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**As Thailand Industrializes, How Can Formalized Water Rights Protect the
Interests of the Small Farmers in the Bang Pakong River Basin?**

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Abstract:

The systematic subordination of agriculture to more productive industries has been a constant theme in Thailand's economic development policy since the early 1960's. By placing high levies on agricultural products, artificially suppressing domestic food prices, and selling agricultural surplus abroad to generate foreign exchange earnings, the Thai government was able to redirect agriculture proceeds to other, more productive sectors of the economy. This strategy was instrumental in stimulating economic development throughout the later part of the 20th century, however, as a result, many rural farmers were kept poor artificially. Even though many of the oppressive policies of the 1960's, 1970's, and 1980's have been largely abandoned, the rural farmer still struggles to maintain a viable livelihood without the aid non-farm income.

Recent evidence regarding the country's fresh water supply suggests that the plight of the rural farmer could get much worse. Mounting demands from industrialization and a growing population are putting constant pressure on the nation's fresh water resource. The once blatant subordination of agriculture will again resurface if poor and middle-income farmers' are not guaranteed dependable access to fresh water. In places where scarcity is worst (especially the country's eastern seaboard), water is becoming privatized and commoditized by companies specializing in raw water delivery. In contrast to water allocation options that prioritize resource efficiency over the needs of poor and middle-income farmers (i.e. direct water pricing), or that are simply too complex to introduce at the present time because they require established and competent institutional support (i.e. a water-rights market), introducing a system of well-defined, enforceable, and non-transferable water rights is the best way to protect the short and long-term interests of the rural farmer.

From a theoretical standpoint, assigning property rights to water accomplishes three important goals for all water users, but particularly rural farmers. First, it establishes water as an economic good and prevents the untenable, de-facto "open-access" management of water that currently exists in Thailand. Second, water rights guarantee assets to the poor and have a net positive effect on non-income characteristics of poverty such as exposure to risk, resource security, and vulnerability. Lastly, when water has a price, farmers are pushed to modernize agriculturally and invest in technological improvements that raise productivity. The corollary rise in income from these technological changes will only benefit poor and middle-income farmers, if from the outset, these farmers are guaranteed rights to water. If this guarantee is not made explicit, with water adding to their cost of production, farmers will realize only marginal returns from technological investments and will likely be forced to inevitably abandon agriculture altogether.

Water rights are a vital development for the poor and middle-income farmer, but there are a number of barriers hindering the progress of water rights in Thailand. Among the more significant obstacles is the lack of a clear national water policy and weak institutional development at the river basin level. Farmers must also accept that they will ultimately receive less water and relieve themselves of the misconception that water rights somehow equate to water pricing. Because the proposed national water law devolves responsibility and authority for water management decisions to newly established river basin authorities, the case for water rights is made at the river basin level. This thesis uses a case study of the Bang Pakong River Basin to present its findings.

List of Abbreviations

ADB	Asian Development Bank
BPRB	Bang Pakong River Basin
BPRBC	Bang Pakong River Basin Committee
DWR	Department of Water Resources
GDP	Gross Domestic Product
MONRE	Ministry of Natural Resources and Environment
NGO	Non-governmental Organization
ONWRC	Office of National Water Resources
RBC	River Basin Committee
RID	Royal Irrigation Department
WUA	Water User Association

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Chapter 1

Introduction

Since the early 1960's, Thailand has enjoyed its industrialization experience, to a large extent, at the expense of the rural, poor farmer. By constantly squeezing the agricultural sector for high tax revenues and selling its agriculture surplus for foreign exchange earnings to reinvest elsewhere, the government has helped artificially keep the small farmer in perpetual poverty.¹ Unfortunately, evidence suggests that things could get much worse. The small farmer, who already feels the constant pressure to modernize and produce goods more efficiently on the global market, is facing increasing problems with securing a production input that historically been abundant... fresh water.

In the past, Thailand has had enough storage capacity to meet all its water needs, which are most pressing in the dry season (November-April). However, in the face of rising industrial and municipal demands, this capacity has become inadequate in recent years. Water is currently furnished by the central government as a public good and is free of charge to farmers. Consequently, a large part of the government's response to water scarcity is to keep water "complimentary" by renovating existing irrigation systems and building more supply-side infrastructure. While this might be helpful in the short-term, it only delays the inevitable. As building more storage capacity becomes no longer a viable option (for either economic, social, or environmental reasons), and as Thailand continues on the track of rapid industrialization, water (other than for basic purposes such as drinking water) will cease to be a free, public good. Most water is used for economic purposes (i.e. agriculture, industries, etc.), so in one fashion or another, water will eventually become commoditized and flow upstream to the highest bidder.

The process of water commoditization will hit the agriculture sector hardest (and the poor farmers therein). The sector employs about half of the country's total labor force (Krongkaew and Kakwani, 2003, pg. 739)² and has always enjoyed fresh water as a free and dependable factor of production. Rising water uncertainty will no doubt compromise agricultural production and Thailand's export competitiveness in the long run. To make matters worse, there has been a long-term trend of rising input costs and stagnant global market prices for many agricultural products (especially for rice-the country's largest export).^{3,4} Typically when water increases in value, it moves away from low-value uses (agriculture) towards higher value uses (the industrial and municipal sectors). Therefore, as agriculture pushes to modernize concomitant to water being exported elsewhere, this raises fundamental questions regarding the security of poor farmers and their ability to ascend from poverty.

Ninety percent of Thailand's poor live in rural areas and a large fraction of these people are small farmers (World Bank, 2003, pg. 6). They will not possibly be able to cope with the pressure of

¹ These foreign exchange earnings helped fuel its import-substituting industries in the 1960's and early 1970's, as well as its export-oriented industries in the 1980's (Preedasak and Puntasen, 1998, pg. 1-5).

² As of 2000, 48.8% of the country's total employed labor pool was in the agriculture sector (Krongkaew and Kakwani, 2003, pg. 739).

³ Per discussions with many different farmers and members sitting on the Bang Pakong River Basin Committee (July-November, 2004).

⁴ Thailand previously was able to increase the amount of mono-cropping or converted its forests to farmland to remain competitive. However, land availability makes this strategy no longer an option.

agriculture modernization should their water supply become increasing uncertain. In addition, according to Taesombut (2002, pg. 52) the Thai farmers are the least influential stakeholders in water management decisions and yet the most vulnerable to the outcomes of those decisions. The question then remains, “as industrialization fuels the growing water demands of non-agriculture sectors, how then can farmers be guaranteed access to fresh water?” There is a range of answers to this question yet Thailand has no national legal framework in which to implement these options. In fact, it is this lack of well-defined water policy the increasing influence of the free market upon water allocation.

The water laws in Thailand do not make exactly clear who can take water, where, when, and how much. The government is undertaking legislative and institutional steps to try clarify water allocation rules, yet these reforms have been slow to progress and are not yet inscribed into law. In the absence of guiding water policy, water is becoming privatized priced on the open market. The notion of buying and selling water is relatively new in Thailand, but companies like East Water Co. in the Bang Pakong region of eastern Thailand have already spent hundreds of millions of dollars expanding its water delivery infrastructure to prospective clients (Naprom, personal interview, 2004). As fresh water becomes privatized and commoditized, the poor farmer is prevented from entering the market. However, clearly, it is impossible to maintain the status quo of unmet limits to water extraction for farmers. Therefore, the concern is not whether the “traditional” system of water allocation can be preserved; rather it is what is the proper way to protect the interests of the poor as industries and municipalities demand more water.

There is a number of different water allocation strategies possible for Thailand, though not all are necessarily in the best interest of the poor. As Israngkura (1995) argues, water can be priced and furnished to the user directly by the government. This “command and control” policy can set different prices for different sectors (charging industry more than farmers for example). However, this approach has fundamental flaws with respect to Thailand. Water is currently furnished free of charge so imposing any kind of cost-recovery pricing regime will enjoy little public (and thus political) support. The second approach privatizes and promotes the buying and selling of water through water markets. Christensen and Boon-Long (1994) argue for the need to introduce regulated water markets to allow water to flow to its “highest-value” use. This allows those giving up their right to water (via transferable water rights) to receive some kind of compensation (i.e. prices dictated by the free market). Implementing water markets is an extremely complex and difficult process and without clear legislation and well-defined mandates for water management institutions, they can present many dangers for the poor (expanded upon in Chapter 3). Should such a system be introduced, there is no clear indication it would be successful, and again, farmers would eventually get priced out of the system. In addition, non-agriculture sectors of the economy are not yet ready to absorb the amount of agricultural labor that would be free should farmers start selling their rights to water. However, there is an alternative. The best way in which to protect the short and long-term interests of the poor is through an allocation system that does not require the farmer to pay for water, clearly establishes allocation rules, and allows the farmer to make agriculture-related investments without fear of losing access water. This can be done by implementing a system of well-defined and enforceable water rights.

Assigning property rights to water and handing these rights to the poor accomplishes three important goals. First, it establishes water as an economic good and prevents the de-facto “open-access” management of water that currently exists in Thailand. In essence, it clarifies who exactly can receive water, where, and when. It also guarantees that farmers are guaranteed a proportion of the total amount of available water. Second, water rights guarantee assets to the poor. Literature suggests there are many factors keeping people in poverty (World Bank (1), 2001, pg. 15-29) and water rights can

have a net positive effect on the constant features of poverty such as exposure to risk, resource security, and vulnerability. Conversely, denying water rights will further debilitate the poor. Lastly, when water has a price, farmers are pushed to modernize agriculturally and invest in technological improvements that raise productivity. These technological investments will only hold promise if farmers are guaranteed access to water. In this way, farmers can participate and benefit in agricultural modernization rather than just consolidation-driven farms and agro-businesses. Experience shows that improvements in agricultural productivity can hasten the pace of economic development and have large, positive effects on a country's relative income (Gollin et al., 2002). The above assertions regarding water rights are the basis for this thesis.

The idea of water rights is not new in Thailand and there are different water right systems functioning throughout the world. It is a well-known response to situations of open-access water allocation. It is also a tool used when claimants must be identified in events of water scarcity and conflict. This thesis argues in favor of water right introduction at the river basin level in Thailand for the three assertions outlined above. The basin that serves as the thesis case study is the Bang Pakong River Basin.

1.1 The Bang Pakong River Basin

Thailand is currently undergoing major institutional and legal reforms with regards to water management. In the draft national water law, decision-making and responsibility over water management are currently being devolved from the central government to the river basin level. Therefore, it is worthwhile to set an argument over the benefits and feasibility of introducing water rights at the river basin level.

The Bang Pakong River Basin (BPRB), located just east of Bangkok, is characterized by rapid industrialization and having one of the most pressing water problems in Thailand. The situation in the BPRB is relatively worse than the country's other 24 basins so it is seen as the "poster basin" for potential solutions that can then be prescribed and translated to other regions. The newly created Bang Pakong River Basin Committee (BPRBC) is currently ruminating different water management options and based on countless conversations with committee members, there is a clear desire to protect the interests of the poor as the basin grows. Establishing water rights can accomplish this goal and the basin's unique situation perfectly illustrates the benefits of water rights. This will be described at length in the following sections and subsections.

1.2 Structure of the Paper

The structure of the paper outlines a logical argument in favor of water rights in the Bang Pakong Basin. Chapter 2 provides a look at how Thailand's industrialization policies favored the non-agriculture sector at the expense of the agriculture sector. It also shows how growth in GDP was continually matched by an increase in income inequality. A general description and relevant socio-economic characteristics of the Bang Pakong are also introduced. The chapter ends with an explanation of why the current water-related institutions and legislation fail to adequately manage water. Chapter 3 outlines the three main benefits of water as listed above: a) prevent open-access use of water in Thailand, b) ensure the poor is given the opportunity to alleviate themselves from poverty

through water resource security, and c) guarantee that as agricultural water users pursue technical solutions to their decreasing share in water, the poor are included (i.e. they are guaranteed at least a portion of water so they may afford and benefit from the required technological investments). Chapter 4 describes all of the relevant obstacles to implementing a water right system at the present time.

1.3 Field Work, Literature Review, and Statistical Sources

This thesis is done in conjunction with an on-going collaborative project with the International Water Management Institute (Southeast Asia) and the Royal Thai Government's Department of Water Resources over water allocation strategies in the Bang Pakong River Basin. The Asian Development Bank provided funding for the project. The author spent a total 4 months in Thailand, 2 months of which were spent living and working the Bang Pakong River Basin. Field research comprised mostly of in-depth qualitative interviews with farmers, industry representatives, members of the Bang Pakong River Basin Committee, and various government officials from a wide range of water-related departments. A literature review was also done of peer-reviewed literature and statistics were drawn from peer-reviewed, on-line literature, as well as internal documents from the International Water Management Institute. After the initial in-depth interviews, the author kept in close e-mail correspondence with many of the stakeholders and regional experts.

Chapter 2

The Context

This background section is divided into three subsections. The first section provides a glance at major macro-economic trends in Thailand as they relate to industrialization and agriculture development of the past 50 years. The second section is a general description of the Bang Pakong. It includes a socio-economic outline with relevant trends. The final section gives a description of the complex legislative and institutional climate in Thailand and how it currently fails to adequately safeguard the rural farmer. It also explains how this legislation leads to further degradation of the water resource through market failures.

2.1 Industrialization and Agriculture Modernization in Thailand: At a Glance

Thailand's industrializing experience has broadly followed the development model of Japan and its "Asian Tiger" neighbors, Korea and Taiwan. Essentially, these countries acquired funds for initial industrial investments by squeezing agriculture for high tax revenues and trading agriculture surplus for foreign exchange earnings. These countries subordinated agriculture to industry by purchasing a large portion of agricultural goods at artificially kept low prices and selling them abroad for foreign exchange earnings. This foreign exchange was then used to fuel its import substituting industries (Nafziger, 1997, pg. 51-54). The following excerpt from Preedasak and Puntasen (1998) best describes how this process unfolded in Thailand.

Since the inception of the First National Economic and Social Development Plan in 1961, agriculture in Thailand was deliberately planned by the Thai Government to generate foreign exchange earnings needed to stimulate industrial development through import substitution policy at least until 1976. Monoculture was introduced to replace the traditional practice of self-sufficient farming while domestic prices were kept at perpetually low level through various forms of export tax in order to generate income for the government as well as to keep the labour cost of production at low level to be conducive for industrial development.

-Preedasak and Puntasen, 1998, pg. 1.

The First National Economic and Social Development Plan of 1961 was Thailand's first official step, of many, in moving away from an agrarian society and into an era of systematic development. The six National Economic and Social Development Plans that followed (the seventh Plan ending in 1996) all contained language that emphasized rapid economic expansion through industrialization (Krongkaew and Kakwani, 2003, pg. 738). The government's industrialization policies had two basic components with relation to the agriculture sector. The first was a high export tax on rice and other primary goods (such as rubber, tin, and teak). This tax revenue was then combined with the foreign exchange earnings generated from the sales of agricultural products abroad. These two forms of income helped fuel industrialization by subsidizing the import costs necessary for the country's import-substituting industries (i.e. raw

materials, technical expertise, etc.) (Preedasak and Puntasen, 1998, pg. 1). The high tax also kept domestic food prices low and kept food affordable for wage laborers (especially for the urban industrial workers) but also prevented the need to increase wages. Without the artificial suppression of food prices and the receipts generated by agricultural surpluses, Thailand's attempt at industrializing would have never been as successful. However, these measures essentially kept the rural farmer in a cycle of perpetual poverty.⁵

Two phenomenons emerged from the Thai industrialization experience that made matters worse for the farmer. First, the newly established import-substituting industries failed to absorb any significant amount employment from agriculture, despite very low labor costs (Preedasak and Puntasen, 1998, pg. 3). In general, the new industries were capital and technology intensive, which required advanced labor skills. Secondly, the demand for agricultural products and foreign exchange also led to massive deforestation. Forests were harvested for their wood products as well as converted into arable farmland. This caused widespread topsoil erosion and ultimately stunted agricultural productivity in the long-term (Tongpan, 1995, p. 41). However, in fairness, despite the significant topsoil loss and ensuing decline water quality, the government's aggressive policies to expand agriculture proved to be exceptionally pragmatic.

	1961-1970	1971-1980	1981-1990	1991-1995	1996-2000	1961-2000
Agriculture	6.4	3.6	3.7	3.9	1.4	4.1
Industries	10.0	9.2	10.4	10.8	1.4	9.0
Services	7.8	6.9	7.7	8.1	-0.3	6.6
Total GDP	7.8	6.7	7.9	8.7	0.6	6.8

Source: Adapted from (Tinakorn, 2002) and (Preedasak and Puntasen, 1998).

The average growth rate of agriculture as a percentage of total GDP in Table 1 shows the fastest expansion in agriculture between 1961-1970. In fact, by the end of the 1960's, Thailand became the largest agriculture exporter in all of Asia and ranked fifth in the world behind the United States, Canada, Australia, and France (Suchinda 1995, p. 40). Although growth in the sector peaked in the late 1960's early 1970's, agricultural goods have remained competitive globally. Thailand is still the largest rice-exporting country in the world on a per-capita basis (Crispin and Goad, 2000, pg.1).

The data in Table 2 is somewhat indicative of the relative success of Thailand's industrializing policies. One can attribute the decline of agriculture as a share of GDP by not only to its slowing growth rates (shown in Table 1.) but also its relation to the growth in industry (Table 2).

⁵ When the farmers finally formed an organized resistance in light of the government's agriculture policies, the government responded with "strong" military repression (Preedasak and Puntasen, 1998, pg. 4).

Table 2.
Sector Share of GDP from 1960 to 2000 (%)

	1960	1970	1980	1990	1995	2000
Agriculture	31.5	27.5	20.2	13.6	10.8	11.4
Industries	19.7	24.0	30.1	37.8	41.7	43.1
Services	48.8	48.7	49.7	48.6	47.5	45.5
Total GDP	7.8	6.7	7.9	8.7	0.6	6.8

Source: Adapted from (Tinakorn 2002) and (Preedasak and Puntasen, 1998).

The service sector share of GDP stays relatively the same in Table 2, but the trends for both the agriculture and industry sectors are clear. In the 1970's, the industrial sector surpassed agriculture as the second largest share of the GDP, and in 2000, it generated almost four times more revenue. In fact, Yamada (1997, Pg. 6) reveals that while "agricultural GDP grew by about 12.3 times in 30 years, 1961-1991, the non-agriculture sectors registered an even more substantial increase, one of almost 55.9 times, during the same period." Much of the industrial success is attributed to the crucial switchover from import-substituting industries for export-oriented industries in the 1970's.

By the mid-1970's, import-substituting industries became a liability. The domestic market was already saturated with their goods and because the inefficiencies created by their de facto monopoly power (Preedasak and Puntasen, 1998, pg. 3), they could not adequately compete on the export market. Consequently, Thailand "cashed in" the net gains from its import-substituting industries, took advantage of their large supply of cheap labor, and redirected its efforts towards export markets.

Table 3 shows how much the industrial and service sectors absorbed agricultural labor since the beginning of Thailand's industrialization experience. While the sectors absorbed millions of laborers over the last 40 years, about half of the country's work force is still farming. This merely illustrates the massive amount laborers (and their families) who have been affected and continue to be affected by the government's agriculture policy. Looking back on how Thailand's agriculture policy aligns with its economic development plan, it is clear that welfare of the poor is largely ignored.

Table 3.
Sector Share of Employment from 1960 to 2000 (%)

	1960	1970	1980	1990	1995	2000
Agriculture	82.3	79.3	70.8	64.0	52.0	48.8
Industries	4.2	5.9	10.3	14.0	19.7	19.0
Services	13.5	14.9	18.9	22.0	28.2	32.2
Total GDP	100	100	100	100	100	100

Source: Adapted from (Tinakorn 2002) and (Preedasak and Puntasen, 1998).

Since the inception of the First Economic and Social Development Plan in 1961, the Thai government invested large amounts of capital into agriculture (via road building, electricity, irrigation development, etc.) to widen access to both domestic and global agricultural markets. Unfortunately, members of the agriculture sector (i.e. farmers) were not able to share in the full benefits of these investments. Instead, as the government exercised full control over agriculture prices, greater

agriculture production essentially only meant higher returns for government. In a similar fashion, overall poverty rates dropped from where they were in the early 1960's, however, income inequality has consistently increased since over the same time (Krongkaew and Kakwani, 2003)⁶ and now 90 percent of the Thailand's poor live in rural areas (World Bank, 2002, Pg. 6).

As mentioned before, there were a number of developments that obstructed the farmers' ability to share in the benefits of industrialization. From 1950-1965, taxes on rice alone constituted about 10% of the government's annual budget (Yamada, 1997, Pg. 7). The government-led agricultural expansion resulted massive deforestation (through road building and land conversion) and mono-cropping.⁷ These two events led to significant soil and water degradation, which further stymied farmer's efforts. To make matters worse, the country's attempts at land reform have largely failed (to be discussed at length in Chapter 3) and there were two general phenomenons keeping wages relatively low: 1) the adoption of labor saving, capital-intensive technology in the agriculture sector and 2) natural population growth in rural areas (Mundlak et al., 2004, pg. 121). All of these factors kept the rural farmer in poverty throughout an era of significantly high agricultural productivity.

In conclusion, industrialization in Thailand, with respect to rural farmers, has been far from being "pro-poor". The statistics above highlight how rural farmers have been largely left out of the county's industrialization experience. Given the historical perspective of agricultural development in Thailand, it is now sensible to provide a general description of the Bang Pakong River Basin and examine the socio-economic trends therein. The following subsection on the Bang Pakong region draws much of its information from a case study done on the river basin in 2002 by Professor Virapol Taesombut and staff (Taesombut, 2002).

2.2 General Description and Socio-economic Characteristics and Trends for the Bang Pakong River Basin

The Bang Pakong River Basin (BPRB) is located just east of Bangkok. Like the whole of Thailand, the BPRB located in a tropical monsoon zone and subject to monsoons and tropical cyclonic storms during the period from May to October. From November to April, the dry season, it rains only sporadically. The basin has a total drainage area of 18,500 Km² (Taesombut, 2002, Pg 25). Most of the water supply infrastructure within the basin is small in scale except for the Bang Pakong Diversion Dam, which is largest dam in the area (though currently not in service). The population for the BPRB is primarily rural in classification and the region supports a large agricultural community and a wide range of growing industries. The following is a brief description of the agricultural and industrial trends in the Bang Pakong as well as a brief socio-economic analysis and water accounting summary.

Agriculture is still the most influential industry in the region. Approximately 77% of the total land area is dedicated to agriculture use, and 95% of the available water in the basin is used for

⁶ "The Gini coefficient of income inequality (in Thailand) rose from 45.3 in 1981 to 52.5 in 2000. In the region, only Papua New Guinea, the Philippines, and Malaysia show higher inequality" (World Bank, 2002, Pg. 6).

⁷ When roads were built to access populations of the rural poor who were organizing under the Communist party to revolt against the governments' agriculture policies, many virgin forests were clear-cut. Because most roadside real estate was given to wealthy interests in Bangkok, the poor were forced to convert afforested areas into farmland (Preedasak and Puntasen, 1998, pg 4).

irrigated agriculture (Biltonen, personal correspondence, 2004). Rice is the most widely grown crop taking up 54% of the agricultural land area, with cassava and maize following thereafter. From the available data in Taesombut (2002), rice offers relatively low economic returns and requires the most amount of water (on a per area unit basis) and there does not appear to be any aggregate shift from rice cultivation to other crops. Although low rice prices have most likely pushed the consolidation of rice farms as there has been a significant increase with the number small, low-tech industries (including the heavily polluting industry of shrimp farming).



Figure 1.
The Bang Pakong River Basin
Source: Adapted from Feld *et al.*, 2003, Pg. 436

region are landless (taken from Table 11, Taesombut, 2002, pg 29). Rent-seeking landlords will significantly curb farmers' income even during periods of substantial aggregate growth in agriculture production. This is another clear indication that the benefits of Thailand's industrialization have not affected every sector of the economy in the same fashion.

Briefly, a water accounting analysis was completed for the region in 2002. In essence, the analysis concludes that in a relatively "wet year" (a year with higher than normal precipitation) there is still more gross inflow of water to the hydrological system than is demanded. However, for a "normal

Other larger and more established industries in the area include paper, textiles, leather, plastic, chemical, and automobile manufacturing. These industries international corporations like Nike and Toyota. Many of these industries are owned internationally and have a solid financial grounding from their parent company. The most recent industrial growth data from 1997 indicates that in the four major provinces in the Bang Pakong, the industrial growth rates ranged from 10.1% to 28.8%. Although the data is somewhat outdated, it gives a clear indication of the growing influence of industry in the Bang Pakong region.

Rural poverty is a major concern in the area. The rural poverty rate in the basin ranges between 45-85% (Taesombut, 2002, pg. 26). This is much higher than the national average of 16%, however, the national average does not reflect (as stated before) that approximately 90% of the classified poor in Thailand that live in rural areas. It is interesting to note that percentage of rural poor associated with farming is unusually low; it ranges from 13.1% to 29.7%. However, Taesonmbut (2002, Pg. 24) suggests there were probably misunderstandings with the question of occupation classification (i.e. whether one was a farmer or non-farmer) so there is a good chance the numbers are actually higher.

Land tenure for farmers is also a concern. About 17.31% of the farmers in the Bang Pakong

year” the system is in near equilibrium and running a deficit in “dry years” (Taesombut, 2002, pg. 51). It is important to note that this analysis does not account for water quality. Obviously, as quality deteriorates water is useless to any user. The water accounting analysis makes the water quantity picture clear for the Bang Pakong. As industry grows and demands more water under the existing infrastructure and policy conditions, water supply will only be adequately supplied to the basin in years with above normal precipitation.

Although there is limited information for the BPRB, the available information makes the major water and poverty-related trends clear. Agriculture uses the vast majority of the available water resource and its annual consumption pattern is relatively stable. Industries within the BPRB present a double-sided problem. They happen to be highly polluting to begin with (therefore posing a threat to water supplies and potential 3rd party users) and will naturally demand more water as they expand. Rural poverty also is a major concern. The percentage of farmers currently under the poverty line is surprisingly low (though again, the source of this information is questionable), however, the numbers remain significant. The water counting analysis also gives a discouraging prognosis. Water demand is growing to such an extent that it will soon eclipse the total water supply supplied in a year of normal precipitation. The above trends clearly indicate that the problem of water scarcity will only worsen for the BPRB under the existing conditions.

The next section outlines how the existing legislative and institutional climate undermines sensible water management in Thailand. However, it also explains that the state of transition in water management in Thailand makes enough room to the notion of introducing water rights can be a reality.

2.3 The Legislative and Institutional Climate Currently Undermine the Efficient Management of Water Resources

“The State shall organize the appropriate system of the holding and use of land, provide sufficient water resources for farmers and protect the interests of farmers in the production and marketing of agricultural products to achieve maximum benefits, and promote the assembling of farmers with a vision to laying down agricultural plans and protecting their mutual interests”

-Section 84 of the Constitution of the Kingdom of Thailand, 1997

Thailand has a long way to go before reaching its constitutional promise to the country’s farmers. Land reform has been far from successful. The National Economic and Social Development Board reveals that in 1987, 25% of the rural population owned less than an acre of land (“proletariats” by definition) (Preedasak and Puntasen, 1998, Pg. 5). As recent as 1995, 10 million of the country’s 60 million people did not have legal rights to their land (Economist, 1995, Pg. 36). Although water management is qualitatively different, the outcome is essentially the same- it is failing to meet the needs of the poor. This section describes exactly why.

Thailand has many laws governing the use of water resources. A majority of these laws, however, were passed before 1970 (when water was still relatively abundant), and they “tend to leave too much room for interpretation and do not explicitly specify who exactly has the rights to use water” (Israngkura, 1995, pg. 11). To exacerbate the lack of clarity in water law, there are some 34 governmental agencies (Fled et al., 2003, pg. 437) under 8 ministries (Taesombut, 2002, pg. 36) with

budgets to manage water for their own purposes. The agencies' overlapping mandates lead to jurisdictional conflicts between departments. Even now, the two departments with the most influence over water management, the Royal Irrigation Department and the Department of Water Resources, keep simple rainfall data confidential from each other. In recent years, the Thai government has created more agencies in an attempt to clarify and consolidate water management authority. However, these newly appointed agencies have yet to exercise their effectiveness as they are still in the early stages of fulfilling their tasks. Therefore, although the recent reforms have been qualitative and widespread, they are still ongoing. This makes effective water management in Thailand an exceedingly difficult task.

The basic problem that arises from unclear water law and overlapping government mandates is that water is subject to an "open access" situation. An open-access resource, defined by the Global Water Partnership (2003, pg. 19), is a management regime "where no defined group of users or owners are identified and the benefits (of the resource) are available to anyone. Individuals have both privilege (the ability to act without regard to the interests of others) and no right (the incapacity to affect the actions of others) with respect to usage and maintenance of the asset." Given the profit-maximizing behavior of individuals, this makes water open to a wide range of management abuses. Research has consistently shown that if a resource is managed under an open access regime, it almost always leads to destruction of the resource if it is in great demand (Ostrom, Stern, and Dietz, 2003, pg. 9). Most water laws in Thailand can be *interpreted* that the state owns the resource, however, these laws are not explicit (Israngkura, 1995, pg. 13). Instead, users are given almost unrestricted access to water (free of charge beyond the costs of diversion- in many cases pumping- and making the water usable). These allocative inefficiencies for water often lead to a breakdown in environmental quality.

In 1992, the Thai government attempted to preemptively fix the open access problem by introducing water rights in its first draft version of a national water law. This draft included "strong" language that established defined and transferable water rights for all users and allowed for the possibility of water trades under regulated water markets. Somehow, the public fused the notion that people must pay for water (which happens under water markets) to the idea of water rights. In fact, many of the first round, public response meetings to the policy were met by protesting farmers (Wongbandit, personal interview, 2004). Although it was revised a number of times throughout the 1990's, the misinterpretation of water rights drained its political support and the draft was eventually abandoned. The fact that the country has still yet to pass a guiding national water law aggravates the jurisdictional conflicts in government and the open access problem. Fortunately, another final draft of a national water law sits before the Department of Water Resources waiting to be submitted to parliament.

The new draft water law devolves most water management authority to the river basin level. It legally recognizes the river basin committee as the apex management authority for all water management decisions occurring within the river basin. One of the essential clauses in the law requires water users to ask the RBC for permission to use an amount of water above that deemed for "social" purposes (i.e. drinking water, household needs). It is in the granting of this "permission" where a water right system can be established. According to the principle author of the draft water law (Wongbandit, personal interview, 2004) and high-ranking officials of both the Department of Water Resources and Ministry of Natural Resources and Environment (Jhanthanin, personal interview, 2004; Sukontha, personal interview, 2004), the newest version of the draft national water policy will get presented before parliament within the next couple of years. They all concurred it would receive political support and mostly likely get passed once presented to parliament. Unfortunately, these assurances are far

from being guarantees. Little measurable progress has been made in the attempts over the last fourteen years. Given the present water shortages, reform must receive greater priority.

In conclusion, the historical experience of water abundance in Thailand did not motivate the country to design and adopt clear rules regarding water allocation. Consequently, farmers all over Thailand, including those in the Bang Pakong, have essentially been left to fend for themselves against a growing numbering of demanding and, and often, polluting industries. It is imperative the Thailand moves forward with passage of its national water law with greater velocity. Until RBCs are given real authority and thus can exercise the option of implementing water rights, the poor will continue to be left unprotected; their demand for fresh water will be consistently be trumped by those in other sectors.

Chapter 3

Water Rights in the Bang Pakong River Basin

Water right systems regulate access to water and exist in many parts of the world. A water right is simply the right to access a portion of the total amount of available water within a defined area. By decree of the right, water are delivered at a certain time (or defined timeframe) and location. Water rights may be informal, embedded in local practice, or formally registered as water permits (Bruns, 1998, Pg. 2). During events of water scarcity, claimants come into conflict. This requires some kind of registry that provides water claimants with a sense of place and privilege in relation to other water users. It also links water users with a specified quantity or proportion of available water (of a particular quality). Although water rights are contentious (especially when users are able to transfer these rights), they offer three distinct benefits.

First, with rights, water is treated as an economic good. This address the problems of open-access abuses in Thailand and gives users a structured and more effective incentive to value water in a way that reflects its *real* value. Second, if administered appropriately, water rights, by their very nature, offer protection to users facing unpredictable and decreasing water supplies whether from variable annual precipitation or growing demands from other users. For the poor (mostly small farmers in the case of the Bang Pakong), this can accomplish many things related to poverty and poverty alleviation. Specifically, it positively addresses issues related to resource security, exposure to risk, and vulnerability. Literature suggests these issues have great influence over the poor's ability to both cope with and climb from poverty. The last point of discussion explains that as agriculture inevitably receives relatively less water, farmers and other users will have to invest in water-saving and/or productivity-increasing technology. Having a right to water makes these investments less risky. Conversely, in the absence of water rights, farmers would quickly go bankrupt. Agricultural land is virtually useless without water and larger farms or agro-businesses would likely buy out the small farmer. Therefore, water rights guarantee, to an extent, that farmers are able to participate in productivity gains of technological change. Furthermore, experience suggests that improvements in agricultural productivity can hasten the pace of industrialization and have large effects on a country's relative income (Gollin et al., 2002). A subsection is dedicated to each of the three benefits of water rights described above.

3.1 Treating Water as an Economic Good in Thailand

The Buddhist influence on natural resource management in Thailand remains strong. In managing water in the Bang Pakong region, members of the Bang Pakong River Basin Committee (BPRBC) state they and other stakeholders must “act like brothers... (in order) to reduce conflict as much as possible...and guarantee enough water for everyone”.⁸ Water management based on mutual cooperation is far from sustainable given the rational, profit-maximizing behavior of individuals. It is an option with no viability in the long-term. The easiest way of delaying inevitable conflicts of interest is through constructing more dams and other water supply infrastructure. Accordingly, this option enjoys a lot of support in the Bang Pakong. In fact, there are many different feasibility studies for dam construction within the Bang Pakong already underway. As mentioned before, suitable land for such infrastructure is limited, and public support for such projects varies from region to region.⁹ These “supply-side delays” can hold off the inevitable for only so long. Growing demands from industry and

⁸ Taken from multiple conversations with different BPRBC members.

⁹ Ibid.

population growth will force water to be treated in an economic fashion and the resource will go to those willing to give the most for it.

The concept of “treating water as an economic good” encompasses much more than the resource’s financial value. It takes into account (or at least attempts to do so) all of the measurable and fairly immeasurable values of water. Admittedly, the economic tools available to assess the *full* value of water cannot be inadequate (i.e. it is very difficult to quantify one’s religious value of water—especially for Thailand). But the purpose of water valuation is to force people to use and steward the resource in a way that reflects its *real* scarcity and opportunity cost (the foregone opportunity of using the resource for other purposes). Typically, when government furnishes water as a free, public good, users are provided with “no incentives to treat water as a limited asset” (Global Water Partnership, 2000, Pg. 18). Furthermore, “While there are some notable exceptions to the rule, the public sector has generally performed miserably in all forms of water management— whether in irrigation, or in domestic and industrial water supplies, or in protecting resources and environmental quality” (Perry et al., 1997, Pg. 7).

Water is invaluable in sustaining human life and therefore a small portion of water will always remain, as it should, a “social commodity” for social purposes. This water is for drinking and household purposes and is provided at little to no charge (albeit, this is also done out of political necessity). On the other hand, most water resources, especially those in Thailand’s Bang Pakong region, are currently and will continue to be allocated to those who use it for economic profits. Thus, it will inevitably become a purely economic commodity.

There are essentially two general approaches to treating water as an economic good. The first is the application of price-based instruments and the second assigns property rights to water (via water rights; this also potentially allows for water right transfers). Unfortunately, in recent years, the public debate in Thailand regarding the “economic managing” of water has been obfuscated in the media. The result is the belief that any means of managing water in an economic fashion will ultimately charge water users. This confusion “appears clearly in newspaper articles, interviews, consultant’s reports, and NGO literature” (Molle, 2001, Pg.12). Even separate ministries and government departments often voice conflicting statements on the issue and change their positions over time (Ibid). There are fundamental contrasts between the two approaches and it is important to briefly state why water rights is superior to water pricing.

3.1.1 Water Pricing Does Not Work in Thailand

There is a range of “full-cost” water pricing regimes used around the world but none enjoy measurable support in Thailand. The notion of charging for water is extremely difficult in a country where agriculture is still the basis of rural life and where it has been historically provided for free. Members of the BPRBC have already voiced their fervent opposition to such a measure and, based on principle, do not include it as a management option.¹⁰ The idea was first introduced to Thailand following an announcement by the Asian Development Bank (ADB) that their US\$600 million dollar loan to restructure the agriculture sector (after the 1997 financial crisis) would be “conditional on its subscribing to, and applying, the overall principle of water pricing (Molle, 2001, Pg. 12). The senior national advisor of ADB claimed that farmers should bear part of the costs of providing irrigation services; “it is not fair to use the money of people nationwide to support only a few groups of people.

¹⁰ Ibid.

Therefore those who benefit from such projects should pay” (Bangkok Post, 2000, June 11). Despite this logic, the idea was highly unpopular with the farmers themselves. Small farmers based their opposition largely on the fact that they simply do not have the same purchasing power as larger farms, agribusiness, or industry. Therefore, any pricing scheme would favor the wealthy. In light of the large public outcry, the ADB was forced to consistently and publicly rescind their loan requirement as it applied to small farmers; “ordinary farmers would be exempt” from any pricing scheme (Bangkok Post, 1999, January 15).

By charging for water, users are motivated to conserve the resource and there are several cases around the world where imposing water fees has been conducive to water savings (Molle, 2002, pg. 4). According to Postal (1992), farmers in countries like Pakistan, India, and Bangladesh are willing to pay for irrigation water on the condition that they receive a more reliable and equitable supply. By contributing to the costs of irrigation, farmers can also increase their influence in water management decisions. While conceding the success of these examples, there are still many practical and theoretical concerns with how successful water pricing can be applied to Thailand.

The major practical problem of water pricing in Thailand (and most of Asia) is that charging on a volumetric basis is not viable given the small sizes of most farms (small farms are usually under one hectare) This claim is well documented in literature (Molle, 2002, pg. 4). The elasticity of water demand in agriculture is also generally very low. In Egypt, Perry (1996, pg. 12) found that pricing water with goal of a 15% reduction in water demand came at a 25% reduction in net farmer income. Theoretical concerns for water charging accuse the water pricing of not being an economically efficient as it is not based on the benefit that each unit of water can generate (Israngkura, 1995, Pg. 20). Since water prices are generally stratified for different applications, water users are not given a uniform base price on which to influence their behavior. Finally, when the government imposes water charges, users are not guaranteed that the charges are equitable and the government will not abuse their authority and unjustly allocate water. Notwithstanding these practical and theoretical problems, the fact that Thailand has traditionally received water free of charge is largely responsible for collective aversion to the idea. Consequently, it is politically very difficult.

3.1.2 Water Rights Can help Solve Thailand’s Open Access Situation

As mentioned before, most water laws in Thailand can be *interpreted* that the state owns the resource, though these laws are not explicit (Israngkura, 1995, pg. 13). Instead, users are given almost unrestricted access to water (which is free of charge beyond the costs of diversion or pumping, or any other means of making water usable). Without clear, enforceable rules for water ownership, access, and control, effective and sustainable water management is impossible. Box 1 is adapted from the Global Water Partnership’s 2003 *Effective Water Governance*. It shows examples of different property rights regimes for water with their associated rights and obligations.

The World Bank (1997) agrees that the equity and efficiency of resource use on which sustainable development is based, depends on the ways in which property rights are defined and distributed. At present, most countries have legislation that protects the property aspects of rights to use water (Global Water Partnership, 2003, Pg. 17). Effective water rights systems require adequate inventories of water supplies and records and registration of water uses and discharges into waters (Global Water Partnership, 1999, Pg. 25). These rights acknowledge the important “economic good” dimension of water, but also the important social and environmental dimensions of water rights. In a social sense, the intent of water rights is to protect third parties (i.e. other users of the resource) and prevent water hoarding, speculation, monopolies, and waste (Global Water Partnership, 1999, Pg 8). With regards to the environment, water rights can be implemented in conjunction with rules that conserve and limit resource use and development.

Box 1: Property Rights Regimes with Associated Rights and Obligations

- *Open Access*: Open access is a regime where no defined group of users or owners is identified and the benefits are available to anyone. Individuals have both privilege (the ability to act without regard to the interests of others) and no right (the incapacity to affect the actions of others) with respect to usage and maintenance of the asset.
- *Common Property*: A management group has been defined and the group has a right to exclude non-members and define the rules of appropriation. Non-members have a duty to abide by the rules. Individual members of the management group have both rights and duties with respect to usage and maintenance of the property and thus hold rights to manage the resource.
- *Private Property*: Individuals own the resource and have the right to exclude others and transfer rights. They have a duty to refrain from socially unacceptable uses. Others (non-owners) have a duty to respect decisions by the owners and expect that only socially acceptable uses will occur.
- *State Property*: Water is vested in the State-acting for citizens- individuals have a duty to observe use and access rules determined by the controlling agency of the State.

-Adapted from Global Water Partnership 2003, Pg. 19

Competing, self-interested water users make it extremely difficult to protect environmental standards¹¹ and resource over-exploitation (otherwise known as “tragedy of the commons”). Indeed, defining water as private property under which users can be excluded is the only way to adequately address open-access problems. However, in order to be effective, water rights must be designed in accordance with local conditions. As has been shown with countless examples from around the globe, there is great flexibility in the way water right systems are designed.

¹¹ An interview with a member of the BPRBC on October 13, 2004 concurred that in the dry season, water users in the Bang Pakong behaved in a way to “protect their own self-interests...they don’t care about their neighbors or the community.”

3.1.3 Water Rights Can Be Flexible in Design to Accommodate Local Conditions

There is no one design of a water right system that is optimal for all situations. Instead, the rules under which water rights exist differ widely at the country and river basin level. The differences regard questions of who has rights to water, who enforces those rights, when are the rights effective, and how the rights should be shared.

Individual farmers or larger bodies like irrigation associations or water user associations may hold water rights.¹² Rights must be referenced and ultimately enforced by state law (as opposed to customary law), although experience shows that disputes are generally handled between the disputants themselves or local administrative authorities. Courts are often seen as too time consuming, ineffective, and expensive (Bruns, 1998, Pg. 3). In fact, there is much literature highlighting the benefits of resolving disputed claims outside a formal administrative counsel. “This allows participants to use their own detailed knowledge and creativity to craft solutions suited to their particular concerns, not just formal criteria accepted in law or recognized by outside officials” (Bruns, 2000, Ch. 14). Given the flexibility of water rights, the time frame and allocation principles attached to the right must be clearly defined.

Water rights may be assigned to perpetuity or issued with terms limits with provision for renewal. If term limits are too short then investments in water saving technology or productivity might be discouraged. However, limited term rights also reduce the ability of speculation and the creation of water right monopolies (Bruns, 1998, Pg. 3). Some governments, like in Mexico, allow great flexibility with how rights are used and even transferred between users, however, retain the right to exercise complete jurisdiction over the resource in emergencies (Easter et al., 1998, pgs. 173-183). Such a hands-off approach (unless in times of emergency) would be reasonable in the Bang Pakong.

Water rights may also be instituted either on a “first come, first served” or proportional basis. Water rights in the western United States are based on historical claims. Under this system, “senior” rights holders can take their full allotted right in times of shortage whereas more “junior” rights are satisfied thereafter. Under the proportional system, water rights are represented as shares (or a percentage) of the total available flow. Proportional principles are embodied in many allocation systems around the world and proportional rules take effect in times of shortage even in nominally specified rights systems (like in the western U.S.) (Bruns, 1998, Pg. 4). With respect to the Bang Pakong, the system of proportional sharing already occurs within localized area of rice cultivation. After water is diverted from the main channel, farmers proportionally share the flow through secondary and tertiary canals.

The flexibility of water right systems gives the BPRBC ample room to design a system that acknowledges the unique conditions of the basin. Many conceive water rights as rigid licenses that offer little in the way of fairness and flexibility. Instead, a range of alternatives exists.

¹² In fact, given the relatively small plot size and costs of instituting volumetric metering on such a small scale, many argue that it is simpler to have collectives like water user associations hold rights rather than individual farmers. However, this carries its own set of concerns regarding transparency and equitable participation within the local institutions

3.1.4 It is Too Soon for Water Markets in Thailand

The arguments for treating water as an economic good rarely stop at water rights. Most pro-water right arguments go one step further and allow water rights to be traded in a regulated market. These “water markets” are forums where water rights are bought and sold by willing parties. In an economic sense, it is the best way in which water can flow to its highest-value use. However, the success of markets has been mixed and is largely dependent on the quality of related legislation and institutions that facilitate and arbitrate market transactions. In many of the experiences where markets have failed, water rights have not been properly defined or enforced (Easter et al., 1998, Pg. 3). Thailand is currently undergoing major reforms in water management so while the introduction of markets might be a good idea in long-term, to establish water markets directly would have unpredictable and potentially negative effects.

In theory, markets give the water user (especially those in the agriculture sector) the incentive to conserve water. If any saved water can be sold, this encourages development and investment into water use efficiency. Second, instead of government simply reallocating water as they see fit (usually prioritizing domestic use over industrial use over agricultural use) markets give financial compensation to those giving up their ability to use water. These financial returns can help substitute lost income and be reinvested into other financial pursuits. However, all benefits can be lost if there is monopolistic behavior or undue negative effects on other water users.

Without proper accompanying legislation, water markets can present inequitable conditions that especially threaten the poor. If left to their own devices, markets present the possibility for parties to hoard and speculate water and sell it at higher prices. Another danger is the potential of negative, third-party effects (termed “externalities” in economic jargon) from water sales. Exporting water to other areas can decrease the ability of neighboring water users to satisfy their own water right. This is especially true for exports from the agriculture sector. When water is transferred from agriculture to other uses, land is usually taken out of production. This can produce negative economic effects on the regional economy (i.e people whose livelihoods are in some way dependent on the agricultural sector). Therefore it is imperative that markets occur within an environment that provides strong legal and institutional support to those actively (and inactively) engaging in water transfers. Thailand is far from having either of these. Therefore, it is a mistake to move directly to water markets from the current open-access situation. Ironically, water markets could actually exacerbate the problems of which it attempts to solve. The long-term viability of water markets in Thailand is debatable; however, if such an idea is pursued, it still requires well-defined and enforceable water rights.¹³

3.2 Water Rights Can Protect the Poor

Water is a vital element in the poor farmers’ struggle to generate income and ascend from poverty. The concept of poverty goes far beyond the simple notion of income deprivation, however. It embodies deprivation on multiple levels and the types of deprivation are as diverse as they are complex. Amartya Sen considers these forms of deprivation as barriers to the “capabilities that a person has, that is, the substantive freedoms he or she enjoys to lead the kind of life he or she values”

¹³ The failure of water markets in the Philippines was largely based on the poor introduction and management of water rights along with weak institutional support (Navarro and Sy, 2003).

(Sen, 1999, Pg. 87). This section cannot possibly go into a deep explanation and discussion on all of the dimensions related to poverty. Instead, it will strictly adhere to a brief explanation of the non-income characteristics of poverty and how water rights can positively affect those characteristics. The main assertion of this section is that water rights provide protection to the poor through reducing their vulnerability to events outside their control. This allows them to take advantage of higher-risk and higher-rewarding economic opportunities. The theoretical concepts and terms discussed below are taken from the World Bank's 2001 Development Report entitled "Attacking Poverty" (World Bank, 2001). These concepts and terms are discussed widely throughout poverty literature and are not necessarily of the World Bank's own making. The subsequent discussion is divided into four subsections.

Box 2: Causes of Poverty as Highlighted By Poor People in World Bank's "Attacking Poverty" Report, 2001

- **Lack of income and assets to attain basic necessities- food, shelter, clothing, and acceptable levels of health and education.**
- **Sense of voicelessness and powerlessness in the institutions of state and society.**
- **Vulnerability to adverse shocks, linked to an inability to cope with them.**

-Adapted from World Bank, 2001, Pg. 34.

The first subsection explains how the notion of "vulnerability" relates to poverty. This explanation will be brief and demonstrate how the absence of water rights (especially in a climate of increasing water scarcity) will increase the poor's vulnerability to events outside their control. Vulnerability undermines the poor's efforts to alleviate themselves from poverty as well as threatens to send those just above the poverty line, back into poverty. The second subsection explains why water rights represent guaranteed assets and how having "assets" (in a general sense) empower the poor. Assets are important means on which the poor can build further material and financial gain. This idea of "guaranteed assets" translates directly to the third and fourth subsections. The third subsection introduces the idea of "opportunity" and how water rights furnish farmer's the opportunity continued participation in agriculture and Thailand's industrialization process. The last subsection discusses how water rights offer the poor security in an environment of "risk". Risk and continued exposure to risk can have deleterious effects on the poor by influencing their willingness to take economic chances. Again, this keeps them in a weak, vulnerable position.

The above phenomena are dimensions of poverty that shape and reinforce one another. They are not mutually exclusive, but inextricably linked. The following discussion is very theoretical in nature, but it is exactly these ideas that should be kept in mind when considering policies that have tremendous consequences on the welfare of the poor.

3.2.1 Vulnerability is a Condition that Keeps the Poor... Poor

Vulnerability is a dynamic concept that is both a result and cause of poverty. Described generally, "vulnerability is the risk that a household or individual will experience an episode of income or health poverty over time. But vulnerability also means the probability of being exposed to a number of other risks (violence, crime, natural disasters, being pulled out of school" (World Bank, 2001, Pg. 19). Clearly, assessing poverty is much more complex than measuring income poverty. Income poverty describes one indicator at one point in time whereas vulnerability is something that occurs over

time. In fact, many indicators to measure vulnerability have been proposed in the past, however, there is a growing consensus that “it is neither feasible nor desirable to capture vulnerability in a single indicator” (World Bank, 2001, Pg. 19).

Vulnerability is clearly a concern of the poor as they are increasingly helpless to cope with events outside their control. In Thailand, the vulnerability of the nation’s poor was highlighted during the East Asian financial crisis hit in 1997.

The 1997 economic crash in Thailand made a much larger and longer lasting impact on the poor than the rest of society. The crash underscored the income inequality that has characterized economic development in Thailand and the number of citizens hovering just above the poverty line (Kakwanib and Krongkaew, 2003, Pg. 736). Kakwanib and Krongkaew (2003, Pg. 742-744) report that in the early 1960’s, almost 60% of all households in Thailand were under the poverty line (this was not necessarily uncommon for agrarian societies like Thailand). But the aggressive growth policies of the 1970’s and 1980’s pushed the number of people living in poverty number down to 32.6% in 1988, and then to 11.4% in 1996. However, the bubble burst on Thailand’s rapidly growing economy in 1997, and only one year after the crisis, poverty rates increased to 13.0%. Two years later in 2000, the rate jumped to 16.2%. But by 1999 and 2000, the GDP had already rebounded (4.4% and 4.6% respectively). Kakwanib and Krongkaew (2003, Pg. 741) clearly show the economic effects on the non-poor households of society were negligible compared to effect on the poor. The time lag between the shock of the crisis and the ability to reach pre-1997 economic conditions was much greater for the poor than the rest of Thai society. This clearly illustrates how the poor are much less able to recover from events outside their control.

Similarly, for the case of water, depriving fresh water to small farmers will push them into a much more precarious, unstable economic position. Farmers just above the poverty line risk losing whatever economic progress they have made and they risk sinking back into poverty. Therefore it is imperative they be guaranteed access to fresh water. Such a “guaranteed asset” represents more than just a legally binding agreement to a share of water. This is something onto which value can be added. The idea of assets and asset building are central to coping with vulnerability, therefore they are an essential part of the discussion on poverty.

3.2.2 Water Rights “Guarantee Assets” to the Poor

Lacking assets, or access to assets, is also both a cause and outcome of poverty. Promoting and expanding economic opportunity for poor people is largely determined the availability of assets and the increasing returns on these assets. There are many types of assets (human, social, physical, financial, etc.) but they all provide the same function: “These assets interact with market and social opportunities to generate income... (World Bank, 2001, Pg. 77). A water right, by its legal nature, is a guaranteed asset. The poor farmer can benefit greatly on having a guaranteed asset for many reasons, however, this section will focus on how water rights can provide means on which the poor can build credit. It will also explain how the government, by influencing market behavior, can either add value or detract from the asset-value of a water right.

Credit provides important benefits to the poor. Just as land entitlement is used as collateral to access lines of credit, water rights can provide the same service. Access to credit (along with savings) can help people take advantage of better, more profitable business opportunities and help increase one’s earnings potential. Promoting access to credit does not deny the associated risks with borrowing

resources, nor does it necessarily create a significant amount investment opportunities.¹⁴ However, there are many positive examples where financial credit can catalyze lasting investment returns for the poor (World Bank, 2001, Pg. 75). The widening of credit opportunities for low-income farmers in the Bang Pakong will undoubtedly become an important factor as the agriculture sector pushes to modernize.

Of course, the value of a water right is meaningless if one farmers cannot ultimately move their goods to market. The government, with their influence on the way markets operate, can play a significant role in the ability of the poor to reap significant returns on their assets. First, markets do not function as well for the poor farmer in rural areas because of their physical isolation from the actual marketplace. Investments in related infrastructure (i.e. road building, expanding electricity service, improving irrigation, etc.) have obvious benefits in streamlining the process of bringing goods to market. Studies have shown that the Thai government's investments in public infrastructure were important sources for gains in agricultural activity from the 1960's to 1990's (Mundlak et al, 2004, Pg. 123). Second, if the accompanying legislation and institutions that ultimately implement and enforce water rights are weak, the value of the right (or, in these terms, "asset") is compromised. Therefore, if Thailand chooses to adopt water rights, legal clarity and adequate institutional support is critical. The government should allocate enough funding to make this possible, as it will likely pay great dividends on all water right holders.

Poor people need to accumulate assets. Water rights as "guaranteed assets" directly help income generation through agriculture and can help access even more capital by acting as credit collateral. They can provide farmers both security in unpredictable circumstances and protect opportunity to farm into the future.

3.2.3 Water Rights Protect the Opportunity to Continue Farming

The development process does not necessarily expand opportunities for all. It is more difficult for the poor to enjoy the fruits of development as typically they experience "unequal access to assets, markets, and infrastructure and an uneven distribution of skills" (World Bank, 2001, Pg. 29). Water rights do not provide opportunity to farmers as much as it protects opportunity. In countries where water is still allocated at the discretion of the central government, the priority use of water typically goes to its highest value use first (i.e. domestic priorities are satisfied first, then industry, and finally agriculture). Water rights offer protection especially when off-farm opportunities are not available.

The importance of providing more equitable opportunity to the poor is critical as industrialization progresses. If opportunities are not extended to the poor, inequality (in all areas- income, health, education, etc.) will rise and will further effect the opportunities presented by further economic expansion. Part of taking advantage of better income opportunities is by having greater resource security.

¹⁴ The "Attacking Poverty" Report mentions studies from Nicaragua and Romania where increasing access to credit only had very moderate effects on the number and amount of invested capital World Bank, 2001, Pg. 75).

3.2.4 Water Rights Offer Resource Security

When security over resources becomes variable or unstable, the poor are further exposed to risk. Risk refers to likelihood and magnitude of indeterminate (most likely negative) events happening. For a farmer, risk relates to the unpredictability of seasonal harvests and income fluctuations. A water right positively effects resource security in three ways. First, it offers security to the farmer that he/she can access a dependable source of water even in an atmosphere of unpredictability and volatility (either politically, naturally, or economically). Second, water rights keep users accountable for their actions and it thus offers security to farmers that they will receive water of a certain quality. In this way, water rights can act as a de facto pollution permit. Lastly, resource security can create an environment where people are more likely to invest and engage in riskier, income-driven opportunities.

Even as measures have been adopted to decrease the effects of droughts (through dams, irrigation infrastructure, etc.) and reduce the likelihood of another economic crisis happening like that of 1997 (controls on financial markets), the poor in Thailand are given the least amount of protection in relation to others against such unpredictable events. Political instability, dysfunctional government institutions, and volatility in policies are not necessarily new to Thailand. As stated before, water management in the country is in a state of flux. It is difficult to predict what how water will be managed in the future. In such an atmosphere of unpredictability it is essential that farmers have a legal guarantee to water. As industries continue to grow in the Bang Pakong and degrade the water supply, farmers must be guaranteed access to water of usable quality.

Pollution standards can be inclusive to water rights. The resource is useless, no matter the quantity, if the quality is below certain standards. Around the world, water right registries or their equivalents, have attached water quality standards to water rights (Global Water Partnership, 1999, Pgs. 25; 33; 34). These provisions address pollution by stating that the exercise of one's water right may not interfere with the ability of other parties to enjoy the full extent of his/her rights. If these pre-defined standards are not met, governments can rescind or suspend the right as means of punishment.

Lastly, given that water rights provide a dependable supply and quality of water on a yearly basis, people may be more likely to invest in the resource. These investments include improvements in irrigation efficiency or the construction of local/household storage facilities. Resource security can lay the foundation for investments by poor people. "Poor people are central agents in building their assets" (World Bank, 2001, Pg.78). Of course, the likelihood of investment depends on a great deal of other factors mentioned above (stable credit institutions, security of other resources, etc.). However, farmers in the Bang Pakong will have to invest in various agricultural inputs should they desire to stay competitive. Water rights will make these investments less risky.

3.3 Water Rights Can Help Farmers "Harvest" the Benefits of Agricultural Modernization

The commoditization of water induces farmers to make investments in technology that both safeguard the resource and increase agricultural productivity. If the small farmer is forced to pay for water, he/she will not be able to afford these production-improving, income-generating investments. Instead, over time, they will likely go bankrupt. Larger, more solvent farms or agro-businesses will then be compelled to buy the land that, without water, effectively has little value. Therefore, with water rights, the small farmer can forgo making costly water-saving investments and benefit from

investments that improve production. In addition, the benefits of productivity gains are spread throughout the sector rather than monopolized by only those who can afford to pay for water. Agriculture is one of Thailand's strongest comparative advantages and the country's biggest source of employment. It is vital that farmers are not punished because they simply cannot pay for water.

Although agriculture represents a dwindling percentage of GDP, the newly elected Prime Minister, Thaksin Shinawatra, and his Thai Rak Thai Party has made agricultural development a focal point of their rural development and poverty alleviation strategy. The party won the 2001 election, in part, due to their "pro-poor" and "pro-rural" campaign platform.¹⁵ However, if Thailand is to maintain its agricultural advantage, the administration will likely need to bolster their current efforts by improving rural infrastructure and initiating policy measures to help spur investment in the sector. Many farmers are already locked in to global food markets and must either remain competitive or seek income opportunities elsewhere. Therefore, farmers will likely need to make technological investments. Ownership over water is vital to the success of these investments.

This section is divided into two parts. The first explains how resource ownership (i.e. water rights) is a mechanism driving agricultural modernization. The second part explains that there are still farmers in Thailand who must rent their farmland. This is a fundamental problem that water rights will not be able to address. These farmers will likely be the first pushed out from agriculture without some kind of land reform initiative.

3.3.1 Ownership Drives Investment

"One of the most persistent and widely held tenets of development economics is that providing security over property creates economic incentives that can lead to economic growth and poverty reduction. Evidence regarding investments on agricultural land, a growing portion of it based on careful empirical measurement, suggests a positive relationship between security of tenure on the one hand and adoption of new technologies and investments in new agricultural technologies on the other. Indeed, nearly every empirical adoption study seems to include some indicator of tenure security and the list of explanatory variables."

- Shively, Gerald, American Journal of Agriculture Economics, 2004, Pg. 556.

The above statement by Shively perfectly underscores the requisite of resource security for investment. As mentioned earlier, the extent to which a water right owner can enjoy the benefits of his or her ownership is largely dependent on how well defined and enforced the rights are. Because water is a resource that cannot be perfectly enforced (given inaccuracies in volumetric measuring, seepage losses, evaporation loss, etc.), "ownership will always be probabilistic" (Anderson and Snyder, 1997, Pg. 23). Anderson and Snyder (Ibid.) go on to say, "when the probability of capturing benefits from a use is low, it is less likely that the owner will husband the resource." If one is not assured when, where, and how he/she can use the resource, the lack of investment incentive is obvious. Water rights may then become a liability rather than an asset. Water rights must be well-defined and enforceable if

¹⁵ They have since stuck to many of their campaign promises (like putting a 3-year moratorium on farmer debt and outlining various rural poverty targets) (World Bank, 2003, Pg. 4).

they are to spur investment. It is also important that if a system of water rights is introduced, the framers of such a system can learn from the mistakes of the land reform efforts in Thailand.

3.3.2 Water Right Benefits Cannot Translate As Well to Land Under Rent

Although Thailand has carried out multiple attempts at land reform, these efforts have not been completely successful. The first attempt in 1933 was defeated in parliament and finally reintroduced over forty years later in 1975. However, “this law (in 1975) was never meaningfully enforced...(i)t is not far from the truth to say that the age of neofeudalism still exists in Thailand...” (Kakwani and Krongkaew, Pg. 751). The failures in land redistribution have forced many farmers to rent farm land. According to Taesombut *et al.* (2002, Pg. 29), of the 801,986 farmers in the Bang Pakong region, 138,893 farmers had to rent their farming space (over %17). These farmers must pay either part of their harvest or cash to a landlord. Because they do not fully own the land on which they work, the land is ultimately subject to forfeiture back to the landlord. For this reason, water rights can provide little security to farmers. Enforced claims to water are virtually meaningless without enforced claims to land. As the Bang Pakong expands and continues to take land out of production for other purposes, the renting farmers will most likely represent the first to be pushed from agriculture. Any sort of land reforms to the extent that farmers would be free from renting land would be a positive development though highly unlikely.

Chapter 4

Barriers to Reform

The idea of water rights in Thailand is not new. The first draft national water law proposed in 1992 attempted to establish water markets but ultimately failed. Thailand now has another finished draft water law waiting to get sent to parliament. The draft requires that claimants desiring water beyond a certain limit (that for household use) need to ask the RBC “for permission”. In essence, the RBC has a wide range of options in interpreting and granting such permission. Should they want to go through with a system of water rights, they will face a number of obstacles either delaying or obstructing their efforts. In addition, the Bang Pakong has its own set of circumstances that will make it difficult establishing water rights in the region. This section highlights the general and specific barriers to introducing a system of water rights in the Bang Pakong region.

4.1 There is Really No Telling When the National Water Law Will Be Passed

Ever since 1992, Thailand has been trying to pass a national water law. They have not been able to do so, for one reason or another, and this is an ominous sign for the likelihood that the new draft will be passed into law anytime soon. A national water law presents a very difficult situation for the Thai government; they need to satisfy the demands of both industry (to protect future growth potential) and rural farmers (a large portion of their support base).

According to Dr. Amnat Wongbandit, the principle author of the current draft water law (as well as the 1992 draft), a finished draft of the national water law has been in the hands of the Department of Water Resources (DWR) at least a year (Wongbandit, personal interview, 2004). According to the DWR, the law is waiting for a series of nine “civil response” meetings to be held all across the country in order to give the bill popular approval and make finishing touches before sending it to parliament (Sukontha, personal communication, 2004). The cause for concern is that the draft water law was passed in to the DWR before the organization’s 2003-2004 fiscal budget was established, and it was decided that there were “insufficient funds” to allocate for these “civil response” meetings (Sanong, personal communication 2004). Such an action is curious when one considers that the Inspector General of the Ministry of Natural Resources and Environment (MONRE; the ministry under which the DWR is located) admitted that the amount of funding required for the “civil response” meetings represented a relatively insignificant portion of their annual budget (Sanong, personal communication, 2004). This deliberate halt of progress for passing the national water law, coupled with the fact that it has taken 12 years to arrive at this point, represents a major obstacle for establishing system of water rights anywhere in Thailand. Indeed, the Inspector General for MONRE emphasized that there is no reason why the meetings would not receive funding in the 2004-2005 budget (Sanang, personal communication, 2004), though one can only wait and see.¹⁶ Dr. Amnat Wongbandit claimed that the process of holding the aforementioned “civil response” meetings and making subsequent changes to the draft would take about one year. Even still, the actual process of establishing and implementing the

¹⁶ Unfortunately, the fiscal year in Thailand begins in October and the author was not able to access the budget information for 2004-2005.

administrative, institutional, and financial support for the law might take many more years.

Experience in Vietnam shows that the national water law passed in 1998 is only now being implemented (Biltonen, personal communication, 2004). Without the national water law, RBCs all over Thailand have no official legal recognition. At present, this represents the limiting factor of introducing any water management scheme; not just water rights. In the meantime, the only other means of furthering the adoption of water rights in the Bang Pakong is to convince the BPRBC members that a system of water rights offers the optimal solution to their on-going water problems. However, there are two related problems. First, there is still a strong bias against water rights (from the misconceptions of 1992) and more fundamentally, the current lack of general knowledge of committee members make them clearly unfit to make any water management-related decision.

4.2 Misconceptions about Water Rights Still Persist

The idea of water rights currently enjoys little support from the BPRBC. DWR, the institution responsible for the creation of the BPRBC and for providing the committee with management decision-making tools, does not explicitly support water rights either. As a result of various discussions with BPRBC members between August and November of 2004, there is still a strong connotation between the idea of water rights and the notion of paying for water. The concept of treating water as an economic good is still muddled in fears of poor farmers having to pay for water use. This fear and misunderstanding was first introduced in 1992 with the first draft water law, though as previously mentioned, the Asian Development Bank (ADB) helped rejuvenate the misconception of water rights in the late 1990's.

After the 1997 East Asian financial crisis, the ADB was one of a host of international lending organizations who invested heavily in Thailand as the country tried to regain its economic footing. One of the Bank's goals was to facilitate the restructuring of Thailand's agricultural sector in order to boost exports and ease the social stress mounting in the poorer regions of the country (Bangkok Post, 1999, February 16). But as stated before, the Bank tied the condition of water pricing to its restructure loan. This not only was refused publicly, but in the subsequent public debate that the notion of water pricing fused to the concept of "treating water as an economic good." While the Bangkok Post reported in 1999 that the Thai government and ADB had repeatedly assured the public that "ordinary farmers would be exempt" (Bangkok Post, 1999, January 15), over a year later, the Asian Times reported that "Thailand's farming community and social activists are battling a new proposal to charge farmers a fee for supplying water" (Asian Times, 2000, May 9). The loan condition succeeded in catalyzing a constructive, countrywide argument over water management, but is clear that both the ADB and the concept of "treating water as an economic good" came out of the debate with tarnished reputations. In speaking with members of the BPRBC, it is clear that the minutiae of the "economic good" debate did not reach the rural areas. Even within the committee, there still is a strong misconception regarding water rights. Though it is important to state that presently, the committee lacks the understanding of many facets of water management.

4.3 At Present, the BPRBC is Clearly Unfit to Make Any Water Management-Related Decision

The BPRBC is made of representatives from many different socio-economic, educational, and professional backgrounds. One can argue that it is truly representative of the Bang Pakong basin. However, they have only existed since July of 2001 and have started holding regular monthly meetings as recent as the summer of 2004. Although the 44-member committee includes representatives from government and NGOs, over half of the members come from business, industry, farming, and public administration. They have no formal training or experience in water management or the issues related to water management. Once the national water law is ratified, they have a mandate to manage water and must try to do so in a way that maximizes social, environmental, and economic sustainability. This is no easy task even for those with experience. Any water right system will have the full technical support from various government departments; however, to decide on such a complex and formative course of action requires the full understanding of those making the decisions. The BPRBC still needs to get a solid grasp on the fundamentals of water management. In fact, this is a major concern of committee members.

One concern that is repeatedly brought up in conversation with committee members is that DWR has not given them access to enough resources to make sound decisions. Members are volunteers and do not even receive compensation for travel costs to participate in the monthly meetings. It is clear that DWR and participating NGOs must strengthen their efforts in providing the conceptual tools necessary to make well-founded decisions. If this does not happen, the committee will likely stumble and potentially lose legitimacy once they receive the legal authority vested by the national water law. Introducing a water rights system in the Bang Pakong would involve many different types of complexity, therefore it is critical that the committee have a clear understanding of how and why such a system works. They must both to be able to disseminate information to their constituents and minimize the delay in the acceptance, promulgation, and proper implementation of water rights.

4.4 The Consolidation of Water Related Government Agencies is Necessary

Currently, there are over 34 governmental agencies (Fled et al., 2003, pg. 437) under 8 ministries (Taesombut, 2002, pg. 36) with budgets to manage water for their own purposes). There are 22 groups or agencies having a stake in water management in the Bang Pakong at the river basin level (Feld et al., 2003, Pg. 4). New committees (like the Office of the National Water Resources Committee (ONWRC), the National Environment Board, and Pollution Control Committee) were established in the mid to late-1990's an attempt to resolve the resulting conflicts of overlapping mandates. However, these umbrella agencies are constrained "by the lack of comprehensive water resources legislation, and the fact that existing regulations are implemented by various agencies sometimes in contradictory fashion" (Feld et al., 2003, Pg. 3). It is clear that there needs to be further consolidation and streamlining of government institutions that oversee water management. One suggestion from government officials is to create a separate ministry under which all water-related agencies would operate. This enjoys support from many government officials, however, the plan's major obstacle is prying the Royal Irrigation Department (RID) away from the Ministry of Agriculture. The RID is the largest government department (with over 20,000 employees) enjoys the largest annual budget, by far, in comparison with other water-related departments. There is a concern that the Ministry of Agriculture will stand to lose a significant amount of their annual budget should the RID move to a separate ministry. Although consolidation is being discussed with more frequency, there has been little

action.

Furthermore, there needs to be more cooperation and communication between the existing agencies. There is an understanding that consolidation will likely happen, however, it is difficult to know which organizations will be compromised most- or even removed. Therefore, agencies must compete with each other to secure annual funding and survive the imminent consolidation without compromising too much of their authority. The RID and DWR currently keep basic rainfall data confidential from each other. In August of 2004, the commissioners of the two departments met in order to improve relations. However, months later, evidence of active cooperation (beyond the rhetoric) is still yet to be seen.

Until there is consolidation of the water-related government agencies in Thailand, it will be difficult for the BPRBC to implement a water rights system. Multiple agencies will inevitably help manage the resource so the lines of communication between these agencies must be open and clear.

4.5 The Influence of the East Water Company Cannot be Ignored

Demand for dependable sources of raw water for industry and growing municipalities have spurred the creation of multi-million dollar company to provide such a service in the Bang Pakong region. The state enterprise-turned-private Eastern Water Resources Development and Management Public Company Ltd. (East Water) supplies, purifies, and delivers raw water to growing industries and municipalities within the Bang Pakong and neighboring river basins. The company is only ten years old yet has over \$150 million in assets and generated a net profit of over \$7 million in 2001 and \$8 in 2002 (East Water Annual Report, 2002, Pgs. 62-64). One of the main reasons that the company has been so successful is its agreement with RID to take water from the Bang Pakong at 0.5 Baht per cubic meter and turn around and sell it to clients at 8 Baht per cubic meter (Naprom, personal interview, 2004). The company already owns a 99% share of half the public water utilities in the Bang Pakong and services their own drinking water company (East Water Annual Report, 2002, Pg. 17). In 2001 and 2002, the company paid over \$3 million in income taxes (East Water Annual Report, 2002, Pg. 64). East Water is currently conducting feasibility studies to build infrastructure that would deliver water from the Bang Pakong River to Bangkok via the new international airport (Naprom, personal interview, 2004). Such an expansion requires a massive amount of investment upfront but can potentially offer a very generous return

Clearly, the company provides an increasingly valuable service to the people and industries of the Bang Pakong region as fresh water becomes scarce. Water rights will inherently deny the company its relatively unconditional access to Bang Pakong River water and hinder its ability to expand service throughout the Bang Pakong the other areas. The company currently provides a valuable service yet also represent the largest threat to the farmer's ability to access water in the future (especially so if the proposed expansion goes through). The company is both the boon and bane of the region and will likely oppose the idea of water rights.

4.6 Water User Associations Need to be Established and/or Further Developed

About half of all farmers who receive irrigation water in the Bang Pakong belong to a Water User

Association (WUA) (Yadee, personal interview, 2004). WUA are legally recognized groups of collectivized farmers that manage irrigation infrastructure at the on-farm level (secondary and tertiary irrigation canals). They represent the first administrative level in water management above the individual farmer and will likely play a crucial role if water rights are introduced.

Water rights on a per farmer basis is very difficult to administer from an institutional and practical sense. The size of many individual farms in the Bang Pakong is too small to make the costs of volumetric metering economical. WUAs are better institutions to administer water rights as they are large enough to receive a volumetrically measured amount of water and small enough to effectively redistribute the water to the farmers individually. Before water rights can be realistically administered, all farmers who want to receive his/her water right, must be involved in a WUA. Currently, the WUA is an extremely weak institution and only exist to engage in very small-scale irrigation maintenance projects. A water right system can be designed so that the WUA is the only vehicle of furnishing water rights, thus compelling more farmers to join. However, in the meantime, these organizations need to be established in places where they are absent and further strengthened overall. Should water rights be administered through WUAs, they must be a transparent body with strictly enforced regulations on how to equitably deliver water to all the farmers within the irrigation system.

Conversely, WUAs will not be able to exist without water rights. WUAs will breakdown as farmers postpone or simply retract WUA payments because water supplies are not sufficient water for agricultural purposes. They will logically invest their money elsewhere. Without guaranteed access to water, the institution has no standing and the potential benefits of decentralized, locally-based management will be foregone. WUAs can be a vehicle that finally gives a stronger voice to the small farmer, but they also have the potential of becoming an irrelevant and worthless institution.

4.7 Water Users Need to Understand that Open Access Water Allocation is Over

Many people in Thailand still view water as an abundant natural resource that is inexhaustible, of little value, and easy to access. Even those people in the Bang Pakong who accept that water is scarce, they are not yet ready to give up their right to allocate water in the traditional sense. All water users, especially farmers, need to fully grasp that open-access water allocation is indeed over. All of the attempts at supplying more water to maintain the status quo do not recognize the fundamental truth that water needs to be saved. Any technological, institutional, and ideological response cannot prevent scarcity from happening (indeed, that is the definition of scarcity). They can only dictate how allocation develops in the midst of scarcity.

The other fundamental truth is that agriculture will inevitably receive less water. There is a wider variety of water users in Bang Pakong and the aggregate water demand will continue to grow into the foreseeable future. Farmers will receive a limited amount of water. Water rights cannot help farmers preserve their historic access to water; they only guarantee that they receive a share of the available water. Thus in order for water rights to receive support from agriculture, farmers must acknowledge that they will not receive as much water as they have in the past.

The above obstacles make the introduction of water rights in the Bang Pakong region a formidable task. The passage of the national water law will be instrumental in catalyzing the necessary shake-up of government institutions. Also, the DWR also has a long way to go in terms of raising awareness of water rights and basic principles of water management to BPRBC members. Because the

committee itself cannot arbitrate water right disputes, the effectiveness of water rights is also determinant on the strength of the Thai judicial system. In short, it will take a long time before the BPRBC can implement water rights that are well-defined and enforceable. Therefore, the sooner that the idea of water rights is adopted, the sooner all departments can coordinate their efforts to make sure they are successful.

Chapter 5

Conclusion

At present, fresh water in Thailand is still supplied free of charge to the poor, rural farmer. This state of affairs will not last much longer. The current and foreseeable rise in demand for water, as Thailand continues on its rapid track of industrialization, will continually expose water to market forces. A large part of Thailand's strategy is to delay the inevitable by building more supply infrastructure, but this approach fails for the basic reason that the rising demand will soon eclipse the country's storage capacity; in the Bang Pakong River Basin, it already has. These supply-side approaches are inherently limited and irresponsible with respect to the poverty alleviation and rural development. Poor farmers are left with little protection over their dwindling access to the resource.

The water troubles in the Bang Pakong are more established and developed than in other parts of the country. The symptoms in the basin are telling of what the rest of the country will inevitably face which is why it is important to take on as a case study. The basin is rapidly industrializing and water is already exposed to market forces. There is nothing that can ultimately impede the flow of water to its highest-value use (i.e. from agriculture to growing industries and municipalities) regardless of the water management strategy the BPRBC might adopt in the future (whether it be direct water pricing, water rights, transferable water rights, etc.). But if gaining access to fresh water begins to cost money for the agriculture sector, the rural, poor farmer, will in due course go bankrupt and be the first to forfeit his/her access to water. Without fresh water, agricultural land holdings are no longer a productive asset and they will lose value and become subject to speculation by larger farms and agrobusiness. Decreasing water security and the pressure to producing goods more competitively will inevitably push the vulnerable poor farmer further into destitution. In contrast to other market-based approaches, introducing a system of well-defined and enforceable water rights is the best means of protecting the short and long-term interests of the poor for the reasons previously stated in this thesis. Should the BPRBC decide not to pursue a system of water rights, Prime Minister Thaksin Shinawatra and his Thai Rak Thai party (translated as "Thai loves Thai") will indeed have a difficult time in fulfilling their "pro-poor, pro-rural, and pro-Thailand" (World Bank, 2003, Pg. 4) campaign promises.

Should the BPRBC ultimately desire to implement water rights, there are still many obstacles standing in the way. The country needs to pass a national water law that gives recognized authority to the RBCs and, in the meantime, the government and NGOs need to take a more pro-active approach in providing the RBCs with the adequate resources to make sound water allocation decisions. These obstacles are formidable and complex, but are in no way insurmountable. It is important to note that any "pro-poor" response to water commoditization in Thailand must guarantee the farmer access to fresh water at least up until the point where they can be absorbed into other growing sectors of the economy.

The exploitation and suppression of Thailand's rural farmers was a conscious policy instrument used throughout the beginning of the country's industrialization experience. The rising income inequality from the First National Economic and Social Development Plan in 1960 to the present is well documented (Krongkaew and Kakwani, 2003; Mundlak et al., 2004; Yamada, 1997). Should farmers be denied guaranteed access to water, there is little doubt in both the widening of income inequality and increasing vulnerability to "poverty-inducing" events outside their control. The simple fact is farmers will have to again sacrifice for the sake of the country's economic development; they will never again enjoy water allocation in a traditional sense (i.e. unlimited fresh water and free of charge). However, as has been shown throughout this work, water rights are a way in which the government can relieve some of the burden of water commoditization on the poor. In a way, the government can acknowledge the enormous previous sacrifices made by the poor for the sake of development by sacrificing the immediate economic benefits of having water flow freely to its highest-

value use. Industries and growing municipalities will certainly be guaranteed water in future. In return, farmers should be guaranteed they have an occupation in the emerging “modern” economic sectors waiting for them.

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Aekeraj, Sukhontha. 2004. On-going Verbal Correspondence between July 29-November 15, 2004. Director of Foreign Relations at the Department of Water Resources under the Ministry of Environment and Natural Resources. Mrs. Sukontha was the DWR contact person for the ADB-PDA on the Bang Pakong project and spoke with me many times during the tenure of the project.

Biltonen, Eric. Correspondence 2004. Personal and E-mail Correspondence between August-November of 2004. Former Economist for the International Water Management Institute- Southeast Asia. Now working in Laos.

Hangseephoot, Dr. Siripong. August 10, 2004. Deputy Director of the Department of Water Resources. The meeting concerned research in the Bang Pakong region and was held at the Office of the Department for Water Resources, Bangkok.

Jhanthanin, Sanong. September 15, 2004. Inspector General of the Ministry of Natural Resources and Environment. The meeting concerned the future institutional arrangements of water-related agencies and their potential amalgamation. The meeting was held at the Department of Water Resources office, Prachinburi.

Naprom, Naridsara. September 10, 2004. Technical Service Manager at East Water Company's Chachoengsao Operations Center.

Wongbandit, Dr. Amnat. September 3, 2004. Associate Professor of Law at Thammasat University and principle author of the new version of the draft national water policy. The interview was conducted in his office at Thammasat University, Bangkok.

Yadee, Aumnuay, October 8, 2004. Head of the Royal Irrigation Department's Prachinburi Irrigation Project. The interview was held at the RID office in Prachinburi.