

EXAMPLE

The importance of the fish resource in the Mekong River and examples of best practice

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INTRODUCTION

The Mekong is an exceptional river in many ways. In terms of fish biodiversity, it is the world's second richest river after the Amazon (www.fishbase.org). With 6 to 18% of the global freshwater fish catch, it is also home to the largest freshwater fisheries in the world.

Fish catch estimates vary between 755,000 tons (FAO FIGIS figures) and 2.6 million tons, with the most reliable assessment being 2.1 million tons per annum (Hortle 2007, ICEM 2010). This corresponds to about 18% of the global freshwater fish catch (range 6-22%), making the Mekong the largest inland fishery in the world.

The productive Mekong fisheries are essential to the food security of the 60 million people of the Lower Mekong Basin. According to FAO figures reflecting national statistics, freshwater fish consumption in Cambodia, Lao PDR, Thailand and Vietnam ranges between 9 and 19 kg/person/year, making them the top four countries in the world (world average = 2.3 kg/person/year).

However, a review of 20 food consumption surveys in 19,000 Mekong households indicates that fish consumption is even higher, ranging between 24.5 and 34.5 kg/person/year (Hortle, 2007). Fish contributes 81% of the population's protein intake in Cambodia and 48% in Laos.

ECONOMIC VALUE OF MEKONG FISHERIES

Estimates of the economic value of captured fish in the Mekong Basin range between US \$1.4 billion per year (Sverdrup-Jensen, 2002) and US \$2.2-3.9 billion (Hortle, 2009).

Although high dollar figures do not adequately reflect value in countries where fish is valuable because it is cheap and thus accessible to a large number of rural poor.

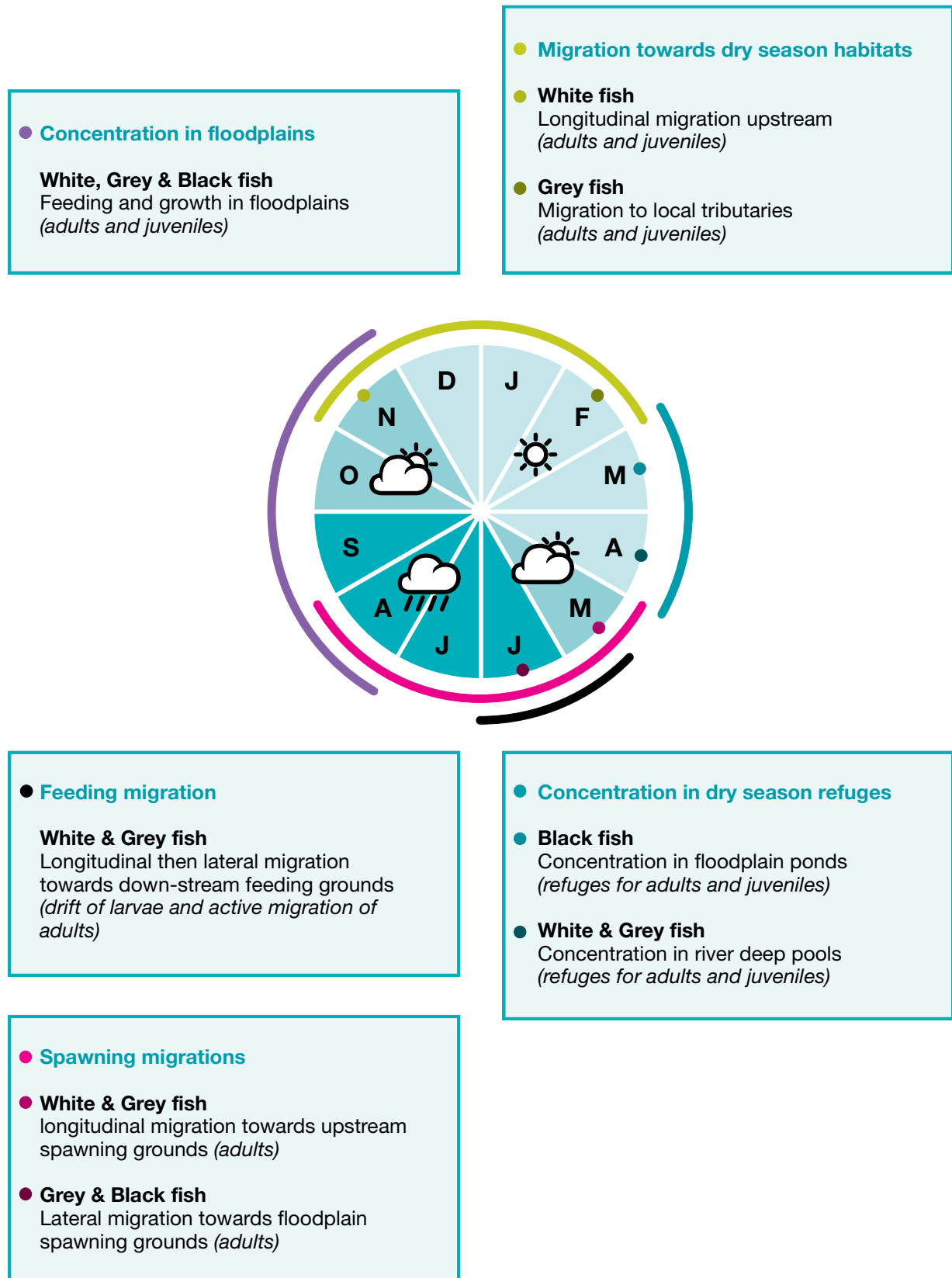
Mekong inland fisheries also provide employment to 1.6 of the 14 million Cambodians. In the Mekong Delta in Vietnam, 60% of the people are part-time fishers (An Giang province) and 88% of 'very poor' households depend on fisheries (Tay Ninh province; UNEP, 2010).

Fish migrations are an essential feature of the Mekong. Of the 189 migratory fish species known, 165 are long-distance migrants (Baran, 2006) and these species represent more than 37% of the total yield, i.e. more than 770,000 tons per year (ICEM, 2010).

The combination of high fish biodiversity, high productivity, high exploitation rate and long-distance migrations makes dam development a major concern in the Mekong Basin (Baran and Myschwoda, 2009).

FIGURE 1

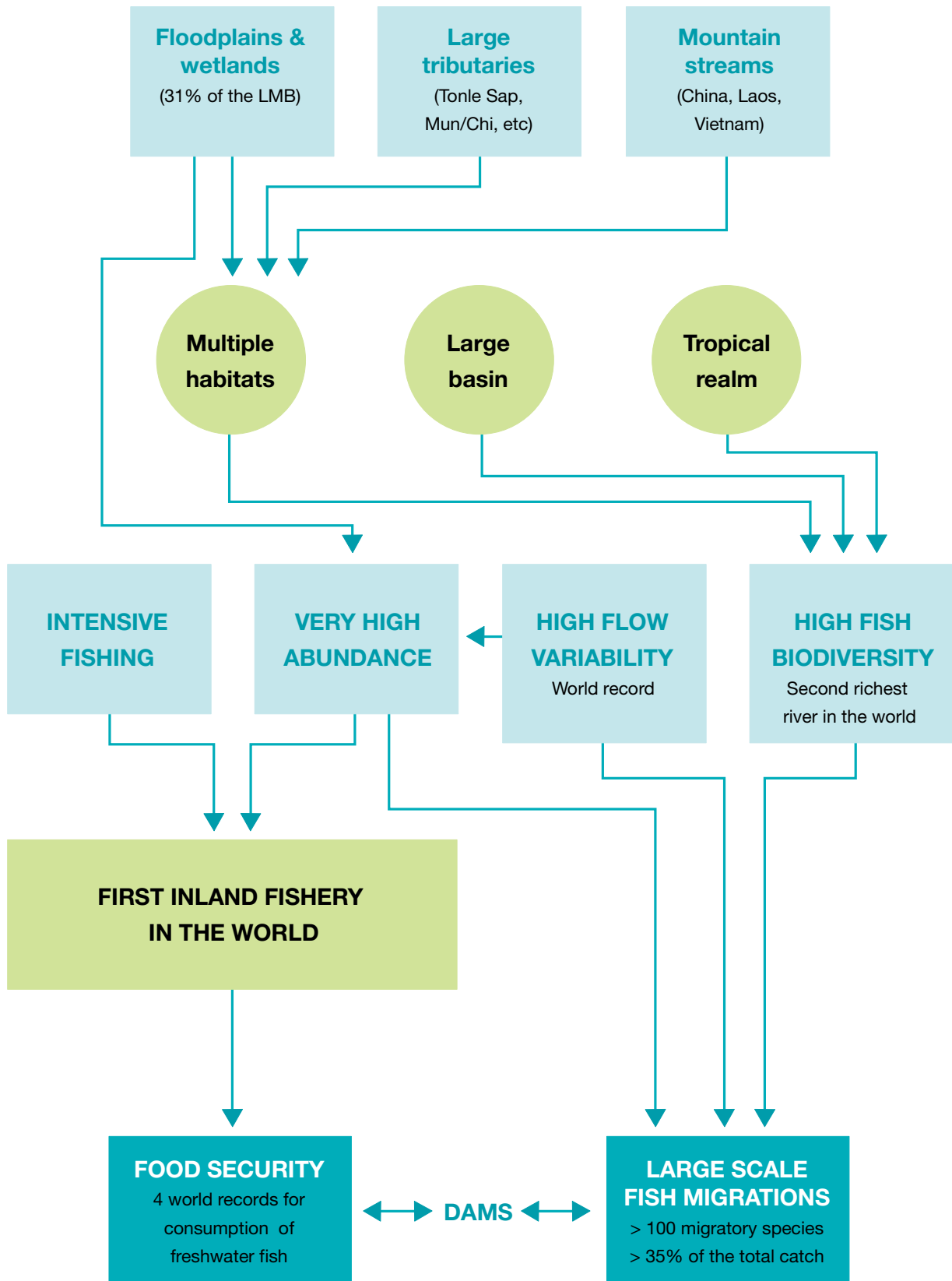
Migration patterns of fish in the Mekong River basin.



>>EXAMPLE

FIGURE 2

The role of migratory fish for the food security in the Mekong River basin.



BEST PRACTICES IN THE MEKONG RIVER BASIN

Although dam development in the Mekong is still taking place without regional planning (Grumbine and Jianchu Xu, 2011), several good practices can be highlighted:

- 1 The activities of the Mekong River Commission, a river basin organization revived in 1995. This institution focuses mainly on improving technical information (hydrological modeling, fisheries, environment, etc.) but is also trying to frame the development of the Mekong (including a Basin Development Plan, Integrated Water Resources Management strategy, Procedures for Notification, Prior Consultation and Agreement regarding mainstream dams). However, the development of numerous dams on tributaries does not fall within the MRC's jurisdiction;
- 2 The development by the MRC in 2009 of 'Preliminary Design Guidance for Proposed Mainstream Dams in the Lower Mekong Basin'. The guidance points are based on sustainability principles and cover navigation, fish passage, sediment transport, water quality and dam safety;

- 3 The implementation in 2010 of a Strategic Environmental Assessment of Mekong mainstream dams (ICEM, 2010), praised for its quality and influence. At a smaller scale, another SEA in Vietnam (Vu Gia – Thu Bon River Basin, ICEM, 2008) led to the creation of a corridor of free-flowing rivers for the sustainability of the migratory fish resource;
- 4 The large number of publications, easily accessible, about the Mekong Basin. Most of this literature is grey, yet this body of knowledge is exceptional for a tropical river. These documents can be accessed via:

www.mekonginfo.org

www.mrcmekong.org

www.mpowernetwork.org

www.mekong.waterandfood.org

www.worldfishcenter.org

www.laofab.org

www.wdrg.fi

In the coming years, the controversial Xayaburi mainstream dam proposed by Lao PDR (Vaidyanathan, 2011) will test the ability of the Mekong River Commission to keep a balance between the conflicting needs of its member countries.

TONLE SAP

Dai Fishery on the Tonle Sap River in Cambodia (© Eric Baran).



4.9 FUNDS FOR FISH

This section suggests various routes to help fish migration specialists to find funding for river restoration projects and fish migration measures. It cannot be an exhaustive overview, however it aims to inspire creative ways of thinking about how public, and perhaps private funds might be made available for river improvements.

In general the more developed countries in Europe, the USA and Australia have diverse funding mechanisms in place. But in developing countries fish migration issues are mainly addressed within the framework of hydropower development (EIA) and specific river basin projects mostly financed by development banks such as the UNDP/ World Bank.

For Europe, the 2006 European Fish Migration Guidance (Kroes, *et al.*, 2006) (www.hunzeenaas.nl) considered many public and private funding opportunities. These included state funding to restore ecological functionality to damaged rivers, and funding from key stakeholder groups including angling and biodiversity interests. In the USA, private investment strategies such as the National Fish Habitat Action Plan are more common, where the federal state (generally the Fish and Wildlife Service), and in some area tribal initiatives and privately-raised funds, are combined through regional partnerships to address fish migration issues and habitat protection and restoration.

In all countries stakeholders and governments should work together with developers, for example hydropower organisations and other water users, on strategic regional and national planning.

Free-flowing rivers are rare and these, together with relatively un-impacted rivers with few dams should be identified for protection and restoration. In Europe substantial amounts of money are being invested to restore ecological status under the WFD. For example the Westphalia region of Germany is planning to invest 60 million euro

every year until 2027 to achieve this, and other countries also plan investments costing millions of euros. The importance of legal drivers for ecological protection and restoration is clear.

Hydropower is a significant issue on many rivers around the world with schemes dating back many decades and, today, growing interest in new schemes. A strategic compromise deal with hydropower organisations could be a mechanism to protect some of the remaining natural unimpounded rivers in return for agreements for further developments in other less ecologically important rivers. Building on this concept, hydropower resources could be used to decommission dams, particularly older and less efficient hydropower dams, and in some areas to restore naturally functioning rivers. Funding allocated by governments for nature and water projects could be used as well. The Penobscot River Restoration Project in Maine is a good example of this kind of successful collaboration (www.penobscotriver.org).

Stakeholders in fishery and agricultural initiatives should develop coalitions to address the potential impacts of hydropower dam development. However this may be difficult to achieve unless the true costs of impoundments are recognised more widely. In their natural state all rivers can support healthy fish stocks and in the larger rivers around the globe these usually support large and important artisanal and subsistence fisheries. However, many studies have demonstrated plummeting stocks directly after dam development (e.g. Mol, 2000 & Baran, *et al.*, 2011). In addition changes in sediment transport often lead to less fertile floodplains and agricultural land and ambitions to create fisheries within the newly impounded areas generally fail.

The Mekong River is a good example where a fish resource is a major driver for the economy. Dam development has had devastating impacts on fish stocks and people's livelihoods. These socio-economic issues have recently been driving the commission of the Mekong River Basin Committee, which is seeking to establish com-

mitment to a more integrated management of the catchment and its ecology for the benefit of the people living in the watershed. The concept of tribal and indigenous land and water rights is an important one and is increasingly used around the world to initiate funding for sustainable development projects.

A significant challenge that, happily, has been met in most continents is that of cross-border rivers in which more than one country has a role to play in protecting the natural functioning of rivers. The Mekong, Nile, Rhine, Niger and Danube are examples where political will has secured integrated thinking for trans-boundary rivers.

Within rivers, notably the larger ones, the global impact of habitat fragmentation because of the rapid expansion of so-called 'green' hydropower dam development has not been addressed comprehensively. Significant UN and EU funding is still channelled into potentially damaging dam developments in the third world and it would seem sensible if some of these funds could be addressed for fisheries protections scheme and to ensure that some rivers are kept free-flowing.

TIPS

- National and international representatives (UN/ FAO) should cooperate with stakeholders (such as hydropower companies) in developing fish migration policies and management plans within a river basin framework;
- Stakeholders and local water managers should initiate and provide bottom-up input to the planning process;
- UN and EU funding should in some cases be re-assessed. Funding proposals for potentially damaging dam development schemes should first address fish ecology and migration issues. These bodies and others should ensure that some rivers are kept free-flowing.

4.10 GENERAL CONCLUSIONS

Policies concerning the protection and restoration of fish migration are well developed in Europe and the USA, where the level of habitat degradation and fragmentation is highest. Australia has good policies in place, though the level of degradation there is currently relatively moderate. Africa appears to have no continental policies in place regarding fish migration, although some strategy exists, for example in South Africa. Overall the level of fragmentation is currently low but increasing. In South America, most countries have a low level of degradation and there are therefore many free flowing rivers, although once again this position is changing. In Asia the picture is much more diverse. While the level of fragmentation in China and India is high, they both have policies in place for national river basin management and fish habitat protection. However this appears to be largely aimed at limiting the impacts of damage done in the past related to poor water management.

In general there are few specific and effective fish migration policies outside the US and the EU. The regions with greatest risk of imminent habitat fragmentation, often because of large hydropower developments, are Asia, Africa and South America. Effective policy is clearly needed in these regions which are the major emerging economic powers. It is hoped that the challenges and the resource they stand to lose will be recognised before it is too late.