Chapter 2
Avoiding Poverty: Distributing Wealth in Fisheries

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Abstract Aquatic resources contribute to economic growth, food security, and the livelihoods of millions of fishers around the world. This is evidenced by the industrialization of capture fisheries in the twentieth century, which has generated enormous wealth. Rather than supporting a policy aimed at maximizing economic efficiency though, this chapter argues for the distribution of wealth among small-scale fishers. After all, the small-scale fisheries function as a safety valve for a host of rural poor, for whom alternative livelihoods are not available.

2.1 Introduction

Aquatic resources are a valuable global asset. Whether they are large-scale or small-scale, fishers carry out their activities either to produce food for their own consumption, fish products for a market, or to engage in recreation. Often these objectives

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coexist; and frequently, they also constitute different stages in a development process. Almost 250 years ago, Adam Smith described the different facets of fisheries in this way:

> Hunting and fishing, the most important employments of mankind in the rude state of society, become in its advanced state their most agreeable amusements, and they pursue for pleasure what they once followed from necessity. In the advanced state of society, therefore, they are all very poor people who follow as a trade, what other people pursue as a pastime. Fishermen have been so since the time of Theocritus (Smith 1776, section I.I.4).

Smith's concept of fishers being poor has continued into the present age. In recent years, however, the emphasis is on the connection between poverty and resource depletion (Béné 2003). This discourse has identified open-access to aquatic resources and so-called Malthusian overfishing (Pauly 1994) as the core of the problem. To the contrary, we argue that rather than forming an obstacle to successful management, access to aquatic resources ensures food security and self-sufficiency for large numbers of poor people living in coastal areas. Common pool natural resources are the employer of last resort, suggesting relief, not disaster. Free access to fish resources gives comfort and satisfaction when the alternative is penury and hunger. On the basis of such observations, MacKenzie (1979) concludes that the poor fisher is fishing because he is poor, not the other way around.

We are not suggesting, however, that fishing today is inevitably equated with poverty. Poverty certainly occurs, sometimes quite prominently so, but at the same time fisheries have become a source of enormous economic wealth. This apparent paradox reflects a dualist reality in which many people exploit aquatic resources primarily to avoid hardship, while others – a smaller category – acquire further riches. Both groups are taking advantage of the economic value of the natural resource, though this value takes on different forms in different contexts.

We limit our discussion to capture fisheries in the context of marine and inland waters. We investigate how poverty and wealth relate to fisheries, and how both figure in the context of economic development. The first section sketches the development of fisheries in North and South geographies, and emphasizes their various trajectories. We subsequently explain the relevance of economic growth in capture fisheries, but also the importance of taking distribution into account.

2.2 Global Changes in Fisheries: Southern Growth and Northern Decline

The worldwide changes that have taken place in fisheries from the beginning of the twentieth century have been characterized as the "great fish race" (Butcher 2004); an era of industrialization of the ocean (Smith 2000) or the "blue revolution" (Bailey 1988; Bavinck 2011). We note that this process of industrialization – to borrow Smith's terminology, which involved the development of technology and markets – has created enormous economic wealth and, in Butcher's (2004) perception, a

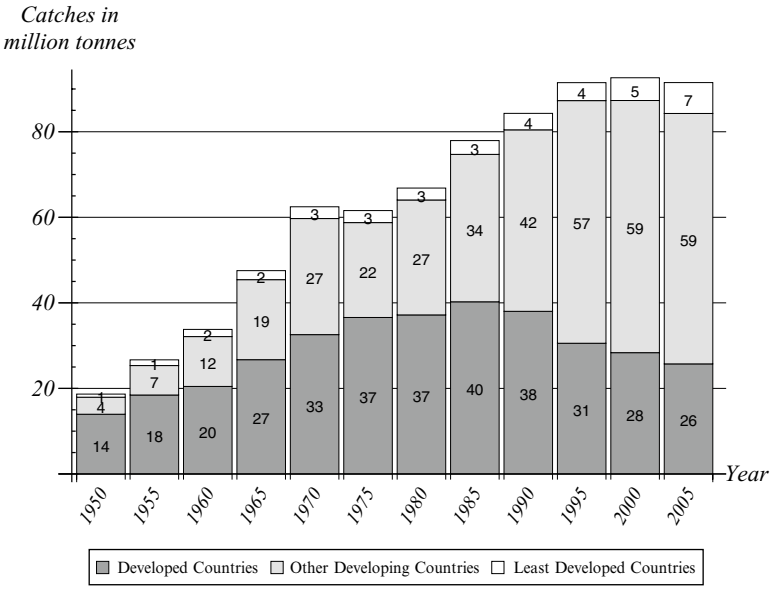

Fig. 2.1 World marine and inland catches distributed between developed and developing countries. The latter is split into two categories: least developed and other developing countries (Source: FAOs online capture statistics. Accessed 20 January 2011 at http://www.fao.org/fishery/statistics/global-capture-production/query/en)

"golden age."[1] A recent report (World Bank 2008) estimates that capture fisheries now represent a monetary annual value of US$ 50 billion, with many "sunken billions" still remaining to be reaped – if management regimes are improved.

Global catches today are five times the catches of 50 years ago (Fig. 2.1), and have been stable at around 90 million tons over the last decades. The most recent FAO report (2009) on the state of world fisheries and aquaculture explains that fish is now the main source of animal protein for 20% of the world's population, and that more than 37% of the global catches are traded internationally. An increasing share of world fish production (77% in 2006) is used for direct human consumption. In addition, a world average of about 10 kg per capita fish consumption in 1960 had increased to almost 17 kg per capita in 2005 (FAO 2009).

These are impressive results. Such aggregate production and consumption figures, however, mask three important trends that have been taking place. The first

[1] The industrialization of capture fisheries (Platteau 1989; Thorpe and Bennett 2001; Bavinck 2011) that took place during the twentieth century had two phases. Phase 1 commenced late in the nineteenth century and was centered in Europe, North America, and Japan. Post-colonial governments initiated phase 2 in the period after WWII. The technologies in both phases were identical, and consisted of engine-driven harvesting technology, new gear types, refrigeration, and large-scale infrastructure (such as harbors). Markets developed alongside increases in production, with most landing sites now being connected to national and international markets.

is a shift from industrialized countries to the developing world. The introduction of Exclusive Economic Zones (EEZ), stock collapses, economic growth of developing countries, and an increased demand for fish products in the world are factors explaining the current dominance of developing countries in the global fish trade. Today, about 80% of the world's fisheries production takes place in developing countries; their share of the world fish trade value has passed 50%, and is steadily increasing. This pattern is even more striking when it comes to inland fisheries: 95% of global inland capture production now comes from developing countries (FAO 2009).

The second trend that has occurred – most notably in the developing world – is the partition between a large-scale, industrialized fishery, and a small-scale fishery. This division is mainly the consequence of the development pattern pursued by governments in the post-independence era, namely the creation of a modern, technically efficient, harbor-based fishery, in proximity to – and in conflict with – many already existing small-scale fisheries (Platteau 1989; Bavinck 2005, 2011). Although, as the various chapters of this volume testify, the latter have been far from stagnant, there is still a remarkable gap between the two subsectors in terms of investment levels, catch per unit of effort (CPUE), and employment, with small-scale fisheries employing a far greater portion of the fishing population than the large-scale subsector (also see Johnson 2006).

This brings us to the third trend, which relates to demography. While employment in fishing is decreasing, and the number of recreational fishers now exceeds professional ones in most industrialized countries, fisheries employment is growing steadily in the rest of the world. FAO statistics (FAO 2009) show 35 million part-time and full-time ocean fishers, in addition to 4 million occasional fishers and fish farmers on a global level in 2006. Less than 0.9 million of these are located in industrialized countries. The total production per fisher is around 20 tons per year in Europe and North America, while the global production per fisher is 3.3 tons per year, indicating a much more capital intensive fishery in the industrialized, as compared to the developing, countries.

Unlike the prices of many other export products from developing countries, real fish prices are also increasing. The World Bank (2008, p. 8, Fig. 8) has thus calculated that the real export unit value (US$/ton) of fishery products in the world more than doubled between 1976 and 2004. In conjunction with increasing production, these price rises saw the total export value minus the total import value of fish products from developing countries grow from USD 1.8 billion to USD 24.6 billion in the period 1976–2006 (FAO 2009). Fish products now represent a significant monetary worth equivalent to the combined export values of coffee, rubber, cocoa, meat, and sugar. Analyzing these trends, Delgado and others (2003) note that rising consumer demand has resulted in a long and virtually uninterrupted increase in prices, which probably benefits fishers of all types and geographical origins. Fishing costs and income vary greatly by type of fishery and locality, however, and reasoning based on global aggregated figures has its limitations.

Figure 2.2 presents capture fisheries in the period 1950–2008 for the countries that are discussed in this volume. These data suggest that developing countries have

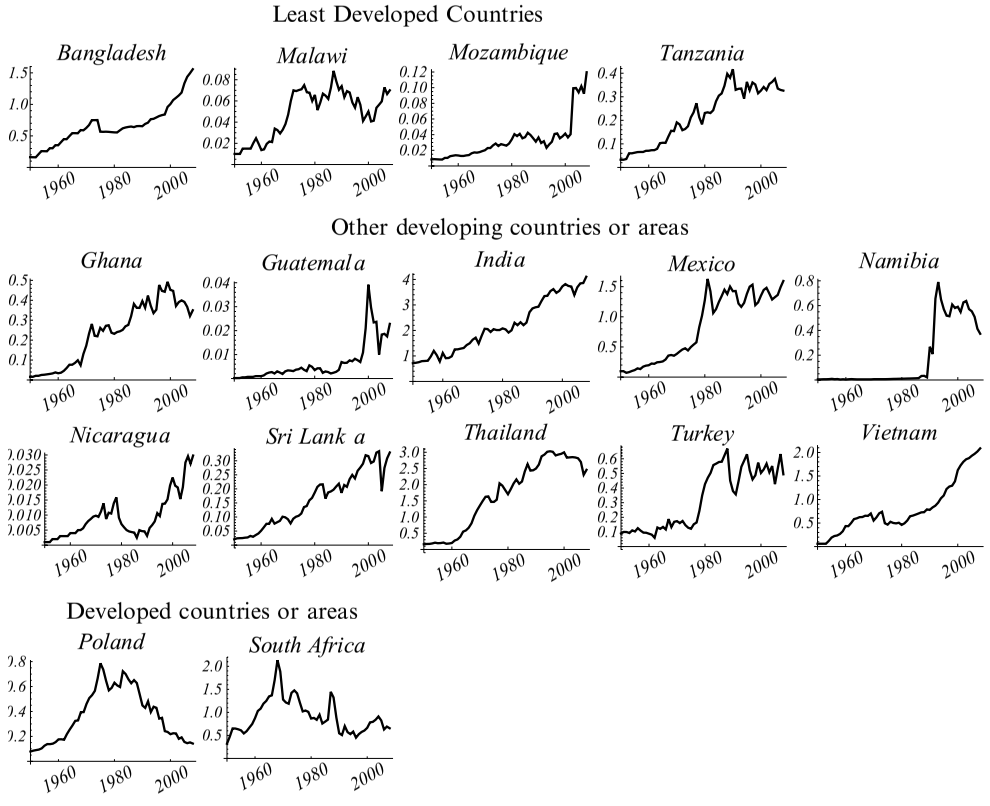

Fig. 2.2 Total catches of the countries discussed in this book in the period 1950–2008. The development level according to the FAO categorization (as in Fig. 2.1) places two of the countries (Poland and South Africa) in the developed group, and Bangladesh, Malawi, Mozambique and Tanzania in the least developed. The graphs include both marine and inland catches; graphs of these countries' marine catches only are shown in Fig. 3.1, Chap. 3 (Source: FAOs online capture statistics. Accessed 20 January 2011 at http://www.fao.org/fishery/statistics/global-capture-production/query/en)

witnessed spectacular growth of fish production in the past decades, with leveling off (or some decline) in recent years. However, developed countries, represented by Poland and South Africa in this volume, have simultaneously witnessed severe reductions in fish production.

About 90% of those employed in world fisheries are classified as small-scale fishers (FAO 2007, p. 2). An additional 100 million people are estimated to be employed in other occupations associated with fisheries, primarily in processing and trading. Total global employment, directly or indirectly associated with small-scale fisheries and aquaculture, was estimated to be about 135 million in 2002 and the number is increasing (Table 2.1).

Table 2.1 presents an overview of capture fisheries employment in the period 1970–2005.[2] Note that the growth of world fish catches and the number of fishers outdistanced the growth of the world's population in a period when the latter almost doubled. Table 2.1 shows that while the world's population increased by 75%, the number of capture fishers in the world increased by 178% between 1970 and 2005, more than twice the growth of the world's population. The distribution of fishers over geographical regions, however, is severely skewed, with Asia (where the real increase in numbers of fishers is found – including 84% of the world's capture fishers), and Africa making up the bulk of the remainder.[3] Europe and America show a declining share of the world's fishers, from 11% in 1970 to below 6% in 2005 (Table 2.1).[4]

Where did additional growth in the number of people employed in capture fisheries (mainly in Asia, but also in Africa) come from? Assuming that population growth among fishers is roughly similar to general population growth, and that most fishers and their descendants have stayed in capture fishing, the surplus must have come from outside the sector. Our hypothesis is that most of these people have been attracted by the possibility of obtaining a share of the wealth available in fisheries. This situation would seem to pertain to countries with a stable administration, but also to countries where people have been driven to the coast by civil war (as, for example, in the case of Mozambique, Chap. 18).

[2] There are no figures for the period before 1970, which constitutes the nucleus of the industrialization era, and is therefore likely to have created the largest impact on employment too. Similar to global catch data, which are regularly disputed, employment figures are also imprecise (FAO 1999). The figures in Table 2.1, however, appear at least to indicate a general trend.

[3] The stabilization that has apparently taken place in the fishing population from 2000 to 2005 (see Table 2.1) suggests that capital is also substituting for labor at a higher rate in developing countries. However, this requires further investigation.

[4] Low and declining employment figures in the fisheries of the North do not indicate a marginal role in global fisheries. FAO (2009, Table 7) points out, for example, that production per person in Europe and North America is eight to ten times the production rate in Asia and Africa.

Table 2.1 Number in millions of capture fishers and total populations 1970–2005, and the relation between the two[a]

	Regions	1970	1980	1990	2000	2005	Percentage increase 1970–2005
Fishers in	Africa	1.360	1.570	1.770	3.524	3.478	156
	Americas	0.906	1.080	1.421	1.382	1.367	51
	Asia	9.301	13.558	20.028	27.412	28.572	207
	Europe	0.436	0.372	0.634	0.768	0.663	52
	Oceania	0.046	0.050	0.054	0.044	0.050	8
	World	12.261	16.259	23.905	33.199	34.131	178
Population of	Africa	366.795	482.232	638.726	819.462	921.070	151
	Americas	517.755	616.751	725.000	839.884	891.689	72
	Asia	2079.820	2566.922	3112.180	3698.295	3936.540	89
	Europe	693.082	739.232	777.460	726.569	729.420	5
	Oceania	19.636	22.944	26.926	31.163	33.560	71
	World	3677.089	4428.081	5280.292	6115.373	6512.279	77
Percentage of fishers in total population	Africa	0.37	0.33	0.28	0.43	0.38	2
	Americas	0.17	0.18	0.20	0.16	0.15	−12
	Asia	0.44	0.53	0.64	0.74	0.73	62
	Europe	0.06	0.05	0.08	0.11	0.09	44
	Oceania	0.23	0.22	0.20	0.14	0.15	−36
	World	0.33	0.37	0.45	0.54	0.52	57

[a]Fisher figures calculated from FAO (1999 and 2009, p. 23, Table 5). General population figures from UN (2009)

2.3 Fisheries Development and Economic Growth

Capture fishing is one of the oldest sources of livelihood in human existence and displays an amazing technical variety (Von Brandt 1984). It is also a profession with distinctive social characteristics (Acheson 1981; Van Ginkel 2001). A collection of human *niches* (Tuomi-Nikula 1985) formed around the capture of various species of fish as they are distributed over marine space. Generally speaking, there are two conditions for developing a fishery: (1) The availability of aquatic resources; and (2) Techniques and knowledge on how to harvest and utilize them.

At a subsistence level, aquatic resources constitute primary or secondary sources of nutrition for a large number of households. Seasons and years of lower productivity or reduced availability prompt migration and a pursuit of alternative livelihoods. Despite these fluctuations, aquatic resources are a staple asset for people who depend on them for subsistence (rather than monetary income).

By principle, common pool resources as utilized in the capture fishery are open to anyone with the knowledge and equipment to harvest them. Finite resources do, however, limit the number of people who can derive a fisheries livelihood. Further restrictions are also imposed by the fishing technology available, or lack thereof. At the other end of the value chain, new technology and the discovery of previously untapped aquatic resources increase the population that is potentially supplied with fish products.

The development of subsistence fisheries involves commercialization and access to markets. For this to take place, issues relating to preservation, product quality and logistics need to be addressed. Dry and salted fish products have historically been transported over large distances and stored for long periods, even years. Fresh fish products, however, necessitate other preservation methods. Improved infrastructure and refrigeration technologies have radically changed conditions for the trade of seafood in the twentieth and twenty-first centuries. These changes have had major repercussions for the fisheries.

Access to markets induces subsistence fishers to harvest beyond their sustenance needs; excess catches are converted into capital, and economic wealth is thereby generated. Economic theory argues that as wealth accumulates, capital becomes less expensive and labor more expensive; hence, capital often substitutes for labor. Increased buying power results in possibilities for employing labor in other economic sectors, and in higher prices for other products (including fisheries products). This type of economic development has taken place in many industrialized countries (Béné et al. 2010), where many former fishers have entered new professions, and employment in fisheries has thus declined.

As the demand for fish products augments, the resulting increases in fishing effort in unregulated fisheries may at some point lead to a decline in fish production, a situation referred to as biological overfishing. Economic overfishing occurs at an even earlier point in time, as resource rent starts to decline at levels of fishing effort below those leading to a decline in surplus biomass growth (Gordon 1954). Biological overfishing today represents the main reason for contemporary fisheries management. The aim of resource-motivated management is to reduce fishing effort

in order to increase sustainable catches, which also will eventually reduce the cost per unit of harvest.

Given that the national objective in many developing countries is to promote and encourage economic growth, governments' first – and valid – challenge is to create conditions for the commercialization of fisheries to take place. In the case of subsistence fisheries, access to markets represents a critical factor. First of all, it is necessary to make markets available through infrastructure, trade agreements, and preservation technology; none of which are easily established by regular market mechanisms. Extension services promote market production at the producer end of the value chain, and the introduction of new technology is one of the objectives of this mechanism. Economic growth, however, is not obtained from improved technology alone – a demand for fish products must also be present. All market failures hindering economic growth therefore need to be addressed.

As is corroborated by various chapters in this book, small-scale fisheries have many faces. They are also embedded in societies, economic structures, and historical trajectories of varying character, which do not necessarily follow the trends of commercialization and capital replacing labor described above. Small-scale fisheries have defied many predictions just by staying around, and it is likely that they will be present for many years to come. The current state of world fisheries has induced various views about how to move forward. While Cunningham et al. (2009) still seem to advocate resource rent optimization as the best way to alleviate poverty, Béné et al. (2010) counter that this method is neither realistic nor relevant to the majority of small-scale fisheries in developing countries.

If the distribution of wealth is not taken into consideration, successful economic growth may worsen, rather than improve, the situation for the poor. We emphasize that even though fish stock resources may sustain subsistence capture fisheries, ensuring food security for those exploiting the resource, development of markets is necessary to secure economic benefits. The issue of resource distribution, moreover, becomes crucial when economic wealth is incipient. It represents another management challenge, as fair and equitable distribution is not likely to occur in an unregulated market (Atkinson 1997). The final challenge, of course, is not to develop higher economic resilience at the expense of the natural resource base.

2.4 Distribution of Common Goods

Our starting point is that coastal societies are fortunate to possess aquatic resources that can provide large economic benefits. However, this raises such questions as: What should be the objective of resource exploitation? And who should benefit from its use?

One contemporary line of argument is that fish resources are to be exploited in order to maximize economic wealth for society as a whole, and that maximization is attained by favoring efficiency, taking externalities and opportunity costs into consideration. Since income in the fishery sector is linked to the rest of the economy, increasing wages outside the fishery affects the supply of labor inside (Eide 2009). Béné et al. (2010) provide the example of Norway, where employment in fisheries

today is one-tenth of employment after World War II. This is not a consequence of regulation but of regular economic growth. Capital has thus replaced labor in the production of fishing effort.

The authors of the report "The sunken billions – the economic justification for fisheries reform" (World Bank 2008), point out the economic irrationality presently evident in global fisheries. Governments strive to introduce reforms that will result in the capture of the "sunken billions" that wait in aquatic ecosystems. A first item of attention is the massive public subsidies pumped into the global fishing fleet (primarily directed toward industrial fishing), which exacerbate overcapacity and contribute greater pressure on fish resources (Sumaila et al. 2008). Subsidies have a negative impact on small-scale fisheries by diminishing their fishing opportunities. Furthermore, the small-scale fleet has also lost economic competitiveness to the large-scale fleet, because the small-scale sector is not subsidized at a level even remotely comparable to the former.

A second bone of contention is the introduction of property rights to fish resources. Individual property right systems may improve profitability, but will most likely be devastating to the small-scale sector and concentrate wealth in a few hands (World Bank 2005). We tend therefore to side with Hersoug (2007), who enquires: How do we secure rights-based fisheries to the right people? This position builds upon the understanding that fish resources represent an important safety valve when livelihoods in non-fishing (e.g., agricultural) sectors are under threat (Jul-Larsen et al. 2003). Small-scale fishers are often the most dependent on the common pool nature of fisheries, and thus will suffer the most from changes in property regimes. Such changes will also prevent, once and for all, aquatic resources from being a safety valve in times of economic hardship.

In these conditions, is it not better to prioritize the livelihoods of the millions depending on small-scale fishing rather than maximizing wealth creation for a relatively small and already privileged group of better-off fishers? Even if the total value obtained from the fisheries can be increased by reducing the number of fishers, most of those who are removed will be worse off, since the wealth created will not reach them and alternative livelihoods are scarcely available.[5] Closing the commons is therefore a risky business, especially for those who are left outside.

2.5 Conclusions

In the vast literature dealing with the quantification of poverty, the dominant approach is to specify a poverty line which defines the level of income necessary for subsistence. Recent studies (Pinkovskiy and Sala-i-Martin 2009) point out that world poverty is declining based on this viewpoint. The establishment of industrial

[5] It is important in this regard to reiterate that solutions to prevent or reduce poverty in fisheries in developing countries also need to be found outside the sector, where alternative employment is to be created for those who have sought in fisheries an employer of last resort (Cunningham 1999).

fisheries in developing countries has probably been one of several factors contributing to this trend; others include the availability of health services, global trade, and general economic development. On a global scale, poverty (referring to a poverty line of one US$ per day) has declined by 80% over a period of 36 years, in spite of a significant increase in total population (Table 2.1), reducing the number of poor from 403 million in 1970 to 152 million in 2006.

Loury (1981) notes, however, that when markets are imperfect – as they often are, particularly in developing countries – redistributive policies may improve economic growth. Sen (1976) points out conversely that *poverty* and *inequality* are related terms. Inequality occurs at different levels. In fisheries, we see it not only between industrial and small-scale fishers, but also within the small-scale fishing sector itself. This is not necessarily condemned by such fishers, who view a measure of inequality to be a logical result of differences in skill and in fortune (Acheson 1981; Van Ginkel 2001). Many scholars studying small-scale fisheries, however, have noted the nearly ubiquitous presence of community mechanisms to support those who are unable to secure a decent livelihood – widows, the unfortunate, the destitute (see, for example, Kurien and Paul 2001). Such support is predicated on notions of fundamental human rights. Small-scale fishers also challenge, however, those who take an inordinate share of what the sea has to offer. This has resulted in a large and continuing body of conflicts between small-scale and industrial fishers all over the world, especially in terms of inshore resources.

Developing countries face two main challenges today with regard to their fisheries: (1) to continue their efforts to generate economic development, which will hopefully result in better living conditions for their populations; and (2) to nurture the present small-scale fisheries, which provide, in the interim, large measures of employment, nutrition, and hope. The latter approach means having an eye for allocating the resource according to the needs of those employed in the sector.

Recent trends in fisheries demonstrate that the economic value embedded in aquatic resources allows society to employ and feed an increasing number of fisher families, thus spending natural and economic wealth for disadvantaged people to survive. We argue that the distribution of these riches among a larger population of small-scale fishers is the better policy direction to employ in the context of economic development and poverty reduction.

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