decisions for improving Nepal’s electricity capacity are based on demand growth in cities and the problem of ‘loadshedding’. The population affected by loadshedding, however, is the minority 40 percent of the population who have access to electricity at all. The other 18 million people in the country live in rural areas where the national grid for electricity doesn’t reach, and are hardly considered in most hydropower development decisions.

To address the electricity needs of this ignored population, Dilli Ghimire established the Nepal Association of Community Electricity-Users Nepal (NACEUN) in 2005, after years of lobbying for community electricity rights in the government. The organization’s goal is to provide electricity in rural areas through connection to the national grid or by building independent micro-hydropower plants that supply enough electricity for just a few villages. It also acts as a pressure group to get rights for rural electricity distribution from the Nepal Electricity Authority (NEA). Prior to NACEUN’s work, the NEA had a monopoly in producing, distributing and managing national

electricity. NEA is a centralized, top-down company that lacks accountability for managing electricity theft and huge transmission losses. NACEUN, on the other hand, is a grassroots approach from the bottom-up, and promotes local participation in hydropower development through community management. Dilli Ghimire has been working on this process of ‘communitisation’ since 1997, and struggled for six years before any laws passed to make way for rural electrification in Nepal.

From 1997 on, Ghimire went to planning commissions, NEA, and government ministries to lobby for rural rights to electricity. His perseverance led to a verbal agreement allowing the sale of electricity in bulk to village groups in '98. At the time, the terms and conditions were that the cost of micro-hydel projects would be split fifty-fifty with the government and individual communities. When the '98 verbal agreement didn't transfer to the new authority figures in '99 (remember that Nepal's government has frequent leadership changes), Ghimire made the decision to persevere in lobbying the ministries. The first success was in 1999, when the government started to allocate funds to the Rural Electrification Program (3.5million rupees/year). Ghimire also proposed 19 village distribution committees (VDCs) in '99, continued to build fifty-fifty infrastructure projects, and lobbied for bulk rights and wholesale managing of electricity from '98 to 2003 (D. Ghimire, Interview, May 2011). Finally in 2003, Dipak Gyawali, the new minister of water resources, responded positively to Ghimire's lobbying, resulting in the passing of a set of Rural Electrification by-laws. It took Dipak Gyawali and Ratna Sansar Shrestha, a hydro resource economist who was working in the water ministry at the time, 27 drafts of the “community electricity by-laws” (2003) to get passed (D. Gyawali, Interview, May 2011). Through their persistence and strategic prioritizing of the by-laws

on every discussion list, they laid the groundwork and South Lalitpur became the first rural area cooperative able to buy electricity in bulk and supplies those first 19 VDCs to this day.

The next line of work for Ghimire was lobbying to reduce the community's share of the fifty-fifty plan. Not only is it difficult to prepare 50 percent of capital cost for a micro-hydro in rural communities, many people thought it was unfair that they had to pay at all when government electrified urban areas for free. In 2004, Minister of Finance, Dr Prakash Chandra Lohan, reduced the community portion to 20 percent, resulting in Nepal's current 80/20 fund for rural electrification. NACEUN currently addresses electricity generation (in very rural areas without grid access: building micro-hydro) and distribution (buying bulk electricity from NEA to be distributed locally). However, its main priority is in building infrastructure to connect villages to the national grid. Now, seven years after NACEUN's beginning, there are 207 rural cooperatives in 47 districts that buy in bulk and distribute electricity. 146,000 households have been electrified by NACEUN and the 20/80 rural electrification program, and in another 1.5 years- 97,000 more households will be electrified from projects that are currently on-going (D. Ghimire, Interview, May 2011). A whopping 12 percent of total households that NEA provides electricity to are a result of this rural infrastructure and community management program. Best of all, NACEUN is accessible to people of the lowest financial strata in Nepal: the organization charges only two rupees each year per household in the 207 cooperatives and a thousand a year from the actual electricity cooperative in member fees- all of which goes to support the organization.

A huge part of NACEUN's strength is based on how many people it can reach without building extensive dams. In fact, a large portion of NACEUN's work is focused entirely on management rather than construction. Most issues with hydropower at the large, government scale tie back to the idea that Nepal is "not a poor country, but a poorly *managed* one" (B. Tulandhar, Interview, May 2011). NEA has ignored all research about leaks and pilferage (when people illegally hook wires into electricity lines to pilfer power) and thus power wasted can be beyond 70% in present systems! (D. Gyawali, Interview, May 2011). Community management schemes curtail losses by introducing double accounting (first from NEA, then through the community groups) to stretch Nepal's existing electricity to reach more people. The community management groups have more at stake than NEA employees, who are paid steady government salaries. The community's best interests are served by responsible management in distribution in order to make back their investment in bulk electricity.

- Simigaau: a rural village's micro-hydropower

Simigaau is a hill village in the Dolakha District of Nepal, cradled against the Himalayas to the North and surrounded by steep canyons with rapidly flowing glacial rivers. There are only about 90 families living in Simigaau today, as a result of outward migration to cities in search of jobs, education, and a more comfortable lifestyle. Basic technology that Kathmandu has enjoyed for years has been slow in coming to Simigaau, because of its isolation. However, in recent years the advent of cell phones, electricity, and most recently, the possibility of a road (built for the Tamakhosi hydropower) are increasing Simigaau's accessibility to the rest of the country. Simigaau has a community-built and run micro hydropower that produces 12-15 kW of electricity for the

village on a daily basis. The run-of-the-river power station, which only diverts a small fraction of the river's water, provides enough electricity for every family in the village to have light from 6pm to 6am, in the absence of daylight. Moreover, if Simigaau is ever connected to the national grid in the future, it can sell excess electricity from the daytime (the river is still flowing after all) back to NEA, providing an extra source of income for the village, or possibly a back-up fund for maintaining and repairing the hydropower machinery. This scale of micro hydropower gives an idea of the unnecessarily vast disparity in size of hydropower projects. If 15 kW can provide even 75 families with basic electricity, than 15 MW projects (which are still considered tiny by the Big Dam model) can be expected to power close to 75,000 households! This extrapolation could certainly have a high possibility for error, due to different energy needs in households and the vastly magnified need for electricity in industry. However, the observed point is that funding many small-scale projects can add up to the same amount of power provided by one Big Dam, without tying up all of Nepal's resources in one project or wreaking havoc on the environment.

Through interviews with villagers and the micro-hydro operator and manager, I learned that Simigaau's micro-hydro was built about ten years ago (in 2001). Appealing to the government for funding through the rural electrification program and getting the site assessed took four years. The project has cost 27 lakh (2.7 million Nepali rupees, or approximately \$35,000) to date. Its original cost was only 19 lakh, in grant from the Remote Area Development Committee (RADDC). However, an additional 8 lakh had to be reapplied for, through pestering the government endlessly, to get money for replacement parts after a lightning storm rendered the original machinery useless. The villagers

themselves used the grant money to buy all the equipment from Nepal's Butwal Power Company, a corporation with a 40-year track record of funding "multi faceted capacity building initiatives in hydropower development" (Butwal Power Company, 2012). Now the responsibility for running and paying for the hydropower is entirely Simigaau's responsibility. Each household in the village pays 20 rupees each month for each lightbulb (approximately the value of a U.S. quarter). The hydropower operator receives 2000 rupees per month so there is no money left over from villagers' payments for a reserve fund in case the machine ever breaks again. Simigaau has been more than lucky to receive government assistance, not once but twice, and could probably not apply for more.

The villagers were devoted and persistent in their goal of getting electricity for their village. At the onset each family contributed a large sum of 700 rupees, along with fifteen days of 'shramdaan' (donated labor) from each family and two cubic meters of collected rock, for building the powerhouse. All together, this significant contribution from the villagers still amounted to less than the expected 20 percent of the total cost, but the government subsidized the rest of the cost. The whole system took six months to build: two engineers from Kathmandu came to advise the building process and they ran the powerhouse for the first six months. Other than these two men, Simigaau villagers contributed all the labor for this project. After each family's fifteen days of 'shramdaan', the villagers were paid a small pittance for their work: two months of labor earned each family 2000 rupees. The fact that they were paid at all may seem like an extra benefit, since the hydropower was already for their village. However, the labor required to build the powerhouse detracted valuable time from their fields, and most of Simigaau's

villagers depend upon subsistence farming. The lone hydropower operator in Simigaau received 45 days of training in Kathmandu. The single other knowledgeable person in the village, who often fixes wires and outlets, never had any formal ‘bijuli’ (electricity) training. This handyman offered me his opinion on their project willingly: small hydro-power projects work better (“saphal bhayo”) because they need less money, are easier and faster to build, and can be managed locally. Nepal’s politicians are still struggling to understand this simple conclusion, which the villagers of Simigaau know implicitly from having observed the success of the method in their own village. As small and isolated as Simigaau is- only a fraction of the larger picture of hydropower in Nepal- sharing this small village’s struggle to build a micro-hydropower project provides a personal perspective to understand the magnitude of the problem that almost 18 million people in Nepal (60 percent of the population) have no access to electricity. Furthermore this case study attests to the success of community management in the hydro-sector.

This brief history of NACEUN and the success of the 80/20 funding plan in building micro-hydro projects demonstrates that Nepal has the resources to supply its vast rural population with power. Moreover, when decision-makers have their heads on straight and look out for the public good, a lot can get done in a short amount of time. To further my argument that Nepal does not need to rely on international funding to further its hydro-development goals, the next two case studies explain how Nepal can domestically fund and build hydropower at scales beyond the community level. One is a mid-size project currently under construction by the private hydropower company, Synergy, called the Siprin Khola Hydroelectric. The last case study is an example of a new breed of Big Dam through all Nepali funding: from companies, the government, and

public shares. This 456MW Tamakhosi project is in the process of being built on a river of the same name, above the village of Simigaau and Synergy's Siprin Khola project.

- Siprin Khola: A case of private sector participation

The Siprin Khola Hydroelectric is a medium-scale run-of-the-river hydropower project. While it contributes a sizeable quantity of electricity to the national grid, it doesn't displace thousands of people because of its size or involve a reservoir that would necessitate flooding a populated valley. The 9.6 MW project is located along the Tamakhosi River that flows in the steep valley below Simigaau, between Jagat and Singati (the closest major town to Simigaau). In May 2011, I met an engineer for the Siprin Khola project in Singati who strongly believed that including the private sector is one of the best ways to build local capacity for development (through backward linkages) and build more hydropower, quickly. In the case of the Siprin Khola project, engineers laid plans for a year, received their license through the Department of Electricity Development (DoED), and have been constructing for a year. When we met in May of 2011, there were only six months left until the powerhouse would be ready to supply electricity. Funding for the project included 30 percent of the developer's money, while 70 percent in the form of a loan from the Sanima Bikas Bank. The involvement of multiple groups is one integral reason for keeping hydropower production within Nepal. Not only Synergy, but also every industry they buy materials from, the labor, and the loan all boost Nepal's economy. The total cost of the project is two 'arab' (2 billion rupees, or \$28 million U.S.), which is cheaper than the equivalent cost of a project built without outside contractors, materials and loans.

The importance of the private sector in Nepal's hydropower development is clearly visible in history. It took Nepal 86 years since its first hydropower project (-1996) to get 300 MW of hydropower capacity built. Then, in under a decade, because of a policy shift following the restoration of multi-party democracy in 1990 that allowed the addition of the private sector and community sector into the hydro-building business, another 300 MW was installed. In the last decade, however, few substantial projects have reached completion, though many projects are in the planning stages or supposedly under construction. Private sector companies, despite their success rate in doubling Nepal's hydropower capacity, face a political roadblock because the government still prefers giving contracts to international companies. I can't speak to why this is, when the international contractors' profits will go to their own economies, not Nepal's, but these are the facts. In 1997 the government announced a buy-back rate from Nepal's private power producers that was, at the time, lower than what the government offered to Indian companies (D. Gyawali, Interview, May 2011). Certainly the buy-back rate needs changing now, more than a decade later; the rate still hangs at four rupees per unit of electricity even though the government willingly pays Indian companies seven rupees per unit (R.S. Shrestha, Interview, May 2011).

If policy changes were made to not only support rich private sector businesses but to include laypeople with small shares, the money in the private sector could continue to grow. "To date the private sector contributes about 30 percent of annual electrical energy supplied by the national electricity grid" (Subarna Das Shrestha cited in Bisht, 2010). Currently, Kali gandaki A (144MW capacity) is the largest project to be completed in Nepal but Nepal's greatest goal is quite a leap larger: the Karnali-Chisapani project, at an

estimated 10,800 MW, will be the biggest dam if it is ever built (Independent Power Producers Association Nepal (IPPAN), n.d.).

- Upper Tamakhosi: A domestically-funded Big Dam

Further up the Tamakhosi River from the Siprin Khola project lie the beginnings of the first entirely nationally funded mega-project. The Upper Tamakhosi project has a planned capacity of 456 MW for the national grid, which will be the biggest project in Nepal upon its completion. The dam is a public sector government project, with funding from NEA, Nepal Telecom, the civil servants Provident Fund, and local IPO (which are public shares that anyone can invest in), among others. Ten percent of the total shares in the dam go automatically to Dolakha district so that the local people will profit from the project. Other projects of this magnitude have never gotten off the ground: licensing or funding issues, politicians interested in kickbacks, not to mention local demands, always stymied progress. But Gokunda Bishta, Nepal's current energy minister can be credited for recently beginning construction on the Upper Tamakhosi. Not only is the road to the project (built by a Chinese company) under construction, so is the actual ground site for the dam. As exciting as it will be for Nepal to finance and support a project of its own of this magnitude, it's hard to imagine how many people will be displaced to make room for a dam of Tamakhosi's size. Hopefully, domestic management, transparency in the project's planning and implementation and the inclusion of local people in the investment and returns from this mega-dam will lead to more follow through in re-settlement of affected villages.

Lessons and changes to be made

After so much discussion in the previous chapters on the obstacles to progress and many shortfalls of foreign aid-funded Big Dams, we can now turn to the shining light at the end of the tunnel: hydropower in Nepal is by no means a dead end, and its increasing success with the nation-led development approach highlights possibilities for other developing countries. The Simigaau and Siprin Khola Hydroelectric case studies provide alternatives to the 'Big' model of Western hydropower development, focusing on scale of projects. If large dams remain necessary to fulfill electricity demands from large cities and irrigation needs for agriculture, the larger Tamakhosi project is an example of how large-scale hydropower can most benefit the state's economy, by relying on sovereign means for development.

There are endless possibilities to further change the construction paradigm and take action to relieve Nepal's power shortage burden. The first change Nepal can make is to accept the importance of plurality in decision-making (both on policy and project choices). To make wise choices for hydropower development, Nepal needs its government (for checks and balances), it needs the private sector (to build big enough for the national grid and provide an arena for investment), and it needs community (to represent the public's interests). Cultural theorists assert that monism and dualism don't work in functioning democratic societies: pluralism is what allows the public, private, community, and activists to act as a whole, and the egalitarian voice (from informed activists) is the only thing that has currently stopped Nepal's government from handing out project licenses to any international company that comes around with a big enough bribe.

The second promising field for Nepal's hydropower circuit is how much Nepali investment can be put into hydropower if only the means are made available. Remittance² coming from abroad every year is 300 billion rupees (R.S. Shrestha, Interview, May 2011). Only 10 percent of that giant figure is 30 billion rupees. Ratna Sansar Shrestha (the leading source in Nepali media for hydropower economics) says that with one third equity and two thirds in loans, Nepal could build 900 MW of hydropower every year on that amount, with Nepali investment through Nepali companies! Nepal is not a destitute nation: a lack of policy framework that could allow Nepali investors to participate is what is sorely missing- not the money to invest in hydropower. The public shares available for the Tamakhosi project could be the beginning of institutionalizing a way within the government for the public to participate in hydropower development.

Initiating policy framework falls under a need for a change in management style: Nepal can redirect efforts from "project construction to water management" (Gyawali, 2001, p. 8). With this paradigm change will come a logical shift in focus toward community management. While NEA will have to relinquish some of its control, the facts show distinctly how "community participation and ownership brought about dramatic reductions in the construction costs of water resource projects" (Gyawali, 2001, p. 10). It costs NEA and the World Bank \$300/household for rural electrification while it only costs NACEUN \$99/house (D. Gyawali, Interview, May 2011; D. Ghimire, Interview, May 2011). Through NACEUN, management groups don't have to be registered as electricity groups: they can be a mother's group, or forest management group which makes room for all the people without bureaucratic qualifications who care about their

² Remittance is a certain amount of money sent home to families from citizens working abroad that is taxed by the government

communities to be involved in electricity management. Kunda Dixit drew my attention to a wider range of community management successes: “everything that has worked in Nepal since 1990 has ‘community management’, including irrigation, forestry, healthcare, education, and electricity” (K. Dixit, Interview, May 2011).

A big price motivation for handing over electricity management to communities is reducing theft: “simple institutional tinkering in early 2003, which introduced double accounting with bulk supply separated from retail, has brought down the loss figure to nine percent from over three times that amount. Implemented nation-wide, such a measure would free up electricity equivalent to our largest power plant, the Kali Gandaki, for use by genuine paying consumers.” (Gyawali, 2010a, n.p.) Mugling is one small town that now buys electricity from NEA in bulk. After adding this double accounting step, loss dropped from 36 percent to 9 percent in Mugling and citizens have been using the extra electricity to start businesses and refrigerate valuable medicines (Mahato, 2010). Even currently foreign-run projects can be handed over to municipalities to manage: Dhulikhel and Kumbu are successful examples of foreign-built hydropower that are now being successfully run by local communities (D. Gyawali, Interview, May 2011). The basic point is that the process of communitisation is key in getting more electricity to rural people- a method that can be used in any other country and in other development arenas, such as for forestry and agriculture.

The real reason for focusing on communitisation is to “get away from the romance of generation, [the] real problems lie in distribution” (D. Gyawali, Interview, May 2011). Since electricity can't be saved, the focus has to start from distribution, not generation, and must hold NEA accountable for lost electricity and theft. The trick is

decentralization: "if you can separate things, they become easier to manage" (B. Tulandhar, Interview, May 2011). The government needs to pressure NEA to dissolve its monopoly *at least* into separate generation, transmission, and distribution companies (calling for accountability, checks and balances, and decrease in leaks and theft).

To make and enforce such a decision as decentralizing Nepal's power conglomerate will require strong, accountable leadership. Nepal is not historically bereft of such leaders: King Ganendra put knowledgeable technocrats as his ministers to increase accountability (e.g. a neurosurgeon as Health Minister). Nepal needs responsible leaders who have their motherland's interests at heart above their own. The difficult part is, most experts in water management, fighting for the common good of Nepal, are so turned off by the corruption they witness in politics that they would never think to join the government. Dilli Ghimire, for example, with the help of his friends and political connections, got 142 amendments added to the "Electricity Act" (2009) for community management, distribution and de-monopolizing NEA, and separating rural electrification programs from NEA. This is a huge leap from the first draft of the bill (in '92 or '93), which focused on the development of hydropower and export to India, and how to bring in international investors. NACEUN's goals for the bill now include: anyone who wants to participate in hydropower development (whatever their investment capacity) should have a mechanism within the government to do so; Nepali people can have ownership and also benefit from buying shares. The amendments put consumers first, saying that priority should be given to consumers in Nepal before export is considered, and the tariff process needs to be transparent, which requires consumer participation. The bill calls for not only a break up of the NEA monopoly but requires that rural electrification should be

separate from NEA entirely (so it is not commercially viable and cannot be promoted by a business entity) because it is a social concern. NACEUN was able to put through these amendments by inviting ministers to share in their meetings in 2009 and calling over and over again, pressuring the government through all their connections. With 142 amendments, it's now the most amended bill in the history of Nepal. That's the kind of leadership and initiative with the potential for great success in changing the construction paradigm in hydropower planning in Nepal.

Nepal can also make changes, at the government level, to welcome foreign investment with more caution and care. One example of a current joint project that could be better tailored to benefit Nepal is the 900 MW Upper Karnali project. Under the current contract, Nepal will only receive twelve percent of the produced energy, while the rest is exported for India's use. However, GMR, the Indian company currently licensed to construct the Upper Karnali project, is just a contractor. If Nepal acts intelligently, it could draw up a new contract and insist that all the hydropower from the Upper Karnali project go to Nepal, while still letting GMR build the dam (R.S. Shrestha, Interview, May 2011). Returns on financial investments are the main concern of foreign contractors, so the perceived risk that Indian companies will back out immediately when Nepal does not offer India the majority of the benefits is false. Activists insist that it's possible, if Nepal is smart and stops saying, "YES" to every foreign company's first offer, to have Indian investment without export.

Nepal can make it clear that it won't say yes to every offer by saying to investors: "we'll guarantee your return and your security" (which is more than Nepal has done so far), "but you have to sell all of the electricity to us at the same price that you would have

exported it to India.” This is not an unreasonable demand, but of course if Nepal is willing to settle for less (which it historically has), than why wouldn’t Indian contractors take advantage of Nepal’s poor decisions to benefit their own motherland. One example where Nepal could have been more circumspect in accepting foreign aid is the Middle Marsyangdi project, which is now costing \$10,000/kW. The government should have been more careful about the contract: Ratna Sansar Shrestha—who was in the cabinet picked by Dipak Gyawali when he was minister of water resources—saw the present problems coming and offered a way out, an opportunity to drop the contract and rewrite it carefully. Unfortunately, the prime minister in power was too afraid of backlash from the bureaucracy if he dropped such a prestigious hydropower contract. Important things to keep in mind in discussions on incorporating foreign involvement are that in small projects, backward linkages are more important: they can give jobs to Nepalis since local factories have the capacity to build turbines up to 2-3 MW. In big projects, backward linkages are negligible because Nepal doesn’t have the capacity to build and maintain large hydropower yet, so forward linkages become the only thing worth building for. Therefore, it cannot be stressed enough that electricity has to stay in Nepal in order to develop Nepal’s industrial capacity.

Each of the lessons to take away from Nepal’s experiences in nation-led hydropower development are tools that can be applied in other developing countries. Utilizing community management for small-scale development projects, adjusting government policy to include participatory mechanisms for investment, and embracing pluralism in decision-making can help developing nations in the Global South rely less on foreign aid. Independent of foreign aid, developing countries can choose to forgo the

homogenizing modernization model and replace it with locally adapted, human-centric development techniques. Community management, participatory investment, and pluralism all entail levels of cooperative decision-making that are foreign to the top-down Western development model. Each of these development tools allow for local knowledge input to adapt development projects to scale, peculiarities of environments, and disparate cultures.

Chapter V: Conclusion

This paper has covered a host of topics in attempting to prove that sovereign development, across multiple scales, results in positive development that focuses on local needs and capacity building. It illuminated the negative effects foreign aid can have on developing countries through sharing the evolution of modernization theory and common critiques of the Western development model. While Big Dams have become a symbol of progress and development all over the world, the section exploring the consequences of large-scale hydropower development revealed how the singular focus on building big has had disastrous impacts on the environment and rural poor of developing countries.

Focusing specifically on case of hydropower development in Nepal provided context and examples for why foreign aid, tied integrally to other countries' agendas, can stymie domestic development. Finally, the last chapter on alternative development options for nation-led hydropower development in Nepal illustrated how developing countries already have the tools for independent development, and can break the destructive cycle of dependence on foreign aid. Utilizing local knowledge and labor, local materials, and domestic finances for development provides all possible benefits, from backward and forward linkages, to the developing country rather than conflating benefits with other countries, as the foreign aid-dependent Western model of development does.

The reasons the Western Development model has failed to bring true human-centric development to developing countries are inherent in its goal to impose one approach to development in every country, regardless of vast differences in history, culture, and place. The Western development model is born on the modernization principles that all societies must abandon their traditions in order to progress toward

becoming homogenized, 'Americanized', mass-consumer states. Aside from the fact that not all nations want this future, the illogical idea that every country in the world can modernize with the same five-step process first introduced by Rostow, has led to an insurmountable cycle of debt and dependence on foreign aid in developing countries. Because foreign aid often focuses on donor agendas more than developing countries' needs, rates success of projects based on money delivered rather than observed effects at the local level, and procreates the same 'cookie cutter' style projects that worked in the West, top-down, large-scale development projects built with foreign aid are ignorant of human needs and destructive to local people's livelihoods and the environment. How could any model predicated on notions of completely remaking distinct cultures into homogenized replicas of the West pay heed to the needs of individual nations, much less communities?

Instead, the Western development model has led to the continued exploitation of developing countries' resources for the benefit of the Global North through neoliberal 'free market policies'. Western developed countries, through the mouthpiece of their international finance institutions, have imposed liberalization policies to deregulate protectionist measures in the Third World in exchange for development loans.

Developing countries lose two for two under this model: neoliberal policies concentrate wealth in the hands of the few at the expense of the poor, while large development loans tie up all the host country's resources in a few projects and undermine locally adapted techniques by imposing Western technology. Thus, foreign aid has worsened problems of scarcity (most dangerously in agricultural and water resource sectors) and actually pulled

the underdeveloped countries of the Global South a step back in their attempts to reduce poverty and raise living standards.

Critics of this mainstream model advocate for developing countries of the Global South to de-link from trade relationships with the West in order to break the cycle of neocolonial exploitation. They suggest eliminating the entire concept of ‘Third World’ because it maintains unequal power dynamics. Without arbitrary connotations of what constitutes ‘progress’ and ‘development’ versus ‘backwardness’, the developing world would be released from the pressure to conform to the West’s modernization model. The cut and paste model propagated by the West cannot work because the developed countries of the Global North were never ‘underdeveloped’—their own industrial development was predicated on extracting the resources of colonized countries, who are now left worse off because of contact with the West.

The specific problems resulting from Big Dam development are integrally related to the Western development model’s exclusive focus on large-scale development through foreign aid. Dams have proven their usefulness in providing irrigation, preventing floods and producing a source of valuable electricity—so the problem is not that all dams are destructive for development—but that the Western approach to dam building ignores and covers up problems that could be fixed by focusing directly on the needs of local people and being open to different scales of hydropower development. Western development’s approach to dam building lacks responsibility in properly addressing environmental impacts and the risks to local people affected and displaced by dams. It is guilty of exaggerating the potential benefits of dam projects and underestimating the costs in order to convince developing countries that large loans tied to specific projects are in their best

interest. Worst of all, this model cannot (and barely attempts to) follow through on its promise that Big Dam development will spur industrialization, reduce famines through increased irrigation potential, and provide clean drinking water in underdeveloped areas.

All of these negatives effects of foreign aid are apparent in Nepal's history of hydropower development, where India is the foreign actor whose agenda is primarily served by building large-scale dam projects. The general pattern is one of unequal treaties for joint Indo-Nepal projects, where Indian companies generously offer to fund giant hydropower projects in Nepal- but also demand most of the benefits. Political infighting in Nepal and corrupt leaders looking for kickbacks give licenses too willingly to Indian companies, insisting that India's superior development capacity is key to Nepal's hydropower development.

The vital missing link to understand why India developing Nepal's water resources won't boost Nepal's economic development is in the nation-led development idea of backward and forward linkages. Projects built mainly for exporting energy or water to India relinquish opportunities for forward linkages to boost Nepal's development. The economic revenue gained from selling project rights to India won't spur domestic development the way retaining the electricity to improve Nepal's own industrial sector would, or the way retaining regulated water for Nepal's use could improve the agricultural production of the country. Moreover allowing foreign contractors and foreign aid to drive development decisions leaves Nepal as little more than a passive observer of its own resource development. Thus, Nepal surrenders all opportunities for backward linkages from increased employment, experience for Nepali engineers, use of Nepali banks, and material supplies from its own industries.

The sovereign development methods gaining momentum in Nepal today ensure that the country receives benefits from both backward and forward linkages in its hydropower development projects. While this case study is understandably limited—Community management techniques, policies for participatory investment, and pluralism in the decision-making process are methods for sovereign-led development that can be extrapolated to other arenas of development and other countries. The central lesson is that successful nation-led development projects, whether at the small-scale community level or large-scale state level, are human-centric in addressing local needs, incorporating local knowledge, and encouraging participation from all levels of society. As it turns out, the big picture of successful Global South development necessitates focusing on the small, as the overall development of any nation depends on the quality of life it can offer its individual citizens. The nation-led development model supported here allows room for each individual to play a role in deciding the unique development path of their country. With further attention paid to these local capacity building methods, the future of the world need not be a reflection of one homogenized consumer culture or even a continuation of the current global hierarchy of First World over Third World. Nation-led development can lead to a world where eventually, the terms ‘colonization’ and ‘underdeveloped’ may only exist in history books.

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