

The Mekong under threat

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Until the 1980s the Mekong River flowed freely for 4,900 kilometres from its 5,100-metre-high source in Tibet to the coast of Vietnam, where it finally poured into the South China Sea. The Mekong is the world's twelfth longest river, and the eighth or tenth largest, in terms of the 475 billion cubic metres of water it discharges annually. Then and now it passes through or by China, Burma (Myanmar), Laos, Thailand, Cambodia and Vietnam. It is south-east Asia's longest river, but 44% of its course is in China, a fact of capital importance for its ecology and the problems associated with its governance.

In 1980 not only were there no dams on its course, but much of the river could not be used for sizeable, long-distance navigation because of the great barrier of the Khone Falls, located just above the border between Cambodia and Laos, and the repeated rapids and obstacles that marked its course in Laos and China. Indeed, no exaggeration is involved in noting that the Mekong's overall physical configuration in 1980 was remarkably little changed from that existing when it was explored by the [French Mekong Expedition](#) that travelled painfully up the river from Vietnam's Mekong Delta to Jinghong in southern Yunnan in 1866 and 1867. This was the first European expedition to explore the Mekong from southern Vietnam into China and to produce an accurate map of its course to that point.

Since 2003, the most substantial changes to the Mekong's character below China have related to navigation. Following a major program to clear obstacles from the Mekong begun early in the present decade, a regular navigation service now exists between southern Yunnan and the northern Thai river port of Chiang Saen. It is not clear whether the Chinese, who promoted the concept of these clearances and carried out the work involved, still wish to develop navigation further down the river, as was previously their plan. To date, the environmental effects of the navigation clearances have been of a limited character.

The Mekong plays a vital role in the countries of the Lower Mekong Basin (LMB): Laos, Thailand, Cambodia and Vietnam. (Burma is not within the basin). In all four LMB countries the Mekong is a source of irrigation. In Vietnam's Mekong Delta the annual pattern of flood and retreat insure that this region contributes over 50% of agriculture's contribution to the country's GDP. For all four LMB countries the Mekong and its associated systems, particularly Cambodia's Great Lake ([Tonle Sap](#)), are a bountiful source of fish, with the annual value of the catch conservatively valued at US\$2 billion. More than 70% of the Cambodian population's annual animal protein consumption comes from the river's fish. Eighty per cent of the Mekong's fish species are migratory, some travelling many hundreds of kilometres between spawning and reaching adulthood. Overall, eight out of 10 persons living in the LMB depend on the river for sustenance, either in terms of wild fish captured in the river or through both large and small-scale agriculture and horticulture.

Since the 1980s, the character of the river has been steadily transformed by China's dam-building program in Yunnan province. The important changes that had taken place on the course of the river since 1980 and up to 2004 were outlined in the Lowy Institute Paper, [River at Risk: The Mekong and the Water Politics of Southeast Asia](#). In 2010 three hydroelectric dams are already in operation and two more very large dams are under construction and due for completion in 2012 and 2017. Plans exist for at least two further dams, and by 2030 there could be a "cascade" of seven dams in Yunnan. Even before that date and with five dams commissioned, China will be able to regulate the flow of the river, reducing the floods of the wet season and raising the level of the river during the dry. In building its dams, China has acted without consulting its downstream neighbours. Although until now the effects of the dams so far built have been limited, this is set to change within a decade, as discussed below.

For despite the limited environmental costs of the dams China has so far completed, and of the river clearances to aid navigation, this state of affairs will change once China has five

dams in operation. And the costs exacted by the Chinese dams will be magnified if the proposed mainstream dams below China are built.

Even if no dams are built on the mainstream below China, the cascade to which it is committed will ultimately have serious effects on the functioning of the Mekong once the dams are used to control the river's flow. This will be the case because the cascade will:

- * Alter the hydrology of the river and so the current "flood pulse", the regular rise and fall of the river on an annual basis which plays an essential part in the timing of spawning and the migration pattern. This will be particularly important in relation to the Tonle Sap in Cambodia, but will have an effect throughout the river's course;

- * Block the flow of sediment down the river which plays a vital part both in depositing nutrients on the agricultural regions flooded by the river and also as a trigger for fish migration — at present well over 50% of the river's sediment comes from China;

- * At least initially cause problems by restricting the amount of flooding that takes place most importantly in Cambodia and Vietnam; and

- * Lead to the erosion of river banks.

Proposed dams below China

So China's dam-building plans are worrying enough, but the proposed new mainstream dams would pose even more serious concerns. In contrast to what has occurred in China, and until very recently, there have been no firm plans for the construction of dams on the mainstream of the Mekong below China. This situation has changed over the past three years. Memoranda of Understanding have been signed for 11 proposed dams: seven in Laos; two between Laos and Thailand; and two in Cambodia. The proposed dams are being backed by foreign private capital or Chinese state-backed firms. Government secrecy in both Cambodia and Laos means that it is difficult to judge which, if any, of these proposed dams will actually come into being. Attention and concern have focused on two sites: [Don Sahong](#) at the Khone Falls in southern Laos and [Sambor](#) in north-eastern Cambodia. The reason for this attention is that if built these dams would block the fish migrations that are essential to insure the food supplies of Laos and Cambodia.

Those built at sites higher upstream would cause the least damage to fish stocks, but if, as currently seems possible, the most likely dams to be built would be at Don Sahong and Sambor, the costs to fish stocks could be very serious. This is because unanimous expert opinion judges that there are no ways to mitigate the blocking of fish migration that would occur if these dams are constructed. None of the suggested possible forms of mitigation — [fish ladders](#), [fish lifts](#), and alternative fish-passages — are feasible for the species of fish in the Mekong and the very large biomass that is involved in their migratory pattern. Fish ladders were tried and failed at the [Pak Mun dam](#) on one of the Mekong's tributaries in Thailand in the 1990s.

Why are the governments of Laos and Cambodia contemplating the construction of dams that seem certain to have a devastating effect on their populations' food security? The answers are complex and include some of the following:

- * A lack of knowledge at some levels of government;

- * A readiness to disregard available information on the basis that it may be inaccurate; and

- * A belief or conviction that fishing is "old-fashioned", whereas the production of hydroelectricity is "modern".

In Cambodia's case, and in particular in relation to the proposed dam at Sambor, the fact that a Chinese firm is seeking to construct the dam raises the possibility that prime minister Hun Sen is unready to offend the country that has become Cambodia's largest aid donor and Cambodia's "most trusted friend". In Laos, the proposal for a dam at Don Sahong is very much linked to the interests of the Siphandone family for whom southern Laos is a virtual [fief](#). Of all the proposed dam sites, Don Sahong is the most studied in terms of knowledge of fisheries so that it can be safely said that the planned dam would wreak havoc on a migratory system that involves fish moving through the Hou Sahong channel throughout the year, movement that takes place in both directions, upstream and downstream.

In the face of the threats posed by both the Chinese dams and those proposed for the downstream stretches of the river, there is no existing body able to mandate or control what individual countries choose to do on their sections of the Mekong. The agreement establishing the [Mekong River Commission](#) (MRC) in 1995 does not include China or Burma, and though the latter's absence is not important, the fact that China is not an MRC member underlines the body's weakness. In any event, the MRC members' commitment to maintaining the Mekong's sustainability has not overcome their basic commitment to national self-interest. A prime example of this is the manner in which the Lao government has proceeded in relation to the proposed Don Sahong dam. For at least two years while the dam was under consideration there was no consultation with Cambodia. Similarly, so far as can be judged, Cambodia's consideration of a possible dam at Sambor has taken place without consultation with the governments of either Laos or Vietnam.

At the moment the best hope is that both the Cambodian and Lao governments will abandon their plans for Sambor and Don Sahong. If they do not, the future of the Mekong as a great source of food, both through fish and agriculture, is in serious jeopardy. At the time of writing the intentions of the Lao and Cambodian governments remain uncertain.

Concern about dams in China and the LMB is given added importance in the light of worries associated with the likely effects of climate change in the region through which the river flows. Research suggests there will be a series of challenges to the Mekong's future ecological health. Until recently concerns about the likely impact of climate change tended to focus on the [ongoing reduction in the size of the glaciers](#) from which its springs in the Himalayas and which feed it as the result of snow melt. But while there is no doubt that a diminishment in size of the glaciers feeding the Mekong is taking place, recent research has suggested that a more immediate serious threat to the river's health will come from sea-level changes, particularly as rising levels could begin to inundate large sections of Vietnam's Mekong Delta. To what extent the threat posed by rising sea levels will be affected by another predicted development linked to climate change — greatly increased precipitation leading to more flooding during the wet season — is not yet clearly established. But research is pointing to a greatly increased precipitation that is likely to cause major increases in flooding in the future, possibly as early as 2030.

Against the pessimistic views outlined in this article perhaps the best that can be hoped for is that once serious consequences begin to become apparent advice can be offered to mitigate the worst effects of the developments taking place. Where once it was appropriate to write of risks, when assessing the Mekong's future it is now time to write of fundamental threats to the river's current and vital role in all of the countries of the Lower Mekong Basin.

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面 威 的 湄 公 河

[米 · 奥斯本](#)

2010年1月15日

在 去 的 三 十 年 里 ， 南 最 的 河 流 已 生 了 很 大 的 化 。 目 前 ， 湄 公 河 下 游 流 域 的 食 安 全 而 未 。 米 · 奥 斯 本 撰 文 道 。

20世 80年 代 之 前 ， 湄 公 河 从 西 藏 5100米 高 的 源 奔 涌 而 下 ， 自 由 奔 4900公 里 ， 抵 达 越 南 海 岸 ， 并 最 流 入 中 南 海 。 湄 公 河 是 世 界 第 十 二 的 河 流 ， 其 水 量 每 年 475立 方 千 米 ， 居 世 界 第 八 或 第 十 位 。 古 往 今 来 ， 湄 公 河 流 的 家 有 中 、 甸 、 老 、 泰 、 柬 埔 寨 和 越 南 ， 是 南 最 的 河 流 。 然 而 ， 由 于 其 的 44%在 中 国 境 内 ， 因 此 ， 湄 公 河 的 生 和 治 理 有 足 重 的 影 。

1980年 ， 湄 公 河 上 不 有 水 ， 而 且 由 于 位 于 柬 埔 寨 和 老 之 界 上 的 孔 恩 瀑 布 的 阻 ， 以 及 在 老 和 中 河 段 上 不 出 的 湍 流 和 障 ， 在 其 大 部 分 的 河 道 上 无 法 行 大 模 距 离 的 航 行 。 毫 不 夸 地 ， 1980年 的 湄 公 河 整 体 流 域 形 与 1866~1867年 [法 国 湄 公 河 探 流 行 考 察](#) 相 比 ， 化 并 不 大 。 年 ， 支 法 探 千 辛 万 苦 越 南 湄 公 河 三 角 洲 出 ， 逆 流 而 上 到 云 南 南 部 的 景 洪 市 。 是 洲 探 首 次 越 南 南 部 至 中 一 段 的 湄 公 河 流 域 行 勘 察 ， 并 制 了 一 份 段 流 域 的 地 。

2003年 ， 中 国 下 游 湄 公 河 流 域 最 著 的 化 就 是 通 航 有 了 大 改 。 始 于 十 年 初 期 的 湄 公 河 河 道 大 型 清 障 目 的 展 ， 云 南 南 部 到 泰 北 部 清 盛 港 之 的 河 段 目 前 已 正 式 通 航 。 清 障 工 程 最 先 由 中 提 出 并 施 。 但 是 中 方 是 否 仍 然 愿 意 按 照 之 前 的 划 航 一 步 向 下 游 延 伸 ， 目 前 不 得 而 知 。 至 今 日 ， 航 清 障 目 的 境 影 很 有 限 。

老、泰、柬埔寨及越南等湄公河下游流域（LMB）国家而言，湄公河的作用足重。（甸不在流域范围内。）所有四流域国家，湄公河灌溉了他的土地。越南湄公河三角洲洪水每年有规律的退确保了地的品值占GDP的50%。

些家，湄公河及相水系，特别是柬埔寨的大湖——洞里湖的水源丰富。据保守估计，其年值高20美元。柬埔寨人民的年物蛋白摄入量中有70%来自于淡水。湄公河中80%的洄游物种。其中一些卵到育成成要跋涉百公里。而言之，下游湄公河流域的人口中，每十人中就有八人以河生。有的人打，有的人事模各异的花卉。

从20世纪80年代始，受中云南省境大修建目的影，湄公河流域的特征已不地生了很大的化。伊研究所的文，《[危河流：湄公河及南的水政治](#)》

1980年到2004年止湄公河所生的重大化行了概述。2010年，已有三座水大投入使用。此外，有座模更大的大正在建中，分于2012年和2017年竣工。根据有的划，修建至少座水。到2030年，云南省将建成七座“梯”大。在那之前，即便是在只有五座大的情况下，中也能河流的流量行控制，降低雨季的水位，提高旱季的水位。中在有征其下游邦的意的情下便始了大的修建。管到目前止，大所影很有限。然而，一情在十年生改。此，我 在下文中加以。

尽管到目前止，中建成的大以及了通航所行的河道清障工作所生的境成本有限。但是，一旦五座大始用，事生改。同，如果中下游建的干流水一旦建成，中大所生的成本也被放大。

即便是中国下游不再修建干流水，但是，一旦梯大始控制河流的水量，已建成的梯大最湄公河的功能生重的影。之所以出种情是因大生以下的一些影：

*河流的水文及有的“洪水脉冲”都将生改。洪水是指河水每年有律的跌。洪水的卵以及洄游方式有很大的影。它影整湄公河流域，特别是柬埔寨的[洞里湖](#)。

*阻碍了河流沉物向下游的。泛洪地分的累以及的洄游是至重要的因素。目前，50%以上的河流沉物自中。

*通主要限制柬埔寨和越南洪水量的方法至少一开始就引一些。

*同，致河堤受到侵。

中国下游 建的大

中国的大 修建 划已 足以令人 不已。但是， 建中的新的干流大 造成更加 重的 。与中 已 付 施相比，直到近期，中 下游的湄公河 有

确切的干流大 修建 划。而 一 在 去的三年 生了 化。有 十一座 建大的 解 忘 已 署。十一座大 中有七座位于老 ， 座位于老 和泰 之 ， 有 座在柬埔寨。 些 建中的大 得到了外 私有 本及具有 有背景的中 企 的大力支持。柬埔寨和老 的政府 此事秘 而不宣的 度 人

很 判定 些大 中究竟哪几 真正 工修建。目前引起人 重 和 注的 座大 是：位于老 南部孔恩瀑布的 [沙宏大](#)，以及位于柬埔寨 北部的 [松博大](#)。人 之所以 注它 是因 些大 一旦建成， 妨 的 洄游。而 洄游是保障老 和柬埔寨食物供 的重要因素。

在靠近上游位置建造的大 源的影 小。但是，照目前的情 看，大 最有可能修建的位置在 沙宏和松博。一旦 座大 建成， 源 生非常 重的影 。 家 一致 ，如果 座大 建成，其 洄游造成的阻 是任何手段也 法 的。[梯](#)、[升降式 道](#)、以及替代性 道等可能的解决方式都无法有效 解湄公河的 种群以及与 洄游模式相 的大量生物 所面的 。20世 90年代，泰国就曾 在位于湄公河一 支流上的[帕穆水](#) 采用 梯的方式解 些 ，但是最 是以失 而告 。

既然几乎可以肯定大 食品安全造成 性的影 ，那么， 什么老 和柬埔寨政府 要 意考 修建大 呢？ 的答案非常复 ，其中包括以下几个方面：

- *政府内部一些 相 知 缺乏了解；
- *在有可能并不正确的基 上，忽 了一些有用的信息；
- *抱有 “落后”，而水力 “先 ”的 或想法。

就柬埔寨而言，特 是 于 划在松博修建大 的 上，一家中 企 正 成 大的承建方， 人不禁怀疑，洪森 理有可能 做好充分的准 拒 柬 埔寨最大的援助国和“最值得信 的朋友”。而在老 ，修建 沙宏大的提 在很大程度上是与西潘敦家族的利益有 。因 老 南部正是 家族的 [地](#)。在所有 的 址中， 于 沙宏的 研究最 透 。因此，可以肯定地 ， 建中的大 全年 上游和下游 向游 洪沙宏河道的 洄游系 生 重的影 。

面 中 大 以及下游那些 建中的大 所 的威 ，目前 有一 能

有能力命令或者遏制其他国家在其境内湄公河段上的所作所为。湄公河委

(MRC) 1995年的中未能包括中国和甸。管后者的包括与否足重，然而，中的缺席志的弱力。在任何情况下，湄公河委

成所做出的保湄公河可持续性的承都不凌于各自家自身的基本利益之上。在与建的沙宏大有的上，老政府所采取的程度就是一很好的例子。考修建大至少花了年的。而在年中，未就此事征求柬埔寨方面的任何意见。有偶，就目前的情判，柬埔寨在考修建松博大也未曾征求老或越南政府的意见。

目前，我唯一的希望就是柬埔寨和老的政府能放他在松博和沙宏修建大的划。如果他持己，那么，作及品等食物的主要源，湄公河未来的命运将岌岌可危。截至撰写本文，老和柬埔寨政府的意见仍不明朗。

于人气候化有可能湄公河流地造成的影的，中及湄公河下游流域家修建大的注就得更加重要。研究示，湄公河未的生健康面一系列的挑。到目前为止，人气候化有可能造成的影的注主要集中在冰川体的不小上。

而些喜拉雅冰川正是湄公河的源地。冰川的融水源源地地滋湄公河。管冰川的消融毋庸置疑，然而近期的研究却示，河流健康所面的一更加迫

切、更加峻的威是海平面的化。特是海平面的上升，越南湄公河三角洲的大部分被海水所淹。海平面上升所威究竟在多大程度上受到另一与气候化相的因素——

致雨季洪水增多的降雨量大幅度增加——

的影响，目前法确定。然而，研究指出，最早有可能到2030年，降雨量的大幅度增加将有可能致未洪水的大大增加。

基于本文所述的悲，也我最后的希望就是，一旦重的后果始，人能

拿出有效的建解事展程中所造成的最劣影。我在湄公河的未行估，曾各种入手。而在我一下前湄公河在其下游家中足重的地位所面的主要威。

米·奥斯本：伊研究所者。自1959年他被派到澳大利金使起，他就与南地有密不可分的系。斯本著十部，其容涉及南地的史和政治，其中包括《湄公河：的去，未卜的未》(2006)及《南史》等。

本文早些候曾以《面威的湄公河》表于The Asia-Pacific Journal (2010年1月11日, 2-2-10)。作者授在此表。

作者在其 伊研究所 文 (2009, 27) 的基 上撰成此文。 原文 [此](#)
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