Lowy Institute Paper 02

# river at risk

## THE MEKONG AND THE WATER POLITICS OF CHINA AND SOUTHEAST ASIA

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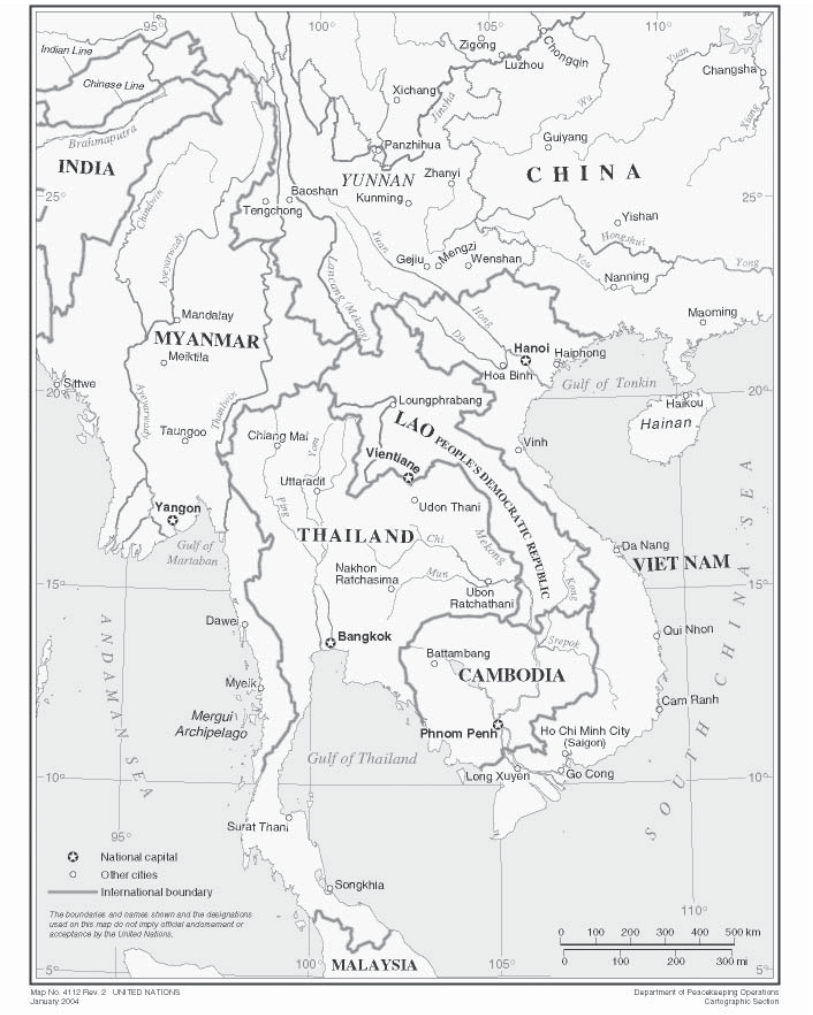
# Greater Mekong subregion



**Milton Osborne** has been associated with the Southeast Asian region since being posted to the Australian Embassy in Phnom Penh in 1959. A graduate of Sydney and Cornell Universities, his career has been divided almost equally between government service and academia and he has served as a consultant to the United Nations High Commissioner for Refugees. He is the author of nine books on the history and politics of Southeast Asia, including *The Mekong: turbulent past, uncertain future* (2000) and *Southeast Asia: an introductory history* which is shortly to be pubished in its ninth edition. Since 1993 he has been a freelance writer and lecturer based in Sydney.

# Executive summary

By the middle of March 2004 there was growing concern in Thailand, Laos and Cambodia about the level of the Mekong River. Poor rains in the wet season of 2003 and a subsequent protracted dry period appeared to be largely to blame for the sharply lower level of water in the Mekong by comparison with 'normal' years. But the unusually dry season may not have been the only factor at work. Officials in Thailand have claimed that Chinese authorities have endeavoured to limit the flow of water out of the dams already built on the Mekong in China's Yunnan province, as they undertake new dam construction and continue work to clear the river of obstacles to navigation. At the same time, Thai officials suggest that unusual volatility in the river's flow reflects the manner in which China has been closing its dam gates. Gates are closed for three days, before opening them for one day to allow Chinese cargo vessels to travel to and from river ports in the southern Yunnan province and northern Thailand.[1]

The state of the river by March 2004 was a matter for concern, and was reflected in the comment of an official of the Mekong River Commission (MRC) based in Phnom Penh, Dr Robyn Johnston, who

noted that the river's level at Vientiane, the Lao capital, was "the lowest it has ever been". At other locations along the river, water levels were said to be at 20-year lows.[2] While water levels below Phnom Penh and in the Mekong Delta in March did not appear abnormally low, *New Scientist* magazine stated that the overall state of the river was sufficiently disturbing for the MRC to address a letter to the Chinese authorities. The letter sought information about the way in which its dams on the upper section of the Mekong were being operated — an unusually proactive course of action for the MRC to take.[3]

By the beginning of April 2004 the media was reporting that boats were aground, stranded in the river above Chiang Saen in northern Thailand because of low water levels. This is a sharply different situation from what I had observed travelling on the Mekong from Guan Lei in the far south of Yunnan province to Chiang Saen in March of 2003. For a river that plays such a vital part in the lives of many millions of people the state of the river is a matter of the deepest concern. And, for the first time in many years, the Mekong was once again a subject of major media coverage.[4]

Against this background of worry over the Mekong's water levels, the release of new information from the MRC in early April 2004 is a cause for further very real concern. Based on data collected in relation to Cambodia's Tonle Sap (Great Lake) River since 1993, and at the only controlled data collection point in the Lower Mekong Basin (LMB), the size of the fish catch following the end of the 2003 wet season — that is, for a period extending into March 2004 — fell by almost 50 % by comparison with the previous year. This fall follows declines of approximately 15 % in both 2002 and 2001. The concern is that this might indicate the most worrying future development possible — the collapse of the Mekong fishery in Cambodia. While that judgment can still not be made, the signs accompanying the fall are very disturbing, including as they do a loss of large species and the fact that the fall had taken place despite increases in fishing effort.[5] In a country so dependent on fish for the national diet, this development can only be regarded as potentially very serious.

Often spoken of as Southeast Asia's largest river, no less than

44% of the Mekong River's course flows through Chinese territory before reaching the five Southeast Asian riparian countries — Burma (Myanmar), Laos, Thailand, Cambodia and Vietnam — that lie downstream from China.

It is on this section of the Mekong in China that the Chinese central and provincial authorities have already built two dams, are constructing another two, and plan to build a further four dams to generate hydropower.

At the same time, Chinese work teams have, since 2000, been engaged in a major program of blasting and dredging along the river's course to expand greatly its use for commercial navigation.

The construction of dams and the program of river clearance have already brought substantial change to what, until very recently, was a river largely unaltered for millennia. As discussed in the pages that follow, these are Chinese actions that have not so far resulted in opposition from the governments of the riparian states downstream from China.

The combination of possible irreversible changes to the ecology of the Mekong and the need to make a clear-eyed assessment of China's dominant role in mainland Southeast Asia, means that Australia cannot disregard what is happening in a region it regards as important both politically and in terms of security. For major environmental change carries with it the threat of political instability, not least if it affects long-existing food consumption patterns. With the Mekong River increasingly a source of controversy, this Paper attempts an assessment of the current status of the Mekong while considering what the effects of future changes to the river might be. In particular, it examines the manner in which politics and the concerns about the environment intersect as a result of the Mekong and its tributaries' status as trans-boundary rivers.

# Contents

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The following individuals were consulted and assisted in the course of this Paper's preparation in various ways. In thanking them warmly for their assistance, I wish to make absolutely clear that none bear any responsibility for the views expressed and judgments made in the Paper, which are mine alone. Where the views of individuals are cited, this is on the basis of published work, specific permission given to me for their name to be used, or information gathered from other persons. In addition to the individuals listed, I am happy to record the assistance given to me by the staff of the Australian embassies in Cambodia, Laos, Thailand and Vietnam.

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## List of acronyms

| | |
|---|---|
| ADB | Asian Development Bank |
| DWT | Dead Weight Tonnage |
| EGAT | Electricity Generating Authority of Thailand |
| EIA | Environmental Impact Assessment |
| GMS | Greater Mekong Subregion program |
| LMB | Lower Mekong Basin |
| MRC | Mekong River Commission |
| SEARIN | Southeast Asia Rivers Network |

# Upper Mekong in Yunnan province

*showing the location of Chinese dams already built, under construction or planned.*

# Chapter 1

## The river and its people

### Geography

The Mekong River is the twelfth longest river in the world and, in terms of the volume of water it finally discharges into the South China Sea, variously calculated to be either the tenth or eighth largest. It rises at a height of 5,100 metres in eastern Tibet, with its source close to those of several other great rivers that eventually flow out of Chinese territory, including the Salween, or Nu as it is known in China, which flows into Burma (Myanmar). With a total length of 4,880 kilometres, the Mekong, as already noted, flows through, or by, six countries. Called the Lancang River (Lancang Jiang or 'Turbulent River') in China, this upper section of the river is 2,161 kilometres in length and flows, for the most part, through steep gorges that have restricted settlement but provided sites deemed highly suitable for the construction of dams.

The total drainage area of the Mekong Basin is approximately 795,000 square kilometres, but the amount of water flowing into the river from the six countries of its basin is far from equal. The

generally accepted proportion of runoff from each country is as follows: China 16 %, Burma 2 %, Laos 35 %, Thailand 18 %, Cambodia 11 % and Vietnam 18 %. The disproportionate quantities of runoff is one of the issues contributing to the controversies that have arisen over the river's use. For instance, China is able to argue that the effects of its dam building program are limited to a degree by the amount of water that flows out of its territory. But the story is more complicated than the statistics just cited suggest, for water from China is of great importance in sustaining dry season flow for the downstream countries, perhaps to a total of 40 % of the river's volume. Another statistic more meaningfully underlines the fundamental importance of the Mekong to two of the countries downstream from China. In the case of Laos and Cambodia no less than 85 % of their national territory lies within the river's basin.[6]

## River-dependent industries

An estimated population in excess of 70 million live in the Mekong River Basin, with most of this number living downstream from China, for much of the territory surrounding the river in China is inhospitable to settlement. Specialists estimate that no less than eight out of ten of those living in the Mekong Basin depend on the Mekong River for subsistence, either in terms of the fish catch taken from the river or in terms of agriculture, both through extensive cultivation, principally of rice in the Mekong Delta, and through river bank cultivation, particularly in Laos and Cambodia. The significance of these statistics is reinforced by the fact that more than 70 % of the Cambodian population's annual animal protein intake comes from fish caught in the Mekong and the Tonle Sap, Cambodia's Great Lake, and its tributary, the Tonle Sap River. Another measure that emphasises the importance of the Mekong River may be found in relation to Laos, where 71 % of rural households — that is, more than half of Laos's total population — depend on fishing to some degree. In the case of Vietnam, more than 50 % of the country's agricultural contribution to GDP is generated in the Mekong Delta, with the greater part of this figure resulting from rice growing.[7]

## Population trends

The various statistics just cited must be viewed in relation to population trends in the Lower Mekong Basin (LMB), that is, the basin region excluding China and Burma. The population of the LMB is currently estimated at 55 million, with rapid growth taking place in Cambodia and Laos. In both these countries there has been a post-conflict baby boom, leading to a skewing of the population towards an extraordinarily youthful profile. If present trends continue, Cambodia and Laos will double their populations over the next 20 years. Although their rate of population growth is slower, the populations of Thailand and Vietnam are expected to increase by between 20% and 30%. In terms of the LMB, this suggests that the current population will grow from 55 million to 90 million by 2025. In the four countries of the LMB poverty rates are disturbingly high, in excess of 35% of the population in Cambodia, Laos and Vietnam, with Thailand showing a marked contrast at 16% in that part of its territory that is within the Mekong Basin.[8]

## Wet and dry seasons

A vital feature of the Mekong River is the annual pattern of its rise and fall in accordance with both the wet and dry seasons affecting the river below China and as a result of the runoff that accompanies snow melt in its upper, Chinese reaches. The natural pattern of flood and retreat of the Mekong's waters is essential to the river's ecology. Flood waters carry silt that is deposited on the river's banks which, with the advent of the dry season, provides a highly fertile basis for horticulture and agriculture. In the case of the Mekong Delta, the annual pattern of flooding 'rinses' accumulated alkaloids from the soil and plays a major part in ridding rice fields of pests, not least as rats, as well as depositing valuable nutrients that are essential to the high yields characteristic of the agriculture, particularly that of rice, in the Mekong Delta.

Floods play a vital role in the spawning and growth of fish within the Mekong River system. Nowhere is the annual pattern of flooding more obviously of benefit than in the case of Cambodia's Great Lake, an integral part of the Mekong River system. At its lowest level the Great Lake has a surface area of approximately 2,700 square kilometres. At

the end of the wet season, after a vast volume of water has flowed up the Tonle Sap River from its confluence with the Mekong at Phnom Penh, the surface of the lake increases to as much as 13,000 square kilometres, with the depth of the water in the lake attaining as much as ten metres — at low water, large areas of the lake are little more than one metre deep.[9] These great fluctuations in size and depth are accompanied by vital developments in the cycle of fish spawning and growth, for while there is a need for further scientific investigation it is quite clear that the bounty of fish taken from the Great Lake at the end of the wet season depends on this millennia-old pattern of annual increase and decrease of the lake's volume.

## Large-scale navigation

Until very recently, much of the Mekong had not been used for large-scale navigation as the result of its morphology, with the course of the river 'punctuated' by rapids and major obstacles in the river bed. It has only been in very recent times that work has been undertaken to overcome the barriers to navigation in the section of the river running between southern Yunnan and northern Thailand.

# Chapter 2

## Governance of the Mekong

### Fractured governance pre-1990s

There is no single body that either has, or claims to have, any form of control over the governance of the whole of the Mekong River. The first attempt to develop a form of governance over part of the river dates from 1957 when the Committee for the Coordination of Investigations of the Lower Mekong Basin was established, to be known more generally as the Mekong Committee. Very much a child of the Cold War, and owing its existence to support from the United States, the concept behind the plan to promote the economic development of the Mekong River was summed up in a United States' National Security Council document of September 1956 that called for the denial "of the general area of the Mekong Basin to Communist influence or domination".[10] As established in 1957, the Mekong Committee had as its members four of the five riparian countries along its lower course: Cambodia, Laos, Thailand and Vietnam in the form of the Republic of Vietnam (South Vietnam). Each of these countries was at that time heavily dependent on American aid. Although not a member of the Committee, the United

States' interests were firmly asserted through the fact that an American was the administrative head of the Committee.

Under the aegis of the Mekong Committee, and at a time when the building of large dams was regarded as a general good, the river was surveyed with a view to building a series of dams on the main stream. Four sites were selected as particularly suitable for dams: Pa Mong, upstream from the Lao capital of Vientiane, the Khemerat rapids in southern Laos, the Khone Falls at the border between Laos and Cambodia, and the Sambor rapids a short distance upstream from the Cambodian provincial town of Kratie. Some consideration was also given to the possibility of building a dam that would have controlled the flow of water in and out of Cambodia's Great Lake. In the case of the proposed dam at Pa Mong it was estimated that no fewer than 250,000 persons would have to be relocated when the dam was built, while the dam proposed for the Khemerat rapids would have resulted in the flooding of the sizeable Lao town at Savannakhet. In the event none of the dams were built as the Vietnam War put paid to all plans being developed for the Mekong.

Following the Vietnam War, continuing instability in mainland Southeast Asia, and in particular the unresolved problems associated with Cambodia, stood in the way of any efforts to resurrect the Mekong Committee as a functioning body. It still existed in name, but there was no Cambodian representative until after the signature of the 1991 Paris Peace Agreements. As detailed below, the Mekong Committee was reconstituted as the Mekong River Commission in 1995. Before that occurred, there was, by the late 1980s, a renewal of interest in the possibilities of boosting development linked to the river and the regions along its course.

## Greater Mekong Subregion program (GMS), 1992

The first initiative, promoted by the Asian Development Bank (ADB) was the proposal for a Greater Mekong Subregion program (GMS), with the first meetings taking place in 1992.

The GMS program involves the six countries of the subregion (Burma, Cambodia, Laos, Thailand, Vietnam and China in the form of Yunnan

province). The GMS continues to function as a loosely structured forum concerned with the development of a wide range of programs from transport to tourism, and most importantly the promotion of energy production. While the ADB has not contributed funds to the construction of dams in China, for example, it has been involved in financing the transmission lines that carry power from them. This financing reflects the ADB's commitment to the development of a regional power grid throughout mainland Southeast Asia. A report to the ADB by the Norwegian consulting firm Norconsult, released in July 2003, recommended a regional power grid in mainland Southeast Asia fuelled exclusively by hydropower generated by 12 dams, already built or planned, in Burma, China and Laos.[11]

Crucially, the GMS does not have any regulatory functions, in whatever fashion, so far as use of the Mekong River is concerned. Neither does it have any involvement with projects on the Mekong's main stream. On the other hand, the GMS serves as a body in which agreements can be negotiated as, notably, the inter-government agreement on regional power trade negotiated at the GMS leaders' summit in 2002.[12]

## Establishment of the Mekong River Commission (MRC), 1995

The signature by representatives from Cambodia, Laos, Thailand and Vietnam of an Agreement for the Sustainable Development of the Mekong River Basin on 5 April 1995 established the Mekong River Commission (MRC) and replaced the effectively moribund Mekong Committee.

Hailed at the time as a step towards overcoming past antagonisms in the region of mainland Southeast Asia, the establishment of the MRC obscured some very real problems.

### *China*

Foremost of these was the refusal of China to become a member of the Commission. While China has never made public the reasons for its failing to join the Commission, these are not hard to find. As indicated by its failure to consult downstream countries in relation to its dam

building program on the upper Mekong in Yunnan province, China takes the view that it has no obligation to submit its actions, so far as these relate to that section of the Mekong River in its territory, to discussion or consideration by other countries. Interviews with members of the National Mekong Committees in both Laos and Cambodia made clear that efforts to persuade China to join the MRC, rather than to be present at meetings of the MRC, as an observer, as currently is the case, have proved fruitless.

Sources in China, speaking in February 2004, made clear that this attitude is unlikely to change. In 2002 China made a small gesture towards greater cooperation with the MRC by agreeing to supply data on river levels at two stations on the upper Mekong, but only during high water periods.

### *Burma*

Burma's reluctance to join the MRC reflects both the relatively limited importance of the Mekong to that country and the general disinclination of the Rangoon regime to place itself in any position that might limit its freedom of action. Despite Burma's close ties with China, it is not clear if China's decision not to join the MRC influenced the Burmese authorities in their decision.

### *Thailand*

There were other difficulties before the MRC was established that have been largely ignored by external observers since the signature of the agreement establishing the new body took place. Thailand, it is clear, was a reluctant participant in the early stages of discussion, fearing that its membership might restrict its freedom of action, particularly in relation to the possible future diversion of water from the Mekong River.

### *Cambodia*

Cambodia's Prime Minister, Hun Sen, predicated that country's membership of the MRC on the agreement that the organisation's headquarters should be located in Phnom Penh for at least five years. The MRC secretariat is scheduled to move to a new building in Vientiane in May 2004.

### *Critics of the MRC*

Since its establishment, the MRC has been an almost continuous target of criticism from advocacy NGOs and academic observers for its supposed failure to take an active role in addressing the range of environmental challenges facing the Mekong River. Such criticism is misguided since it fails to recognise the MRC is a 'creature' of the governments that are members of the Commission. While its critics might want it to be otherwise, the MRC has no mandate to act on its own in any fashion that has not been approved by the member countries. Efforts by the former chief executive officer of the MRC, Mr Joern Kristensen, to have the organisation play a more active role in relation to contentious developments — involving one or more of the governments of the MRC — were solidly resisted by the Thai authorities, and were among the factors that, reportedly, led to Kristensen's decision to resign from his position in 2003.

## Agreement on Commercial Navigation on the Mekong–Lancang River

The most recent international instrument established to regulate activity on part of the river is the *Agreement on Commercial Navigation on the Mekong–Lancang River* concluded between Burma, China, Thailand and Laos in April 2000.

The agreement covers the section of the Mekong River between Simao Port in Yunnan province and Luang Prabang, a distance of some 886 kilometres.

At the time when the Agreement was concluded, it was stated that upgrading of navigation on the Mekong would proceed in three phases.

The first phase would involve clearance of river obstacles to the point where vessels of 100–150 Dead Weight Tonnage (DWT) could use the river for 95 % of the year. In the second phase, further clearance would enable vessels of at least 300 DWT to use the river for 95 % of the year. While in the final, third phase of clearance, vessels of up to 500 DWT could use the river for 95 % of the year. As will be shown later in this Paper, clearance of river obstacles has become a highly controversial issue as increasing use of the river by Chinese vessels has been taking place.

# Chapter 3

## Escalation of China's dam building program

It was not until the mid-1990s that there was any general awareness of the scope of China's plans for dams on the upper Mekong in the Yunnan province. This changed with the presentation of a paper by EC Chapman and He Daming in a conference held in Melbourne in October 1996.[13] China had not made any major announcements of its plans and had not then, nor since, sought any international finance for the construction it was undertaking. Moreover, the dams it was building were located in remote areas of Yunnan, far from any casual visits by foreigners.

By the time its intentions became more generally known, China was close to completing the first dam, at Manwan (completed in 1996) and had started work on a second dam, at Dachaoshan (variously reported as completed or actually commissioned in late 2003). Of some interest as an indication of the importance China places on its dam building program is the fact that the Dachaoshan Dam was completed much earlier than was originally projected.

China started work on a third dam at Xiaowan in January 2003, and has now begun work on a fourth dam at Jinghong. The electricity

produced by the Jinghong Dam is to be sold to Thailand. With a projected power output of 4,200 MW, Xiaowan will be the second largest dam in China, after the Three Gorges Dam on the Yangtze. Dubbed 'a reservoir for progress' in the Chinese press, its construction will result in the displacement of an estimated 32,000 people. It is currently set to be commissioned in 2010–12. In the course of a visit to Jinghong, in February 2004, I observed major roadworks being undertaken on both sides of the Mekong leading up to the dam site and the readying of a large area for a construction camp headquarters. Further upstream, construction linked to the dam proper has begun, although the flow of the river is not yet restricted.[14] It is planned to be commissioned in 2012–13. The dam, when built at Jinghong, is expected to displace some 5,000 people. Eventually, China intends to build a further four dams so that there will be a 'cascade' of eight dams on the Mekong, producing electricity intended for both domestic and foreign consumption.

At a time when China is facing severe power shortages as a result of its rapid economic growth, the hydropower to be extracted from the Mekong is only part of a much larger projected program of dam building associated with the 'Western Region Development Strategy'; a program better known in its slogan form of 'Develop the West'.[15] This program reflects the concern of the Chinese leadership — a leadership in which engineers have long played a dominant part — to modify the economic imbalance that has seen China's coastal provinces surge ahead in terms of economic development by comparison with western regions of the country.

Yunnan's hydropower potential is enormous, containing as it does 24% of the estimated national capacity, to be extracted, in particular, from the Yangtze, Mekong and Salween, known as the Nu, where it flows through China.[16]

With dams already built on the Mekong and Yangtze, China recently announced its intention to build 13 dams on the Salween, before that river reaches Burma. The decision to build these dams — which would lead to resettlement of 50,000 people — was taken despite the existence of a critical Environmental Impact Assessment and a surprisingly vocal series of protests from within China, including from the Chinese

Academy of Sciences, as well as protests against the dams in Thailand. In a rare suggestion that critical responses to its dam building program may be having an effect at the top levels of government, it has now been reported that the Chinese premier, Wen Jiabao, has suspended plans for the dam building to go ahead in deference to opposition from environmentalists. It is likely to be some time before it is clear whether Wen Jiabao's intervention will actually stop dams being built.[17] Meanwhile, there are now reports that Thailand is also considering building two dams for hydropower at the Thai–Burma border.[18]

Neither the Manwan nor the Dachaoshan Dams are particularly large by international standards. Although it has only been producing hydropower since 1996, the Manwan Dam is already affected by the rapid build up of sediment behind the dam wall. This is one of the reasons why the Chinese have quickly embarked on the construction of the very large Xiaowan Dam with its planned dam wall rising to a height of 300 metres and a pond (reservoir) that is expected to stretch back 169 kilometres. The hope is that, in addition to generating electricity, the construction of this dam will minimise the build up of sediment that would otherwise greatly reduce the power-generating capacity of both Manwan and Dachaoshan. Table 3.1 provides information about five of the dams built or planned.

**Table 3.1: Chinese dams on the Mekong**

| Dam name | Manwan | Dachaoshan | Xiaowan | Jinghong | Nuozhadu | Total |
|---|---|---|---|---|---|---|
| **Status** | Complete | Complete | Under construction | Under construction | Planned | |
| **Generating capacity (MW)** | 1,500 | 1,350 | 4,200 | 1,500 | 5,500 | 14,050 |
| **Height (m)** | 126 | 110 | 300 | 118 | 254 | — |
| **Dead storage** | 663 | 556 | 4,660 | 984 | 10,100 | 16,973 |
| **Total storage (million cubic metres)** | 920 | 933 | 14,560 | 1,233 | 22,400 | 40,046 |
| **Active storage (million cubic metres)** | 257 | 933 | 9,900 | 249 | 11,743 | 23,073 |

Source: *Watershed: People's Forum on Ecology*, Vol. 8, No. 2, November 2002–February 2003, 43.

## Transparency in China's dam building program

China has not consulted the downstream Mekong countries in relation to its dam building program. Nor has it responded to requests to visit the dam sites at Manwan and Dachaoshan, though there have been offers to provide a visit to Jinghong, where dam construction has now begun.[19]

While there has been some reporting of landslides into the ponds of both the Manwan and Dachaoshan Dams, there have been only limited suggestions that there should be concern about the geological stability of the dam regions in Yunnan province. The argument has been made that insufficient seismic surveys have been made of the Chinese dam sites and that for such studies to be properly undertaken would require several years of fieldwork and studies.[20] Given the clear record of dam collapses in China, particularly in 1975 when 60 dams collapsed and over 100,000 people lost their lives,[21] further investigations are warranted.

China is aware that its dams are viewed critically for their adverse environmental effects and effects they are likely to cause, by governments and by various groups in downstream countries, and internationally. However, the Chinese argue that such concerns are misplaced and that, in fact, the dams will have a beneficial effect by 'evening out' the flow of water down the river and so reducing the problems associated with flooding. Chinese spokesmen have also argued that there will be no change to water quality as a result of the dams on the river.[22] More generally, China has dismissed the findings of the World Commission on Dams, published in 2000,[23] which raised doubts about the utility and desirability of large dams, as biased and impinging on the sovereign rights of nations.

## The dams and their critics

Criticism of the Chinese dams has come chiefly from NGOs and individual academic observers. For, such is the relative imbalance of power between China and the downstream countries, I have found no evidence that any of the downstream governments have felt able to confront China in a formal fashion, despite there being sound reasons

for an assessment that, overall, the dams will have a range of negative environmental effects.

However, expressions of concern about the dams and their effects have now come from senior Thai politicians, including the influential Thai senator, Kraisak Choonhavan, who is a member of the Senate's Foreign Affairs Committee.

The Chinese authorities are certainly aware of criticism of their policies and they have allowed discussions relating to the dams, including their negative aspects, to take place in China itself. Additionally, China allows at least one NGO with a highly critical view of the dams to function in Kunming, the capital of Yunnan province. Nothing suggests, however, that criticism levelled at the Mekong dams has led to a revision of the government's policies.

# Chapter 4

## Ecological impact

In seeking to catalogue negative effects linked to the dams, a major problem confronts critics: it may be several years before the full range of the impact of dam construction becomes apparent.

### Fish stocks

The greatest cause for concern relates to fish stocks in the Mekong. It is impossible to overestimate the importance of fish as an essential feature of the diet of people living in the Lower Mekong Basin. The MRC estimates that the annual catch in the LMB is 1.5 million tonnes, with another 500,000 tonnes raised through various forms of aquaculture.[24]

Many of the fish species inhabiting the Mekong are migratory in character, and it is possible that some of these species have already been affected by the dams the Chinese have constructed. The giant catfish (*Pangasianodon Gigas*), as an example, is thought to have previously spawned in Lake Erhai in the west of Yunnan province. Access to this lake by a tributary of the Mekong is no longer possible since the construction of the Manwan and Dachaoshan dams.

Probably of the greatest concern is the possibility that altered water

flows will affect the ecology of Cambodia's Great Lake (Tonle Sap). During the wet season in Cambodia the lake becomes a vast breeding ground for fish so that when the lake starts to empty in late October of each year vast quantities of fish pour out of the lake at a rate of 50,000 fish per minute swimming past a given point.[25] None of the experts consulted in the preparation of this Paper felt able to predict how much change to the Great Lake's ecology would need to take place for there to be serious negative effects on its capacity to provide fish catches equivalent to those currently harvested. Nevertheless, there was general agreement that substantial change could only be harmful. A telling point to be kept in consideration is the fact that although the fish catch in the Lower Mekong Basin has remained fairly stable over the past 50 years, until very recently, it now takes almost twice as many people to catch the same quantity of fish as was the case 50 years ago.[26]

Additionally, the fish being caught are now smaller than once was the case. And there are regular complaints from fishers about the difficulty of catching their desired quantities of fish.[27] Although it is too early to state that the sharp decline in the fish catch heralds a definitive collapse, if this were to happen it would be an extremely serious development with profound long-term consequences in a region where fish are such an important part of diet.

There is an additional consideration in relation to fish catches in Cambodia, and to some extent in all the other downstream countries. In conditions of widespread poverty, very high unemployment and a rapidly growing population, fishing is an activity that can be undertaken with a limited amount of equipment to provide subsistence, so adding to the strain already exerted upon finite fish stocks by fishers who can find no other way to sustain themselves.

At present, there is no obvious alternative source of food available to replace the protein provided by the fish catch.

## Agriculture

Threats to the ecology of Cambodia's Great Lake are already apparent. In recent years there has been an expansion of agriculture in those areas bordering the lake that are inundated at the height of the wet season. In

the course of this increased agricultural use trees have been cut down to make way for the planting of crops. This is a matter of considerable concern, since it was in these flooded forest areas that many of the fish species in the lake previously bred. Other developments, and in particular illegal logging in forest areas away from the lake, has led to increased run-off of topsoil that has, according to some reports, already raised the bed of the lake substantially. This claim is, however, denied by the MRC on the basis of research since 1992.[28] Increased use of chemical fertilisers as they wash into the lake pose a further threat to the lake's existing ecology.

## Discovery of oil

Finally, if not exhaustively, in a catalogue of concerns relating to the Great Lake, there have been reports in Phnom Penh to the effect that an oil deposit has been discovered either close to, or under the bed of the lake. Short of an official announcement, and given the tireless and unreliable character of Phnom Penh's rumour mill, it is not possible to assess what such a discovery would mean in terms of possible future environmental damage.

## Natural and man-made floods

Despite the difficulty in providing precise estimates for the likely effects of the Chinese dams on fish stocks in the Mekong, it is possible to record with considerable certainty the general effects that can result from the presence of dams on rivers according to how they are operated. In particular, the greatest concern relates to patterns of water releases. If, as the result of unusually heavy rain fall above the location of the dam, it is necessary to release water into the river below at a greater rate than usual, this can have a devastating effect on fish stocks in the region below the dam. But releasing water in other than 'normal' quantities does not just occur as the result of unusually heavy build-up of capacity.

In the very dry conditions of March–April 2004 the Chinese adopted a program of holding back water and then releasing it from Manwan and Dachaoshan in order to raise the river's water level so that Chinese

cargo boats could travel both up and down the river to and from Chiang Saen in northern Thailand.

While this pattern of water releases is of assistance to powerful Chinese cargo vessels, the less powerful Thai and Lao cargo vessels are unable to make the journey to and from southern Yunnan during the period the water level has been raised.

These releases also endanger fish stocks, for not only are fish highly sensitive to changes in water temperature (the water released from a dam will be colder than the water in the regions below it), in addition, unusual or unplanned releases of water greatly disturb the river bed and its role in providing food sources for fish.

Chinese control of the flow of water from its dams on the upper Mekong can have rapid effects on the river. It is believed that the unnaturally low level of the Mekong in the region around Luang Prabang in 1995 was a result of the use of a coffer dam to block the flow of the river in the course of the construction of the Dachaoshan Dam. A similar blockage in 1997 is claimed to have cost Vietnamese farmers in the Mekong Delta US$100,000 per day over four days.[29]

Given the devastation that can occur when there are large floods, it is essential to emphasise the positive effects that flow from 'normal' flooding, a point to be kept in mind in relation to Chinese claims that their dams will minimise flooding. Dealing with floods has been a way of life for endless generations along the river.[30] To a fairly accurate degree, people living in areas regularly affected by floods know when to expect them and how to make provisions for their occurrence. What is more, these 'normal' floods carry considerable benefits with them. Both along the regions that form the river banks during the dry seasons and in the flood plains beyond, the periods of high water deposit rich silt which is of great value for riverside horticulture as well as for agricultural crops. Floods flush away impurities and kill pests.

In relation to annual flooding, some Vietnamese informants spoke of the beneficial effects of this phenomenon in ameliorating salination. With an expanding population of over five million people and increasing use of water for irrigation, as much as one and a half million hectares of the delta is affected by salinity intrusion. The problem has grown

steadily worse with the impact of salination stretching back as far as 60 kilometres from the coast. But this could be one instance where the fact that the Chinese dams will 'even out' the flow of the river could have a positive rather than a negative effect, since salination is essentially a dry season problem.

A further concern is the likelihood that China's dams will have a significant effect in reducing the deposit of silt downstream. It is still too early to quantify this potential problem in a precise fashion, but the judgment can be made that the silt flowing out of China in the future will be both less in quantity and of poorer quality. There are varying estimates made as to the quantity of silt that will be blocked by the Chinese dams already built. One estimate provided by the advocacy NGO, International Rivers Network, in its Briefing Paper 3, of October 2002, is that the Xiaowan Dam when constructed will block up to 35 % of the silt currently carried downstream from China.

Paradoxically, there is a possibility that contrary to the Chinese dams operating to mitigate flooding they could, in some circumstances, contribute to excessive flooding. While relatively little is known about activity on the most distant reaches of the Mekong, where it flows through Tibet and the western-most area of Yunnan, there are concerns regarding serious deforestation along the river's course with a resultant increase in run-off. Additionally, and posing a problem for the holding capacity of the two dams that have already been built, there have been a large number of land slides into the dams' ponds as a result of deforestation in the course of dam construction. Efforts at reforestation have not been successful. In short, if there is both increased run-off and a significant reduction of the dam ponds' holding capacity, plus the already reported rapid build-up of sedimentation in the Manwan Dam, it is not alarmist to suggest that the authorities controlling the dams may be forced to release water on an unscheduled basis to prevent water within the dam rising to unsafe levels. The effect of such releases could well be to cause floods at unexpected times of the year.

These possible negative effects have been discussed in terms of what the Chinese dams might mean for the downstream countries. However, according to one well-placed informant, serious negative effects have

already occurred within China's own boundaries.

The most substantial concentration of population along the Mekong River in China is found in an area around the city of Jinghong, called Xishuangbanna.[31] Here, the Dai people, linguistic cousins of the Thai, form the dominant minority group. Since the completion of the Manwan and Dachaoshan Dams the quality of the water in this region of the Mekong has, my informant reported, deteriorated significantly, requiring much more treatment than was the case previously before it can be considered potable. Additionally, there has been a sharp fall in the size of fish catches, a fall of as much as 50 % by comparison with the period before the dams were built. Before the construction of the Manwan Dam there were 120 species of fish indigenous to the Mekong in the region around Jinghong. Today, half of these species are no longer found. And far from preventing floods, Jinghong in 2003 experienced a major flood, almost certainly as the result of an unannounced water release from one or both dams as the dams reached their maximum holding capacity.

## Relocation of local populations

While not of immediate consequence for a consideration of issues associated with the effect of the Chinese dams on the environment, and by extension on political relationships between China and the downstream countries, brief reference should be made to the relocation of population that has been necessitated by the dams already constructed in China. Although the numbers involved have been relatively small, a well-placed Chinese informant has stated that in many cases resettlement has been very unsatisfactory, both from the point of view of the areas to which displaced villagers have been sent and in terms of monetary compensation offered to them. No cynicism is involved in the observation that the fact that those who have been resettled are members of minority groups has meant there is little domestic Chinese interest in their fate.

A further problem in assessing what is happening, I was further informed in China, is the fact that the Chinese officials who staff the dams are unreliable in terms of providing accurate information on what

is happening to central and provincial authorities. A case in point, is the degree of sediment build-up that has taken place at Manwan and which, according to a well-placed informant, in China has not been reported accurately. Control of the dams, in any case, is practised with concern only for the perceived benefits that relate to Chinese interests.

# Chapter 5

## Increased navigation on the Mekong

### Navigation between China and Laos

Awareness of the actual and potential problems associated with the Chinese dams has been growing since the mid-1990s, but until recently, less attention has been given by many outside observers to the serious impacts resulting from the increased navigation of the Mekong River, first as a result of increased Chinese usage since the 1980s, and more recently following the conclusion of the agreement signed in 2000. Details of the extent of river clearance in the 1980s and 1990s in the stretch of the river from Jinghong in southern Yunnan to the point where the river flows out of China to run between Burma and Laos are not available. But there is no doubt some clearance did take place in these two decades. It is impossible to give too much emphasis to the fact that until quite recently navigation was severely limited by the obstacles existing in the river — rocks blocking passage and repeated rapids. The rapids of Tang Ho (also referred to as Tang O) lying north of Chiang Saen, where the Mekong runs between Burma and Laos, were thought to be the limits of navigable region for vessels of any size, certainly until

the 1970s. Small local craft could navigate large stretches of the river, but larger vessels were effectively prevented from doing so, preserving a situation that had been recognised at the end of the 19th century.[32]

Through the 1990s discussions, mostly held within GMS forums, concluded that after a major program of river clearance it would be possible for vessels up to 500 DWT to navigate the river from southern Yunnan to Luang Prabang. The next important step following the signature of the navigation agreement was the preparation of an Environmental Impact Assessment (EIA) designed to lay out the impact of the proposed river clearances necessary for implementing the plan to increase the size of vessels using the river. The EIA, known formally as *The Report on Environmental Impact Assessment, The Navigation Channel Improvement Project of the Lancang Mekong River from China–Myanmar Boundary Marker 243 to Ban Houei Sai of Laos*, was completed in September 2001. In the final conclusion section of the report,[33] possible negative aspects of the planned river clearances were almost totally discounted with the proposition that the clearance program would be positive for the "promotion of the sustainable development of the Greater Mekong Subregion". It is apparent that Chinese officials played the leading part in the completion of this report, though it should be noted that it was eventually accepted by all parties to the navigation agreement of 2000. Just as the Chinese did not consult downstream countries in relation to its dam building program, signatories to the navigation agreement did not consult Cambodia and Vietnam about their plans.

Following the completion of the EIA, and acting at the request of the Lao government, the MRC commissioned an independent evaluation of the document by three consultants. The consultants' report was completed in December 2001 and was published by Monash University's Environment Institute.[34] Their report stated that the EIA was "substantively inadequate" and in many places "fundamentally flawed. The EIA is inadequate in that it is not based on assessments of the full range of potential impacts. In general it omits assessment of long-term impacts associated with the operation of the waterway following the proposed works."[35] The critical nature of this report did not lead to any

of the parties drawing back from their decision to begin the removal of obstacles to navigation in the river. Blasting and dredging undertaken by Chinese work teams took place in 2002 and 2003 and was scheduled to take place in March–April 2004.[36] As has been the case with the dams built on the Mekong in China, finance for the clearance operations has come completely from the Chinese government.

For the moment, river clearances are limited to the section of the river between Simao Port in Yunnan and an area close to Chiang Saen in Thailand. Planned clearance of the last major rapids where the river runs along Thai territory, at Khon Pi Luang, between Chiang Saen and Chiang Khong have been placed on hold because the Thai government in April 2003, stated that it was necessary to establish the location of the boundary between its territory and Laos (which is the thalweg[37]) on this section of the river.[38] There has been some speculation that the issue of the boundary has provided a useful excuse to avoid clearances, as there has been much local protest from villagers living in the Chiang Khong region. Given the fact that the Thai government is continuing to work on port facilities at Chiang Khong, it seems likely that the current delay in the blasting of some reefs will prove temporary, and this appears to be confirmed by a report in the *Bangkok Post* of 8 June 2004. It is not clear when the clearance program will continue into that section of the river where it runs through Laos. A major program of blasting will be required to provide a channel for vessels of 100–150 DWT to operate for 95 % of the year, let alone the larger vessels envisaged by the navigation agreement. Although Lao officials were ready to speak out sharply against any plans for blasting when I visited Vientiane in 1998, this was not the case in 2004. Senior officials did however indicate that they were not in favour of river clearance being undertaken to permit vessels larger than 150 DWT to navigate as far as Luang Prabang, echoing a public call for caution expressed by the Lao Minister to the Prime Minister's Office, Somphong Mongkhonvilay, in November 2001.[39]

At present, Chinese vessels terminate their journey at the Chiang Saen river port, which is currently equipped to handle vessels up to 150 DWT. More than 3,000 vessels are expected to dock at Chiang

Saen in 2004, up from fewer than 1,000 in 2003. According to the deputy governor of Chiang Rai (the Thai province in which Chiang Saen is located) planning is under way to build a second port at the town capable of handling vessels of 500 DWT.[40] There is no escaping the fact that the benefits of the increase of navigation on the Mekong between southern Yunnan and northern Thailand are currently overwhelmingly in China's favour. While Thai exporters are benefiting from the opportunity to ship exports into China, the bulk of these are carried on Chinese vessels, which are larger and more powerful than Thai and Lao vessels. NGOs concerned with the environmental impact of the clearance program have argued that the expectations held by both the Thai government and business interests in Bangkok for a major increase in exports to China are fundamentally unrealistic. Moreover, and in concert with the consistently pro-China policy of the Thaksin government, the area around the river port at Chiang Saen is becoming home to an increasing number of expatriate Chinese business enterprises.

## Effect of clearing the river for navigation

The negative environmental effects of the blasting that has already taken place are considerable, though as with the dams on the Mekong it could be years before the full effects can be quantified. What appears to be taking place, however, may be characterised as 'disregarded' rather than 'unanticipated' consequences. It is often forgotten that a river is a single, complex organism; that is, its character depends on the totality of the river. Deep reaches and rapids all have their part to play in maintaining a river's health. Ecologists are agreed on the importance of rapids for their capacity to aerate water, a process of importance for river fauna, and for their role in providing a beneficial diversity in contrast to the deep water pools in which fish feed. One feature of a river's normal character is the manner in which, over periods up to a week, there is a fluctuation in water levels. There are consistent reports that since 2001 there has been an alteration of the normal pattern of water level fluctuation in the Mekong. This is because of both water being held back upstream by the Chinese dams and as a result of the effect of the

removal of rapids and other obstacles to navigation. Fluctuations have sometimes occurred several times in a single day. Such fluctuations impinge on fish stocks, particularly on fish with established migratory patterns, but also on other populations of fauna and insects living along river banks, some of which are integral to the diet of fish in the river.

While much of the evidence now being advanced concerning the negative effects of changes to the river as a result of the combined effects of the Chinese dams and the clearance program is anecdotal, the fact that negative changes are occurring is beyond dispute. One of these changes relates to the increased volatility of the river's flow as the result of the removal of rapids and other obstacles. The river now flows with greater volatility, which leads to increased erosion along the river banks and the removal of what, previously, might be described as 'permanent' sandbanks that regularly emerged in the dry season as the Mekong's level fell. In very recent years the combination of erosion and the disappearance of sandbanks has meant that areas previously used for horticulture during the dry season have disappeared. If the later, second and third phases of the navigation agreement allowing larger vessels to ply the river, come into operation, the damage to river banks and sandbanks can confidently be predicted to be even greater. This most particularly will be the case if barge 'trains' of up to 500 DWT eventually operate as planned.

For the moment, Chiang Saen is the main discharge port for vessels coming downstream from China, though existing plans call for Chiang Khong to be developed as another major river port. Fishing around Chiang Saen has, it has been reported, been badly affected since the local small craft used by Thai fishers are swamped by the wakes of the large cargo vessels now using the port. No statistics are available to verify the claim made to me in Thailand that, overall, fish catches between Chiang Saen and Chiang Khong have dropped by as much as 50%. That fish stocks have been affected by blasting and dredging activities further upstream is entirely possible, indeed very likely.

Another food source that has been affected by changes to the river is Mekong 'seaweed' or kai. This is an underwater plant rich in protein that has long been harvested from the Mekong by villagers living along

its course. According to the Southeast Asia Rivers Network (SEARIN) growth of kai has ceased from the point where the river begins to flow past Thailand at the triborder point — where the boundaries of China, Laos and Thailand meet — down to Chiang Khong. This has occurred because of changes in water levels and increased sediment stirred up as the result of the river clearances covering areas where kai previously grew.[41] Further downstream, in the region around Luang Prabang, kai is continuing to grow satisfactorily.

Finally, if not exhaustively, there has been remarkably little consideration given to one further potential negative aspect of increased navigation on the section of the Mekong River covered by the agreement. This is the possibility, indeed probability, that there will be an increase in pollution of the river as a growing number of diesel-powered vessels use the river, whether as part of normal usage or as the result of an accident. For the moment there is no way to quantify this future effect, nor have there been, for the moment, reports of any large-scale spillages into the river. Only a supreme optimist would believe that pollution will not increase and that no accidents will occur. The effects of such developments on fish catches may not be quantifiable, but they cannot be disregarded.

Not surprisingly, the fact that Cambodia and Vietnam are not parties to the navigation agreement is a matter for comment within those countries, where the river clearance program is viewed with some considerable concern. In both countries senior officials spoke of their worry that the clearance program could, in the long term, have an adverse effect on fish stocks in their countries.

# Chapter 6

## Troublesome tributaries

The problems already outlined have mostly dealt with the main stream of the Mekong River — along with a discussion of Cambodia's Great Lake. It is therefore important to note that major controversies exist in relation to existing and planned developments on several of the Mekong tributaries. The best known of these controversies is that associated with the Pak Mun Dam on the Mun River that enters the Mekong not far from the major provincial town of Ubon Ratchathani in northeastern Thailand.

The Pak Mun Dam was built under the auspices of the Electricity Generating Authority of Thailand (EGAT) and funded by the World Bank. Construction began in 1991 and was completed in 1994. In the process of building the dam, more than 200 households were displaced. Although described in a 1998 World Bank report as being 'in a class by itself', the Pak Mun Dam sparked a vigorous and critical reaction from local villagers living along the course of the Mun River. Most particularly, the villagers pointed to the fact that damming the Mun River drastically reduced fish catches in the river by as much as 70 % since, despite the construction of a fish ladder, the dam wall effectively blocked fish that

had once migrated up and down the river. In a remarkable victory for local political action, the Thai government in the face of continuing protest has agreed to open the dam's gates. Even more significantly, the government stated that it would not build any more dams for the generation of electricity within Thailand. In making this decision in 1995, it did so with the knowledge that plans were already in train to acquire additional hydropower elsewhere, from both Laos and China. Very recent reports suggest that the decision to build no more dams may now have changed.

The most controversial issues associated with a Mekong tributary relate to the Se San River and the dam built on that river by the Vietnamese government. The Se San rises in Vietnam's Central Highlands and flows westward into Cambodia and then through Ratanakiri and Stung Treng provinces until it joins the Mekong at the small provincial town of Stung Treng. As with the Chinese dams on the Mekong, the Yali Falls Dam on the Se San was constructed to generate electricity, with a projected capacity of 720 MW. The Yali Falls Dam is one of six dams planned for construction on the Se San.

Construction began in 1993 (before the inauguration of the MRC Agreement), and was finally commissioned in 2002. (Had construction begun after the conclusion of the MRC Agreement, Vietnam would, in strict theory at least, have been required to consult with Cambodia before constructing the dam.) Built at an estimated cost of US$1 billion, the dam's construction costs were met by overseas donors, notably Russia and the Ukraine, with technical assistance from Sweden. The EIA for the dam's construction was provided by a Swiss consultancy firm. The EIA has been the subject of considerable criticism, most particularly for the fact that it was restricted to making judgments on the possible effects of the dam in Vietnam alone.[42] Various sources confirm that the population living along the Se San in Cambodia, who are almost entirely non-Khmer minority peoples, to a total of some 50,000, were unaware that the dam was under construction. They became brutally aware of its existence in 1996 when a coffer dam put in place during construction broke, leading to a large and sudden release of water. It is clear that no effort was made by Vietnamese authorities to notify their

Cambodian counterparts of what was happening.[43]

Since the first unannounced release of water took place, other releases have continued with agreements put in place to ensure that Vietnamese authorities notify Cambodia in advance of their intention to release water frequently failing to be honoured. The procedure requires the Vietnamese to fax their intention to release water in advance. There have been several instances when advance warning has not been given, or when a fax has not been sent until after the release has taken place.

There has been a cost in human lives as a result of the unannounced water releases, with a figure of 39 deaths being cited.[44] In the longer term the damage to livestock and the disruption to traditional patterns of fishing and agriculture are probably a cause for even greater concern than the lives that have been lost.

In a fashion that replicates some of the problems that have arisen on the Mekong River itself, the construction of the Yali Falls Dam has had a noticeable and negative effect on the water levels of the river, which have risen and fallen with a rapidity not previously experienced. As with the Mekong, this has led to damage to river bank horticulture and disruption of traditional fishing methods. The fact that the water released from the Yali Falls Dam is much colder than the water in the river in normal conditions led to even sharper falls in fish catches.[45]

The unquestioned problems facing the populations living along the Se San in Cambodia led the ADB to commission a study of the impacts water releases from the Yali Falls Dam, which concluded that the releases resulted in serious and negative effects on the riverside populations. The MRC also carried out an investigation and acted to bring together representatives from the Cambodian and Vietnamese governments in April 2000. Because of its status, as explained earlier in this Paper, the MRC has acted only as a facilitator and not as an enforcer, a cause of considerable criticism from a number of NGOs.

From the point of view of the upland villagers the current situation is most unsatisfactory. While the Cambodian government has expressed some public concern about problems associated with the Yali Falls Dam and approached the MRC to seek its intervention with the Vietnamese government, it has done little more than this, with calls for compensation

coming from NGOs rather than from the government. It is unlikely that the Cambodian government will pursue the issue vigorously given the close political relationship between Prime Minister Hun Sen and the Vietnamese leadership. This is despite the fact that Cambodian officials who spoke to me in Phnom Penh were highly critical of the way in which the Vietnamese have acted in relation to the Se San issue. Additionally, it is difficult not to conclude that the fact the problems on the Se San are affecting ethnic minority Cambodians is a further reason for the Phnom Penh government's lack of any serious action on the issue.[46]

Meanwhile, and in fashion that is a continuing source of controversy, Vietnam appears to have begun construction linked to a second dam on the Se San, known as Se San 3. Doubt about the status of work taking place stems from uncertainty as to whether the construction work being undertaken is preparatory to work on the dam — that is, roadworks and preparation for a construction site — or involves work on the dam itself. But in the light of a number of press reports it does indeed appear that construction of the dam proper has begun. It appears that the Vietnamese authorities are in breach of the basic agreement of the MRC in failing to properly notify Cambodia of the actions it has taken in relation to Se San 3. Press reports also confirm that the Vietnamese government has either begun construction, or is planning to begin construction on at least two more hydropower plants on the Se San River.

The problems affecting Cambodians as a result of the dams built on the Se San could be solved, it has been suggested, by the Cambodian government building its own dam on the river.[47] The Vietnamese actions on the Se San appear to be in contravention of the basic provisions of international law — that one party on a trans-boundary river not to act in an inequitable fashion in relation to another riparian country.

While the Yali Falls and Se San 3 dams have been a cause for controversy, even greater controversy has arisen in relation to a dam in Laos that has not yet been built and which, unlike the dams on the Se San River will discharge its water into the Mekong within Laos's own territory. The projected dam in question about which so much controversy has arisen

is known as Nam Theun 2, a dam planned in the highlands of central-southern Laos at an estimated cost of US$1.2 billion.

The Lao government is firmly committed to the construction of dams in order to generate electricity which it can sell for foreign exchange and in November 2003 Thailand signed a contract to buy electricity from Nam Theun 2. As one of the world's poorest countries, heavily dependent on international aid, hydropower is seen by the Lao leadership as a readily available commodity that it can sell. And without significant alternative energy sources such as coal, and given Laos's topography with major Mekong tributaries running through mountainous areas, the generation of electricity through hydropower has obvious attractions. Some indication of the Lao government's commitment to hydropower generation is provided by noting that four projects are currently under construction and a further eleven projects are being assessed for their environmental effects.

Laos has been selling hydropower to Thailand since the 1970s, following the completion of the Nam Ngum Dam, which was built with Japanese and American assistance at a site a little to the north of the capital, Vientiane. More recently, work was completed on the Theun Hinboun Dam at the end of 1998. This dam in central Laos also has, as its primary purpose, the sale of electricity to Thailand. Theun Hinboun has come under heavy criticism from environmental advocacy groups on the basis that there has been a sharp decline in the quantity of fish caught downstream of the dam — a fall of as much as 70 % — the loss of agricultural land both above and below the dam, and damage to fragile ecosystems.

Proponents of dams argue that Laos's formidable economic problems can be ameliorated by the dams. Environmentalists believe the opposite. It is against this background of sharp division between such groups that debate has been joined over the Nam Theun 2 Dam. Planned for an area not far from the Theun Hinboun Dam, Nam Theun 2 is projected to be on a much larger scale. Whereas Theun Hinboun's generating capacity is put at 210 MW, Nam Theun 2, if built, will generate 1,060 MW. A few statistics give a sense of the scale of the Nam Theun 2 project. The dam wall itself would not be particularly large: 44 metres high and 315

metres wide. But the topography of the proposed site for the dam would allow it to deliver water to a power station 350 metres below the dam itself. Nevertheless, despite the relatively small size of the dam wall, its construction would lead to the flooding of over 450 square kilometres and the displacement of some 5,000 villagers, most of them members of ethnic minority groups, as well as affecting some 170,000 villagers downstream of the dam. The flooding would also affect the adjoining Nakai Nam Theun National Biodiversity Area.

Opposition to Nam Theun 2 has focused on three main issues. For some critics the very fact that a dam is involved is the essential basis for criticism, a basis made the sharper because of the projected involvement of the World Bank, an organisation viewed very critically by many NGOs for its past involvement in the construction of large dams, many of which are recognised for their negative impact on the environment and its people. Other critics have argued that there are alternatives to the Lao government's policy of relying on hydropower, such as a combination of hydropower and gas turbines. Other critics are particularly concerned with the disruptive social costs of the planned dam. And finally, if not exhaustively, many of the opponents of the dam draw attention to the certain effects the dam is likely to have on fish catches in areas below the dam.[48]

The key to a positive decision, in the short term, lies with the World Bank. It has so far not come to a decision as to whether or not it will provide a guarantee covering sovereign risk, which is essential in order to gain the involvement of commercial enterprises and in particular the principal contractor, Electricité de France. (At an earlier stage, an Australian company, Transfield Holdings, was the leading member of the consortium planning to build the dam. The major Australian legal firm, Mallesons Stephen Jaques, has been a legal adviser to the Lao government in relation to the dam.) The Bank's decision, however it is made, will be seen as essentially political in character by the proponents and the opponents of the dam. It is clear that sentiment within the Bank is solidly in favour of the dams being built. One of the reasons for this positive sentiment is a judgment about future energy needs in Thailand. Although, as noted elsewhere, Thailand currently has an

energy surplus, this situation is not going to last and by the time Nam Theun 2 is completed — as Bank sources assume will be the case — Thailand will need the hydropower the dam will produce. Reservations among supporters of the project, to the extent they exist, relate to concerns about the extent to which the benefits from the dam will flow, as they should, to the Lao population in general. The delay in reaching a decision, despite a series of EIAs and other assessments,[49] reflects the major campaign against the dam mounted by a range of NGOs, led by the International Rivers Network, and pitched particularly at the World Bank.[50] It is worth noting that other hydropower projects in southern Laos, which do not have World Bank involvement, have attracted much less NGO attention, as well as having proceeded with inadequate environmental assessment.

Ultimately, a view as to whether Nam Theun 2 should be built or not is a matter of personal conviction as to how to balance competing considerations, and I remain of the view I expressed in 2000 that it is not easy to disregard the arguments in the dam's favour advanced by its Lao advocates.[51]

Ironically, there is good reason to judge that Nam Theun 2 will be built even if the World Bank does not provide the required guarantee of cover against sovereign risk. If the World Bank does not provide the necessary guarantee China is likely to step in to ensure construction of the dam takes place.[52]

One further point needs to be made in relation to the Mekong's many tributaries. This is the need to recognise that every barrier erected on a river, whether large or small, adds to the disruption of the Mekong Basin's ecosystem. All barriers interfere with fish spawning, with migration and the spread of nutrients. And, as noted previously, water releases from dams can have a serious negative effect by suddenly lowering the temperature of the river below the dam.

# Chapter 7

## Future developments

Considerable uncertainty surrounds future developments affecting the mainstream of the Mekong. Until very recently, there was a generally shared view that none of the countries downstream of China had an intention to build dams on the river. The possibility of building a dam at Pa Mong, as contemplated in the 1960s, was mooted again in the late-1990s but then discarded. In early 2004, a report in the Thai newspaper, *Matichon*, suggested that the construction of a dam, or series of dams, on the mainstream has not been entirely dismissed in Thailand.[53] According to a translation of an article in *Matichon* there was discussion of the possibility of building a dam or series of dams on the main stream of the Mekong. The idea was put forward, the article stated, by the Thai Minister for Energy, and agreed to in principle by the representatives of Thailand and Vietnam. The purpose of such dams would be to generate hydropower with claimed additional benefits for navigation. To date it has not been possible to verify the accuracy of this report.

According to the Thai NGO TERRA, a consortium of Vietnamese state-owned enterprises have signed a contract with the Lao government

to build a dam on the Xekaman River in southern Laos and has proposed building a further five dams in the same general area.[54] As with the Yali Falls Dam on the Se San River, all of the sites involved are on rivers that are tributaries of the Mekong and eventually flow out of Laos into Cambodia.

From discussions in Phnom Penh it is also apparent that there are some Cambodian politicians who would like to see a dam built on the Mekong in Cambodian territory, and the Sambor site, surveyed in the 1960s, is regarded as the choice for such a dam, which NGOs claim would involve the displacement of 60,000 people and the flooding of 750 square kilometres.[55] For the moment, nothing suggests that there is any real likelihood of this coming to pass in the near future.

More certain is the fact that the Thai government has given serious consideration to the possibility of two water diversion schemes — the Kok-Ing-Nan and Khong-Chi-Mun schemes — which would involve damming tributaries that currently flow into the Mekong. The Kok-Ing-Nan scheme would redirect water into the Chao Phraya River which flows through Thailand's central plain and which has been affected by heavy and increasing water usage as the result of increased industrial use and the growth of Bangkok. The Khong-Chi-Mun scheme would be used for irrigation purposes. These diversion schemes are regarded critically in both Cambodia and Vietnam which are concerned about the extent to which the diversions will result in reduced amounts of water reaching their sections of the river. While Thai officials have stated that diversion, in the case of the Kok-Ing-Nan scheme, would only take place at times of high water, no such undertaking has been given in relation to the Khong-Chi-Mun scheme, which is planned for use during the dry season. Even with the undertakings given in relation to the planned Kok-Ing-Nan scheme, various Vietnamese and Cambodian informants expressed their scepticism about the claim that it would only operate at times of high water levels. Cambodia's Minister for the Environment, Dr Mok Mareth, took the unusual step of voicing his concern publicly in 1999.[56]

## Pollutants

Until recently, the problem of industrial pollution has not been of major concern. With the growth of factories in and around Phnom Penh there has been some increase in the quantity of pollutants entering the river, and this is an issue that is seen as a cause for concern by observers living downstream in the Mekong Delta.

For the moment more immediate concern is being expressed about the level of nutrients now found in the Mekong Delta because of increasing use of chemical fertilisers. According to the MRC, levels "are now approaching those that result in overgrowth of algae and negative consequences for aquatic life".[57]

## Australian government involvement

Australian government involvement in Mekong developments dates back to the early 1960s when Australian engineers undertook survey work in connection with plans to build a major dam on the river at Sambor in northeastern Cambodia. As already noted, plans for this dam, and others at sites in Laos, were shelved as the war in Vietnam expanded to take in the three countries of former French Indochina.

The Australian government remains involved through financial support linked to the MRC to a total of approximately A$8 million over the 2001–2005 fiscal years. These funds, provided through AusAID, cover a range of projects, including support for a specific position of a Basin Development Planner within the Commission's secretariat and funds to support liaison between the MRC and the Murray–Darling Basin Commission.

Separately, AusAID is funding a number of water control projects in the Mekong Delta in association with the Vietnamese government. These include projects concerned with water supply and sanitation management in three delta towns, Bac Lieu, Sa Dec and Ha Tien, and in the delta more generally, water control and flood mitigation, and the strengthening of institutions concerned with river management. The funds involved in relation to the delta are more substantial than those associated with the MRC, totalling some A$95 million for the 2001–2007 fiscal years.

## River on a knife edge?

It would be easy to present a picture of almost unrelieved gloom in relation to the Mekong River. To do so would be alarmist for the moment.

Nevertheless, the changes that have occurred in the space of 20 years are of such an order that no exaggeration is involved in stating that the river's future as a vital part of the life of mainland Southeast Asia is, as put to me by one highly qualified observer, now on a knife edge. That this is so is a reflection of the changes that have taken place, and are taking place, on and in the river itself — dams and river clearances — and the combination of rapid population growth accompanied by over-fishing. The cumulative effects of these developments plus the additional physical changes that are planned, with more dams in China and extension of river clearances further downstream into Laos, mean that there is every reason to hold very real concerns about the Mekong's future.

Because of the enormous imbalance of power between China and the downstream countries it is highly unlikely that there will be a halt to China's projected dam building program on the Mekong in response to concerns the downstream countries might have. In contrast, the very recent announcement of a suspension of China's plans for dams on the Salween appears to have been made in response to domestic pressures. For engineering reasons alone, the Chinese will press ahead with the giant dam already under construction at Xiaowan, and there is no current suggestion of halting work on the dam being built at Jinghong.

Customary international law and the provisions of the 1997 *Convention on the Law of the Non-Navigational Use of International Watercourses* of the United Nations' International Law Commission, require an upstream country not to act in an inequitable fashion in relation to its use of rivers, so far as countries downstream are concerned. Based on China's past and present record it is apparent that this is a provision that China will continue to ignore.[58] Moreover, and in terms of contemporary Southeast Asian politics, two of the governments of countries which should, by any measure, have concerns about the Chinese dams, Thailand and Cambodia, are led by men who are committed to a close relationship with China that makes criticism of China's actions difficult, if not impossible. Neither Laos nor Vietnam are

in a position to exert pressure on the Chinese to change their plans.

At a wider level, what is happening in relation to the Mekong may be seen as a further reflection of the paramount position that China now occupies in relation to its neighbours in mainland Southeast Asia. The construction of dams, without consultation, the promotion of river clearances and the accompanying extension of Chinese trade down the river sit alongside other aspects of China's steady push to assert its position of dominance in the region. So, China is upgrading its southern road system to link into Laos, Thailand and Burma, a fact expressed in concrete form by the recent construction of a major suspension bridge over the Mekong in Jinghong. At the same time, Chinese companies are extremely active in both Laos and Thailand. The suggestion that China stands ready to step in to ensure Nam Theun 2 is built, if the World Bank opts out, is another sign of this projection of power 'by other means'.

Further complicating the future of the Mekong is the readiness already shown by downstream countries either to act or to contemplate acting in relation to rivers, both the Mekong and its tributaries, in ways that already have, or could have, negative consequences for their downstream neighbours. The readiness to embrace 'beggar my neighbour' policies, as in the case of the dams on the Se San River and the projected diversion schemes in Thailand, are striking examples of this problem. Both the Se San dams and the projected diversion schemes would appear to be clearly in contravention of international law.

While emphasising the doubts that must exist about the future implications of the recent sharp drop in fish catches in Cambodia, this development may represent the most immediate and urgent problem facing the people of the LMB. In terms of future developments within Cambodia, much will depend on the extent to which the government will be prepared to take remedial action in the light of the possibility that what is happening is, indeed, a reflection of a longer-term trend. Since holding power following the UN-supervised elections of 1993, the government led by Hun Sen has had a less than glowing record so far as acting to conserve Cambodia's natural assets. Its poor performance in relation to illegal logging is a case in point. If the sharp fall in the

quantity of the annual fish catch is confirmed as an established pattern over the next few years, can the government be expected to introduce a regime that cuts back the level of fishing currently allowed in order for stocks to start growing again? If this were done, and given the fact that the species making up the bulk of the catch grow to maturity rapidly, it would be possible to prevent a collapse. This less pessimistic possibility exists in contrast to what has happened with some oceanic species that take many decades to grow to maturity. So, what is in doubt here is the readiness of the Cambodian government to recognise the seriousness of the potential problem and to take action to address it. The general record of developing countries facing such a problem gives little cause for an optimistic assessment that the Phnom Penh authorities will act either sufficiently quickly or decisively in the face of this challenge.

When combined with reports of declining fish catches elsewhere, both in the Mekong itself and in its tributaries, the prospect of a continuing fall in the availability of such a major staple in the diet of many millions of Lao, Cambodians and Vietnamese is a serious issue indeed.

Complicating all aspects of the Mekong's use is the fact of there being no single, overarching body in authority in relation to the governance of the river as a whole. This situation exposes the weaknesses of the MRC, to which its critics so frequently draw attention. But as argued earlier, to condemn the MRC for its inadequacies is to miss the point. It is the governments of the countries who are the sponsors of the MRC who should be the targets of the critics. Moreover, limited though the MRC's powers may be, even its critics would not deny the useful role it plays through research and data collection.

Water, the fish that swim in it, and the crops that it irrigates, have become matters for major concern on a worldwide basis. Accumulating evidence now suggests that the Mekong is a river that should be at the forefront of that concern. It is true that there is a range of bodies and individuals that now recognise the urgency of confronting the Mekong's problems. At very least there is an urgent need to encourage greater cooperation between all interested parties, even if the current deeply held differences between many of these parties will be difficult to overcome.

Depressingly, however, there is little sign that the state actors, who are the key to positive change, are fully apprised, or accepting, of the range and seriousness of the Mekong's problems. Yet not to address the issues outlined in this Paper cannot be an option if the Mekong is not to topple from a knife edge into some ultimate form of disaster as has happened with other great rivers throughout the world, not least in China itself.

# Endnotes

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3 Fred Pearce, Chinese dams blamed for Mekong's bizarre flow. http://www.newscientist.com/news/news.jsp?id = ns99994819 [cited 25 March 2004]. In fact, later information is that while there was discussion about sending a letter, none was sent. Nevertheless, the MRC has indicated informally to the Chinese authorities that it would welcome discussion of the dams' operations.

4 Particularly in the Thai press, notably *The Bangkok Post* and *The Nation*, both of which also carried cartoons attributing blame to China. Developments related to the Mekong are frequently covered by *The South China Morning Post*. See, also, The Economist, The sweet serpent of South-East Asia. *The Economis*t, 3 January 2004, and John Vidal, Dammed and dying: The Mekong and its communities face a bleak future. *The Guardian*, 25 March 2004.

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10 Quoted in Nguyen Thi Dieu, *Water, war and peace: the Mekong river and the struggle for Indochina.* Philadelphia, Temple University, 1995. I am indebted to Ms Dieu for the opportunity to read this manuscript.

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[26] Ibid.

[27] Ibid.

[28] Ibid, 7.

[29] Peter Hinton, Where nothing is as it seems: between Southeast China and mainland Southeast Asia in the 'post-socialist' era, in *Where China meets Southeast Asia: social and cultural changes in the border regions*. eds. Grant Evans, Christopher Hutton and Kuah Khun Eng. Bangkok and Singapore, NIAS Press, 2000, 18. Marwaan Macan-Markar, Mekong river's development may flow into conflict. *Asia Times Online*, http://www.atimes.com [cited 26 March 2003].

[30] This was pointed out to me by more than one commentator in my recent discussions about the Mekong in four of the downstream countries.

[31] This area was once part of the group of semi-autonomous statelets that constituted a region known as the Sip Song Panna, a name now Sinicised to the Xishuangbanna.

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[34] Chris Cocklin and Monique Hain, *Evaluation of the EIA for the proposed Upper Mekong Navigation Improvement Project*. Report prepared for the Mekong River Commission–Environment Program, Melbourne, Monash Environment Institute, Monash University, December 2001.

[35] Ibid, 2.

[36] In the course of travel down the Mekong in March 2003, from Guan Lei, in the extreme south of Yunnan province, to Chiang Saen, in northern Thailand, I observed 12 Chinese work parties carrying out clearance operations.

[37] 'Thalweg' means the line defining the lowest points along the length of a river bed or valley.

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[47] This suggestion, put to me in Hanoi, should be viewed as a reflection of Vietnamese attitudes.

[48] Osborne, *The Mekong*, 245–246.

[49] Including a review that was taking place at the time I was visiting Vientiane in February 2004.

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[51] Osborne, *The Mekong*, 245–246.

[52] This is the view of well-informed observers in Vientiane and consistent with the Chinese government's steady push to extend its influence in mainland Southeast Asia.

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