Food and Agriculture Organization of the United Nations

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The consumption of fish and fish products in the Asia-Pacific region based on household surveys

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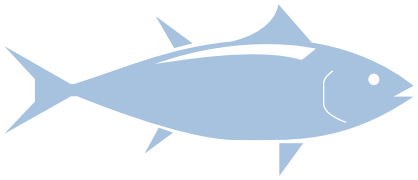

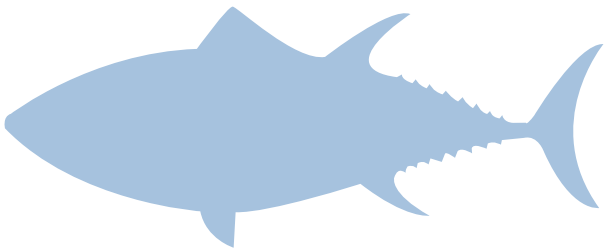

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Foreword

Fish and fish products play a highly important role in the food and nutritional security of rural, urban and coastal populations throughout Asia and the Pacific.

In many countries, catching or farming aquatic resources forms a vital part of rural people's livelihoods and contributes a major source of protein, especially for vulnerable populations. While the importance of fish in both cultural and nutritional terms is clear, far harder to pin down are the actual amounts of fish that people throughout the region are consuming.

For example, the practice of cultivating fish in rice fields or irrigation canals is common and provides a nutritional lifeline for the poor in parts of Asia during certain times of the year. For statistical purposes however, these fish are all but invisible; absent from the official production figures or the FAO Food Balance Sheets (FBS) which represent the only global source of standardized consumption data.

Consumption of fish from rice fields or artisanal fisheries is however picked up by household surveys. Carried out on a regular basis and to a high level of statistical accuracy, such surveys provide a wealth of information about consumption patterns and habits. This data can play a vital role in the development of fisheries and natural resource policies that may have considerable impact on the most vulnerable segments of the population.

This study, carried out by the Asia Pacific Fishery Commission, examines household survey data pertaining to fish and fish product consumption in 30 countries across the region. The information is also compared and contrasted with consumption estimates obtained through Food Balance Sheets.

It is hoped that this publication can help shine the light on consumption patterns of fish and fisheries products at household level as well as some of the reasons for the differences between household survey and FBS derived figures. It is also hoped that the presentation of this data demonstrates the contribution it can make to more informed policy and decision making.

FAO plays a key role in the global compilation, processing and dissemination of food and agriculture statistics. It commits considerable resources towards gathering accurate data and also provides essential statistical capacity development to member countries. Considerable support has been provided to governments throughout the region to assist them to carry out more effective household surveys and this should increasingly pay dividends in years to come.

Fish and fisheries products make an appreciable contribution to human well-being, food security and poverty alleviation in Asia-Pacific. The more detailed our understanding of consumption patterns, the more effective our management actions will be, potentially to the benefit of millions.

Kundhavi Kadiresan
Assistant Director-General and Regional Representative for Asia and the Pacific
FAO Regional Office for Asia and the Pacific

Acknowledgements

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Contents

Fish consumption in the Asia-Pacific region

Fish and other aquatic animals are known to play an important role in the diet throughout the Asia-Pacific region. The wide range of fishery resources, both marine and freshwater have given rise to a strong tradition of fish eating in most countries of the region and this is also reflected in strong cultural traditions associated with fish. Whilst this may be obvious for small island states with their strong dependence upon fisheries, it is also found in continental countries. This affinity is also not only confined to coastal areas, but may extend far inland. This is partly due to the nature of tropical rivers and floodplain fisheries, but is also a direct consequence of the rice production systems and the associated (often traditional) water storage and management infrastructure of the region. These managed wetlands can extend the range of freshwater fish species by providing habitat and refuge beyond floodplains into upland mountainous areas.

Despite the apparent importance of fish in the diet, it is often overlooked in discussions on nutrition and food security. Gaining an accurate picture of fish consumption and its contribution in the diet in the region is a challenge, partly because it is often important to a subset of the population, but also due to the tendency to miss fish when conducting surveys and censuses. This may be because it is often a crop of opportunity, rather than an agricultural staple. It may also be that fishing takes place away from home, off the holding, and thus is "invisible" to routine surveys on household production. Fishing activity is only a relatively recent addition to agricultural censuses, a clear sign that it has been overlooked in the past. In a similar manner, livestock surveys, typically exclude fish culture as fish is not considered as livestock.

Some countries have dedicated surveys of aquaculture production and attempt to monitor catches at landing sites. This allows some insight to the level of production, but much of the small-scale artisanal production may be missed. In developing countries especially, a large amount of inland water catch as well as that brought to shore by small-scale marine artisanal fishers goes unrecorded. The contribution of small-scale aquaculture ponds can also be mis-estimated, resulting in under reporting more in some cases, overly optimistic estimates. Much of this fish production is also marketed and consumed locally and is therefore not formally recorded at the landing site, farm, or as sales the marketplace. The numbers of fishers and small scale-fish ponds can be underestimated, as many fishers are missed by censuses because they are active on a part-time or occasional basis and many small fishponds are not recorded in land-use inventories.

There are a number of approaches to gaining an insight to how much fish is consumed within a country:

- Direct measurement using long term food consumption/nutrition studies (the most rigorous, but typically using small sample sizes)
- Indirect measurement using short term (often as little as three days) household consumption surveys larger sample sizes, but constrained by short time frame)
- Indirect estimation using household economic surveys of production, expenditure, consumption and sale (can be undertaken at large sample size, but consumption is based on estimates and may require a high degree of recall by respondents)
- Indirect estimation of fish availability by use of national food balance sheets (this is typically a national figure and indicates the apparent amount of fish available within a country for consumption)

At the 32nd session of the Asia-Pacific Fishery Commission (APFIC), the importance of fish in the diet and nutrition of the APFIC member countries was noted and that effort should be made to communicate this into policy decision-making.

In order to respond to this request the Asia Pacific Fishery Commission (APFIC) has attempted here to collate and examine two principle sources of information on fish and fish product consumption from 30 Asia-Pacific countries. The objective of this is to provide an insight into both national figures as well as differences within countries. This downscaled information covers contributions by types of seafood, differences between rural and urban areas and in some cases regional differences within countries. It must be noted that due to the differences in how data is collected and also the sample sizes and quality of data, no attempt has been made to undertake rigorous statistical comparisons between countries, or even within them. This document attempts to draw attention to the value of comparison of different sources of information related to consumption of aquatic products and at the same time, highlight the contribution and importance of fish in diets across the Asia-Pacific region.

Sources of consumption and apparent consumption data

A primary source of information for this study was derived from national household consumption surveys.

- 28 surveys were carried out by government statistical departments
- 1 country (China) was based on national statistical surveys and the household nutrition survey
- 2 surveys (Cambodia and Timor-Leste) were carried out by government fisheries agencies with donor support

Comparative information on apparent fish consumption (or "fish availability") was extracted from the FAOSTAT food balance sheets (FAOSTAT FBS). Additional information was drawn from research papers and other documents, which are duly referenced.

Understanding fish consumption through household surveys

Household consumption surveys are undertaken on a regular basis in many countries throughout the Asia region. These may estimate weights of foods consumed, or be based on economic expenditures and incomes, from which consumption figures may be derived. These household level surveys present a wealth of useful data concerning fish consumption, nutrition supply, species consumed, urban, rural or other geographical trends and preferences. These national household surveys are usually undertaken by specialist agencies across all regions of a country and within a rigorously devised sampling framework helping to derive large-scale, statistically valid data.

Whilst they may provide valuable insight into differences between parts of a population, household consumption surveys do have limitations that can result in under- or over-estimation. Reasons for this include:

- the surveys require a high degree of recall
- the respondent may have to estimate consumption by other household members

- respondents may deliberately misreport for income and expenditure surveys;
- the survey may not account of consumption outside of the home;
- surveys which only cover expenditure on food items and which do not record consumption, require estimates of cost;
- the degree of detail on individual food item may vary (e.g. data recorded as 'fish' versus detailed information on individual species;
- distinction made between fresh and various preserved or processed products forms (this has an effect on the fresh weight equivalents);
- different calculation methods may be used to adjust for participant recall (e.g. protein conversion factors and live weight equivalents of the fish products consumed);
- small-scale surveys carried out in smaller areas or specific communities may produce very different results than national averages, often reflecting the availability of fish and local eating habits.

Comparing household consumption survey results between countries can also be problematic because there may be substantial differences in the methodologies used.

Despite limitations due to differing assumptions and methodologies, household surveys can provide very useful comparisons for checking purposes and yield additional information, particularly in relation to sub-national variations in diets.

Strengths and limitations of Food Balance Sheets

Another primary source of information that indicates fish consumption in countries is the Food Balance Sheet (FBS) data provided by FAO. Food Balance Sheets describe the apparent consumption of fish per capita of the population for a country. This figure is calculated based on the national availability, derived from fish production and imports, subtracting fish exports. The FBS figure is a national figure and can be used to compare fish availability between countries. This is one of its strongest features, since it allows comparison between countries. The FAO Food Balance Sheets (FBS) are therefore important, because they represent the only global source of standardized consumption data, which allows time series comparison to be made.

This means that FBS data cannot provide information on the variability within areas of a country or between different socio-demographic subgroups in the population. Those data are provided by individual cross-sectional dietary surveys at the national level. To determine the influences of socio-demographics, geography and the environment, it is necessary to examine the data from such national surveys.

Household consumption survey results will typically differ from apparent consumption estimates in the FAO Food Balance Sheets[1]. The apparent consumption figure in the FBS does not represent the actual amount of fish consumed and almost invariably results in an overestimation in food consumption compared with figures found in dietary surveys at the household or individual level[2].

The apparent consumption figure in the FBS is particular prone to error in those developing countries where there are high levels of informal cross border trades as well as local small-scale fishery and aquaculture production. This activity often escapes formal monitoring and data collection processes and can lead to substantial errors in the national statistics.

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[1]John Kearney (2010). Food consumption trends and drivers. Phil. Trans. R. Soc. B 365, 3083–3097

[2]L Serra-Majem, D MacLean, L Ribas, D Brulé, W Sekula, R Prattala, R Garcia-Closas, A Yngve, M Lalonde, A Petrasovits (2003). Comparative analysis of nutrition data from national, household, and individual levels: results from a WHO-CINDI collaborative project in Canada, Finland, Poland, and Spain. J. Epidemiol. Community Health 57, 74–80.

The FAO FBS data are based on live weight equivalents of available fish for human consumption while household survey data are based on recollections of edible quantities consumed (i.e. product weight). This means at typically, values for household consumption from survey data should be lower than the estimate from the FBS.

In some cases (e.g. Bhutan, Cambodia, Timor-Leste, Philippines, Lao PDR and Thailand as well as six Pacific islands) the household survey consumption figure is higher than the FAO apparent consumption figure. The reasons for these differences could not be investigated in this study, but for at least some of these countries, the differences point to underestimates of national fish production.

Many countries underestimate their total production figures because their statistical systems are unable to adequately record dispersed artisanal fisheries production in both marine and freshwaters. In some cases, there is no catch statistics system in place and national production figures are a best "guess". In other cases, fisheries production is only recorded for industrial production or high value or large scale operations, again missing out the contribution of small-scale producers. Small-scale catch/production of fish and fish products which are consumed locally and are consequently unlikely to register in official fish production statistics, but can be identified by household surveys, thus giving higher consumption estimates.

In some cases, particularly for small, landlocked countries, the import of fish may be under-estimated. This is because there may be many cross border channels bring fresh, dried and canned fish into the country. Due to the dispersed nature of this importation, the amounts of fish may be quite underestimated. This may partly explain the fact that household consumption in Bhutan appears much higher than the apparent consumption figure.

Household consumption surveys may also provide lower figures due to the survey design or the conversion factors used. FBS use per capita availability of whole fresh fish, whereas consumption surveys focus on the amount consumed. This may be only part of a fish or a preserved or processed product. In all these cases, the amount consumed is less than the original fresh fish equivalent from which the food was derived.

Consumption of fish and fish products

The countries of the Asia-Pacific region have a range of environments, spanning landlocked mountainous areas, large tropical floodplains, arid grasslands and oceanic tropical islands. This affects accessibility to fish in its different forms and unsurprisingly, fish consumption figures vary considerably; from 110.7 kg per capita per year in the Pacific island of Tuvalu to 0.18 kg per capita per year in Mongolia and parts of western China.

Fish consumption figures can be broken down across geographical regions as follows:

Pacific: Of the 16 countries and territories reviewed, Tuvalu had the highest consumption at 110.7 kg per capita per year while Papua New Guinea was lowest at 13 kg per capita per year.

Southeast Asia: Data was obtained for eight countries in Southeast Asia. Of these consumption in Cambodia was highest at 63.5 kg per capita per year while Timor-Leste was lowest at 6.1 kg per capita per year.

South Asia: Data was obtained for four countries in South Asia. Sri Lanka recorded the highest consumption of 15.3 kg per capita per year while Pakistan recorded the lowest at 0.6 kg per capita per year.

North Asia: Data was obtained for two North Asian countries. Consumption in Bhutan was recorded as 5.6 kg per capita per year while Mongolia stood at 0.2 kg per capita per year.

Fish and fish products as a share of total protein consumption

Not all surveys examined converted fish consumed into levels of protein consumption. Of the 10 which did it can be seen that fish provided the highest levels of protein in the diet in Cambodia, accounting for 37 percent of total protein consumed followed by Myanmar at 22 percent. The lowest levels were recorded in India where fish represented just 2 percent of protein intake (this is unsurprising in a country where 31 percent of the population are vegetarians and lacto-vegetarians and hides) and Mongolia where a figure of 0.1 percent reflects the negligible levels of fish consumed.

Consumption of marine and inland fish and other aquatic animals

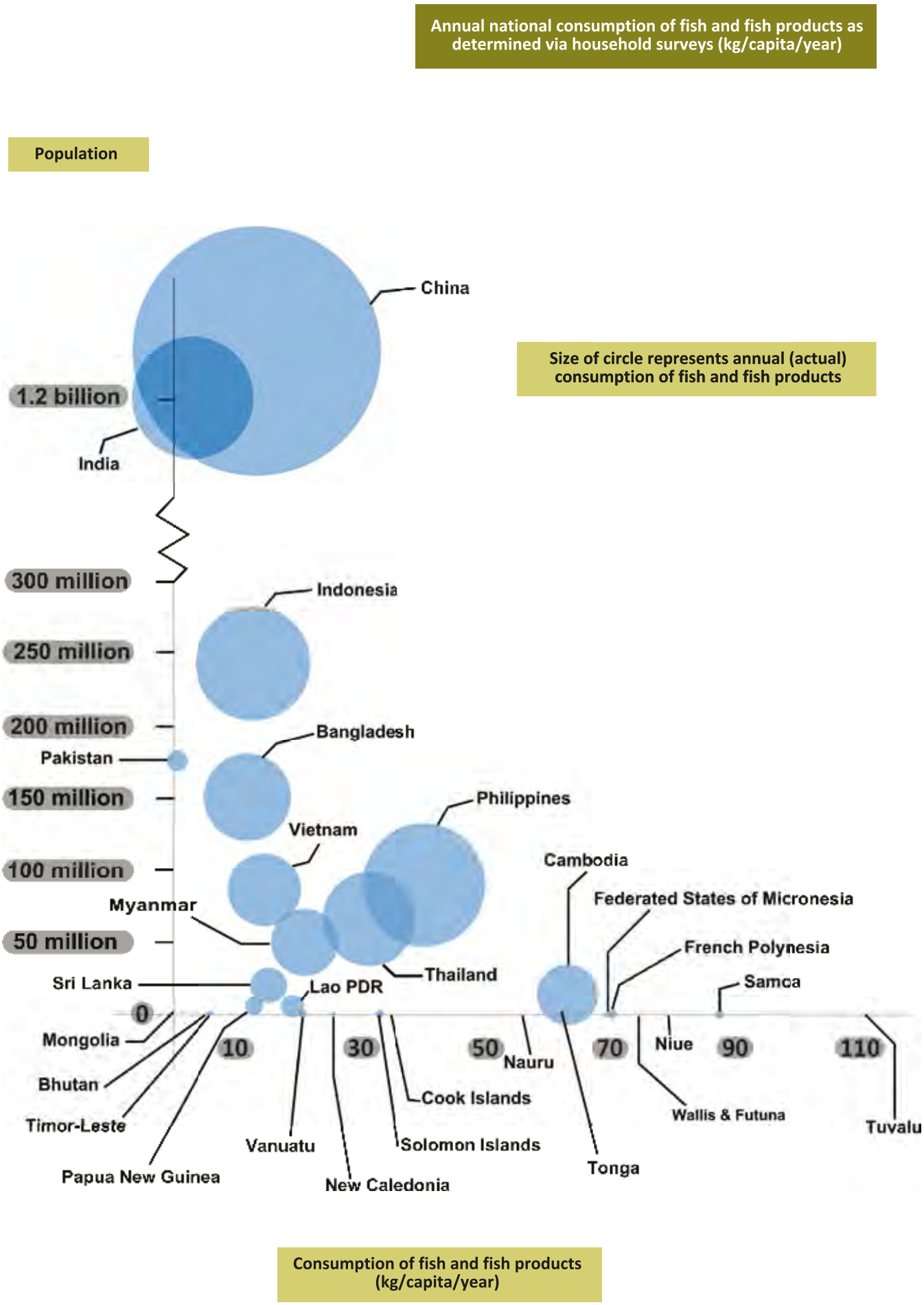
Only six surveys identified the type of fish species consumed and their origin. In Cambodia, Myanmar and Bangladesh more inland water fish and aquatic animals were consumed than marine counterparts. For example in Cambodia the breakdown by weight was 71 percent inland to 27 percent marine. Meanwhile in Thailand, Indonesia and Sri Lanka more marine fish were eaten than inland fish. In Indonesia, for example, close to 80 percent by weight of all fish consumed were marine species.

Common species consumed

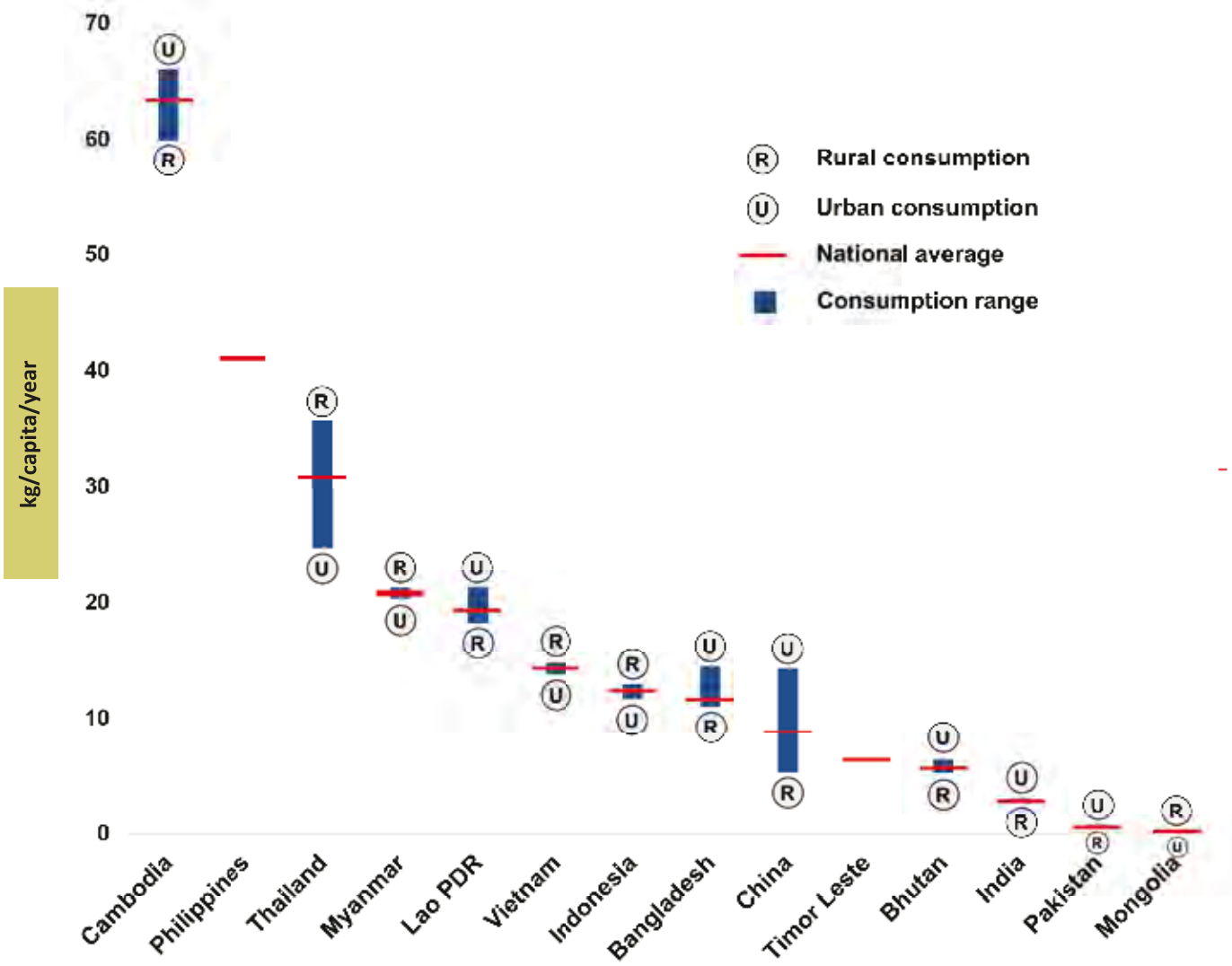
Major inland species consumed included tilapia, catfish, carp, perch and snakehead. Marine species commonly eaten include tuna, anchovy, sardines, mackerel, scad, shad and milkfish.

Summary


Consumption of fish and fish products as determined by household surveys (kg/capita/year)
Pacific Islands
110.7
87.4
79.3
74.6
70.3
69.3
62.2
55.8
34.9
33.4
33.0
25.6
20.7
20.3
20.3
13.0
Tuvalu
Samoa
Niue
Wallis & Futuna
French Polynesia
FSM
Kiribati
Nauru
Cook Islands
Palau
Solomon Islands
New Caledonia
Fiji
Vanuatu
Tonga
Papua New Guinea
Southeast Asia
63.2
40.2
31.4
21.0
19.1
14.6
12.8
6.1
Cambodia
Philippines
Thailand
Myanmar
Lao PDR
Vietnam
Indonesia
Timor Leste
South Asia
15.3
11.9
2.9
0.6
Sri Lanka
Bangladesh
India
Pakistan
North Asia
9.7
5.6
0.2
China
Bhutan
Mongolia

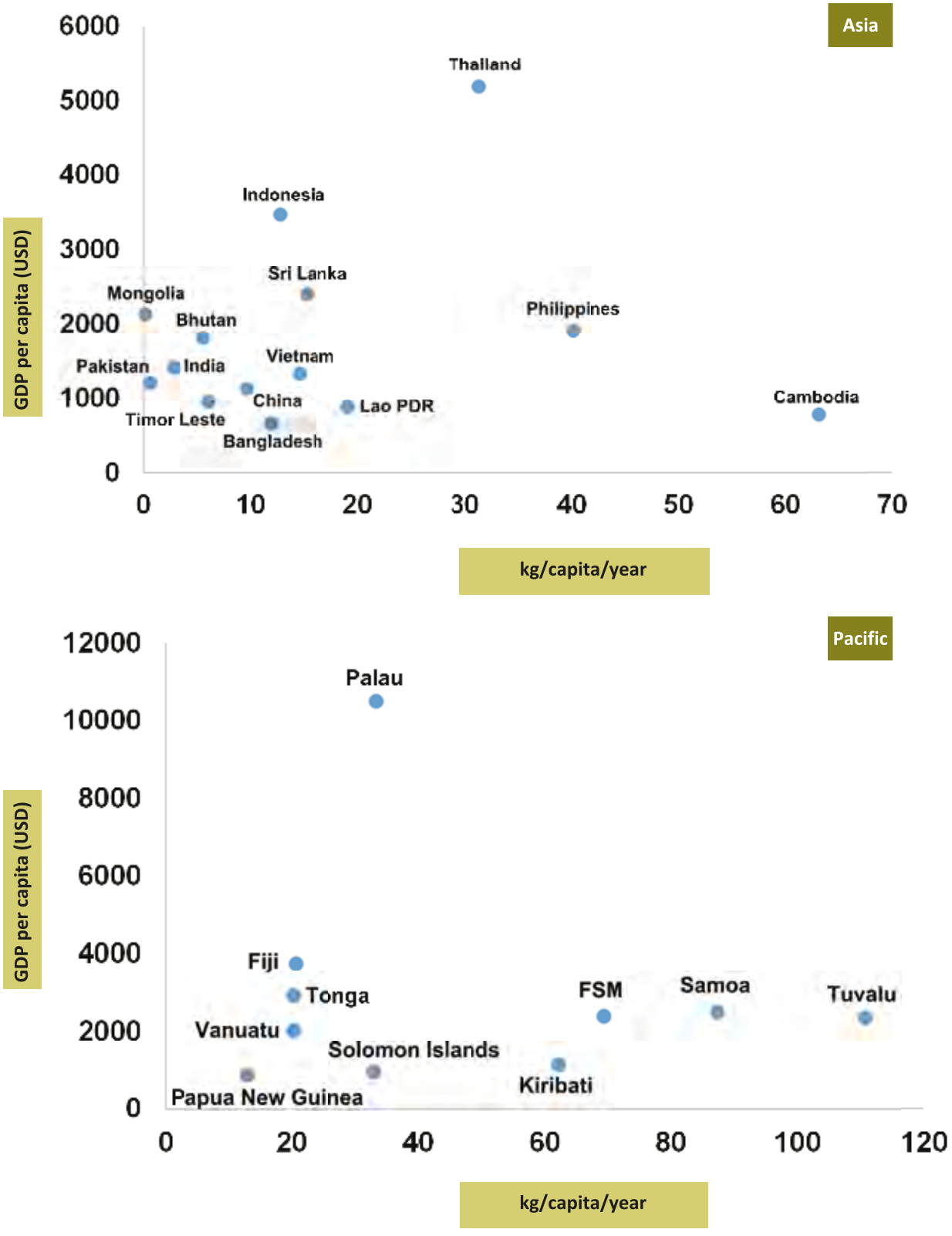

Annual national consumption of fish and fish products as determined via household surveys (kg/capita/year)
Population
Size of circle represents annual (actual) consumption of fish and fish products
China
1.2 billion
India
300 million
Indonesia
250 million
200 million
Bangladesh
Pakistan
150 million
Philippines
Vietnam
100 million
Cambodia
Federated States of Micronesia
Myanmar
50 million
French Polynesia
Thailand
Sri Lanka
Lao PDR
Samoa
0
Mongolia
10
30
50
70
Niue
90
110
Nauru
Bhutan
Cook Islands
Wallis & Futuna
Timor-Leste
Vanuatu
Solomon Islands
Tuvalu
Papua New Guinea
New Caledonia
Tonga
Consumption of fish and fish products (kg/capita/year)

Rural/urban consumption of fish and fish products in Asia



Note
Rural/urban consumption data not available for Philippines. Rural data not available for Timor-Leste.

Per capita fish consumption plotted against per capita GDP (USD)



Note
GDP per capita (current USD). Source: http://data.worldbank.org/
Consumption and GDP figures relate to year of survey information for individual countries.
FSM = Federated States of Micronesia

Bangladesh

Consumption of fish and fish products in Bangladesh based on the household consumption survey was **11.9 kg per capita per year** (2010) which accounted for 11.1 percent of total protein consumption. This is remarkably close to the figure of 11.3 kg per capita per year recorded in 1964[3].

Consumption in the Chittagong area was highest at 17.2 kg per capita per year while that in Rangpur was lowest at 7.5 kg per capita per year.

Overall, 76 percent of the fish consumed were inland species and 18 percent were of marine origin.

Urban consumption stood at 14.5 kg per capita per year and rural at 11 kg per capita per year with rural communities eating more inland fish (70 percent) than urban communities (61 percent).

Contribution to protein from fish consumption varied greatly between income groups ranging from 1.31 kg per capita per year in the lowest income group (bottom 20 percent income group) to 3.39 kg per capita per year in the highest (top 20 percent income group).

The species most commonly consumed were all freshwater including tilapia, catfish and mrigal carp. Hilsa shad and other shads were the most commonly consumed marine/estuarine species.

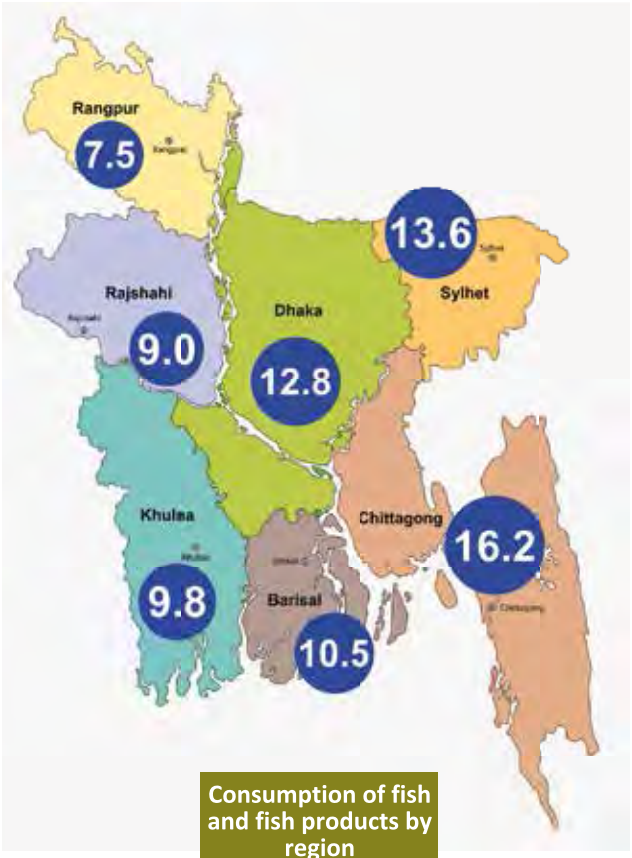
Apart from the estuarine species, the majority of freshwater species are most probably derived from stocked inland water bodies and rice fields. Aquaculture production certainly provides a significant proportion of carps, barbs and tilapia.

It is not possibly to clearly disaggregate the relative contributions to consumption from wild capture fishery and aquaculture, but based on the FAO reported aquaculture and fishery statistics, aquaculture production accounts for 52.9 percent, freshwater and estuarine fisheries (includes hilsa) 38.4 percent and marine fisheries 8.7 percent of total production, respectively.

The per capita annual consumption figure is 32 percent less than the FAO apparent consumption figure.

[3]Khan, M. I. (1969). Aggregative Analysis of Food Consumption in Pakistan. The Pakistan Development Review, 426-441. [Note that at this time Bangladesh was referred to as East Pakistan].

Bangladesh



Consumption of fish and fish products by region (kg/capita/year)

Fish commonly consumed in Bangladesh

Edible quantity of fish and fish products consumed (capita/year)

11.9 kg

Fish and fish products as a share of total protein consumption

11.1%

Annual fish and fish product consumption

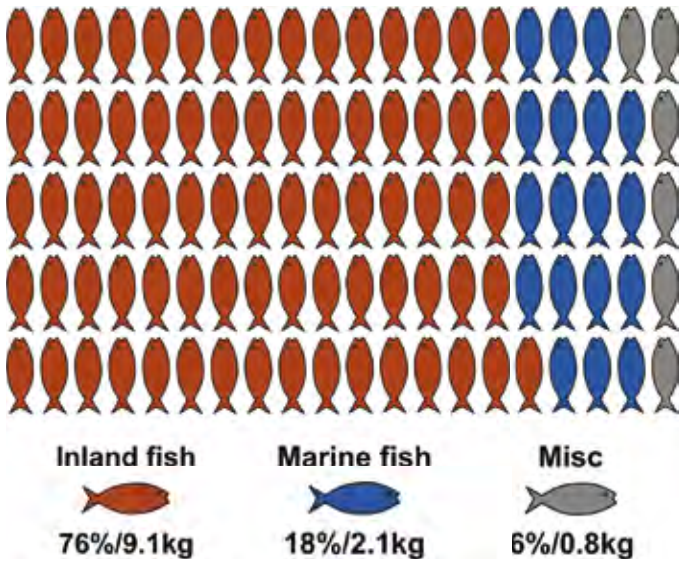
1 798 393 tonnes[1]

Data year

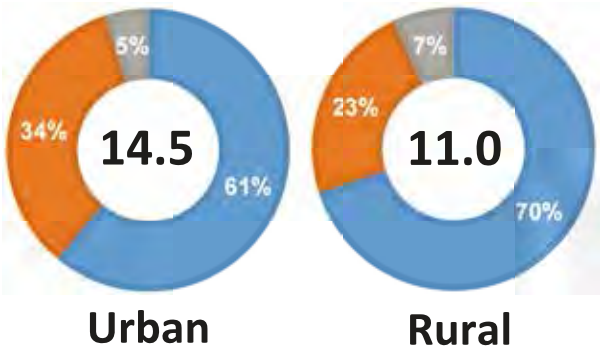
2010

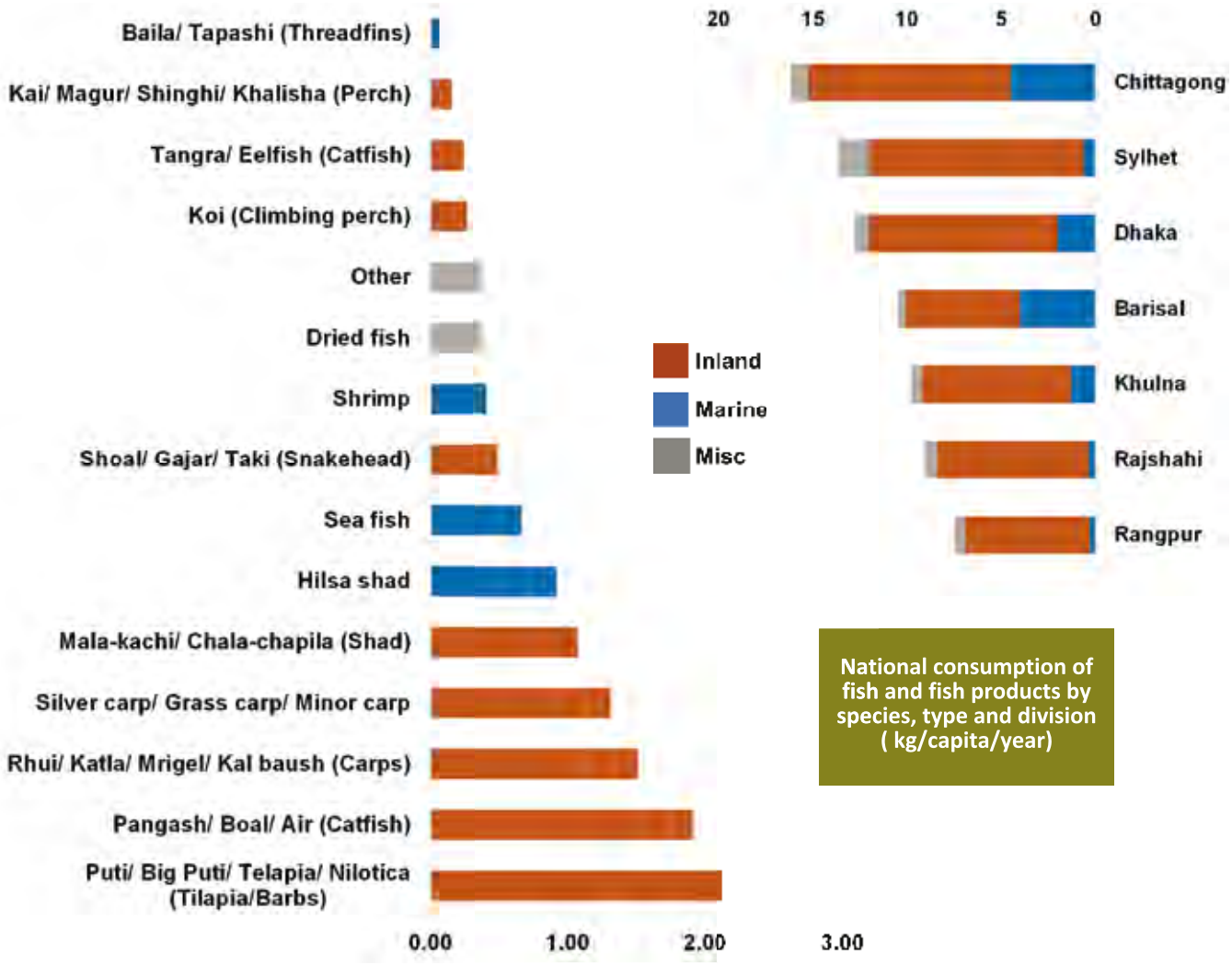
Data source : Household Income and Expenditure Survey 2010[2]

National consumption of fish and fish products (% of total consumed; kg/capita/year)



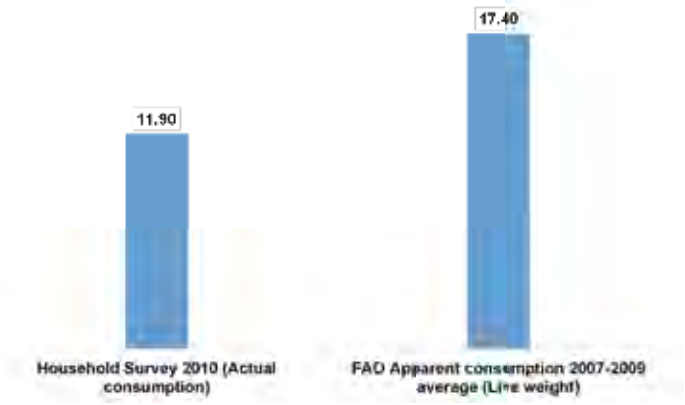
Urban/rural consumption of fish and fish products (% of total consumed; kg/capita/year)



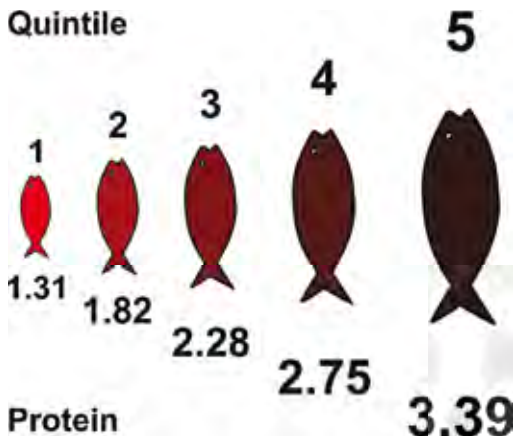


National consumption of fish and fish products by species, type and division (kg/capita/year)

Comparison of fish and fish product consumption figures obtained via 'Apparent Consumption' and Household Survey methods (kg/capita/year)



Protein consumption from fish by income quintile (kg/capita/year)



Notes

1. Based on actual consumption. 2010 population of Bangladesh 151 125 475. Ref: http://countryeconomy.com/demography/population/bangladesh
2. Household Income and Expenditure Survey 2010 carried out by the Bangladesh Bureau of Statistics (BBS). A two-stage stratified random sampling technique was followed. The survey has completed in one complete year (1 February 2010 - 31 January 2011) in order to capture the seasonal variations. In all, 12 240 households were selected with 7 840 from rural areas and 4 400 from urban areas. Data has been revised with the support of FAO using harmonized methodologies.

Bhutan

Based on household surveys (published in 2009)[4], national consumption is in the order of 3 931 tonnes per year. Fish and fish product consumption in Bhutan based on the household consumption survey was 5.58 kg per capita per year (2009) while fish accounts for 3.18 percent of all protein consumed.

Urban households also eat over twice as much fresh fish as their rural counterparts. This is mainly imported frozen fish (~61 percent), but a significant proportion (24 percent) is recorded "fresh fish" which is assumed to be a mixture of fish caught from the wild and imported "chilled" fish (from India).

The "fresh fish" category may also include as salted or dried fish (equivalent to about 943 tonnes per year) . There is no way to verify this from the survey data, but the following points lead us to assume that this is correct:

- Chilled fish (fish on ice) is imported in trucks from India and finds its way into urban markets in particular. Quality and "freshness" are variable.
- This Indian chilled fish probably does not get marketed into rural areas.
- Salted and dried marine fish, imported from India is found in all urban markets and also makes its way into most districts. Based on examples seen in markets, the quality seems rather poor.
- Fresh caught wild fish in Bhutan is not widely marketed into towns or beyond the area where it is captured.

The highest consumption figures are recorded in the Transhi-yangtse district at 11.5 kg per capita per year while Samtse in the far southwest of the country sees the lowest at 2.5 kg per capita per year. Urban dwellers consume more fish (6.4 kg per capita per year) than those in rural areas (5.3 kg per capita per year).

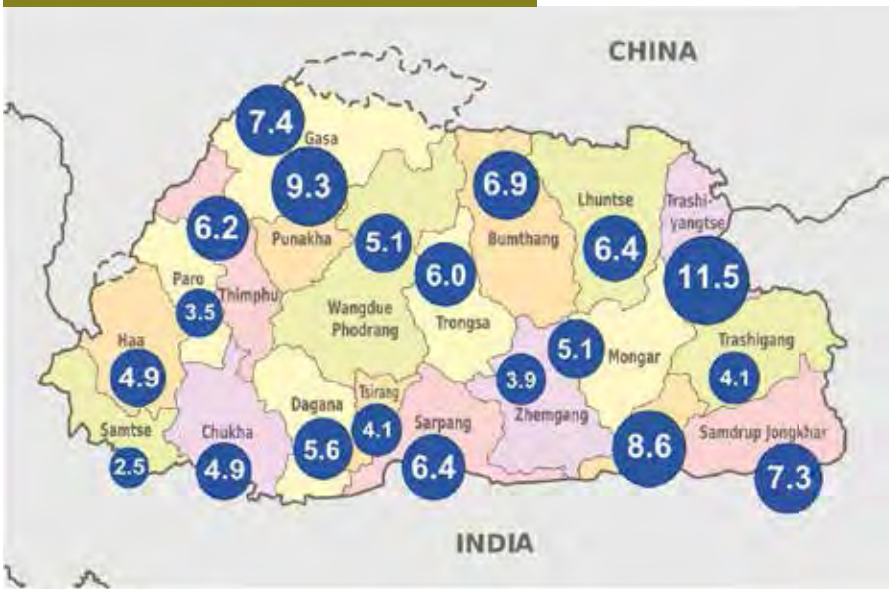
These consumption figures are much higher than those which are calculated based on nationally reported statistics. The FAO apparent consumption figure, which is based on reported national production, exports and imports, gives a much lower figure (0.3 kg per capita per year) for Bhutan. The difference between the two estimates is almost certainly due to the "unreported levels of imports together with and underestimation of the national production.

The consumption and expenditure surveys have their own weaknesses, with under- or over- estimations arising from errors during surveying due to seasonality, recall and the way questions are phrased (e.g. it seems that dried and salted fish were either not recorded, in which case the consumption figure is under-estimated, or were included in the fresh category, in which case the fresh fish figure is a mixture of products). Despite possible shortcoming, the sample size of 10 000 households of the household survey gives the data statistical credibility.

[4]Based on actual consumption, using 2008 population of Bhutan. Survey data from Bhutan Standard Survey (BLS) 2007 (Sample size 10,000 households)

Bhutan

Consumption of fish and fish products by region (kg/capita/year)



Edible quantity of fish and fish products consumed (capita/year)

5.58 kg

Fish and fish products as a share of total protein consumption

3.18%

Annual fish and fish product consumption

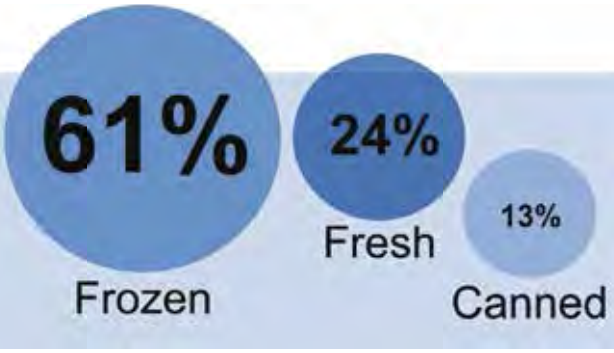
3 931 tonnes[1]

Data year

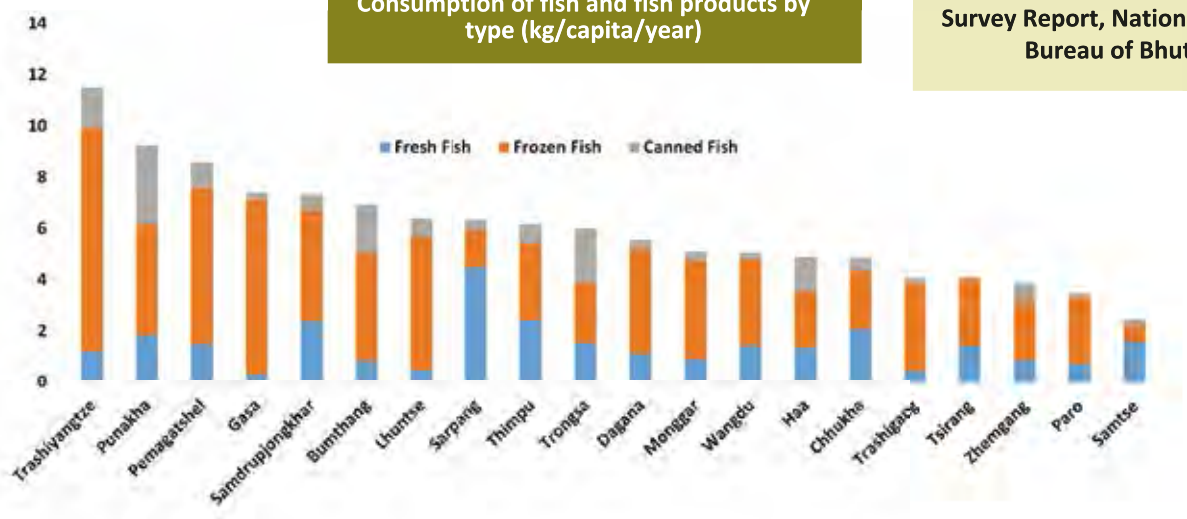
2009

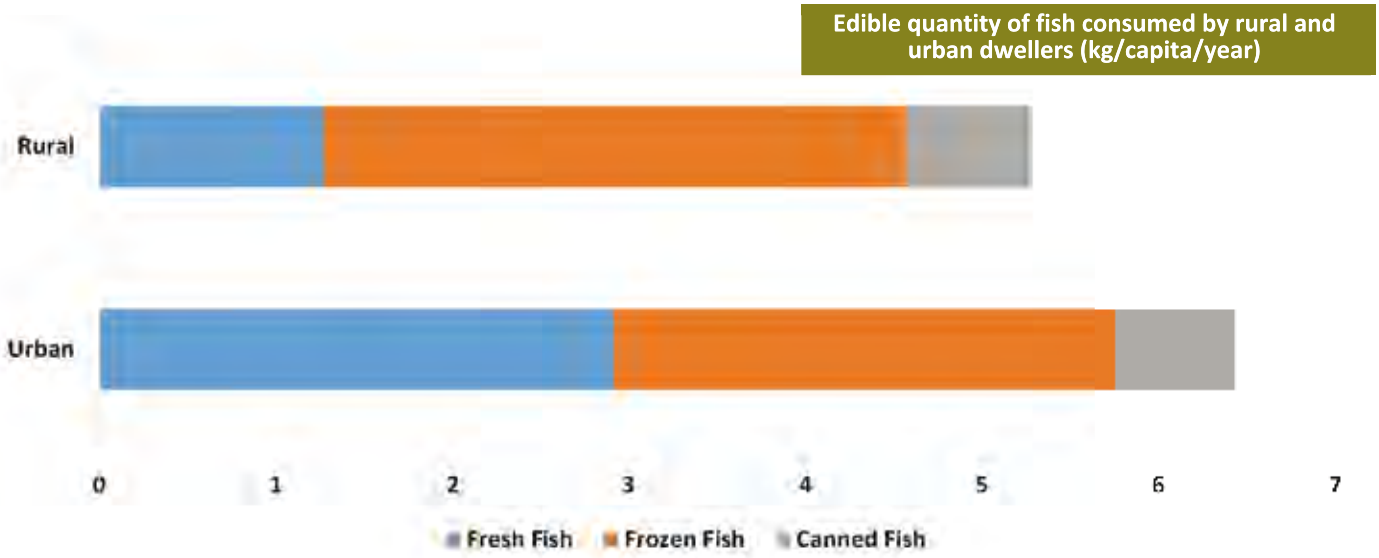
Data source : Living Standard Survey Report, National Statistics Bureau of Bhutan[2]

Consumption of fish and fish products by type on a national level



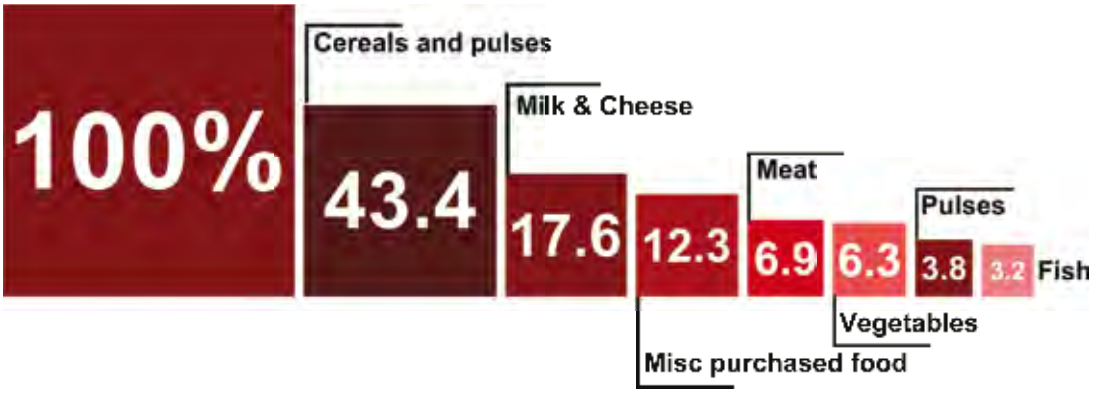
Consumption of fish and fish products by type (kg/capita/year)



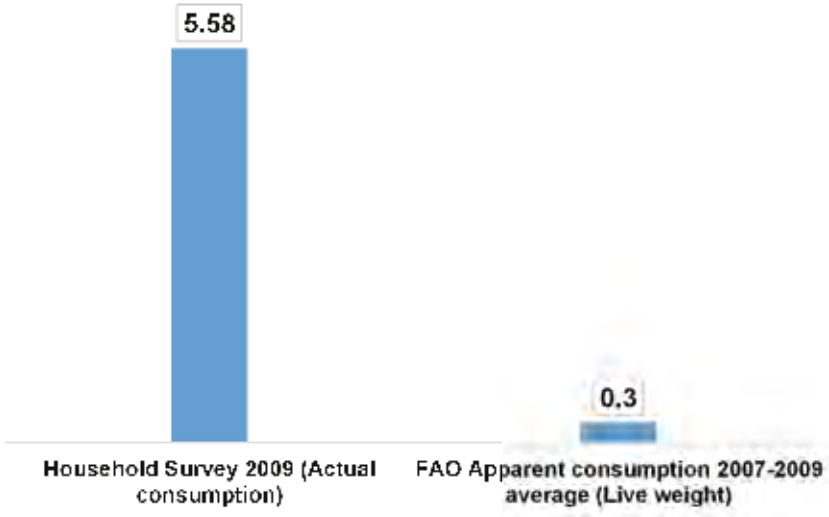


Edible quantity of fish consumed by rural and urban dwellers (kg/capita/year)

Those in the highest income quintile consume 2.5 times more protein from fish and fish products than those in the lowest.



Major sources of protein consumption (% of total)



A comparison of fish and fish product consumption figures obtained via 'Apparent consumption' and household survey methods

(kg/capita/year)

Notes

1. Based on actual consumption. 2008 population of Bhutan 704 542. Ref http://countryeconomy.com/demography/population/bhutan
2. The Bhutan Standard Survey (BLSS) 2007 was the second round of a nation-wide survey of households. The BLSS 2007 was designed to generate statistical indicators for all the twenty Dzongkhags (Districts) in the country. The survey collected information from ten thousand (10 000) households selected by circular systematic sampling.Information was collected through an integrated household questionnaire covering consumption, expenditure, assets, housing, education, health, fertility, and prices of varying commodities.

Cambodia

The edible quantity of fish and fish products consumed in Cambodia based on the household consumption survey was **63.15 kg per capita per year** (2011). This appears to be amongst the highest in the Asia-Pacific region.

With most of the country forming part of the Lower Mekong Basin and with highly productive Tonle Sap being the largest freshwater lake in Southeast Asia, fish consumption figures are relatively high across all regions of the country ranging from 90.2 kg per capita per year in coastal areas to 52.2 kg per capita per year in mountain and plateau regions.

The inland regions of the country consume more inland fish than marine fish, ranging between 62.2 – 83.3 percent of total fish consumed. In the coastal areas marine fish is the principal source providing 57.5 percent of total fish.

Nationally, inland capture fisheries resources account for 71 percent of fish and fish products consumed and marine fisheries resources 27 percent.

There is relatively little difference between urban and rural consumption of inland and marine fish, although there are some differences in the types of inland fish consumed. In particular the air-breathing, “blackfish” are more predominant in the diet of the Phnom Penh and the mountain and plateau areas.

Fish and fish products represent some 37 percent of total animal protein consumed.

Aquaculture accounts for a relatively low percentage of the consumption (2 percent).

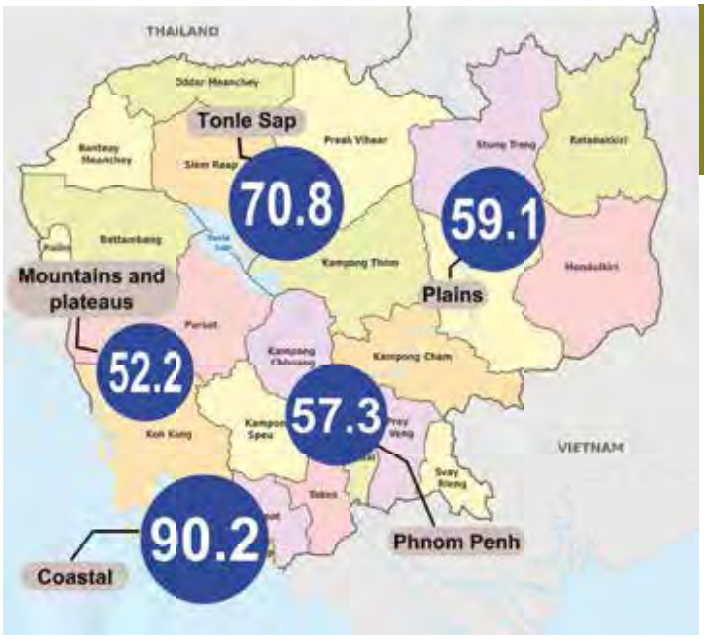
Amongst the most commonly consumed species are snakehead, catfish, climbing perch and mud carp. Other aquatic animals contribute 6.4 percent of the total consumed.

There are several estimates of total fish consumption available for Cambodia. These are based on different methods of estimation. The figure derived from the consumption survey is highest (63.2 kg per capita per year) and differs by 18 percent from the adjusted consumption figure (52.4 kg per capita per year) in the MRC study conducted by Hortle[5].

The FAO apparent consumption figure is much lower (34.2 kg per capita per year) and is almost certainly a result of underestimated fishery production officially reported to FAO. This is an example where consumption survey data can provide supporting evidence for actual production, in cases where national production estimates are not based on statistical data collection systems.

[5]Hortle, K.G. (2007) Consumption and the yield of fish and other aquatic animals from the Lower Mekong Basin. MRC Technical Paper No.16, Mekong River Commission, Vientiane. 87 pp.

Cambodia



Consumption of fish and fish products by Province (kg/capita/year)

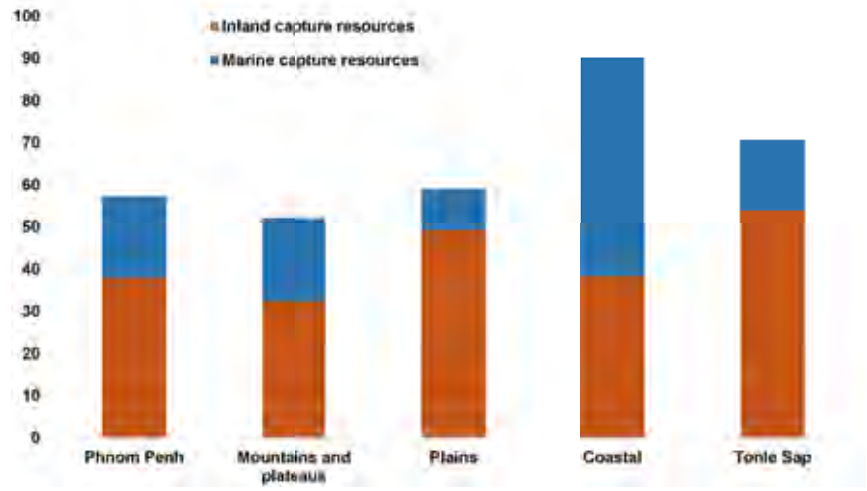
Edible quantity of fish and fish products consumed (capita/year)

63.15 kg

Fish and fish products as a share of total protein consumption

37%

Consumption of inland/marine fisheries resources by area (kg/capita/year)



Annual fish and fish product consumption

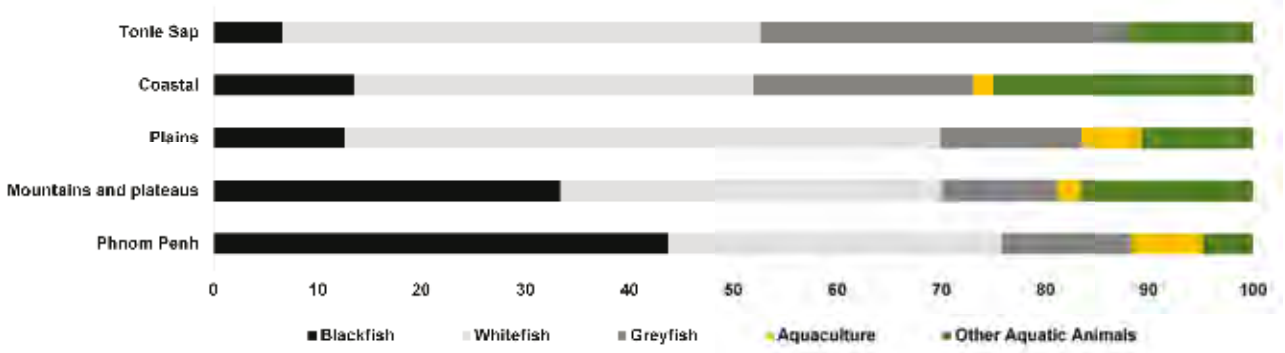
890 344 tonnes[1]

Data year

2011-2012

Data source : Inland Fisheries Research and Development Institute (IFREDI) Fisheries Administration Ministry of Agriculture, Forestry and Fisheries[2]

Consumption of inland fish types by area (%)



Fisheries resource type consumption % of total consumption; kg/capita/year

Black Fish
Tough fish which do not leave floodlands and wetlands. Examples: Snakehead, Philippine Catfish, Climbing Perch
30%/19kg

White Fish
Long-distance migrants Examples: Siamese Mud Carp, Chinese Pangesid catfish
25%/16kg

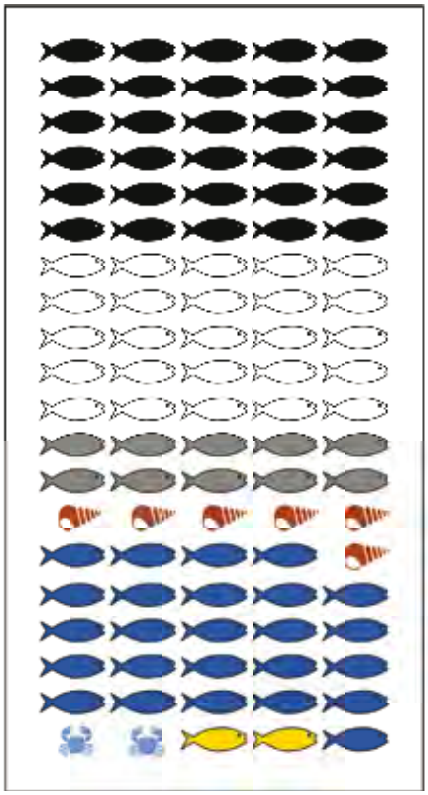
Grey Fish
Ecologically intermediate fish between the black and white groups.
10%/6kg

Inland Other Aquatic Animals
6%/4kg

Marine Fish
25%/16kg

Marine Other Aquatic Animals
2%/1kg

Aquaculture
2%/1kg

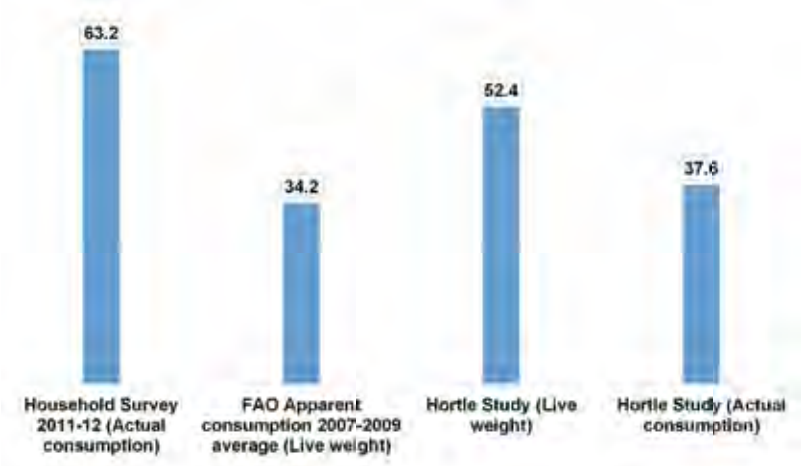


Inland Fisheries Resources
71%/45kg

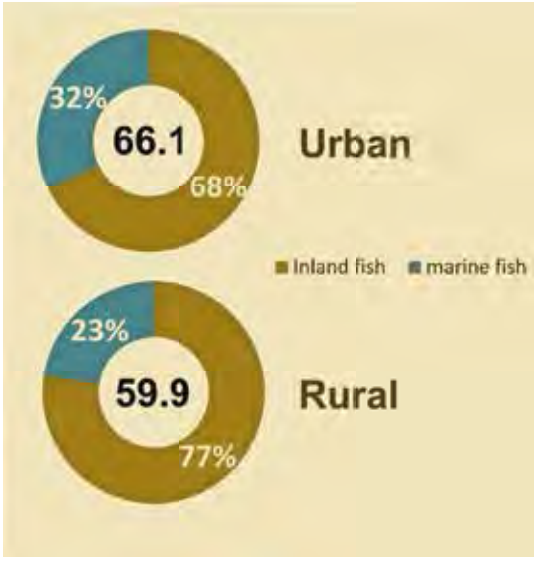
Marine Fisheries Resources
27%/17kg

Aquaculture
2%/1kg

A comparison of fish and fish product consumption figures obtained via 'Apparent consumption' and household survey methods with Hortle study[3] (kg/capita/year)



Urban/rural consumption of fish and fish products (kg/capita/year)



Notes

1. The Inland Fisheries Research and Development Institute (IFReDI) of the Fisheries Administration carried out a survey of fish consumption as part of the 'Food and Nutrition Security Vulnerability to Mainstream Hydropower Dam Development in Cambodia' project which was co-funded by the Fisheries Administration, World Wildlife Fund for Nature (WWF), Oxfam Australia and DANIDA. As part of this initiative a Household Food Consumption Survey was carried out from 2011-2012 with 1 200 households nationwide, in five of Cambodia's major ecological zones namely: Phnom Penh, Coastal, Plains, Plateau/Mountain and Tonle Sap. This survey took into consideration the stratification framework of the National Institute of Statistics for the National Census. 2. Actual consumption. According to the Cambodian National Institute for Statistics, the estimated population of Cambodia was 12 014 343 in 2000 and is expected to grow to 15 104 768 by 2015. This gives a figure of 14 095 147 people in 2011 (rounded up to 14 100 000). 3. The Hortle study for the Mekong River Commission (2007) saw the analysis of 20 consumption studies spanning the Lower Mekong Basin countries (Lao PDR, Thailand, Cambodia and Vietnam).

China

There are very distinct patterns in the consumption of aquatic products between the different regions in China. Major consumers are in China's coastal south and southeast provinces. Aquatic products are consumed less in China's western provinces, especially in the northwest. This trend is generally reflected in both urban and rural consumption patterns.

Aquatic product consumption is typically concentrated in China's coastal south-east provinces, which is also the base of most aquacultural production[6]. The consumption of aquatic products has increased significantly in the past ten years. The rapid increase in demand for aquatic products has been mainly met by domestic supplies from freshwater aquaculture. Fish production from inland freshwaters provides the majority of fish, and this can be broadly interpreted as coming from aquaculture (mostly carp species).

For 2009, significant gaps also exist between rural and urban consumers in the consumption of aquatic products. Rural per capita consumption (5.3 kg per capita per year) in just over one third of that by urban residents (14.3 kg per capita per year). This level is lower than the consumption level of urban residents in the early 1980s indicating a lag of 30 years[6].

Bottom income consumers (10 kg per capita per year) consumed 42.5 percent less aquatic products than the top income consumers (17.4 kg per capita per year). Meanwhile, fish is the second most important source of animal protein (meat/flesh products) in the Chinese diet after pork for both rural and urban dwellers.

The per capita consumption calculated from the 2009 FAO balance sheet (39.60 kg per capita per year) is much higher than the Chinese State Statistical Bureau (SSB) survey figure (9.66 kg per capita per year) for the same year. This gives an annual total consumption figure of 12.9 million tonnes, considerably lower than the national total production figure reported to FAO of over 70 million tonnes.

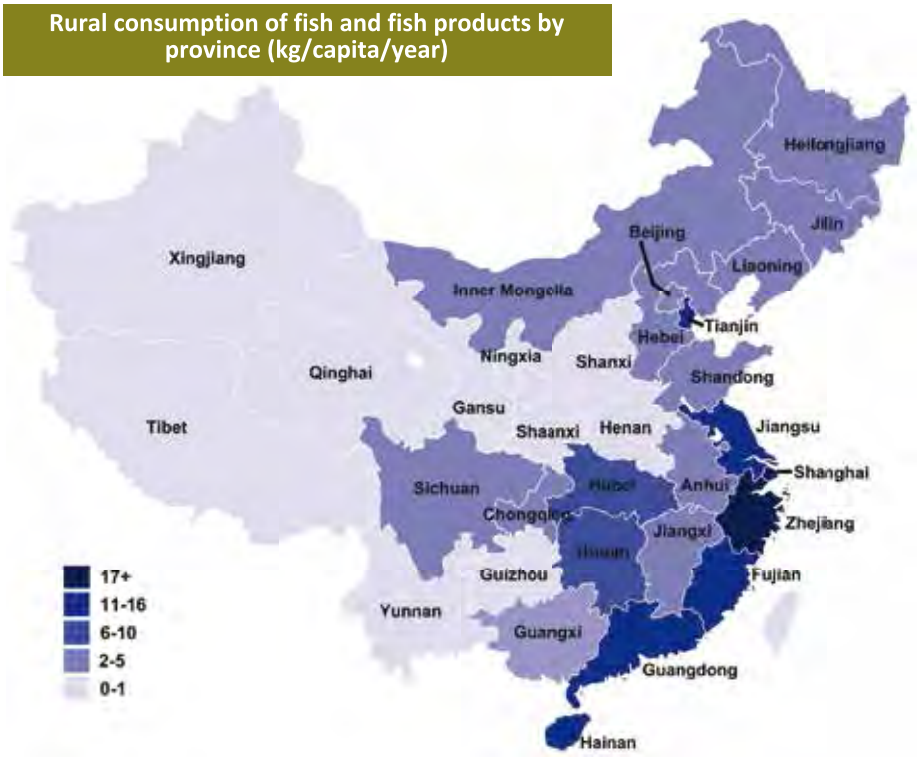
The considerable difference can be attributed to a number of reasons. The FAO balance sheet takes total reported production into account. This includes a large proportion of aquatic plants and molluscs (each comprised about 19 percent of total aquatic products in 2012). Aquatic plants are largely used for industrial purposes or processed food while mollusks contribute very little to household fish consumption in the SSB survey. Significant volumes of domestically produced fish and crustaceans are processed for export.

Even discounting these potential sources of error, the freshwater finfish aquaculture production alone is over 23 million tonnes (double the figure obtained from the consumption survey). There are good reasons to believe that the SSB fish consumption data is very probably underestimated. A significant reason is that the SSB surveys do not include consumption outside the home (i.e. consumption in schools, company canteens or restaurants). As a major producer and consumer of fish, it is important to try to obtain better resolution on these estimates of fish consumption.

[6]Food Consumption Trends in China , April 2012 Prepared by Zhangyue Zhou, Weiming Tian, Jimin Wang, Hongbo Liu and Lijuan Cao. Report submitted to the Australian Government Department of Agriculture, Fisheries and Forestry. http://www.daff.gov.au/__data/assets/pdf_file/0006/2259123/food-consumption-trends-in-china-v2.pdf

China

Rural consumption of fish and fish products by province (kg/capita/year)



Edible quantity of fish and fish products consumed (capita/year)

9.66 kg

Annual fish and fish product consumption

12 861 324 tonnes[1]

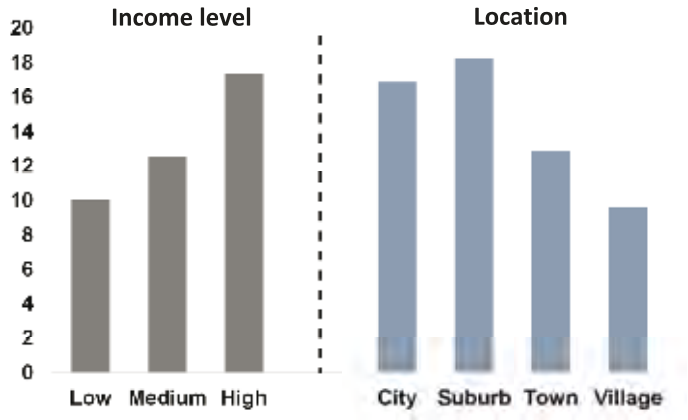
Data year

2009

Data source : Chinese State Statistical Bureau[2]

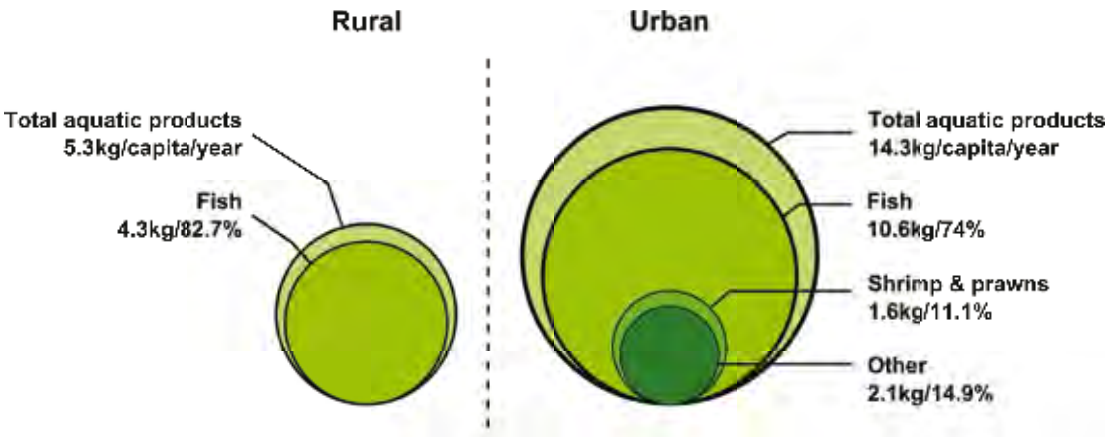
Urban/rural fish consumption (kg/capita/year)

Consumption of fish and fish products by level of income and location (kg/capita/year)[3]



Notes

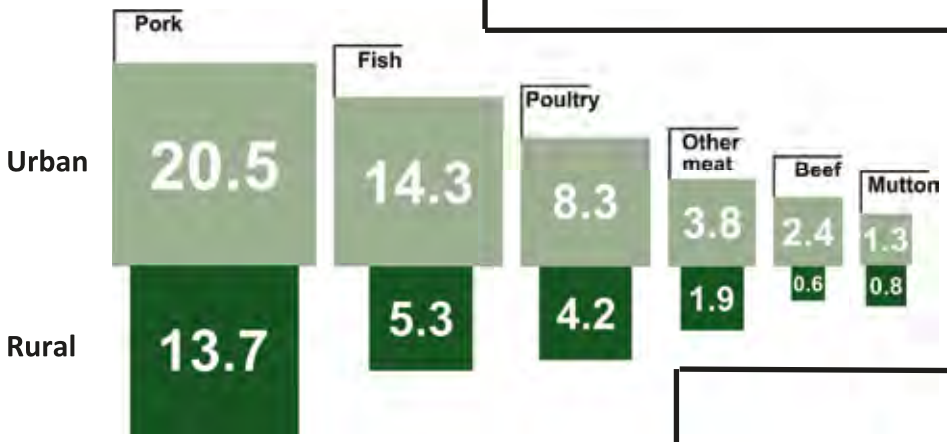
1. Based on actual consumption. Population of China (2002) 1 331 400 000 Ref: www.prb.org/pdf09/09wpds_eng.pdf 2. Data collected by China's State Statistical Bureau (SSB) from household surveys. It must be noted that the SSB data does not include away-from-home consumption, which is a major phenomenon in China. Without away-from-home consumption, the SSB data underestimates food consumption. 3. Based on data for nine sample provinces. 4. Rural poultry and other meat figures from 2006. All others 2009. 5. Bureau of Fisheries, Ministry of Agriculture. 2013. Chinese Fishery Statistical Yearbook 2013



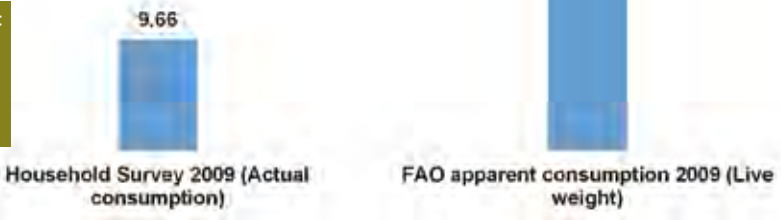
Breakdown of rural/urban fish type consumption (kg/capita/year)

Urban consumption of fish and fish products by province (yuan/capita/year)

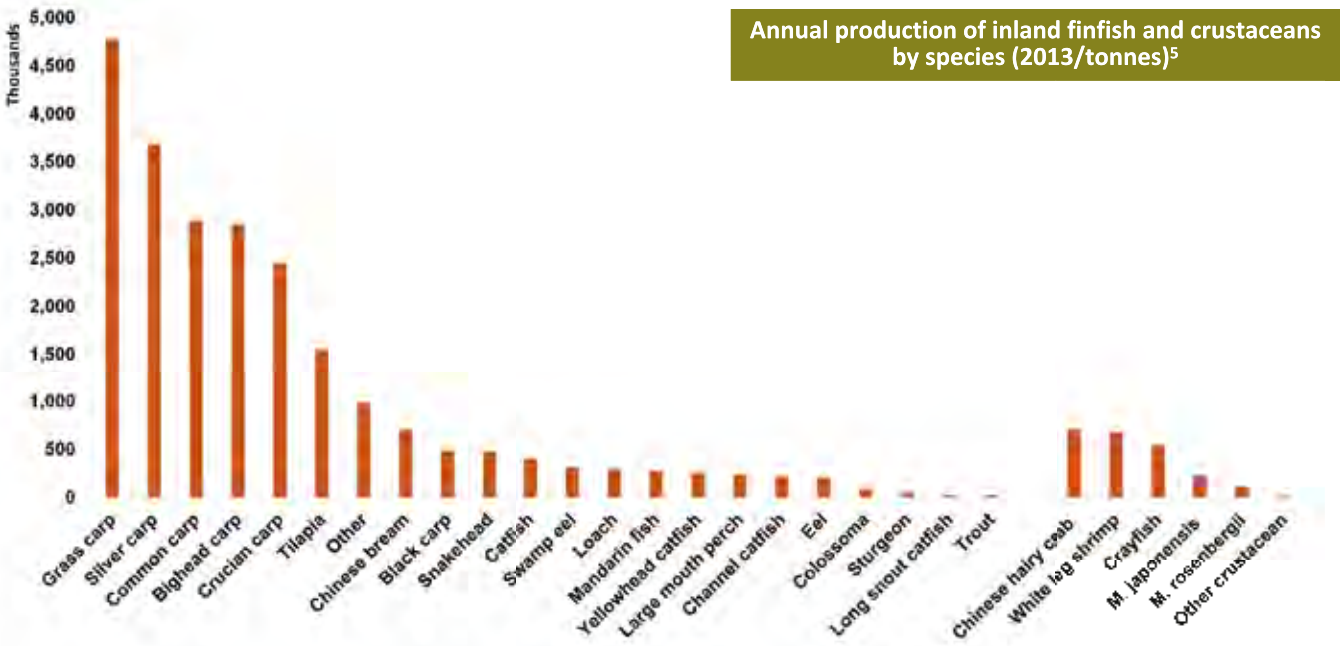
Rural/urban consumption of animal flesh (kg/capita/year)[4]



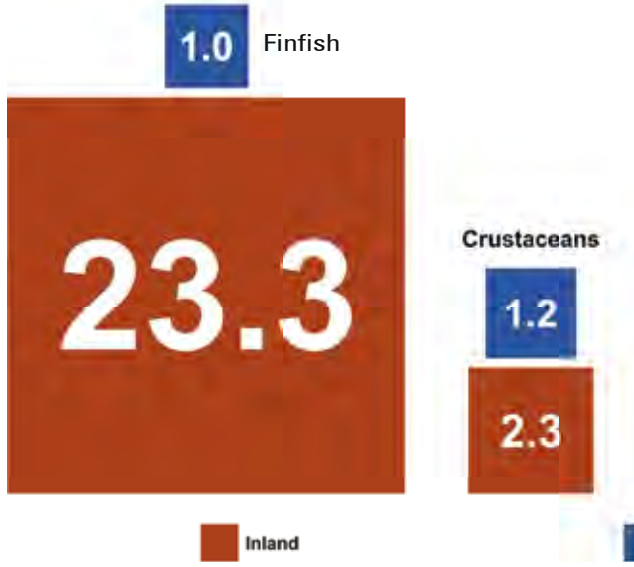
Comparison of fish and fish product consumption figures obtained via 'Apparent Consumption' and Household Survey methods (kg/capita/year)



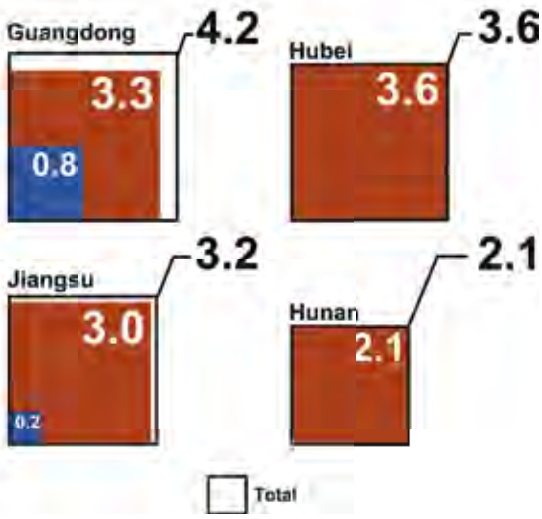
Annual production of inland finfish and crustaceans by species (2013/tonnes)[5]



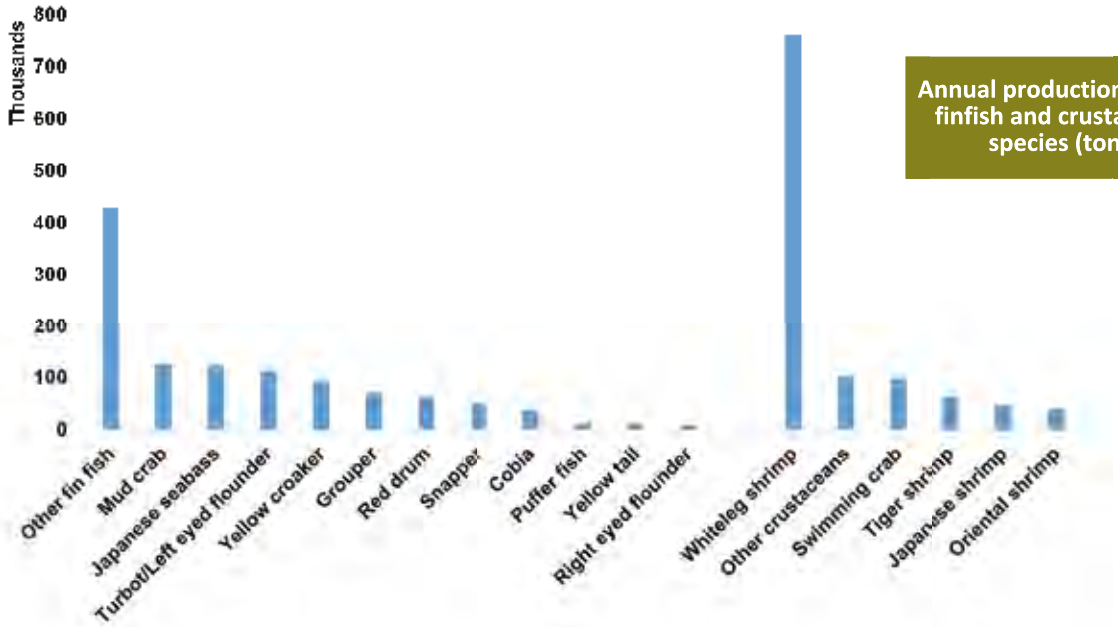
National annual production of finfish and crustaceans (million tonnes)



Annual production of finfish and crustaceans by leading four provinces (million tonnes)



Annual production of marine finfish and crustaceans by species (tonnes)



India

In India national average consumption of fish and fish products, based on the household consumption survey, was **2.85 kg per capita per year** (2010).

This accounted for 2.2 percent of total protein consumption, however it must be noted that 31 percent of the Indian population are vegans or lacto-vegetarians.

Considerable differences in consumption levels were recorded ranging from 22.7 kg per capita per year in the coastal province of Kerala to just 0.03 kg per capita per year in mountainous northern province of Himachal Pradesh.

Access to fish in the floodplains of western India and the coastal regions can explain some of the highest figures. However in areas where there is considerable fish culture (e.g. Andhra Pradesh), or marine fishery production (e.g. Gujarat), consumption figures are rather low. Wealth appears to be another factor influencing fish consumption.

In urban areas average fish consumption was 3.1 kg per capita per year in comparison to rural dwellers, who ate 2.7 kg per capita per year. It is unknown if this reflects higher purchasing power of urban citizens or greater fish availability in urban markets.

There are indicators of the influence of income on consumption. People in the lowest income group (the bottom 20 percent of income) consumed approximately one quarter of the protein from fish and fish products as those in the top 20 percent income group.

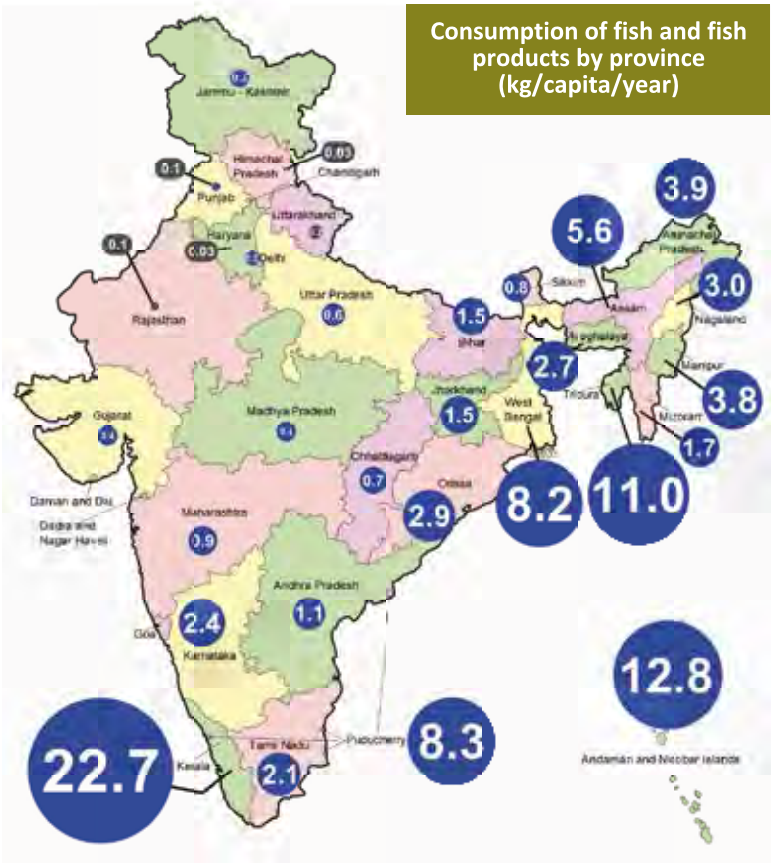
It would seem that wealth and food customs may play a more important role than fish availability, in determining fish consumption.

No data is available in the household survey on the types or sources of fish consumed, and this prevents further analysis.

The national consumption survey figure is derived from the consumption figure and population number by State. The 2010 Household survey consumption national figure is calculated as 2.85 kg per capita per year and is 48 percent less than the FAO Apparent Consumption figure of 5.50 kg per capita per year. As in the case of China, the large discrepancy between these figures is worth exploring, as the population numbers involved are considerable. This may indicate that either national statistics are over-estimated or the household surveys are greatly under-estimating consumption.

India

Consumption of fish and fish products by province (kg/capita/year)



Edible quantity of fish and fish products consumed (capita/year)

2.85 kg

Fish and fish products as a share of total protein consumption

2.02%

Annual fish and fish product consumption

3 436 030 tonnes[1]

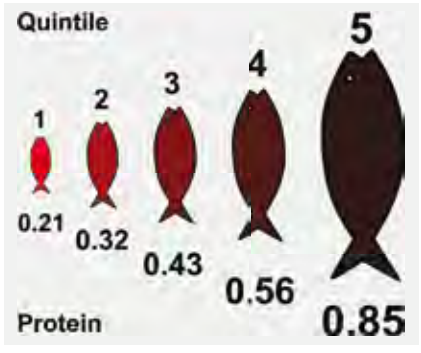
Data year

2009/2010

Data source : National Sample Survey[2]

Urban/rural fish consumption (kg/capita/year)

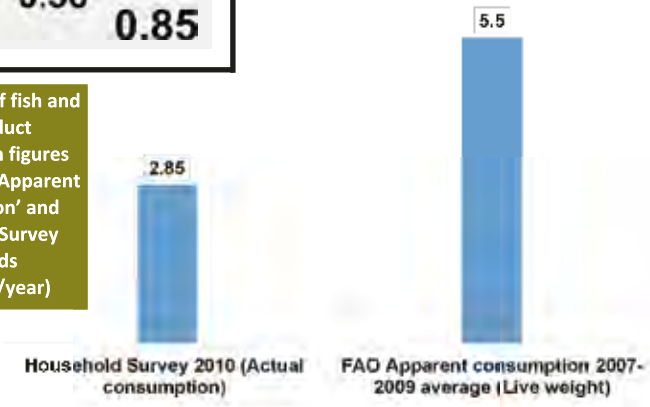
Protein consumption from fish by income quintile (kg/capita/year)



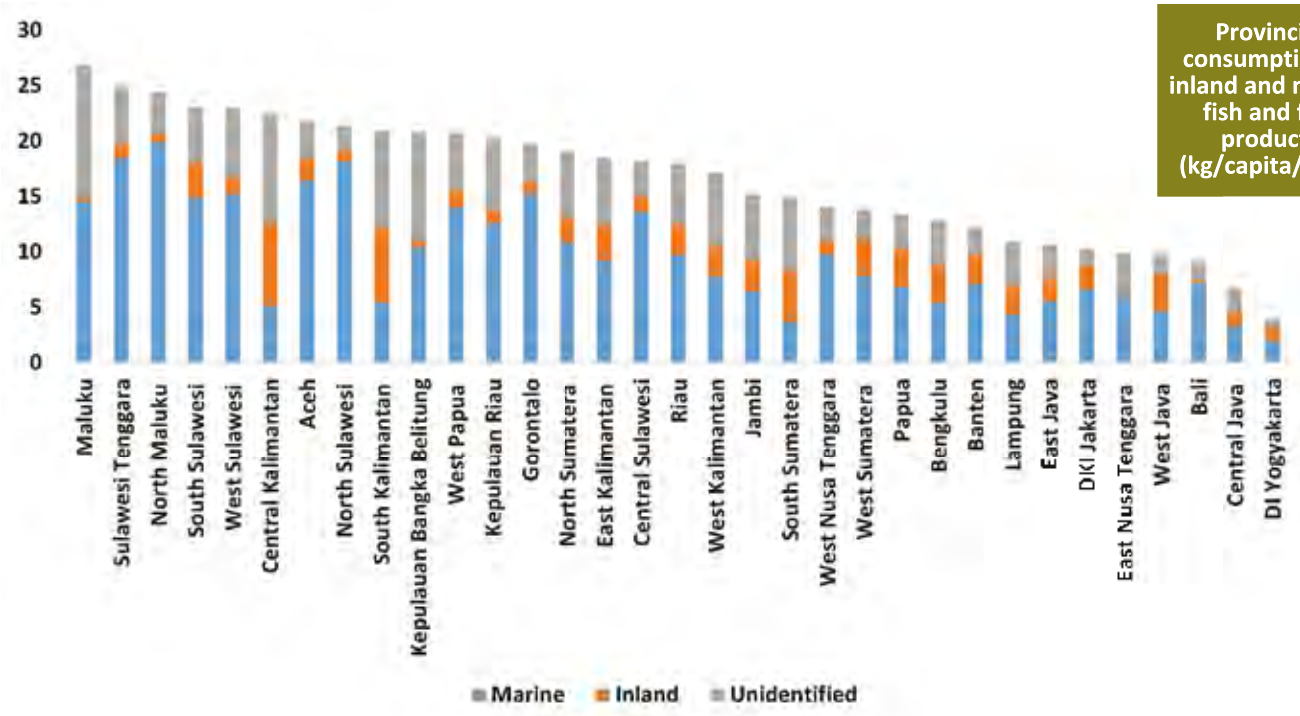
Notes

1. Based on actual consumption. 2006 population of India 1 205 624 648. Ref: http://countryeconomy.com/demography/population/india
2. The survey carried out by the National Sample Survey Organization covers the whole of the Indian Union except (i) interior villages of Nagaland situated beyond five kilometres of the bus route and (ii) villages in Andaman and Nicobar Islands which remain inaccessible throughout the year. Data has been revised with the support of FAO using harmonized methodologies.

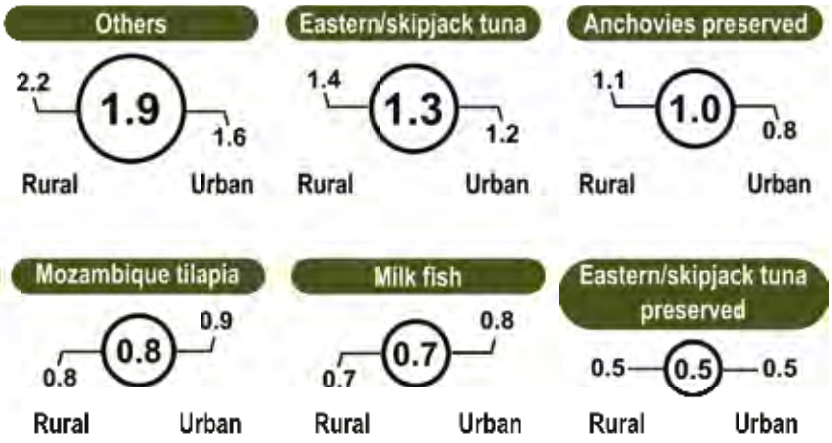
Comparison of fish and fish product consumption figures obtained via 'Apparent Consumption' and Household Survey methods (kg/capita/year)

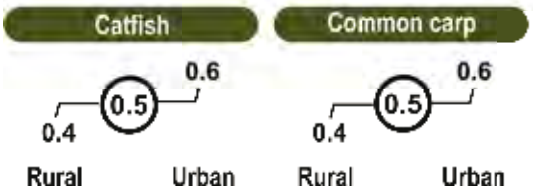


Provincial consumption of inland and marine fish and fish products (kg/capita/year)

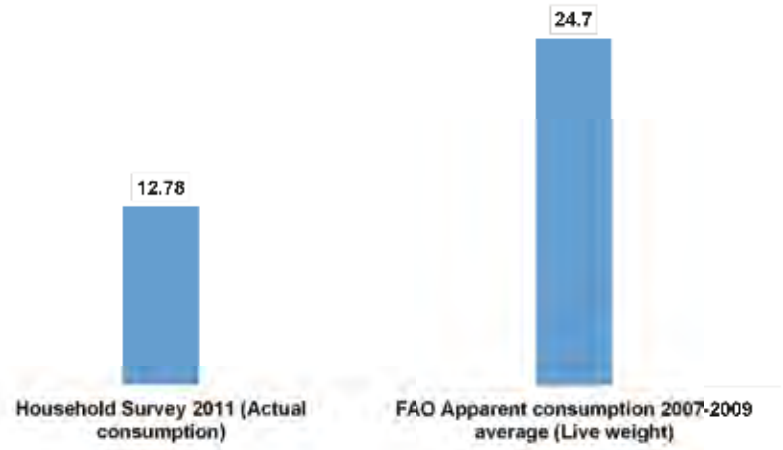


National consumption of 10 leading fish or fish product types (kg/capita/year)





Comparison of fish and fish product consumption figures obtained via 'Apparent Consumption' and Household Survey methods (kg/capita/year)



Notes

1. Figure reflects actual consumption. Population of Indonesia in 2011: 243 801 639. Ref: http://countryeconomy.com/demography/population/indonesia
2. The National Socio-economic Survey (SUSENAS) for 2011 was carried out by the Central Bureau of Statistics (BPS) of Indonesia and covered a nationwide sample of 300 000 households. Sampling follows the structured three phase methodology. Data has been revised with the support of FAO using harmonized methodologies.

Indonesia

Fish and fish product consumption in Indonesia was **12.8 kg per capita per year** (2011) representing 16.4 percent of total protein consumed.

Consumption levels ranged from 26.4 kg per capita per year in Maluku in the eastern part of the country to 4 kg per capita per year in Yokyakarta.

The high population density and relatively low fish consumption level in central Java brings the national average figure for consumption down, but it is clear that in most other parts of the country consumption levels are much higher.

Marine fish accounted for over 70 percent of consumption and inland species for some 25 percent. Although Indonesia is an archipelagic country with a massive coastline, it also has enormous freshwater resources and inland fisheries production in Indonesia is very substantial, particularly in the interior of the island and especially in Kalimantan. Inland fish were a much higher percentage of the fish consumed in Central and South Kalimantan and West Java (33-36 percent).

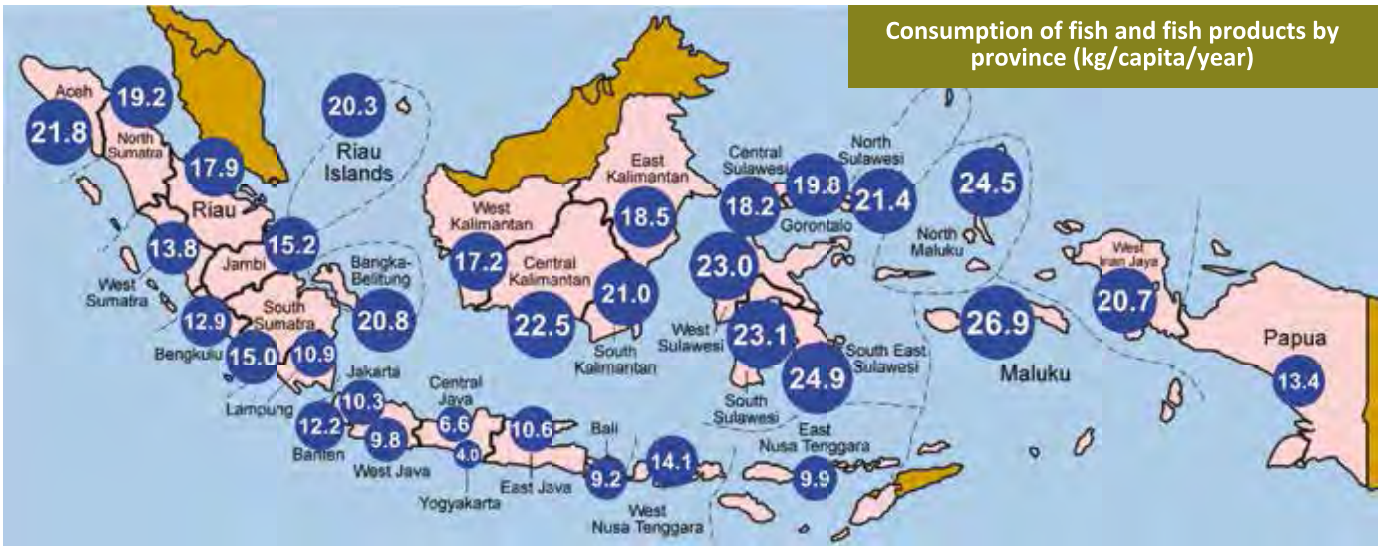
Skipjack tuna was reported to be the most commonly consumed marine fish followed by anchovy and Indian mackerel. For inland species tilapia ranked first followed by catfish and common carp, these are principally aquaculture species.

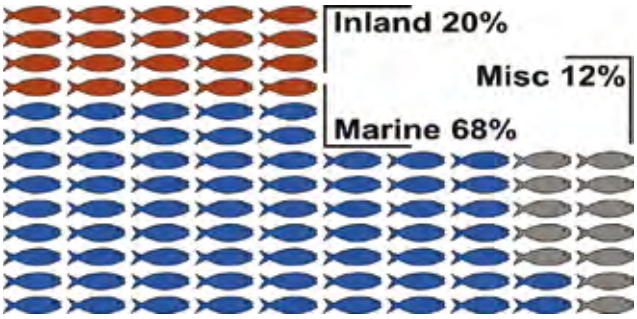
On a nationwide level the majority of fish products (70 percent by weight) are consumed fresh while 30 percent are eaten as preserved or processed products.

There were not large observable differences between the types of fish consumed in urban and rural areas, nor the quantity of fish consumed.

The FAO apparent consumption figure (24.7 kg per capita per year) is double the figure derived from the household surveys (12.8 kg per capita per year). The household survey figure will be underestimated in terms of fresh weight of fish because up to 30 percent of the fish consumed was processed in some way (processed fish typically has a lower weight than the fresh weight of fish from which it is produced).

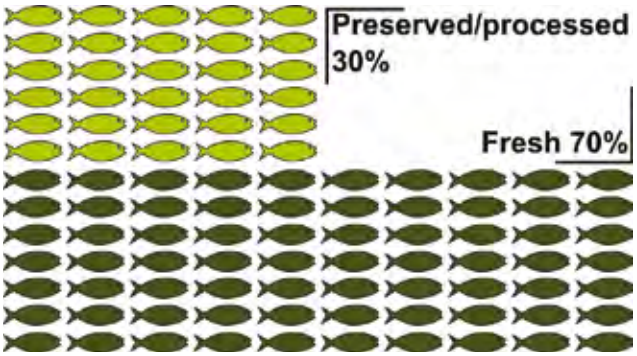
Indonesia





National consumption of inland and marine fish (%)

Ranking of major species of inland and marine fish consumed (%)



National consumption of preserved and fresh fish (%)

Edible quantity of fish and fish products consumed (capita/year)

12.78 kg

Fish and fish products as a share of total protein consumption

16.4%

Annual fish and fish product consumption

3 115 784 tonnes[1]

Data year

2011

Data source : National Socio-Economic Survey 2011[2]

Lao PDR

Consumption of fish and fish products in Lao PDR based on the household consumption survey was **19.1 kg per capita per year** (2008). This represented 10 percent of total protein consumption.

Based on the population of the country, this indicates a total fish consumption of 125 532 tonnes. The estimated production figure reported in FAO FishStatJ is 136 000 tonnes.

Fish consumption ranged from 7.5 kg per capita per year in Houaphan province in the northeast to 32.7 kg per capita per year in Champassak in the far south.

Generally the rise in consumption mirrors the southwards passage of the Mekong river from the mountainous north to the plains in the south until it passes into Cambodia.

Captured fresh fish made up the majority of consumption (approx. 80 percent, with a range of 74 – 98 percent).

Aquaculture fish consumed ranged from 1 – 26 percent, with a median value of 2.5 percent. The Province of Huaphanh was a significant outlier at 25 percent of aquaculture fish and this reflects the significant area of rice fish culture in the province.

Frozen or canned fish ranged between 1.5 - 8 percent of the total.

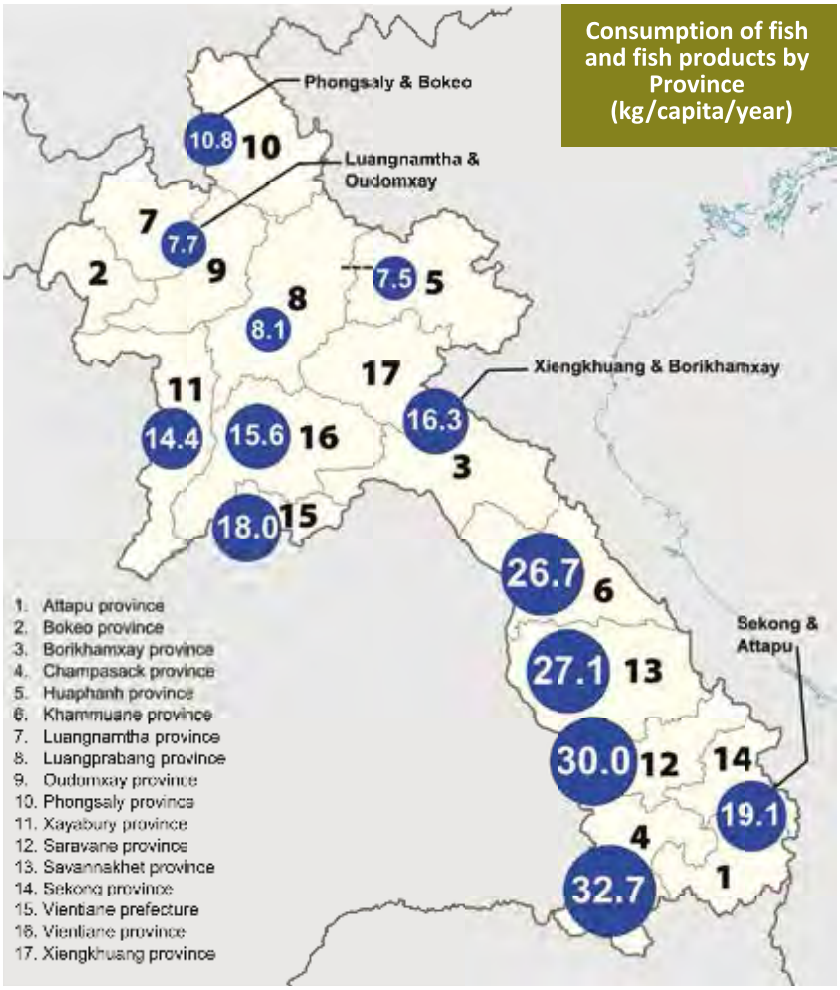
Fish which had been captured from waterways (as opposed to farmed) accounted for over 65 percent of rural consumption as opposed to around 25 percent for urban households.

Processed or preserved fish accounted for 12.5 percent.

Based on the consumption figures and populations of each province, the amount of inland fish consumed (and largely produced within the country) is approximately 100 000 tonnes. This difference between wild caught fish and cultured fish is not reflected in national production statistics, which overall indicate lower levels of capture fishery production (34 000 tonnes) and a greater contribution from aquaculture fish (100 000 tonnes). This contradiction reflects the absence of statistical data collection system, but also indicates how survey responses may not accurately report the source of production.

Despite the apparent contradiction regarding the source of fish consumed, the FAO apparent consumption figure (18.2 kg per capita per year) and that derived from the household survey (19.1 kg per capita per year) are reasonably close.

Lao PDR



Edible quantity of fish and fish products consumed (capita/year)

19.1 kgs

Fish and fish products as a share of total protein consumption

10%

Annual fish and fish product consumption

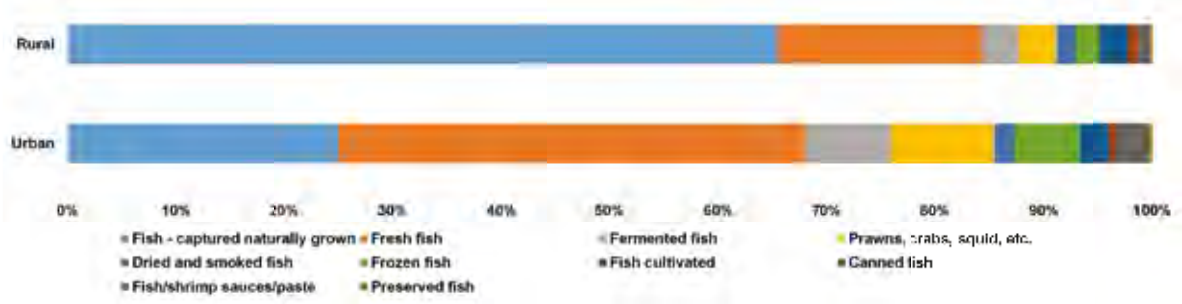
125 532 tonnes[1]

Data year

2007/8

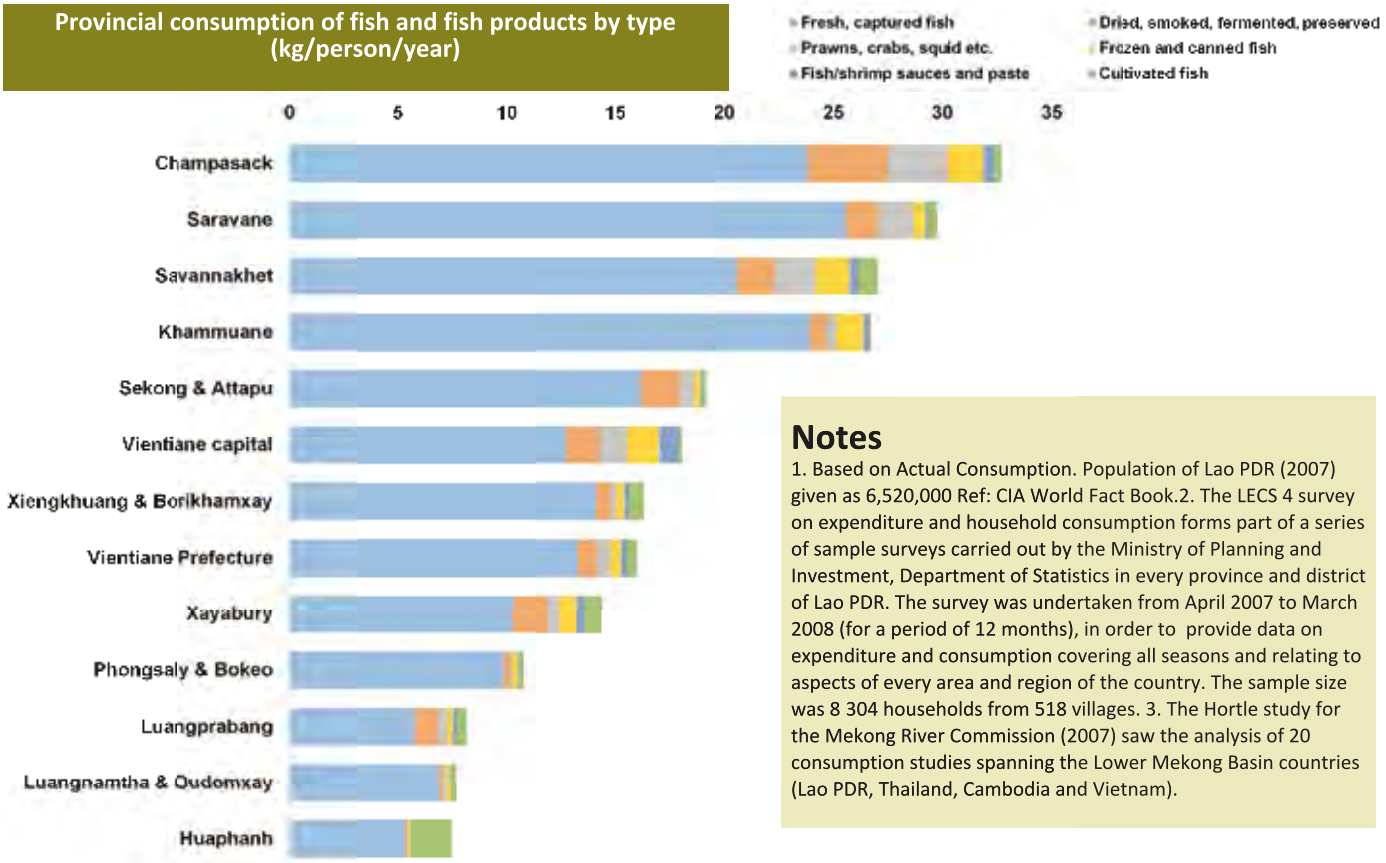
Data source : Ministry of Planning and Investment, Department of Statistics, Household Survey[2] (LECS4)

National consumption of fish and fish products by type (kg/capita/year)



Rural/urban consumption of fish and fish product by type (%)

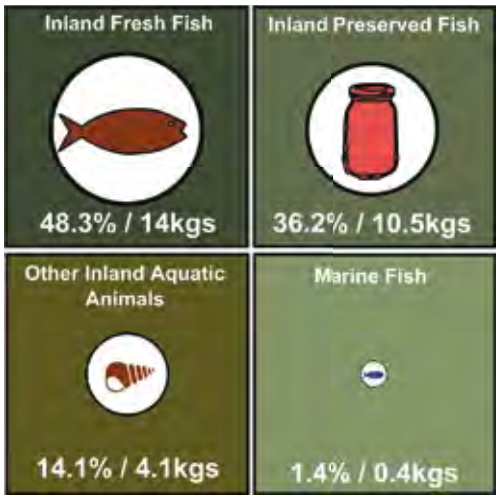
Provincial consumption of fish and fish products by type (kg/person/year)



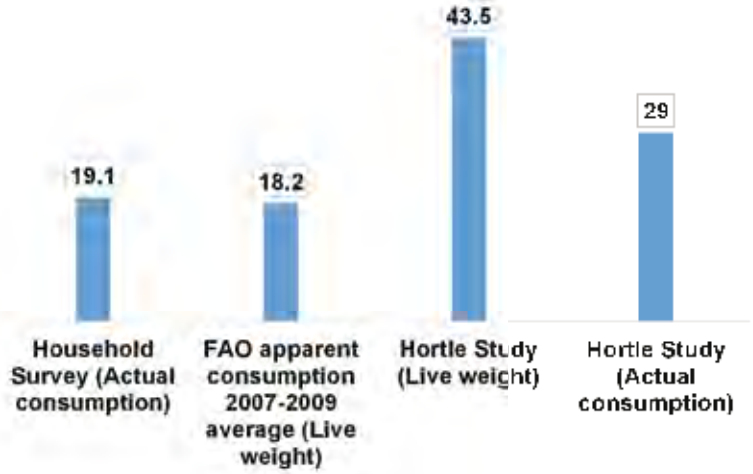
Notes

1. Based on Actual Consumption. Population of Lao PDR (2007) given as 6,520,000 Ref: CIA World Fact Book.2. The LECS 4 survey on expenditure and household consumption forms part of a series of sample surveys carried out by the Ministry of Planning and Investment, Department of Statistics in every province and district of Lao PDR. The survey was undertaken from April 2007 to March 2008 (for a period of 12 months), in order to provide data on expenditure and consumption covering all seasons and relating to aspects of every area and region of the country. The sample size was 8 304 households from 518 villages. 3. The Hortle study for the Mekong River Commission (2007) saw the analysis of 20 consumption studies spanning the Lower Mekong Basin countries (Lao PDR, Thailand, Cambodia and Vietnam).

Fish and fish product consumption (actual consumption) figures obtained via analysis of fish consumption studies (Hortle, 2007[3]); (% of total fish consumed; kg/capita/year)



Comparison of fish and fish product consumption figures obtained via 'Apparent Consumption' and LECS4 Household survey with Hortle Study (kg/capita/year)



Comparison of provincial level fish and fish product consumption (actual consumption) obtained via LECS4 Household Survey and Hortle Study (kg/capita/year)

Mongolia

Consumption of fish and fish products in Mongolia based on the household consumption survey was **0.18 kg per capita per year** (2008) and accounts for just 0.13 percent of total protein consumption in the country.

The highest levels of consumption are recorded in the capital Ulan Bator (0.28 kg per capita per year). In both the eastern and western areas of the country the figure falls to 0.07 kg per capita per year.

Urban dwellers consume just over twice as much fish as rural dwellers; 0.23 kg per capita per year and 0.10 kg per capita per year respectively.

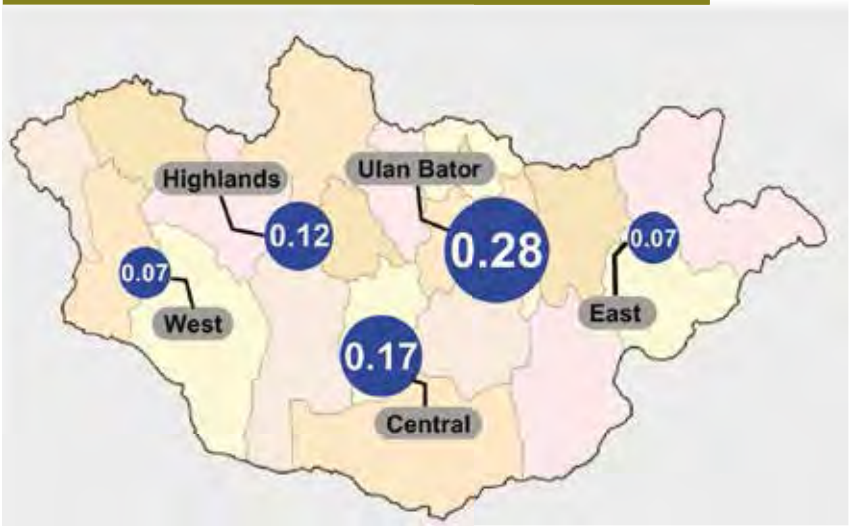
Fresh fish makes up the majority of that consumed (67 percent) followed by imported canned fish (28 percent). Dried, salted or smoked fish meanwhile accounts for 4 percent.

The overall low level of fish consumption and the relatively high levels of fish imports to the country means that errors in assessing imports will strongly influence the apparent consumption figure in the FAOSTAT Food Balance Sheet (FBS).

The FAO apparent consumption figure (0.4 kg per capita per year)is more than double that derived from the Household Consumption survey (0.18 kg per capita per year), but since both figures are less than half a kilo per capita per year, this difference is probably rather insignificant in terms of dietary contribution.

Mongolia

Consumption of fish and fish products by region (kg/capita/year)



Edible quantity of fish and fish products consumed (capita/year)

0.18 kg

Fish and fish products as a share of total protein consumption

0.13%

Annual fish and fish product consumption

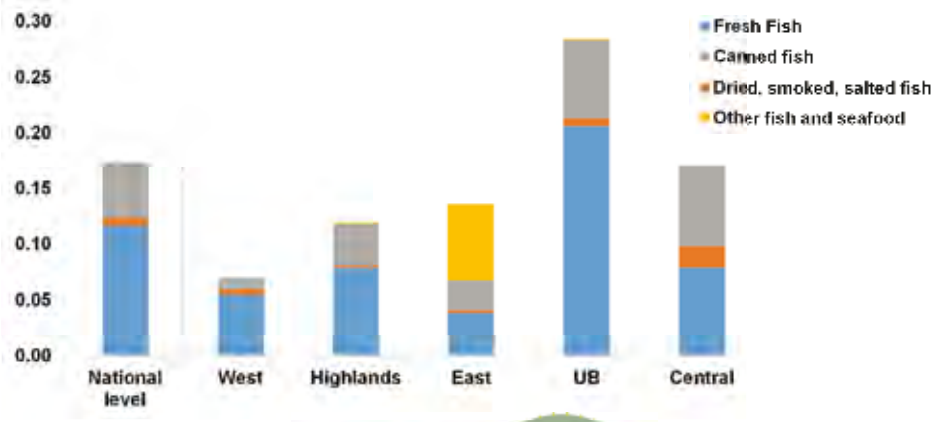
474 tonnes[1]

Data year

2008

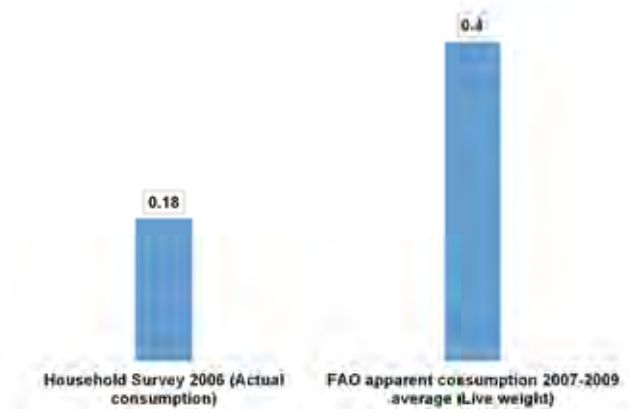
Data source : Household Socio-Economic Survey 2007-2008[2]

Consumption of fish and fish products by type (kg/capita/year)



Urban/rural fish consumption (kg/capita/year)

Comparison of fish and fish product consumption figures obtained via 'Apparent Consumption' and Household Survey methods (kg/capita/year)



Notes

1. Figure reflects actual consumption. 2008 population of Mongolia 2 632 834. Ref: http://countryeconomy.com/demography/population/mongolia
2. The Household Socio-Economic Survey 2007/08 is a nationally representative survey and was carried out between July 2007 and June 2008. The sample of 11 232 households was allocated as follows: 3 600 in Ulaanbaatar, 2 640 in aimag centers and 4 992 in rural areas and small towns. Data has been revised with the support of FAO using harmonized methodologies.

Myanmar

In Myanmar national average consumption of fish and fish products based on the household consumption survey was **21.0 kg per capita per year** (2006).

This represented 22.6 percent of total dietary protein consumed and underlines the importance of fish and fishery products in the diet.

Of the fish consumed, inland species contributed to 31.5 percent of consumption and marine species to 23.5 percent. The accessibility to inland fish in Myanmar and its importance in the diet, compared with that of marine fish (available mainly in dried or salted forms in inland areas), is similar to that found in the Mekong Basin.

Four of the top six items consumed are processed fish (fish paste, fish sauce, shrimp paste and dried fish). Fermented fish paste ("ngapi") is noted as one of the most important sources of calcium in the diet throughout Myanmar[7]. The species of fish used for ngapi are both freshwater, estuarine and to a lesser extent, marine.

Fermented fish paste was the most commonly consumed product while mrigal carp was the most regularly consumed species followed by striped snakehead and rohu carp.

Coastal Divisions tended to have the highest consumption of fish, although the strong contribution of freshwater species over marine species is worth noting. Kayin had an extraordinarily high consumption (67.7 kg per capita per year) and this may be largely attributable to fish paste consumption.

Of the marine species hilsa shad was the most commonly consumed.

There was relatively little difference in overall fish consumption between rural and urban populations. Urban dwellers consumed more fresh fish (53 percent) than rural dwellers (45 percent).

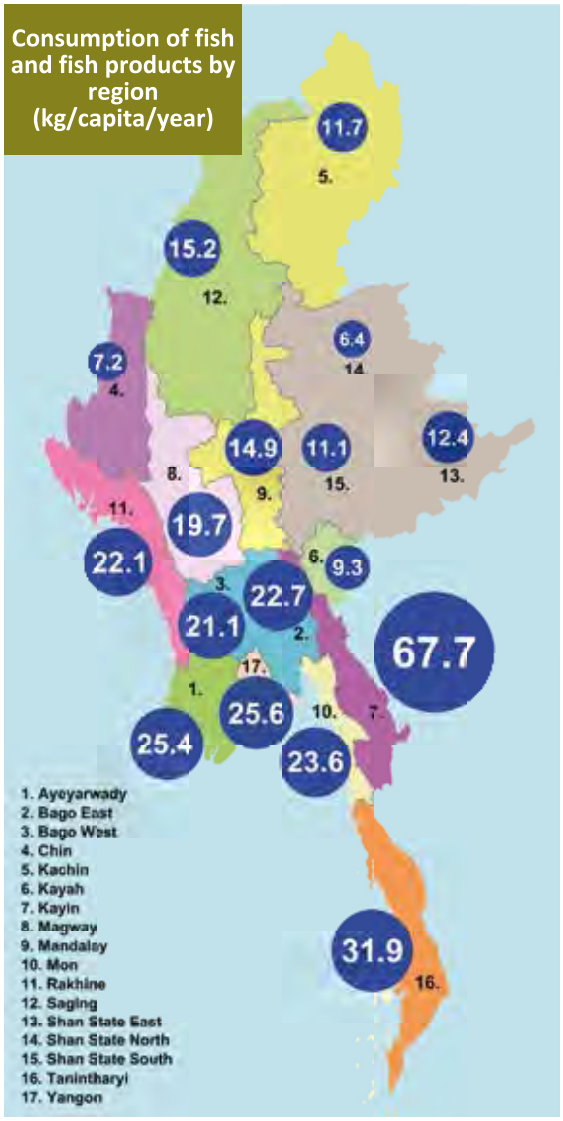
The conversion of processed fish forms (e.g. fish and shrimp pastes, sauces, dried fish etc.) into fresh weight equivalents, would considerably increase the national average fish consumption figure found in the household survey (21.0 kg per capita per year) and would move it somewhat closer to the FAO FBS figure of 46.5 kg per capita per year. This is a good example of how household consumption surveys can underestimate the fresh weight of fish consumed.

It must be pointed also that the national statistics of Myanmar from both freshwater and marine capture fisheries are not based on a comprehensive statistical data collection system and are best considered as estimates. There are indications from a recent survey of the marine fishery by the RV Fritjof Nansen, that marine capture production may be considerably lower than those reported to FAO. The large annual increases reported for inland freshwater capture production also appear to be rather more than that which a fishery can reasonably be expected to deliver. An effect of this over-reporting of fish production will be an inflated value for apparent consumption in the FBS.

[7]Phyu Phyu Aung, Mya Ohnmar, Moh Moh Hlaing, Moe Thida Kyaw, Aye Aye Than, Theingi Thwin & Tin Khine Myint (2010) Calcium Intake among Myanmar Residing in Bago, Kayin, and Yangon Areas. Mal J Nutr . (2010) 16(1): 91 – 100.

Myanmar

Consumption of fish and fish products by region (kg/capita/year)



Ranking of identified species most consumed on national level

1. Mrigal carp

2. Striped snakehead

3. Rohu carp

4. Walking catfish

5. Hilsa shad

Edible quantity of fish and fish products consumed (capita/year)

21.02 kg

Fish and fish products as a share of total protein consumption

22.6%

Annual fish and fish product consumption

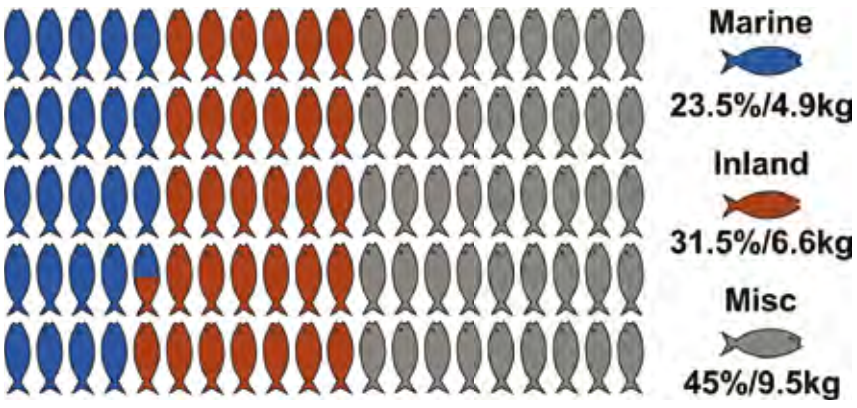
1 061 511 tonnes[1]

Data year

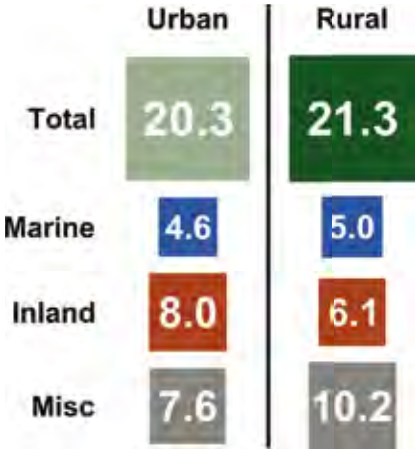
2006

Data source : Household Income and Expenditure Survey[2]

National consumption of fish and fish products (% of total consumed; kg/capita/year)

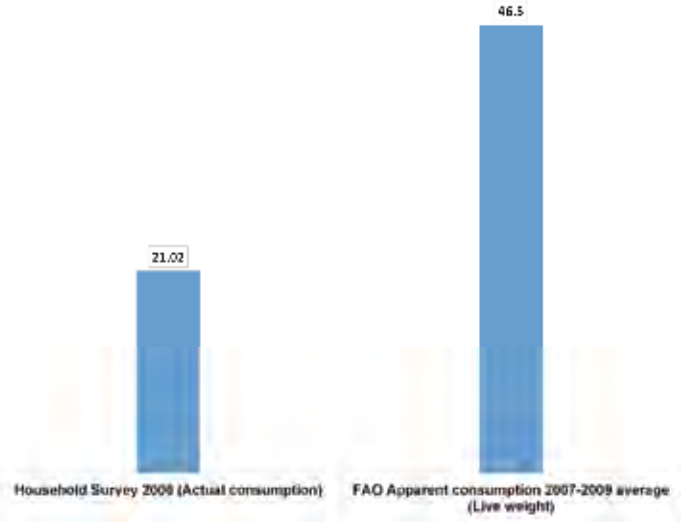


Urban/rural consumption of fish and fish products (kg/capita/year)

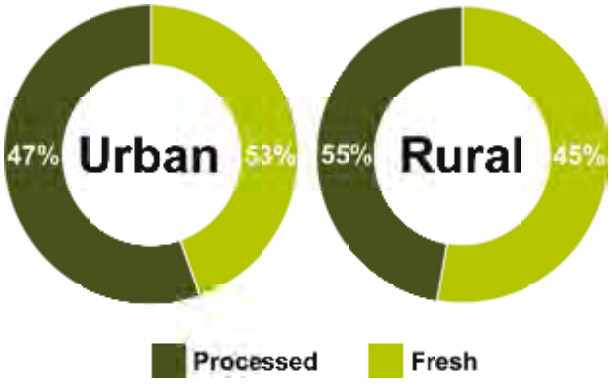


National consumption of fish and fish products by type and region (kg/capita/year)

Comparison of fish and fish product consumption figures obtained via 'Apparent Consumption' and Household Survey methods (kg/capita/year)



Rural/urban consumption of fresh and processed fish and fish products (kg/capita/year)



Notes

1. Based on actual consumption. 2006 population of Myanmar 50 500 070. Ref: http://countryeconomy.com/demography/population/myanmar
2. In December 2006, the fourth nation-wide household income and expenditure survey was conducted by the Central Statistical Organization in 80 sample townships in all States and Divisions. A sample of 32 000 urban and rural households was selected using a three-stage stratified simple random sampling. Data has been revised with the support of FAO using harmonized methodologies.

Pacific Islands

The high levels of fish consumption throughout the Pacific islands reflects the strong tradition and dependence upon fish for food security.

Tuvalu recorded the highest consumption of fish and fish products in the Pacific at **110.7 kg per capita per year** followed by Samoa at 87.4 kg per capita per year.

Papua New Guinea, with its large interior population, had the lowest level of consumption at 13 kg per capita per year followed by Tonga and Vanuatu both at 20.3 kg per capita per year.

The Solomon Islands, Papua New Guinea and Kiribati all recorded higher urban than rural consumption while for all other Pacific nations covered rural consumption was higher.

With the exception of French Polynesia and Wallis and Futuna consumption in coastal communities was higher than in non-coastal communities.

In some countries there were considerable differences between "rural" and urban populations e.g. In Fiji where the national average was around 20.7 kg per capita per year while in coastal settlements the figure was nearer to 120 kg per capita per year.

Across the fifteen Pacific Island countries and territories, there was variable agreement between survey figures (surveys dated 2001-2006) and the FAOSTAT apparent consumption figures.

The differences are in two categories:

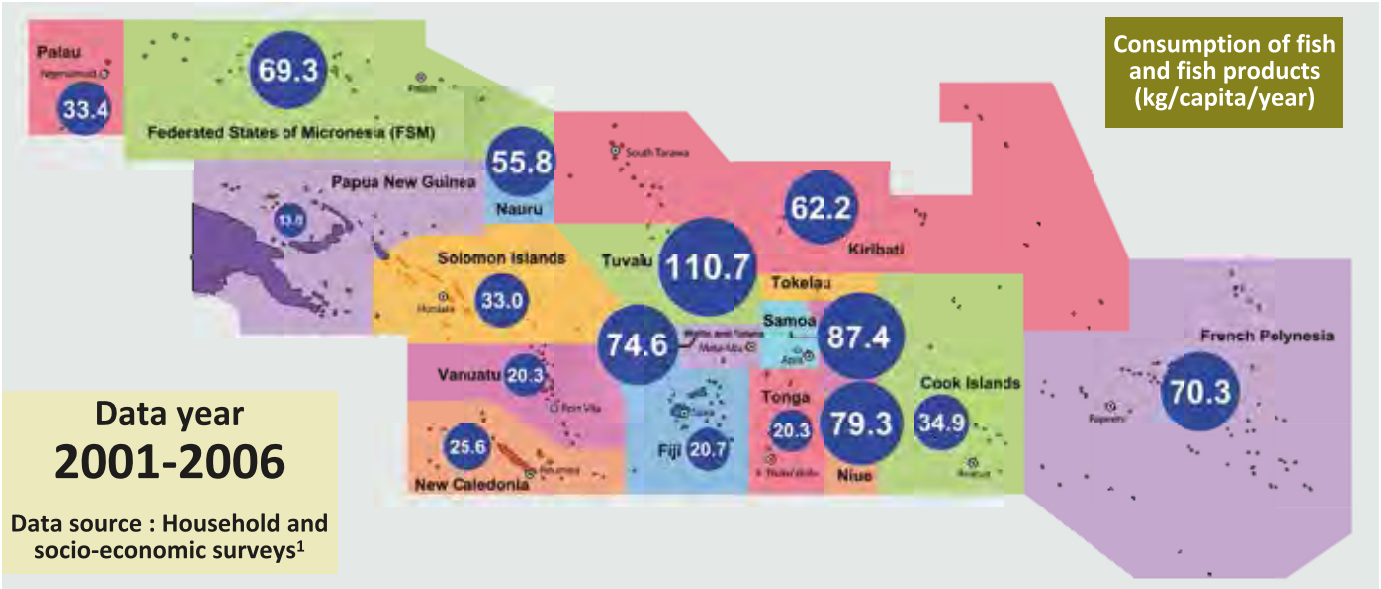
- FBS value substantially greater than household survey: Palau (51 percent), Fiji (42 percent), Tonga (41 percent), Vanuatu (40 percent)
- FBS value substantially less than the household survey: Tuvalu (168 percent), Nauru (133 percent), Samoa (86 percent), Niue (65 percent) and Wallis and Futuna,

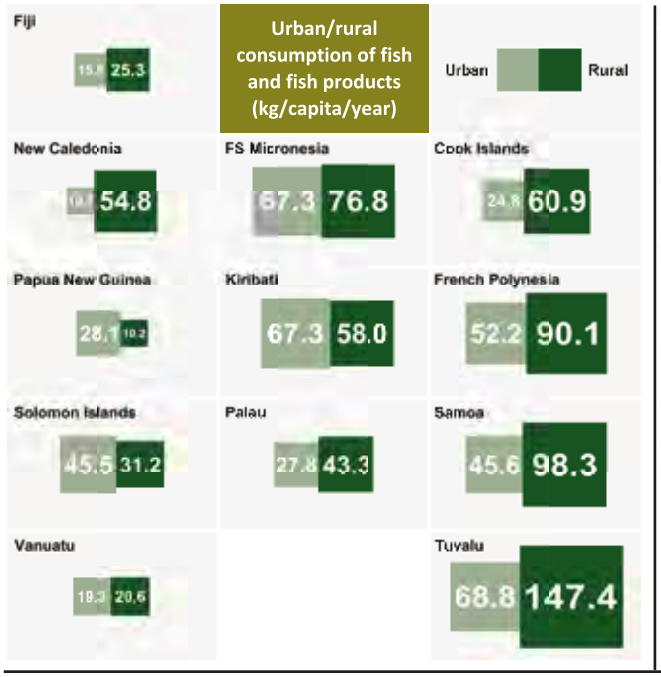
In the cases where the FBS figure was greater than the household survey, this may reflect weaknesses in the design or conduct of the survey. It is equally possible that the quantity of fish landed and exported may be mis-recorded, since several of these countries all produce tuna for export. Another potential source of error is the estimation of production statistics.

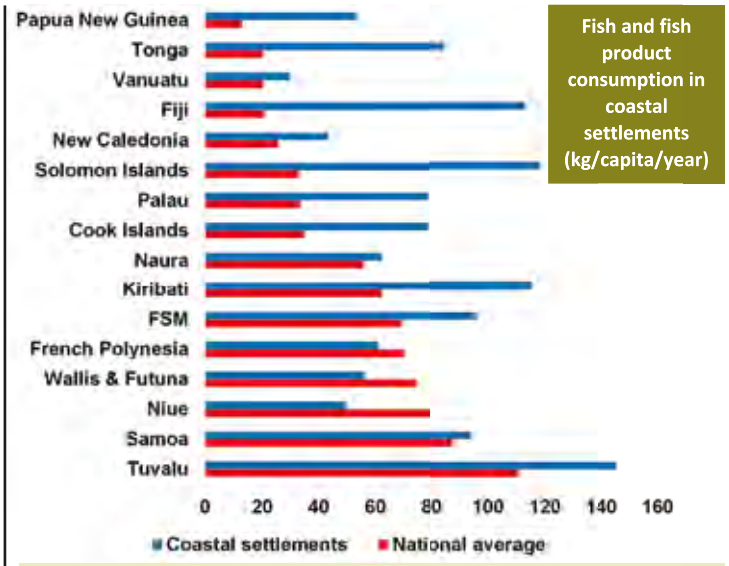
Household consumption surveys tend to under-estimate fish consumption, so for those countries where the FBS figure was lower than the household consumption survey, this may indicate that households are accessing fish locally that are not being included in national production statistics.

Some effort to validate the actual consumption figures would be useful, considering the central role of fish in the diet of the Pacific island countries.

Pacific Islands

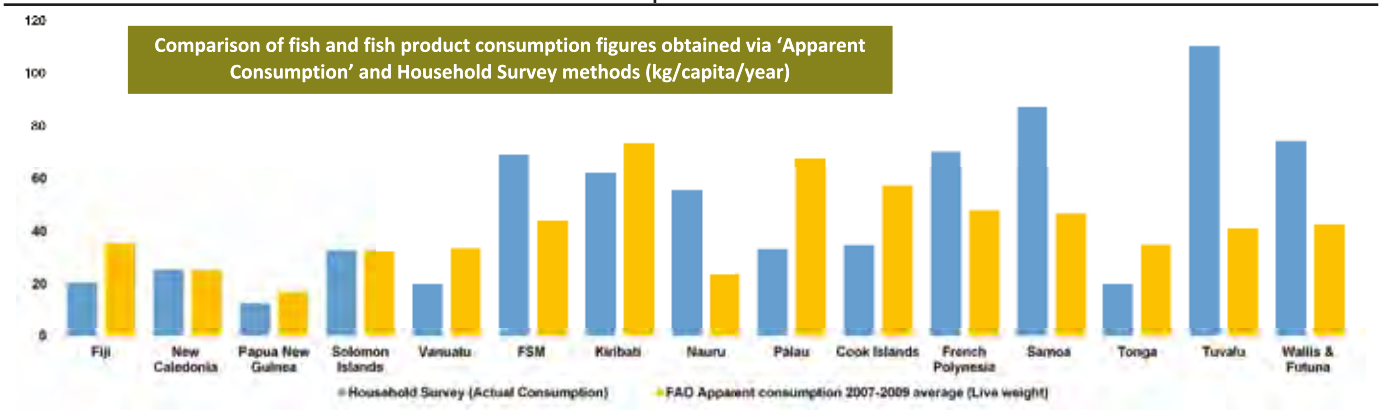






Notes

1. Survey information retreived from Bell et al. (2008) Planning the use of fish for food security in the Pacific. Marine Policy 33, pages 64–76.



Pakistan

From household survey results it would appear that fish and fish products make only a very minor contribution to diets.

The national consumption figure based on the household consumption survey was just **0.6 kg per capita per year** (2011), whereas the FAOSTAT FBS apparent consumption figure is 300 percent greater at **1.9 kg per capita per year**.

The low figure is considered to be due to the tendency to export much of the fish production and low purchasing power inside the country.

This food survey figure of **0.6 kg per capita per year** is the same as the figure derived from surveys in 1964[8]. This indicates that there has been little change over time in the per capita fish consumption of the country.

Much of the fish accessed in the interior of the country is derived from inland fisheries and aquaculture.

Fish and fish products also account for 9.1 percent of all animal products eaten. Poultry is the most common animal product eaten at 3.4 kg per capita per year.

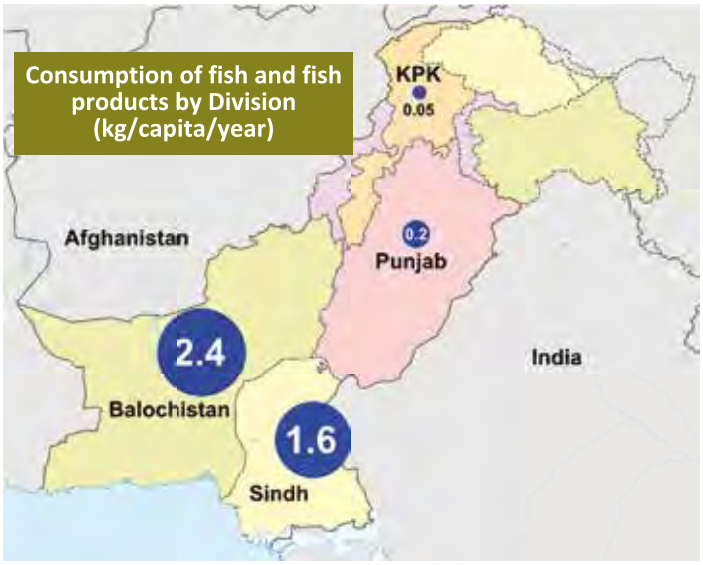
The highest fish consumption figures were recorded in the two coastal provinces of Balochistan (2.4 kg per capita per year) and Sindh (1.6 kg per capita per year).

Consumption tails off further north with households in the Punjab consuming just 0.2 kg per capita per year and those in the mountainous Khyber Pakthunkwa area negligible amounts (0.05 kg per capita per year).

In both rural and urban areas over 90 percent of fish products consumed were purchased with just 3-4 percent self-produced.

[8]Khan, M. I. (1969). Aggregative Analysis of Food Consumption in Pakistan. The Pakistan Development Review, 426-441.

Pakistan



Consumption of meat products (kg/capita/year)

Edible quantity of fish and fish products consumed (capita/year)

0.6 kg

Fish and fish products as a share of total animal meat consumption

9.1%

Annual fish and fish product consumption

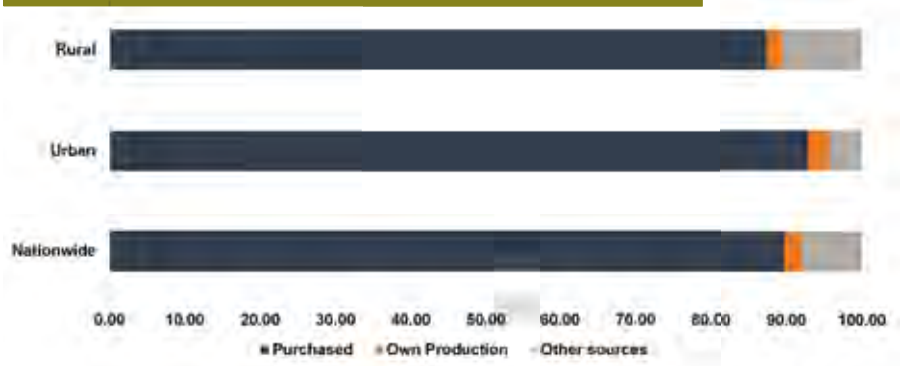
106 047 tonnes[1]

Data year

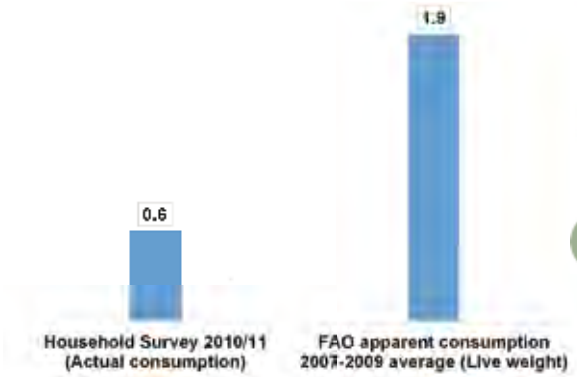
2010/11

Data source : Household Integrated Economic Survey (HIES), Government of Pakistan Statistics Division, Federal Bureau of Statistics[2]

Sources of fish and fish products consumed (%)



Comparison of fish and fish product consumption figures obtained via 'Apparent Consumption' and Household Survey methods (kg/capita/year)



Urban/rural fish consumption (kg/capita/year)

Notes

1. Based on actual consumption. Population of Pakistan 2011 given as 176 745 000 ref: http://unstats.un.org/unsd/pocketbook/PDF/2013/Pakistan.pdf
2. This Household Integrated Economic Survey (HIES) comprised all urban and rural areas of four provinces of Pakistan. However, military restricted areas were excluded. A sample size of 16 341 households from 1 180 sampled areas (enumeration blocks and villages) was considered appropriate to provide reliable estimates of key characteristics at the National/Provincial level. Data has been revised with the support of FAO using harmonized methodologies.

Philippines

Fish consumption based on the household consumption survey in the Philippines was **40.2 kg per capita per year** (2008).

Nationwide there is about 3-5 kg per capita per year variation from the national average.

The highest fish consumption levels were recorded in Western Visayas and Caraga which both stood at 46.7 kg per capita per year. The Cordillera Administrative Unit in the far north of the country recorded the lowest levels at 28.1 kg per capita per year.

Canned fish and sardines, mackerel scad and milkfish were the three most commonly consumed products/species followed by tilapia.

Amongst consumer age ranges those in the 60+ year old group ate the most fish (15.6 percent of total food consumption) followed by those aged 20-59 (14.7 percent).

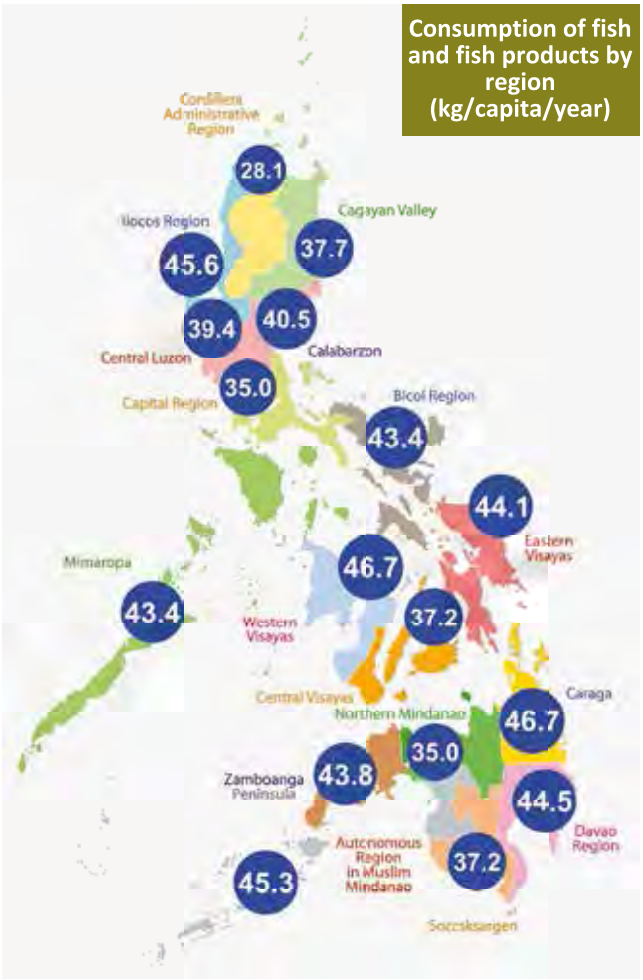
Round scad and canned sardines were the most commonly consumed species/products for all age groups apart from the 60+ group which ate more round scad and milkfish.

This is the only household survey where age related consumption was presented.

There is reasonable agreement between the national average household consumption figure (40.2 kg per capita per year) and the FAOSTAT FBS figure of 35.9 kg per capita per year.

Philippines

Consumption of fish and fish products by region (kg/capita/year)



Most commonly consumed fish species

Edible quantity of fish and fish products consumed (capita/year)

40.15 kg

Fish and fish products as a share of total protein consumption

21.1%

Annual fish and fish product consumption

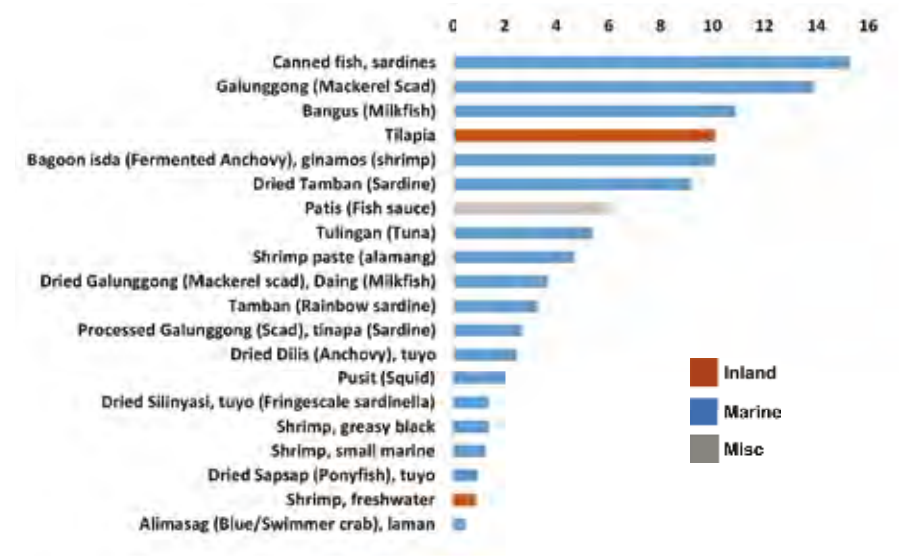
3 628 407 tonnes[1]

Data year

2008

Data source : Philippine Nutrition Facts and Figures 2008, Food and Nutrition Research Institute[2]

Households consuming common fish or fish products (%)

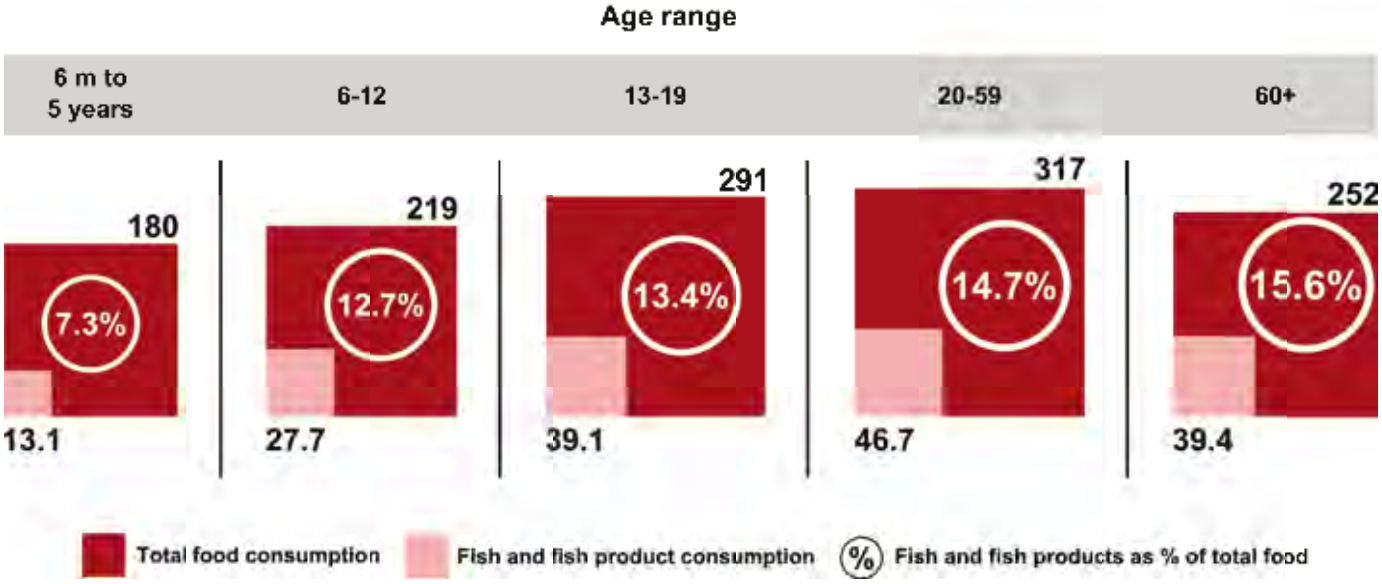


Notes

1. Based on actual consumption. 2008 population of Philippines 90 371 287. Ref: http://countryeconomy.com/demography/population/philippines

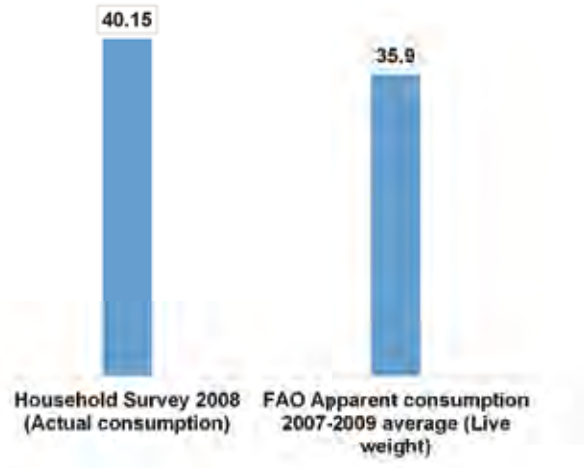
2. 7th National Nutrition Survey: Philippines, 2008 (7th NNS) was undertaken by the Food and Nutrition Research Institute, Department of Science and Technology (FNRI-DOST). It covered all 17 regions of the country, 79 provinces and the National Capital Region (NCR) and included 36 634 sample households and 191 316 sample individuals.

Fish and fish products as a proportion of all food consumed by age group (kg/capita/year)



The 30 most commonly consumed food items by age group

Comparison of fish and fish product consumption figures obtained via 'Apparent Consumption' and Household Survey methods (kg/capita/year)



Sri Lanka

Average national consumption of fish and fish products based on the household consumption survey in Sri Lanka was **15.3 kg per capita per year** (2010).

There is reasonable agreement between the national average household consumption figure and the FAOSTAT FBS figure of 21.1 kg per capita per year.

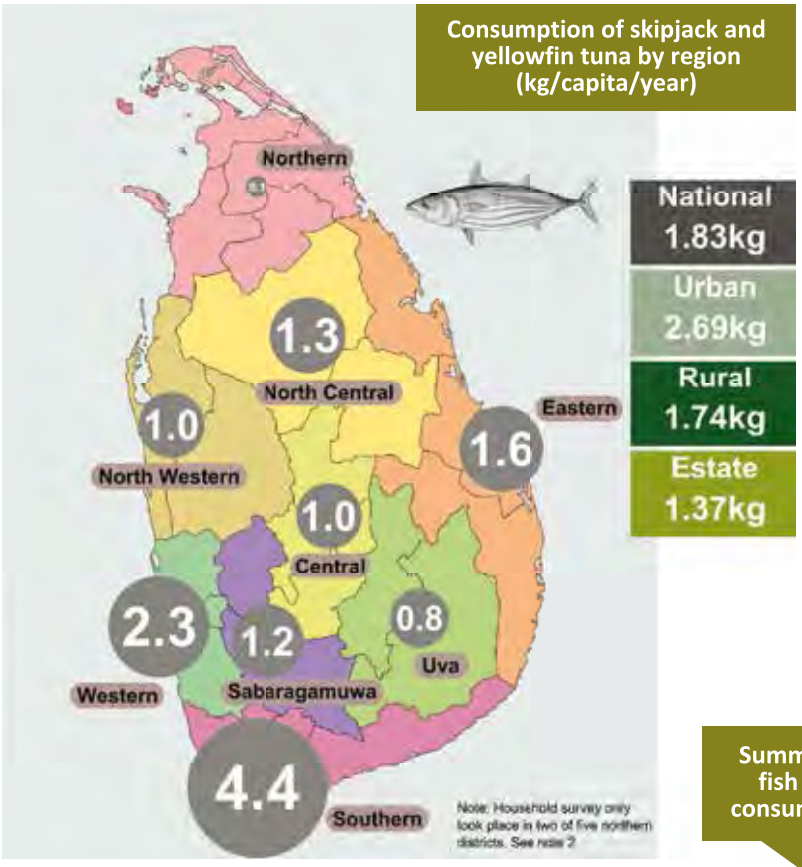
The difference can be attributed to processed or dry fish to fresh fish equivalents.

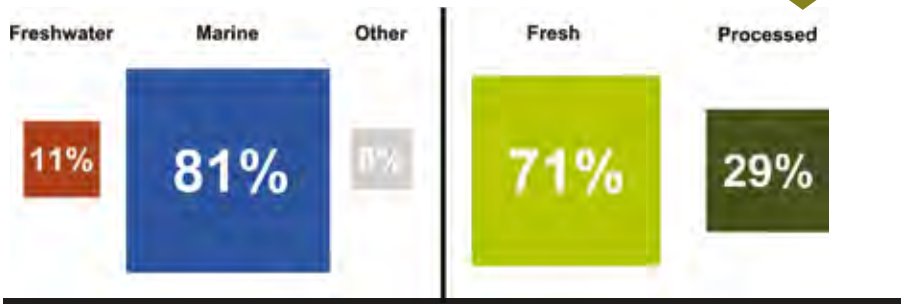
Overall 71 percent of fish was consumed fresh and the remaining 29 percent as dried or processed products.

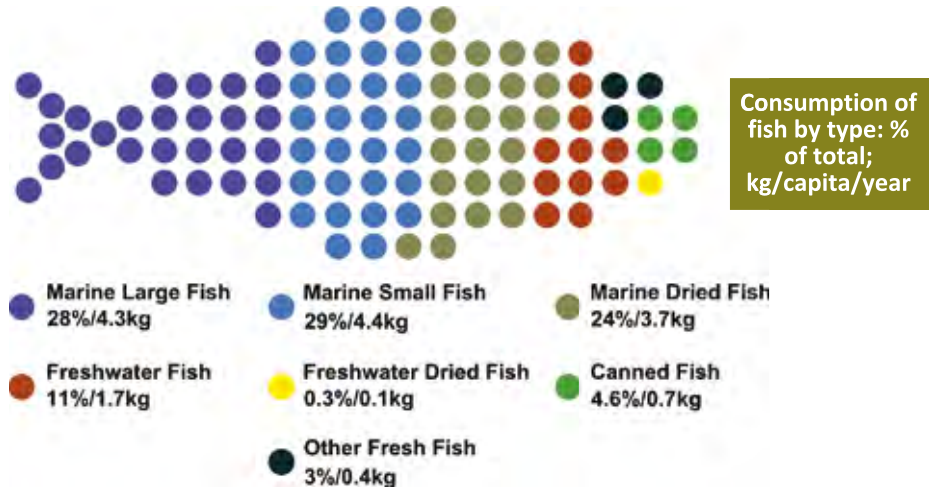
Marine species accounted for 81 percent and inland species around 11 percent. Sprats were the most commonly consumed marine species followed by skipjack tuna and gold stripe sardinella.

Tilapia was by far the most commonly consumed freshwater species followed by catfish and snakehead.

Sri Lanka







Edible quantity of fish and fish products consumed (capita/year)

15.3 kg

Fish and fish products as a share of total protein consumption

55%

Annual fish and fish product consumption

315 990 tonnes[1]

Data year

2010

Data source : Household Income and Expenditure Survey 2009-2010

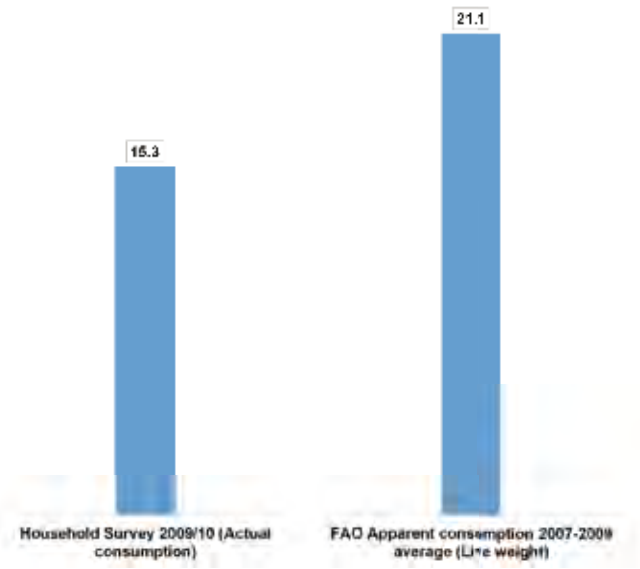
Notes

1. Based on actual consumption. 2010 population of Sri Lanka 20 653 000 Ref: http://countryeconomy.com/demography/population/sri-lanka
2. The Sri Lanka Household Income and Expenditure Survey (HIES) is conducted by the Department of Census and Statistics (DCS) under the National Household Sample Survey Program. The field data collection took place in twelve monthly rounds starting from July 2009 to June 2010 and covered all districts excluding Mannar, Kilinochchi and Mullaithivu districts in the Northern province as post liberation resettlements of internally displaced persons were in progress in the three districts during the scheduled survey period.

Consumption of fish by species: Marine/ Freshwater and Dried fish/ Fresh fish (kg/capita/year)

Ranking of top three identified species consumed

Comparison of fish and fish product consumption figures obtained via 'Apparent Consumption' and Household Survey methods (kg/capita/year)



Thailand

Edible consumption of fish and fish products in Thailand was **31.4 kg per capita per year** (2011).

This represents 11.7 percent of total protein consumption.

The highest levels of consumption are in the southern provinces (41.4 kg per capita per year) followed by the northeast at 32.7 kg per capita per year.

Inland species and other aquatic animals represented 37 percent of fish consumed in comparison to 47 percent for marine equivalents. There is no disaggregation between capture fisheries and aquaculture production.

Miscellaneous processed products that could have been either marine or inland fish-based made up the remaining 16 percent that were consumed.

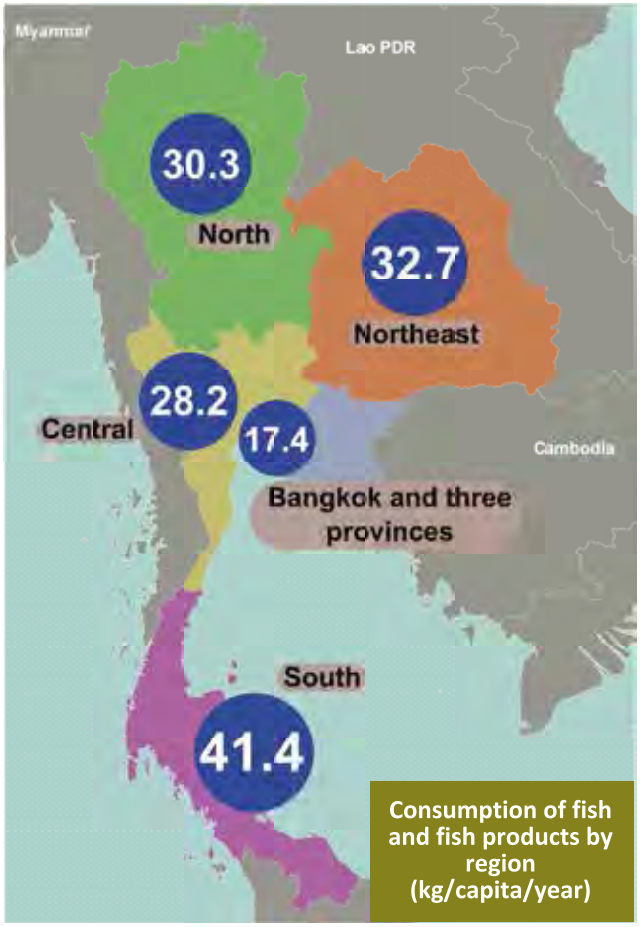
Rural dwellers ate more fish and fish products than their urban counterparts: 35.7 percent and 25.7 percent respectively. Nile tilapia was the most commonly eaten species in north, central and urban areas; snakehead in northeast and rural areas and chub mackerel in the South.

The FAOSTAT apparent consumption figure (26.5 kg per capita per year) is lower than, but close to, the figure from the household survey (31.4).

The household survey figure for the Northeast of Thailand (33.4 kg per capita per year) is also in close agreement to the MRC Hortle study[9] (33.6 kg per capita per year), which covered only the northeast of Thailand.

[9]Hortle, K.G. (2007) Consumption and the yield of fish and other aquatic animals from the Lower Mekong Basin. MRC Technical Paper No. 16, Mekong River Commission, Vientiane. 87 pp.

Thailand



Major species/products consumed at national level (capita/year)

Nile Tilapia

4.12 kgs

Fish sauce
3.4 kgs

Other fish and seafood
3.2 kgs

Snakehead

3.1 kgs

Catfish

2.8 kgs

Edible quantity of fish and fish products consumed (capita/year)

31.39 kg

Fish and fish products as a share of total protein consumption

11.7%

Annual fish and fish product consumption

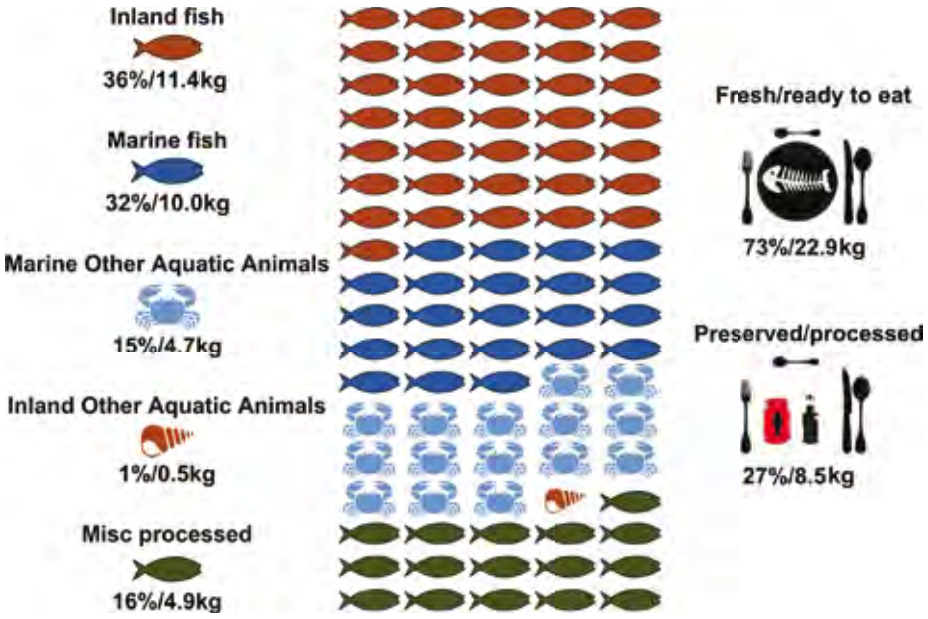
2 089 831 tonnes[1]

Data year

2011

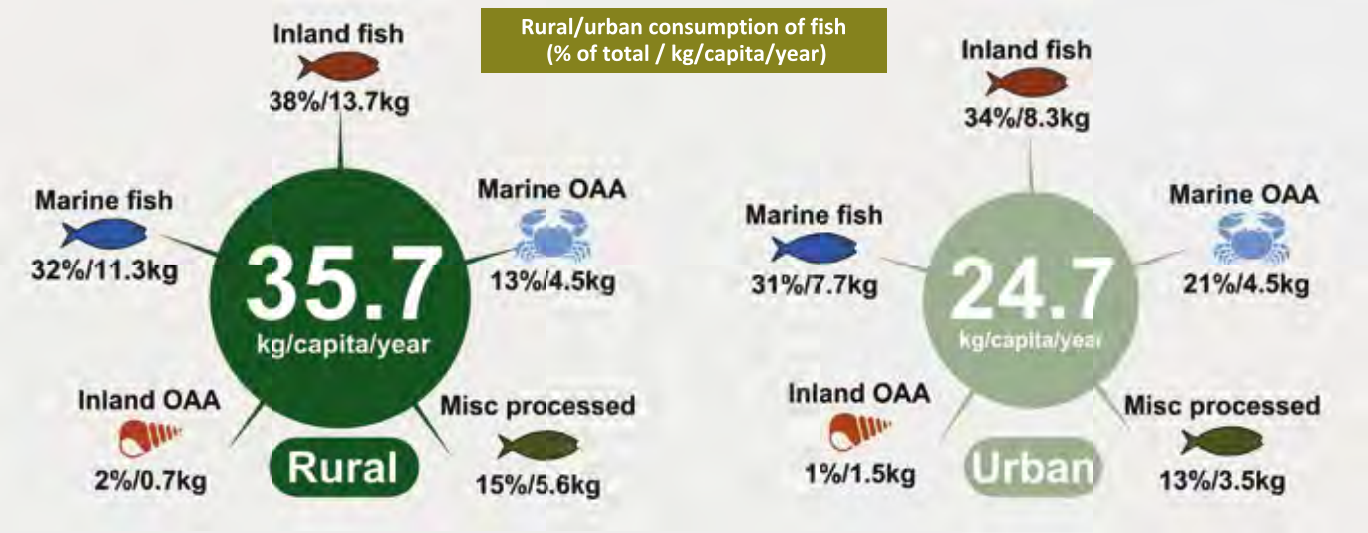
Data source : Household socio-economic survey[2]

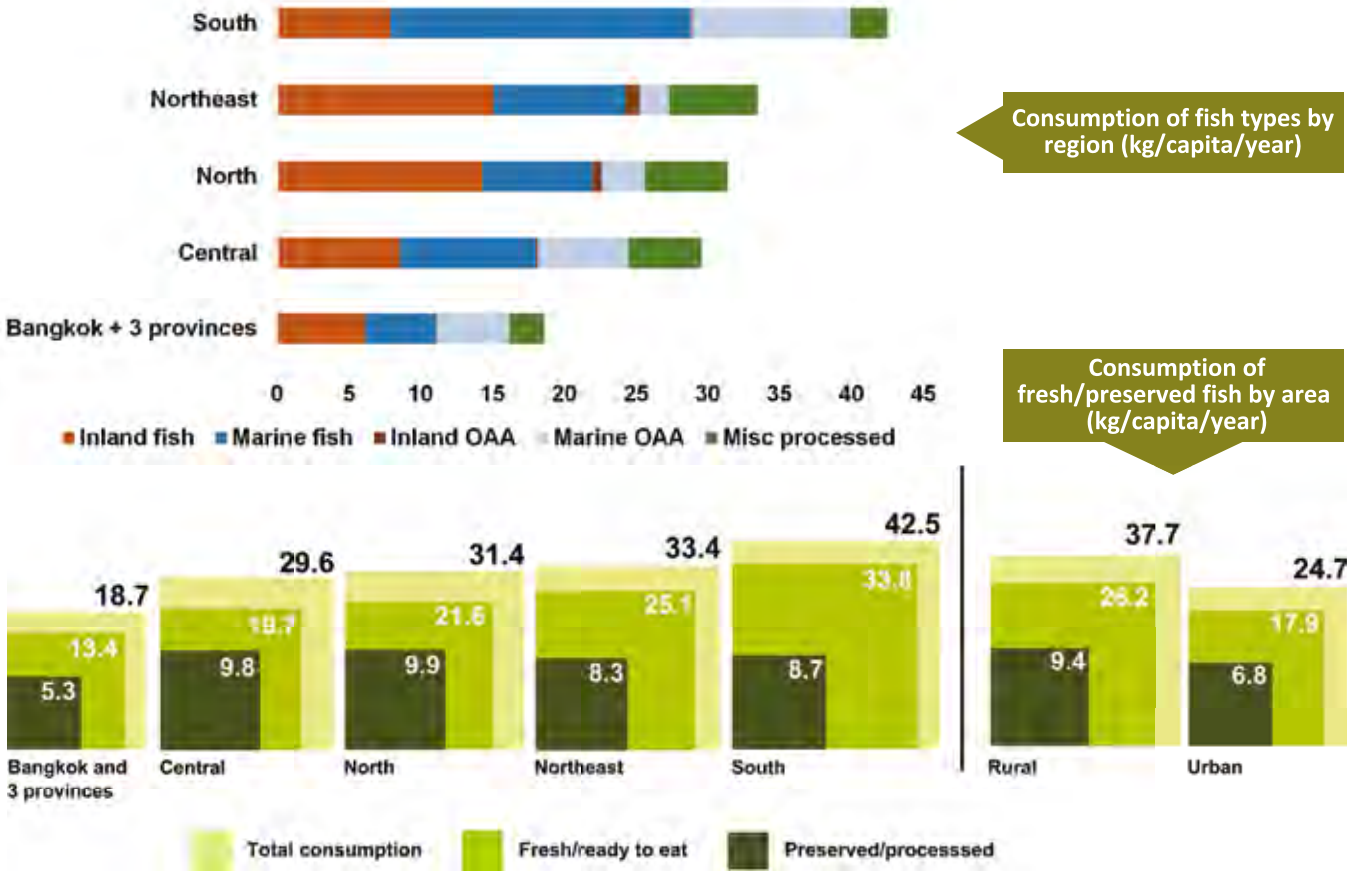
National consumption of fish by type (% of total/kg/capita/year)

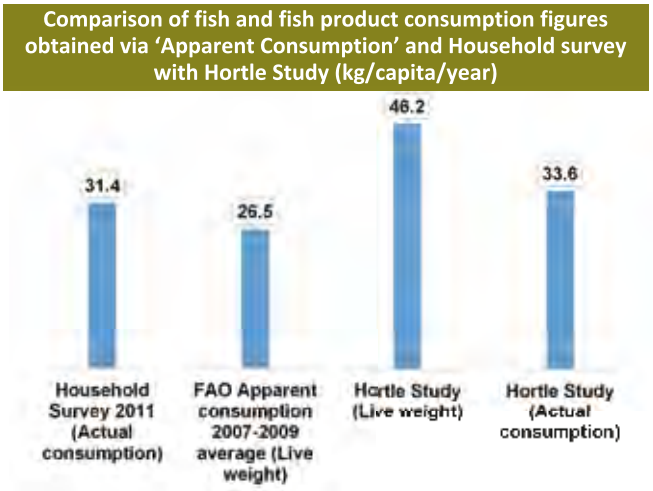


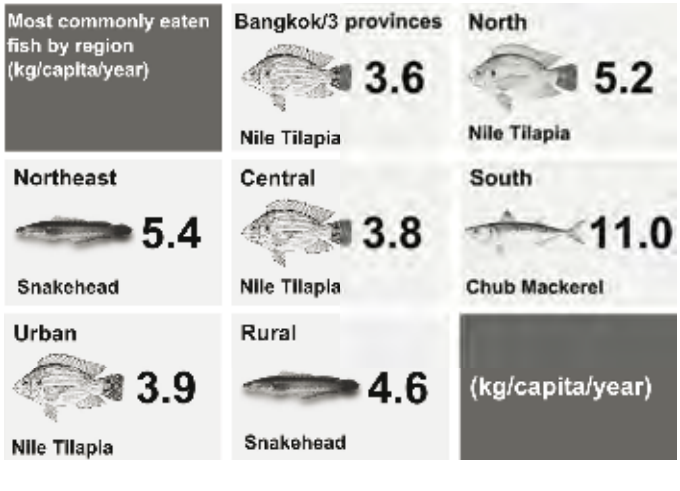
Notes

1. Based on actual consumption. 2011 population of Thailand 66 576 332. Ref: http://countryeconomy.com/demography/population/thailand
2. The National Statistical Office carried out the 2011 Household Socio-Economic Survey from January to December 2011. The survey covered a total of approx 52 000 households in every province. Data has been revised with the support of FAO using harmonized methodologies.
3. The Hortle study for the Mekong River Commission (2007) saw the analysis of 20 consumption studies spanning the Lower Mekong Basin countries (Lao PDR, Thailand, Cambodia and Vietnam).


Rural/urban consumption of fish
(% of total / kg/capita/year)
Inland fish
38%/13.7kg
Marine fish
32%/11.3kg
Marine OAA
13%/4.5kg
35.7
kg/capita/year
Inland OAA
2%/0.7kg
Misc processed
15%/5.6kg
Rural
Inland fish
34%/8.3kg
Marine fish
31%/7.7kg
Marine OAA
21%/4.5kg
24.7
kg/capita/year
Inland OAA
1%/1.5kg
Misc processed
13%/3.5kg
Urban


Consumption of fish types by region (kg/capita/year)
South
Northeast
North
Central
Bangkok + 3 provinces
0 5 10 15 20 25 30 35 40 45
Inland fish
Marine fish
Inland OAA
Marine OAA
Misc processed
Consumption of fresh/preserved fish by area (kg/capita/year)
18.7
13.4
5.3
29.6
19.7
9.8
31.4
21.6
9.9
33.4
25.1
8.3
42.5
33.8
8.7
Bangkok and 3 provinces
Central
North
Northeast
South
37.7
26.2
9.4
24.7
17.9
6.8
Rural
Urban
Total consumption
Fresh/ready to eat
Preserved/processsed


Comparison of fish and fish product consumption figures obtained via 'Apparent Consumption' and Household survey with Hortle Study (kg/capita/year)
31.4
26.5
46.2
33.6
Household Survey 2011 (Actual consumption)
FAO Apparent consumption 2007-2009 average (Live weight)
Hortle Study (Live weight)
Hortle Study (Actual consumption)


Most commonly eaten fish by region (kg/capita/year)
Bangkok/3 provinces
3.6
Nile Tilapia
North
5.2
Nile Tilapia
Northeast
5.4
Snakehead
Central
3.8
Nile Tilapia
South
11.0
Chub Mackerel
Urban
3.9
Nile Tilapia
Rural
4.6
Snakehead
(kg/capita/year)

Timor - Leste

In Timor-Leste consumption of fish and fish products based on the household consumption survey was **6.1 kg per capita per year** (2011).

This represents 33.4 percent of all animal flesh products eaten.

Consumption patterns range greatly from 17.6 kg per capita per year in coastal communities to 4 kg per capita per year in non-coastal areas.

In urban areas the figure based on the household consumption survey was 6 kg per capita per year.

Consumption in coastal and urban areas is entirely of marine species while in non-coastal areas 1.8 percent of animal protein consumed is from inland species.

Sardines and mackerel are, by far, the most commonly consumed species followed by long tail tuna, snapper, prawns and long tom.

Nile tilapia and common carp are produced in small quantities (45 tonnes per year) by small-scale fish farmers.

There is a large difference between the FAOSTAT FBS figure of 6.1 kg per capita per year and the figure from the household survey (3.3 kg per capita per year). Resolving this should focus on the limited statistical information on production that is available in the country (all figures are estimates.) and the potential for under-estimation in the household survey.

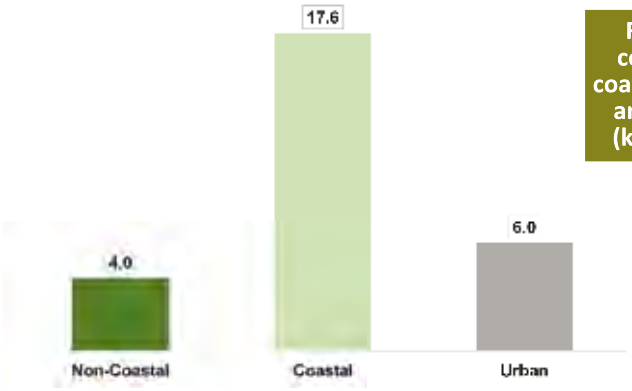
Timor - Leste

Edible quantity of fish and fish products consumed (capita/year)

6.1 kg[1]

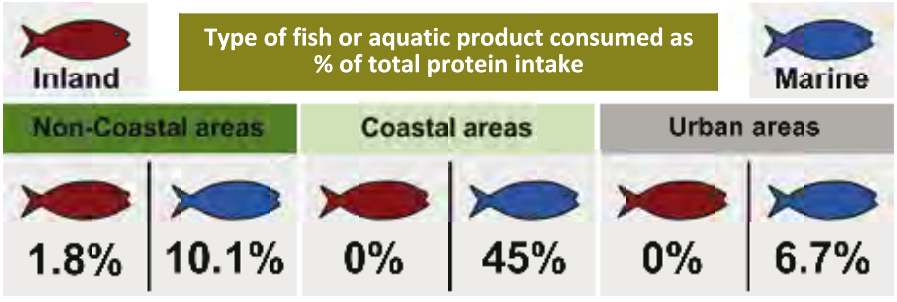
Fish and fish products as a share of total animal meat consumption

33.4%



Annual fish and fish product consumption

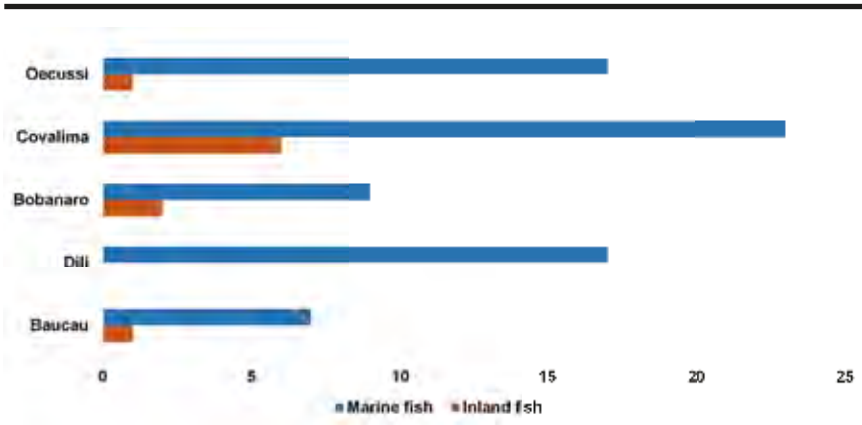
6 506 tonnes[2]



Data year

2011

Data source : Survey of Fish and Animal Protein Consumption and Availability in Timor-Leste; National Directorate of Fisheries and Aquaculture, Ministry of Agriculture and Fisheries, Supported by the Regional Fisheries Livelihoods Programme[3]

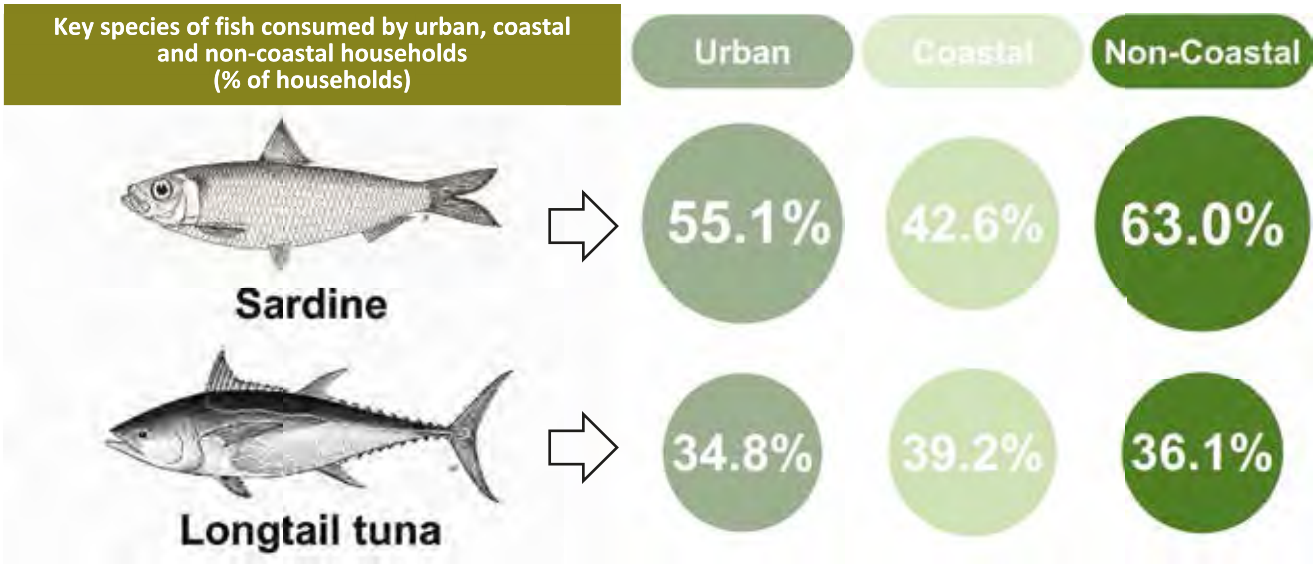


Households consuming marine and inland fish by province (%)

Ranking	Baucau	Dili	Bobanaro	Covalima
1st	Sardine 74.1%	Sardine 49.7%	Sardine 81.2%	Mackerel 52.5%
2nd	Longtail Tuna 44.4%	Snapper 36.1%	Longtail Tuna 42.6%	Sardine 41%
3rd	Prawn 21.3%	Longtail Tuna 31.8%	Prawn 15.8%	Long Tom 37.7%

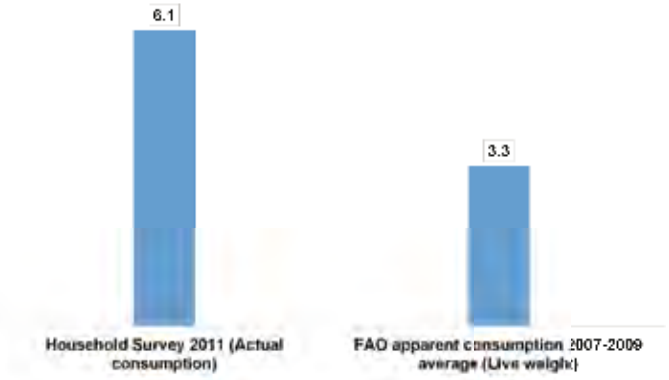
Main species of fish or sea food consumed by District (% of households)

Key species of fish consumed by urban, coastal and non-coastal households (% of households)



Freshwater Aquaculture[4]	
Fish farmers	1,280
Total area	40ha
Annual production	45.6t
Two main species farmed	
Nile Tilapia	Common Carp

Comparison of fish and fish product consumption figures obtained via 'Apparent Consumption' and Household Survey methods (kg/capita/year)



Notes

1. Oecusse omitted from mean calculation due to sample not being representative. 2. Actual consumption. Population of Timor-Leste given as 1 066 582 (Population and Housing Census 2010) Ref: http://timor-leste.gov.tl/ 3. The study of Fish and animal protein consumption and availability in Timor-Leste took place in 2010-2011 as part of the FAO/Spanish-funded Regional Fisheries Livelihoods Programme (RFLP). The study employed a mixed-method of quantitative and qualitative survey, with quantitative survey as the main focus. A random survey was conducted in five districts (namely Baucau, Dili, Bobonaro, Covalima, and Oecussi). The total number of respondents was 820. 4. This data is from an 'Analyses of the Current Situation and Potential for Aquaculture Development in Timor-Leste' which was carried out by the National Directorate of Fisheries and Aquaculture (NDFA) with assistance from the WorldFish Center, the FAO/Spain Regional Fisheries Livelihoods Programme (RFLP) and the Coral Triangle Support Partnership (CTSP).

Viet Nam

The average level of fish and fish product consumption in Viet Nam based on the household consumption survey was **14.6 kg per capita per year** (2011).

This represents 8.5 percent of total protein consumed.

Fresh fish and shrimp (9.7 kg per capita per year) were second behind pork (11.8 kg per capita per year) in animal product consumption. The difference between pork and fish consumption narrows if dried and processed fish and shrimp (0.8 kg per capita per year) are added, bringing consumption of all fish products to 10.6 kg per capita per year.

Consumption levels vary considerably throughout the country, ranging from 6.8 kg per capita per year in the midlands and northern mountainous areas to 24.4 kg per capita per year in the Mekong Delta.

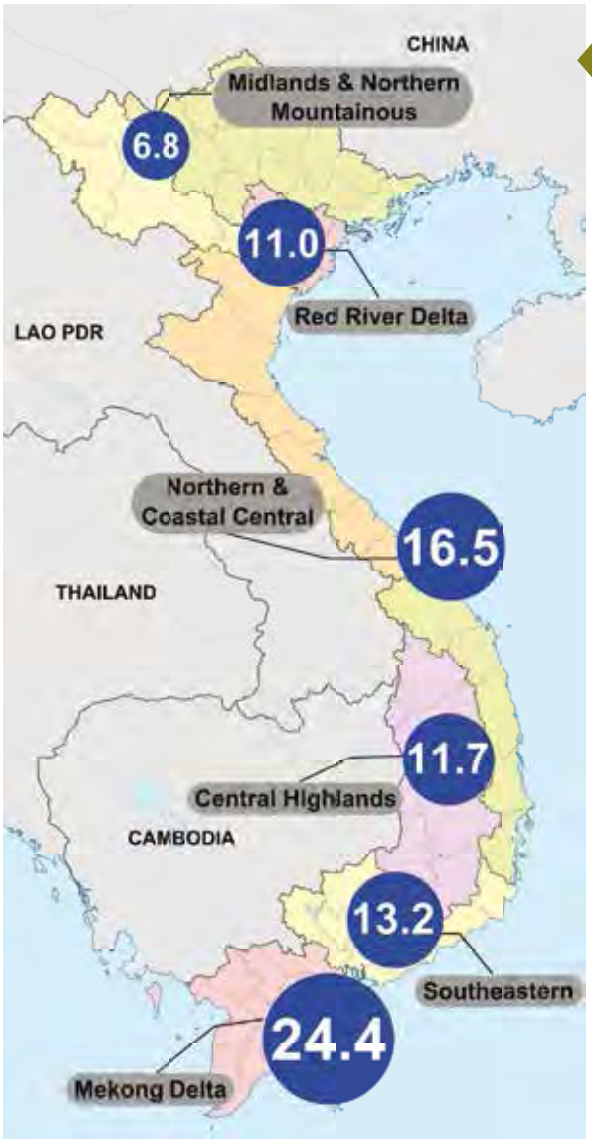
On a national level, fresh fish and shrimp make up 66.7 percent of consumption, fish and various dipping sauces 27.6 percent and dried/processed fish 5.7 percent.

Rural and urban consumption levels were fairly similar standing at 14.8 kg per capita per year and 14.2 kg per capita per year respectively.

The national average derived from the household consumption survey (14.6 kg per capita per year) is substantially lower than the FAOSTAT FBS (32.5 kg per capita per year). The household survey consumption figure for the Mekong Delta (24.4 kg per capita per year) is also much lower than the figure in the MRC Hortle[10] study (which covered the Mekong Delta and returned a figure of 45 kg per capita per year). This suggests that the household survey is under-estimating fish consumption.

[10]Hortle, K.G. (2007) Consumption and the yield of fish and other aquatic animals from the Lower Mekong Basin. MRC Technical Paper No. 16, Mekong River Commission, Vientiane. 87 pp.

Viet Nam



Consumption of fish and fish products by region (kg/capita/year)

Breakdown of national fish and fish product consumption (%)

Fresh fish, fresh shrimp

66.7%

Fish and dipping sauce

27.6%

Dried and processed

5.7%

Edible quantity of fish and fish products consumed (capita/year)

14.6 kg

Fish and fish products as a share of total protein consumption

8.5%

Annual fish and fish product consumption

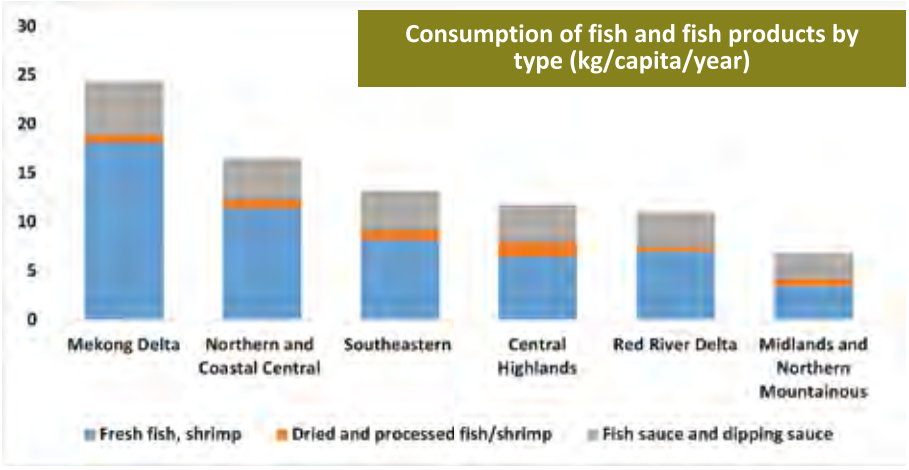
1 269 214 tonnes[1]

Data year

2010

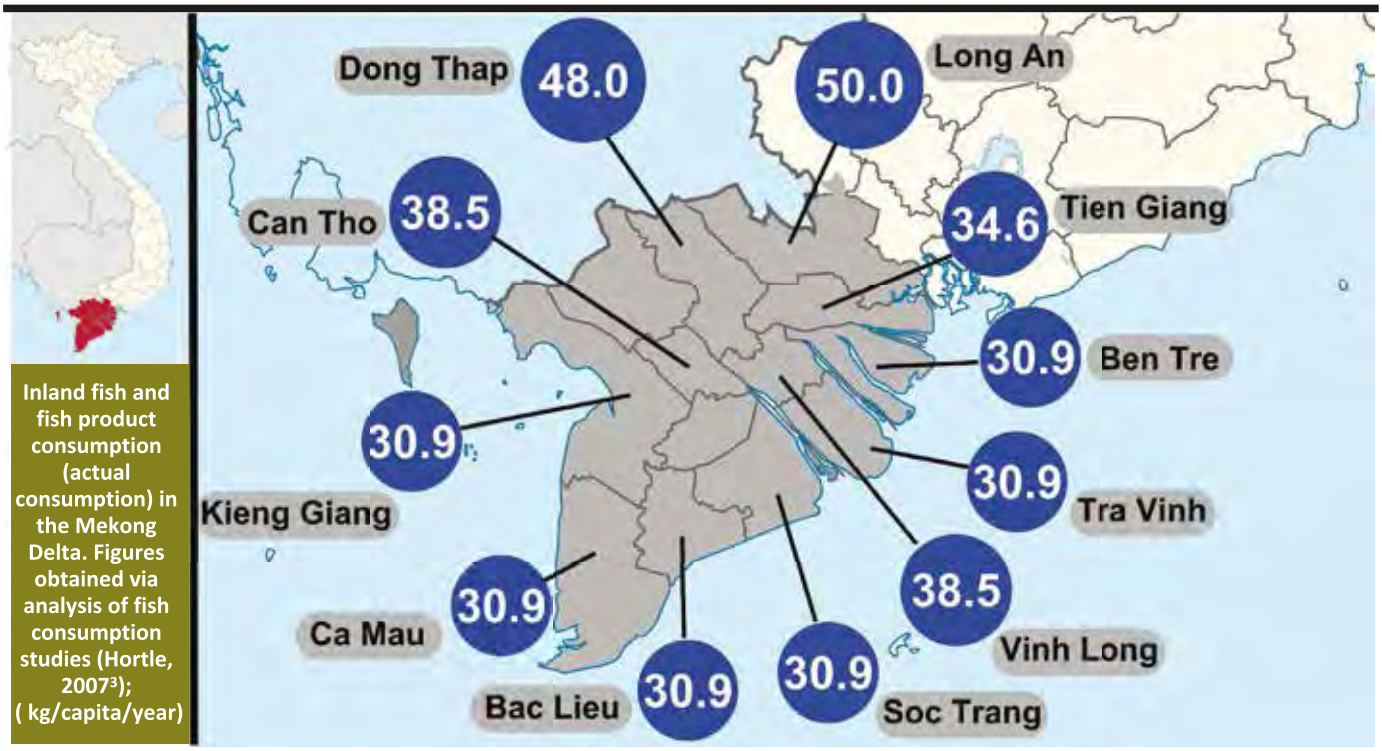
Data source : Viet Nam Household Living Standards Survey (VHLSS)[2]

Consumption of fish and fish products by type (kg/capita/year)



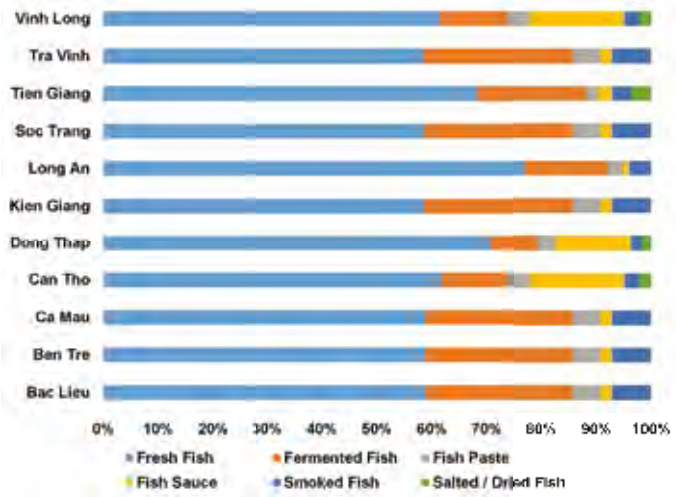
Rural/Urban consumption of fish and fish products (kg/capita/year)

National fish and meat consumption (kg/capita/year)

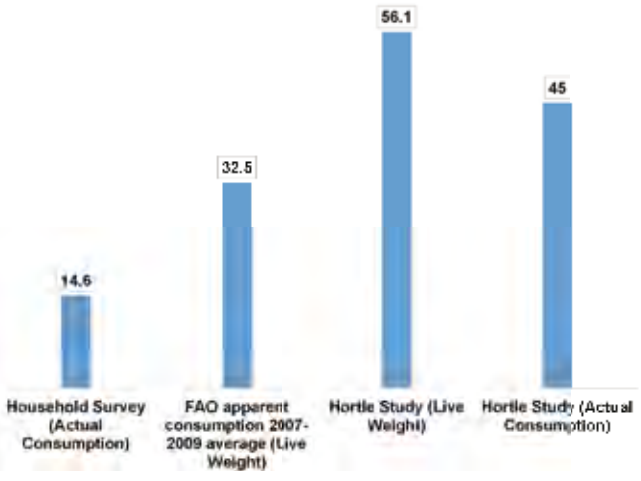


Inland fish and fish product consumption (actual consumption) in the Mekong Delta. Figures obtained via analysis of fish consumption studies (Hortle, 2007[3]); (kg/capita/year)

Fish and fish product consumption by type Hortle Study (%)



Comparison of fish and fish product consumption figures obtained via 'Apparent Consumption' and Household survey with Hortle Study (kg/capita/year)



Notes

1. Figure reflects actual consumption. Population of Viet Nam 2010 86 932 500. Ref: http://countryeconomy.com/demography/population/vietnam
2. The VHLSS 2010 was conducted nationwide with a sample size of 69 360 households in 3 133 communes/wards which were representatives at national, regional, urban, rural and provincial levels. The survey collected information during four periods, each period in one quarter from the second quarter to the forth quarter in 2010 and one period in the first quarter of 2011. Data has been revised with the support of FAO using harmonized methodologies.
3. The Hortle study for the Mekong River Commission saw the analysis of 20 consumption studies spanning the Lower Mekong Basin countries (Lao PDR, Thailand, Cambodia and Viet Nam).

Conclusions

From the data analyzed it is clear that per capita fish consumption in the Asia-Pacific region is highest in the Pacific followed by Southeast East Asia, South Asia and North Asia. However, although fish consumption in countries such as India and Pakistan is relatively low (2.85 and 0.6 kg per capita per year respectively) the large population size of these nations results in significant quantities of fish being consumed (e.g. for India this equates to more than 3.4 million tonnes/annum).

Within countries considerable geographical differences in fish consumption can be identified. Certain geographic reasons are clear such as those living along or in the proximity of large waterways or water bodies, such as the Mekong River or Cambodia's Tonle Sap lake. It is also unsurprising that available data points to higher consumption in coastal communities than those further inland.

There was no clear divide between rural and urban areas. In 13 countries where data was available consumption in rural areas was higher than urban while in nine others urban consumption was higher. This may point to higher or easier availability in certain rural areas as well as better purchasing power in some urban centres.

Where data is available, inland species would appear to play a major role in diets. Certain species such as tilapia and catfish featured prominently.

No single country survey will provide a wholly accurate figure for fish consumption on a national and subnational levels. Instead a combination of approaches using the food balance sheet (FBS) to give an idea of overall consumption and household surveys to provide better resolution of the range and types of consumption can help paint a picture of how much fish is available and who is accessing this.

Household surveys are uniquely positioned to gather detailed data on fish consumption on nationwide and local scales. Continued technical support should therefore be provided to national statistics offices to help them put into practice more effective data collection methods so as to enhance the accuracy, quality and value of fish consumption statistics both in quantity and nutrient values. Support should also continue to be provided with regards to technical areas such as the building national nutrient and product conversion factors including non-edible proportions of different types of fish.

Where possible, household surveys should seek to place added emphasis on gathering data related to the consumption of fish and other aquatic animals or products. This would, for example, help create better understanding of the contribution of small-size, freshwater fish from inland water to the diet, especially of the rural poor. Such information could help better inform policy relating to poverty, nutrition as well as resource management.

Survey data can furthermore play an important role in identifying apparent anomalies in statistics that can then be addressed at national level. Deeper analysis should be conducted to understand the mismatches between apparent live weight consumption from FBS and edible quantity figures from household surveys in certain countries. National authorities would for example then be better placed to address over or under reporting in their figures.

Finally, household survey data is available from most countries in Asia-Pacific region with a few notable exceptions. In order to gain a clearer picture of fish consumption across the region such data should ideally be made available from all countries.

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Country data tables

Bangladesh

Year – 2010

Consumption of fish and fish products	Total g/capita/day	Total kg/capita/ year	Protein %	Marine products kg/capita/year	Inland products kg/capita/year	Unidentified kg/capita/year
Nationwide	32.63	11.91	11.1	2.07	9.09	0.75
Urban	39.78	14.52	12.5	4.07	9.72	0.72
Rural	30.08	10.98	10.6	1.36	8.87	0.76
Barisal	28.72	10.48		4.04	6.00	0.44
Chittagong	44.33	16.18		4.52	10.75	0.90
Dhaka	35.03	12.79		2.04	10.02	0.73
Khulna	26.75	9.76		1.34	7.89	0.54
Rajshahi	24.77	9.04		0.38	8.03	0.63
Rangpur	20.42	7.45		0.34	6.57	0.54
Sylhet	37.38	13.64		0.67	11.31	1.66

Consumption comparison	kg/capita/year
FAO Apparent consumption 2007-2009 average (Live weight)	17.40
Household Survey 2010 (Actual consumption)	11.90

Bangladesh

Consumption of fish by type (kg/capita/year)	National	Urban	Rural	Barisal	Chittagong	Dhaka	Khulna	Rajshahi	Rangpur	Sylhet
Hilsa shad	0.92	2.07	0.51	1.60	1.12	1.38	0.65	0.30	0.17	0.34
Rhui/ Katla/ Mrigel/ Kal baush (Carps)	1.51	2.00	1.34	0.99	1.85	1.50	1.81	1.35	1.13	1.51
Pangash/ Boal/ Air (Catfish)	1.91	1.93	1.90	0.82	2.35	2.51	0.97	2.08	0.73	2.10
Kai/ Magur/ Shinghi/ Khalisha (Perch)	0.15	0.23	0.13	0.15	0.18	0.19	0.06	0.12	0.08	0.22
Koi (Climbing perch)	0.27	0.58	0.16	0.21	0.29	0.44	0.20	0.09	0.04	0.22
Silver carp/ Grass carp/ Mirror carp	1.31	0.97	1.44	0.55	1.03	1.30	1.33	2.10	1.50	1.06
Shoal/ Gajar/ Taki (Snakehead)	0.50	0.44	0.52	1.01	0.33	0.57	0.46	0.34	0.55	0.38
Puti/ Big Puti/ Telapia/ Nilotica (Barbs/Tilapia)	2.13	2.37	2.04	1.01	3.06	2.12	2.48	1.17	1.76	2.38
Mala-kachi /Chala-chapila (Herring)	1.07	0.93	1.12	1.03	1.44	1.09	0.27	0.70	0.72	2.82
Shrimp	0.41	0.63	0.34	1.21	0.77	0.37	0.32	0.06	0.04	0.29
Dried fish	0.37	0.27	0.41	0.08	0.74	0.43	0.03	0.08	0.27	0.69
Tangra/Eelfish (Catfish)	0.24	0.28	0.23	0.23	0.24	0.27	0.30	0.08	0.06	0.63
Sea fish	0.67	1.28	0.45	0.88	2.58	0.21	0.30	0.01	0.12	0.01
Baila/Tapashi (Threadfins)	0.07	0.09	0.06	0.35	0.06	0.07	0.07	0.02	0.01	0.02
Other (specify)	0.37	0.46	0.34	0.36	0.16	0.30	0.51	0.55	0.27	0.97

Fish production by source	Tonnes (2012)	% of total
Freshwater aquaculture	1 575 306	48.3%
Brackishwater aquaculture	150 760	4.6%
Freshwater/estuarine fishery	1 251 949	38.4%
Marine fishery	283 766	8.7%
Total	**3 261 781**	

Source: FAO Fishtat J (2014)

Bhutan

Fish and fish products	Share of total protein consumption %	Edible quantity consumed g/capita/day	Edible quantity consumed kg/capita/year
National Level	3.18	15.28	5.58
Urban	3.24	17.63	6.43
Rural	3.15	14.43	5.27

Edible quantity consumed (kg/person/year)	Fresh Fish	Frozen Fish	Canned Fish	Total
National	1.70	3.18	0.69	5.58
Urban	2.91	2.85	0.68	6.43
Rural	1.27	3.30	0.70	5.27
Bumthang	0.84	4.22	1.87	6.93
Chhukha	2.08	2.27	0.53	4.88
Dagana	1.12	4.08	0.37	5.57
Gasa	0.30	6.84	0.27	7.41
Haa	1.35	2.22	1.34	4.91
Lhuntse	0.49	5.20	0.72	6.41
Monggar	0.91	3.86	0.35	5.12
Paro	0.74	2.60	0.15	3.49
Pemagatshel	1.51	6.09	1.00	8.59
Punakha	1.85	4.35	3.05	9.25
Samdrupjongkhar	2.41	4.31	0.63	7.34
Samtse	1.58	0.64	0.25	2.47
Sarpang	4.50	1.47	0.40	6.36
Thimpu	2.44	3.01	0.75	6.19
Trashigang	0.45	3.41	0.24	4.11
Trashiyangtze	1.21	8.72	1.58	11.51
Trongsa	1.54	2.35	2.12	6.01
Tsirang	1.42	2.64	0.04	4.10
Wangdu	1.44	3.36	0.27	5.08
Zhemgang	0.88	2.26	0.73	3.87

Average food protein consumption by income	kg/capita/year
Lowest income quintile	0.78
Quintile 2	1.11
Quintile 3	1.32
Quintile 4	1.45
Quintile 5	2.01

Consumption comparison	kg/capita/year
Household Survey 2009 (Actual consumption)	5.58
FAO Apparent consumption (2007-2009 average)	0.3

Cambodia

Year – 2011

Mean per capita intake by food groups	g/capita/day	kg/capita/year
Inland fish	110.50	40.33
Inland Other Aquatic Animals	10.80	3.94
Marine fish	44.50	16.24
Marine Other Aquatic Animals	3.10	1.13
Aquaculture	3.70	1.35
Total	**172.60**	**63.15**

Fish and fish products as a % of total food intake	18.0
Fish and fish products as a % of animal flesh intake	36.6

Average fish consumption per subgroup	**g/capita/day**	**% of total**	**kg/capita/year**	**Note**
Blackfish	51.50	30.06	18.98	Inland floodplain residents such as snakeheads
Whitefish	42.50	24.86	15.70	Inland long-distance migrants e.g. Siamese mud carp
Greyfish	16.50	9.25	5.84	Inland short distance migrants e.g. Glass catfish
Inland Other Aquatic Animals	10.80	6.36	4.02	
Marine	44.50	25.43	16.06	
Marine Other Aquatic Animals	3.10	1.73	1.10	
Aquaculture	3.70	2.31	1.46	
Total	**172.60**		**63.15**	

Consumption by region	**Inland capture resources**		**Marine capture resources**		**Total**	
	g/capita/day	**kg/capita/year**	**g/capita/day**	**kg/capita/year**	**g/capita/day**	**kg/capita/year**
Phnom Penh	104	37.96	53	19.35	157	57.31
Mountains and plateaus	89	32.49	54	19.71	143	52.20
Plains	135	49.28	27	9.86	162	59.13
Coastal	105	38.33	142	51.83	247	90.16
Tonle Sap	148	54.02	46	16.79	194	70.81

Cambodia

Year – 2011

Consumption by type		Phnom Penh	Mountains and plateaus	Plains	Coastal	Tonle Sap
Blackfish	g/capita/day	45.00	30.00	13.00	7.00	5.00
	kg/capita/year	16.43	10.95	4.75	2.56	1.83
Whitefish	g/capita/day	33.00	33.00	59.00	20.00	35.00
	kg/capita/year	12.05	12.05	21.54	7.30	12.78
Greyfish	g/capita/day	13.00	10.00	14.00	11.00	27.00
	kg/capita/year	4.75	3.65	5.11	4.02	9.86
Aquaculture	g/capita/day	7.00	2.00	6.00	1.00	0.00
	kg/capita/year	2.56	0.73	2.19	0.37	0.00
Other Aquatic Animals	g/capita/day	5.00	15.00	11.00	13.00	9.00
	kg/capita/year	1.83	5.48	4.02	4.75	3.29

Consumption by rural/urban	**Inland capture resources**		**Marine capture resources**	
	g/capita/day	**kg/capita/year**	**g/capita/day**	**kg/capita/year**
Urban	123	44.90	58	21.17
Rural	127	46.36	37	13.51

Consumption comparison	**kg/capita/year**
Household Survey (Actual consumption: 2011-12)	63.15
FAO Apparent consumption (Live weight: 2007-2009 average)	34.20

China

Year – 2009

Edible quantity consumed (kg/capita/year)

Urban	Rural	National
14.7	5.27	9.66

Consumption by income level and by rural/ urban for nine sample provinces (kg/capita/year)

Income level			Location			
Low	Medium	High	City	Suburb	Town	Village
10.0	12.6	17.4	16.9	18.3	12.9	9.6

Consumption by type and rural/urban (kg/capita/year)

Rural consumers		Urban consumers			
Total aquatic products	Fish	Total aquatic products	Fish	Shrimp & prawns	Other aquatic products
5.3	4.3	14.3	10.58	1.59	2.13

Consumption comparison	kg/capita/year
FAO Apparent consumption 2009 average (Live weight)	39.6
Household Survey 2009 (Actual consumption)	9.66

Inland finfish culture by species (2009)

Species	Total	% of total
Total Finfish	23 341 134	
Grass carp	4 781 698	20.5%
Silver carp	3 687 751	15.8%
Common carp	2 896 957	12.4%
Bighead carp	2 851 419	12.2%
Crucian carp	2 450 450	10.5%
Tilapia	1 552 733	6.7%
Chinese bream	705 821	3.0%
Black carp	494 908	2.1%
Snakehead	480 594	2.1%
Catfish	408 750	1.8%
Swamp eel	320 966	1.4%
Loach	293 911	1.3%
Mandarin fish	281 502	1.2%
Yellowhead catfish	256 650	1.1%
Large mouth perch	243 196	1.0%
Channel catfish	224 132	1.0%
Eel	212 464	0.9%
Colossoma	97 915	0.4%
Sturgeon	55 184	0.2%
Long snout catfish	26 264	0.1%
Trout	25 901	0.1%
Puffer fish	3 804	0.0%
Salmon	2 560	0.0%

Sources of production	Tonnes (2012)	
Marine capture fishery	14 264 635	20.2%
Inland capture fishery	2 298 199	3.3%
Mariculture	26 623 311	37.8%
Freshwater aquaculture	26 263 349	37.2%
Brackishwater aquaculture	1 060 357	1.5%
	70 509 851	

Source: FAO Fishtat J (2014)

China

Marine finfish production (tonnes)

Province	Total Finfish	Parrot fish	Flounder	Yellow croaker	Cobia	Yellow tail	Snapper	Red drum	Puffer fish	Grouper	Flounder
Total	1 028 399	125 836	113 551	95 118	38 014	13 094	52 328	65 712	13 176	72 785	10 431
Tianjin	3 666	115	2 254	0	0	0	0	60	189	268	19
Hebei	12 173	70	4 116	0	0	0	0	0	2 106	0	477
Liaoning	57 823	1 620	35 235	0	0	156	0	0	3 423	0	236
Shanghai	0	0	0	0	0	0	0	0	0	0	0
Jiangsu	72 986	1 757	3 108	0	0	0	59	0	172	13	1 400
Zhejiang	29 898	8 490	236	3 260	0	5	2 449	7 821	199	278	117
Fujian	213 271	18 302	3 341	83 505	587	3 375	22 561	13 585	1 388	18 844	465
Shangdong	148 757	23 490	6 446	75	0	0	0	5 696	5 021	12	7 563
Guangdong	399 414	59 912	815	8 278	24 415	8 677	18 380	31 535	625	35 039	154
Guangxi	40 426	8 882	0	0	245	0	6 285	4 756	0	2 315	0
Hainan	49 985	3 198	0	0	12 767	881	2 494	2 259	53	16 016	0

Marine crustacean production (tonnes)

Province	Total crustacean	Whiteleg shrimp	Tiger shrimp	Oriental shrimp	Japanese shrimp	Swimming crab	Mud crab
Total	1 249 554	762 494	64 554	41 213	49 409	99 580	128 983
Tianjin	10 619	10 594	0	5	0	0	0
Hebwwei	19 513	10 312	0	4 241	3 313	1 442	0
Liaoning	29 460	11 911	0	11 767	2 504	1 285	0
Shanghai	0	0	0	4 549	1 300	29 359	2 012
Jiangsu	94 920	15 288	1 638	1 440	1 143	21 083	26 038
Zhejiang	94 566	31 188	1 111	0	0	0	0
Fujian	134 302	58 635	5 902	3 550	9 677	22 089	27 472
Shangdong	118 276	51 571	2 050	7 151	25 980	21 234	350
Guangdong	412 654	294 865	39 639	8 510	5 318	3 008	43 576
Guangxi	213 627	175 152	11 688	0	174	0	14 212
Hainan	121 617	102 978	2 526	0	0	80	15 323

China

Inland finfish production (tonnes)

Province	Total Finfish	Black carp	Grass carp	Silver carp	Bighead carp	Common carp	Crucian carp	Chinese bream	Loach	Catfish	Channel catfish	Yellowhead catfish	Salmon
Total	23 341 134	494 908	4 781 698	3 687 751	2 851 419	2 896 957	2 450 450	705 821	293 911	408 750	224 132	256 650	2 560
Beijing	**50 222**	**1 021**	**13 175**	**4 325**	**2 876**	**15 208**	**3 320**	**1 396**	**168**	**1 252**	**254**	**16**	**0**
Tianjin	253 289	0	26 951	43 698	8 240	106 202	55 997	1 150	65	7 836	200	0	0
Hebei	397 083	184	68 501	75 351	33 140	150 835	37 704	683	1 831	522	46	60	55
Shanxi	39 580	18	10 264	7 255	3 696	12 295	1 625	258	9	471	28	5	0
Inner Mongolia	98 124	0	12 604	16 754	11 785	39 245	12 207	615	571	1 944	1	156	0
Liaoning	755 274	6 214	81 399	110 841	58 689	309 275	95 144	6 364	15 884	39 616	502	5 620	631
Jilin	161 036	829	15 197	43 078	30 086	41 214	16 963	1 282	1 472	2 847	65	1 545	29
Heilongjiang	396 431	0	31 264	82 126	35 197	163 543	61 309	785	2 139	4 042	60	2 277	0
Shanghai	97 467	3 790	24 305	13 949	8 811	760	35 469	2 883	190	162	127	369	0
Jiangsu	2 343 119	70 934	403 251	470 900	220 151	146 862	562 766	179 952	74 050	12 893	526	21 733	2
Zhejiang	643 290	42 263	86 570	131 228	90 543	32 766	79 673	27 476	4 074	2 547	3 326	24 354	70
Anhui	1 426 788	70 038	237 648	274 035	258 815	112 955	165 789	88 389	32 668	15 023	16 691	22 086	0
Fujian	628 204	11 408	150 011	64 397	58 208	49 114	27 042	4 606	1 259	8 447	1 868	3 638	12
Jiangxi	1 912 270	44 482	436 235	261 907	319 474	141 272	189 090	59 810	68 101	50 940	29 611	37 813	344
Shandong	1 323 277	14 302	232 132	22 726	126 698	345 799	138 778	14 468	8 574	32 694	163	2 711	163
Henan	653 983	6 093	105 595	158 717	97 297	200 863	42 479	11 531	5 862	11 039	4 645	1 358	0
Hubei	3 168 141	99 652	859 105	626 792	397 165	170 091	398 605	157 406	32 175	34 162	45 060	69 194	0
Hunan	2 048 590	65 904	589 105	398 244	331 764	158 478	101 908	67 749	10 960	26 781	27 087	15 305	3
Guangdong	3 079 516	36 792	674 709	219 550	356 030	122 518	133 353	36 632	6 914	29 156	14 981	23 361	422
Guangxi	1 227 613	12 271	271 795	219 101	156 294	143 280	35 419	1 801	2 536	32 702	10 402	2 583	2
Hainan	369 982	1 099	8 988	7 656	7 181	5 930	1 639	1 082	745	1 861	0	0	0
Chongqing	314 158	1 279	72 063	78 961	29 815	31 474	67 986	3 240	4 494	4 761	7 436	2 367	53
Sichuan	1 116 944	1 461	199 316	248 277	131 422	140 619	131 779	30 749	18 080	75 303	53 364	18 615	372
Guizhou	118 502	1 188	18 729	13 345	16 877	34 834	6 943	2 389	432	3 052	6 351	745	257
Yunnan	371 477	3 291	61 773	38 544	29 688	96 477	24 109	968	375	6 299	616	232	17
Xizang	65	0	10	0	0	16	5	0	0	0	0	0	0
Shaanxi	99 458	384	20 632	23 985	13 742	30 330	5 027	431	122	777	404	494	0
Ganshu	13 262	11	3 349	1 634	572	4 490	941	74	0	31	1	0	118
Qinghai	4 355	0	99	96	0	220	160	0	0	0	0	0	0
Ningxia	121 391	0	36 379	14 552	6 783	53 525	7 695	888	161	824	228	0	0
Xinjiang	108 243	0	30 592	15 727	10 380	36 467	9 526	764	0	766	89	13	10

China

Inland finfish production (tonnes)

Province	Trout	Puffer fish	Colossoma	Long snout catfish	Swamp eel	Mandarin fish	Large mouth perch	Snakehead	Tilapia	Sturgeon	Eel
Total	**25 901**	**3 804**	**97 915**	**26 264**	**320 966**	**281 502**	**243 196**	**480 594**	**1 552 733**	**55 184**	**212 464**
Beijing	1 735	0	12	0	0	21	185	35	1 501	3 335	0
Tianjin	0	0	0	0	0	0	0	0	1 264	0	0
Hebei	2 158	0	33	0	0	0	30	61	15 773	3 856	0
Shanxi	1 212	0	0	0	0	0	13	2	1 097	1 106	0
Inner Mongolia	114	0	0	0	0	0	0	1 268	85	0	0
Liaoning	5 200	0	0	0	0	1 101	106	2 422	2 482	1 150	0
Jilin	163	0	0	0	0	293	92	944	27	0	0
Heilongjiang	384	0	0	0	0	482	10	144	118	0	0
Shanghai	0	0	0	0	16	315	209	0	38	57	109
Jiangsu	0	2 720	8 185	8 185	7 307	27 547	32 544	35 923	3 971	1 354	3 854
Zhejiang	149	24	857	71	906	12 715	18 358	51 308	1 759	3 267	1 789
Anhui	0	16	3 477	92	40 806	36 361	4 473	26 026	4 646	302	3 497
Fujian	172	451	4 069	131	725	1 462	9 588	1 982	123 081	2 835	80 105
Jiangxi	60	0	22 124	521	77 332	43 917	19 434	54 193	7 251	1 782	17 271
Shandong	4 093	0	1 018	0	2 453	2 925	912	134 327	11 831	11 685	0
Henan	217	0	618	13	1 740	552	302	1 567	962	730	0
Hubei	0	13	51	862	144 398	31 026	2 800	32 164	3 860	8 110	160
Hunan	511	0	18	348	28 635	16 210	2 060	41 547	1 704	957	0
Guangdong	625	580	27 642	5 672	2 559	100 639	137 239	83 893	664 647	931	105 455
Guangxi	171	0	28 223	817	1 649	234	721	2 471	265 268	881	0
Hainan	0	0	1 062	0	352	0	0	123	331 918	21	223
Chongqing	354	0	336	778	687	412	876	1 715	3 093	918	0
Sichuan	1 019	0	15	7 865	10 510	4 660	10 455	7 320	3 757	5 792	0
Guizhou	113	0	0	895	308	19	2 179	10	1 559	1 182	0
Yunnan	3 219	0	158	14	275	43	139	918	99 267	3 588	1
Xizang	30	0	0	0	0	0	0	0	4	0	0
Shaanxi	558	0	15	0	308	538	53	155	656	700	0
Ganshu	581	0	0	0	0	0	0	1	29	420	0
Qinghai	2 580	0	0	0	0	0	0	0	0	0	0
Ningxia	0	0	0	0	0	0	0	27	0	161	0
Xinjiang	483	0	2	0	0	30	418	48	1 085	64	0

China

Inland crustacean production (tonnes)

Province	Total crustacean	*M. rosenbergii*	*M. japonensis*	Crayfish	White leg shrimp	Chinese hairy crab (mitten crab)
Total	**2 343 034**	**124 713**	**237 431**	**554 821**	**690 747**	**714 380**
Beijing	94	0	0	0	92	2
Tianjin	57 816	0	175	17	56 415	1 209
Hebei	27 536	0	799	0	22 702	3 590
Shanxi	92	0	0	0	60	30
Inner Mongolia	431	1	103	0	0	328
Liaoning	75 175	0	0	0	3 684	71 411
Jilin	934	0	192	0	0	732
Heilongjiang	4 419	0	0	0	60	4 039
Shanghai	63 885	0	645	0	44 071	15 030
Jiangsu	693 007	4 139	107 330	83 711	107 308	326 513
Zhejiang	147 746	67 625	19 310	4 963	102 855	8 762
Anhui	242 241	10 923	45 731	85 704	2 822	105 219
Fujian	58 342	2 650	1 600	120	53 443	1 447
Jiangxi	97 852	1 064	23 731	58 387	672	14 467
Shandong	86 504	595	3 224	7 224	45 093	28 711
Henan	13 208	520	2 481	7 500	611	1 912
Hubei	446 830	704	25 113	302 179	2 559	115 535
Hunan	17 110	1 444	4 365	1 999	242	6 376
Guangdong	295 178	470	1 600	13	245 125	4 859
Guangxi	5 919	32 779	727	266	2 173	717
Hainan	1 475	1 507	0	0	325	250
Chongqing	1 013	0	0	666	260	74
Sichuan	2 761	0	114	1 993	90	287
Guizhou	108	130	2	11	1	40
Yunnan	468	21	182	66	12	67
Xizang	0	141	0	0	0	0
Shaanxi	64	0	2	2	0	32
Ganshu	76	0	0	0	0	68
Qinghai	105	0	0	0	0	105
Ningxia	1 929	0	0	0	3	1 926
Xinjiang	716	0	5	0	69	642

India

Year – 2010

Consumption of fish and fish products	Share of total protein consumption %	Average edible quantity consumed g/person/day	Average edible quantity consumed kg/person/year
National level	2.02	7.82	2.85
Rural	1.91	7.44	2.72
Urban	2.19	8.41	3.07

Average edible quantity of fish and fish products consumed

States and territories	kg/capita/year	States and territories	kg/capita/year
Kerala	22.67	**Bihar**	1.47
A & N Islands	12.77	**Andhra Pradesh**	1.09
Tripura	10.98	**Maharastra & D & N Haveli**	0.93
Pondicherry	8.27	**Sikkim**	0.83
West Bengal	8.16	**Chattisgarh**	0.75
Assam	5.58	**Uttar Pradesh**	0.56
Arunachal Pradesh	3.91	**Gujarat & Daman & Diu**	0.43
Manipur	3.85	**Madhya Pradesh**	0.37
Nagaland	3.05	**Jamu & Kashmir**	0.28
Orissa	2.94	**Delhi**	0.20
Meghalaya	2.68	**Uttarakhand**	0.16
Karnataka & Goa	2.38	**Rajasthan**	0.07
Tamil Nadu	2.06	**Punjab & Chandigarh**	0.07
Mizoram	1.67	**Himachal Pradesh**	0.03
Jharkhand	1.54	**Haryana**	0.03

Consumption comparison	kg/capita/year
FAO Apparent consumption 2007-2009 average (Live weight)	5.50
Household Survey 2010 (Actual consumption)	2.85

Indonesia

Year – 2011

All figures relate to consumption of fish and fish products	Share of total protein consumption %	Edible quantity consumed g/capita/day	Edible quantity consumed kg/capita/year
National level	16.36	35.00	12.78
Urban	15.78	32.04	11.69
Rural	16.91	35.47	12.95

Protein consumption from fish and fish products by income quintile	g/capita/day	kg/capita/year
Lowest quintile	4.99	1.82
2nd quintile	6.39	2.33
3rd quintile	7.58	2.77
4th quintile	8.70	3.18
Highest quintile	9.25	3.38

Consumption comparison	kg/capita/year
FAO Apparent consumption 2007-2009 average (Live weight)	24.7
Household Survey 2011 (Actual consumption)	12.8

Indonesia

Province	Total consumption of fish and fish products (kg/capita/year)	Marine products kg/capita/year	Inland products kg/capita/year	Unidentified kg/capita/year	Fresh products kg/capita/year	Dried/Processed products kg/capita/year	Unidentified kg/capita/year
Maluku	26.90	14.53	0.35	12.02	14.38	1.19	11.33
Sulawesi Tenggara	24.94	18.50	1.34	5.10	18.34	2.46	4.14
North Maluku	24.46	19.92	0.79	3.75	19.00	2.13	3.33
South Sulawesi	23.11	14.90	3.22	4.99	16.17	3.09	3.86
West Sulawesi	23.04	15.22	1.40	6.42	14.19	4.75	4.10
Central Kalimantan	22.53	5.13	7.67	9.73	11.07	5.10	6.37
Aceh	21.83	16.44	2.12	3.27	15.86	4.01	1.97
North Sulawesi	21.43	18.20	0.99	2.24	16.85	2.91	1.67
South Kalimantan	20.96	5.37	6.86	8.73	11.16	2.53	7.27
Kepulauan Bangka Belitung	20.84	10.41	0.63	9.80	10.56	2.49	7.80
West Papua	20.73	14.03	1.57	5.13	14.86	1.36	4.51
Kepulauan Riau	20.27	12.66	1.13	6.48	12.03	2.83	5.41
Gorontalo	19.82	15.30	1.02	3.49	14.81	2.11	2.90
North Sumatera	19.16	10.82	2.29	6.05	8.36	7.22	3.58
East Kalimantan	18.55	9.17	3.28	6.10	11.64	2.61	4.30
Central Sulawesi	18.25	13.64	1.45	3.16	13.55	2.25	2.45
Riau	17.94	9.71	2.88	5.35	8.74	5.74	3.46
West Kalimantan	17.17	7.78	2.69	6.70	8.40	4.07	4.70
Jambi	15.19	6.44	2.82	5.93	5.96	4.60	4.63
South Sumatera	15.04	3.65	4.64	6.75	6.80	3.15	5.09
West Nusa Tenggara	14.13	9.79	1.24	3.10	7.64	4.82	1.67
West Sumatera	13.81	7.82	3.46	2.53	8.71	3.24	1.87
Papua	13.40	6.83	3.54	3.03	9.83	1.23	2.33
Bengkulu	12.87	5.36	3.51	4.00	6.61	3.58	2.67
Banten	12.19	7.10	2.66	2.43	7.58	3.80	0.82
Lampung	10.92	4.36	2.60	3.97	5.55	3.56	1.82
East Java	10.61	5.59	2.01	3.01	5.03	4.62	0.97
DKI Jakarta	10.30	6.65	2.13	1.52	7.19	2.39	0.71
East Nusa Tenggara	9.89	6.28	0.23	3.38	5.21	2.16	2.52
West Java	9.79	4.63	3.51	1.65	5.39	3.95	0.46
Bali	9.16	7.19	0.26	1.71	2.77	5.75	0.64
Central Java	6.64	3.36	1.22	2.06	3.05	2.93	0.66
DI Yogyakarta	3.96	1.92	1.27	0.77	2.31	1.25	0.40

Indonesia

Consumption of fish and fish products (kg/capita/year)	National average	Aceh	North Sumatera	West Sumatera	Riau	Jambi	South Sumatera	Bengkulu	Lampung	Kepulauan Bangka Belitung	Kepulauan Riau
Marine											
Eastern tuna or skipjack tuna	1.26	4.69	1.59	2.56	1.19	1.12	0.70	2.32	0.81	1.50	3.13
Anchovies preserved	0.98	1.47	2.99	2.07	2.79	2.66	1.03	1.71	0.44	0.16	1.18
Indian mackerel	0.90	2.15	2.59	0.64	1.61	0.62	0.46	0.14	0.91	2.26	1.66
Milkfish	0.72	1.92	0.05	0.03	0.09	0.07	0.27	0.04	0.31	0.16	0.09
Eastern tuna or skipjack tuna preserved	0.51	0.11	0.25	0.06	0.20	0.12	0.07	0.14	0.27	0.01	0.07
Trevallies	0.41	0.84	0.53	1.06	0.78	0.09	0.04	0.02	0.22	2.04	2.08
Indian mackerel preserved	0.39	0.62	0.46	0.12	0.37	0.20	0.19	0.06	0.25	0.08	0.16
Shrimp	0.26	0.86	0.34	0.14	0.63	0.40	0.15	0.14	0.09	0.59	0.99
Anchovies	0.25	1.78	0.14	0.28	0.15	0.13	0.12	0.08	0.18	0.15	0.16
Yellow tail or fusiliers	0.23	0.60	0.12	0.16	0.25	0.08	0.04	0.10	0.11	0.80	1.00
Trevallies preserved	0.17	0.22	0.38	0.18	0.24	0.13	0.11	0.08	0.22	0.21	0.24
Common squid or cuttlefish	0.13	0.31	0.19	0.08	0.22	0.06	0.11	0.02	0.15	0.57	0.77
Milk fishes	0.12	0.04	0.02	0.04	0.02	0.02	0.06	0.03	0.01	0.02	0.00
Barramundi	0.11	0.21	0.08	0.07	0.09	0.04	0.03	0.07	0.04	0.18	0.15
Mackerel	0.09	0.15	0.07	0.22	0.19	0.06	0.04	0.12	0.07	0.71	0.21
Others of shrimp and preserved seafoods	0.09	0.09	0.17	0.02	0.03	0.09	0.04	0.12	0.12	0.03	0.00
Cockle or snail	0.08	0.06	0.32	0.01	0.59	0.30	0.10	0.05	0.02	0.47	0.29
Shrimps preserved	0.05	0.14	0.42	0.02	0.11	0.06	0.02	0.01	0.01	0.00	0.04
Baronang	0.05	0.06	0.02	0.01	0.04	0.11	0.06	0.02	0.02	0.14	0.05
Mackerel preserved	0.04	0.03	0.02	0.02	0.08	0.05	0.01	0.02	0.09	0.03	0.03
Common squids preserved	0.03	0.01	0.01	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.05
Mud crab or swim crab	0.03	0.05	0.04	0.03	0.02	0.02	0.00	0.05	0.01	0.31	0.31
Inland											
Mozambique tilapia	0.84	1.17	0.60	1.37	0.56	0.38	1.28	1.73	0.30	0.08	0.18
Catfish	0.50	0.16	0.51	0.24	0.92	0.56	0.59	0.23	0.95	0.29	0.78
Common carp	0.49	0.29	0.63	0.95	0.45	0.98	0.54	1.00	0.49	0.01	0.01
Snake head	0.34	0.43	0.43	0.17	0.81	0.67	1.24	0.13	0.54	0.15	0.03
Snakeskin gourami	0.23	0.04	0.05	0.65	0.11	0.20	0.94	0.30	0.28	0.09	0.12
Snake head preserved	0.06	0.02	0.07	0.08	0.04	0.03	0.05	0.12	0.03	0.00	0.01
Non identified											
Others	1.92	1.97	3.58	1.87	3.46	4.63	5.09	2.67	1.82	7.80	5.41
Other preserved fish	0.93	0.87	2.08	0.41	1.28	0.77	0.77	0.65	1.48	0.80	0.57
Fish paste	0.40	0.31	0.19	0.03	0.28	0.22	0.68	0.22	0.59	1.02	0.27
Canned fish	0.09	0.04	0.13	0.15	0.28	0.26	0.16	0.35	0.04	0.05	0.20
Fried fish	0.05	0.07	0.04	0.07	0.02	0.01	0.03	0.10	0.01	0.09	0.01
Other shrimps	0.02	0.01	0.03	0.01	0.02	0.03	0.02	0.02	0.02	0.04	0.02
Total	**12.78**	**21.83**	**19.16**	**13.81**	**17.94**	**15.19**	**15.04**	**12.87**	**10.92**	**20.84**	**20.27**

Indonesia

Consumption of fish and fish products (kg/capita/year)	DKI Jakarta	West Java	Central Java	DI Yogyakarta	East Java	Banten	Bali	West Nusa Tenggara	East Nusa Tenggara	West Kalimantan	Central Kalimantan
Marine											
Eastern tuna or skipjack tuna	0.83	0.30	0.18	0.32	1.00	1.00	1.16	1.85	1.58	1.81	0.47
Anchovies preserved	0.75	1.22	0.35	0.19	0.40	0.91	0.71	1.23	1.06	1.17	0.11
Indian mackerel	1.70	0.41	0.23	0.13	0.21	1.49	0.19	0.82	0.81	2.20	0.98
Milkfish	0.78	0.45	0.59	0.18	0.62	1.22	0.03	0.39	0.05	0.39	0.49
Eastern tuna or skipjack tuna preserved	0.13	0.37	0.36	0.48	1.30	0.13	3.69	1.79	0.08	0.03	0.23
Trevallies	0.25	0.07	0.05	0.00	0.22	0.27	0.19	1.04	0.96	0.21	0.79
Indian mackerel preserved	0.29	0.61	0.56	0.18	0.48	0.43	0.15	0.12	0.06	0.27	0.36
Shrimp	0.40	0.16	0.13	0.04	0.23	0.30	0.21	0.16	0.04	0.61	0.55
Anchovies	0.15	0.11	0.06	0.01	0.15	0.26	0.25	0.87	0.28	0.09	0.18
Yellow tail or fusiliers	0.10	0.07	0.05	0.01	0.24	0.08	0.18	0.35	0.58	0.15	0.08
Trevallies preserved	0.05	0.23	0.12	0.00	0.14	0.39	0.03	0.15	0.09	0.07	0.12
Common squid or cuttle fish	0.22	0.09	0.04	0.02	0.10	0.19	0.05	0.29	0.03	0.09	0.04
Milk fishes	0.10	0.17	0.37	0.30	0.08	0.04	0.02	0.00	0.03	0.01	0.07
Barramundi	0.20	0.04	0.07	0.00	0.07	0.05	0.13	0.17	0.11	0.10	0.15
Mackerel	0.27	0.03	0.03	0.03	0.05	0.07	0.05	0.20	0.21	0.31	0.09
Others of shrimp and preserved seafoods	0.05	0.07	0.06	0.00	0.19	0.09	0.04	0.03	0.01	0.15	0.15
Cockle or snail	0.12	0.03	0.02	0.00	0.04	0.02	0.01	0.09	0.03	0.04	0.03
Shrimps preserved	0.02	0.04	0.01	0.01	0.02	0.04	0.01	0.02	0.01	0.04	0.03
Baronang	0.03	0.01	0.00	0.00	0.01	0.01	0.01	0.09	0.22	0.02	0.09
Mackerel preserved	0.03	0.04	0.06	0.02	0.03	0.00	0.09	0.05	0.00	0.01	0.10
Common squids preserved	0.15	0.10	0.00	0.00	0.01	0.09	0.00	0.03	0.00	0.01	0.00
Mud crab or swim crab	0.03	0.01	0.01	0.00	0.01	0.01	0.01	0.03	0.03	0.01	0.03
Inland											
Mozambique tilapia	0.50	1.27	0.43	0.14	0.98	0.74	0.14	1.12	0.03	0.06	0.27
Catfish	0.62	0.34	0.64	1.09	0.83	0.55	0.08	0.03	0.04	0.42	0.31
Common carp	0.72	1.25	0.03	0.02	0.07	0.90	0.04	0.05	0.04	0.13	1.26
Snake head	0.07	0.08	0.06	0.00	0.06	0.06	0.01	0.04	0.11	1.26	3.93
Snakeskin gourami	0.10	0.47	0.04	0.00	0.06	0.30	0.00	0.00	0.00	0.48	1.14
Snake head preserved	0.12	0.10	0.01	0.01	0.01	0.10	0.00	0.00	0.00	0.34	0.75
Non identified											
Others	0.71	0.46	0.66	0.40	0.97	0.82	0.64	1.67	2.52	4.70	6.37
Other preserved fish	0.44	0.58	0.98	0.14	1.33	0.97	0.38	0.22	0.72	1.25	1.89
Fish paste	0.19	0.45	0.34	0.07	0.63	0.50	0.61	1.12	0.08	0.44	0.45
Canned fish	0.12	0.10	0.01	0.10	0.03	0.07	0.04	0.01	0.02	0.28	0.84
Fried fish	0.07	0.05	0.05	0.04	0.04	0.06	0.01	0.04	0.03	0.02	0.07
Other shrimps	0.00	0.01	0.01	0.01	0.01	0.01	0.02	0.04	0.02	0.02	0.12
Total	**10.30**	**9.79**	**6.64**	**3.96**	**10.61**	**12.19**	**9.16**	**14.13**	**9.89**	**17.17**	**22.53**

Indonesia

Consumption of fish and fish products (kg/capita/year)	South Kalimantan	East Kalimantan	North Sulawesi	Central Sulawesi	South Sulawesi	Southeast Sulawesi	Gorontalo	West Sulawesi	Maluku	North Maluku	West Papua	Papua
Marine												
Eastern tuna or skipjack tuna	0.73	1.33	9.51	3.95	2.06	5.27	6.54	5.26	6.88	8.57	3.95	1.38
Anchovies preserved	0.08	0.31	0.68	0.67	1.34	0.60	1.20	1.49	0.03	0.89	0.23	0.08
Indian mackerel	1.80	1.86	1.76	1.57	1.23	4.02	0.81	1.95	1.30	2.34	2.61	1.33
Milkfish	0.35	2.35	0.03	0.73	5.89	1.85	0.43	2.90	0.04	0.03	0.27	0.38
Eastern tuna or skipjack tuna preserved	0.20	0.05	1.44	0.33	0.25	0.12	0.08	0.74	0.30	0.59	0.17	0.24
Trevallies	0.45	0.59	1.64	2.84	0.74	2.53	2.31	0.42	2.70	3.08	0.32	0.14
Indian mackerel preserved	0.22	0.10	0.09	0.19	0.04	0.37	0.07	0.04	0.03	0.08	0.13	0.09
Shrimp	0.62	0.77	0.03	0.12	0.46	0.19	0.13	0.14	0.07	0.03	0.41	0.52
Anchovies	0.08	0.21	0.26	0.38	1.59	1.12	0.67	0.43	0.29	0.38	1.15	0.15
Yellow tail or fusiliers	0.07	0.26	1.70	1.23	0.20	0.54	1.99	0.24	1.11	2.47	1.96	1.17
Trevallies preserved	0.15	0.11	0.08	0.22	0.12	0.27	0.15	0.03	0.01	0.09	0.01	0.01
Common squid or cuttle fish	0.10	0.19	0.10	0.21	0.16	0.25	0.29	0.10	0.12	0.22	0.03	0.08
Milk fishes	0.03	0.08	0.01	0.01	0.21	0.05	0.00	0.14	0.01	0.01	0.00	0.01
Barramundi	0.10	0.37	0.30	0.41	0.10	0.53	0.12	0.21	0.51	0.35	1.29	0.82
Mackerel	0.03	0.08	0.23	0.24	0.06	0.15	0.21	0.70	0.29	0.43	0.42	0.18
Others of shrimp and preserved seafoods	0.06	0.07	0.01	0.04	0.12	0.01	0.03	0.03	0.02	0.02	0.04	0.01
Cockle or snail	0.01	0.16	0.05	0.03	0.02	0.07	0.01	0.10	0.06	0.01	0.24	0.08
Shrimps preserved	0.02	0.02	0.01	0.02	0.04	0.01	0.00	0.02	0.00	0.00	0.01	0.01
Baronang	0.01	0.13	0.21	0.31	0.18	0.32	0.18	0.16	0.47	0.27	0.50	0.07
Mackerel preserved	0.19	0.05	0.06	0.06	0.03	0.10	0.04	0.11	0.13	0.00	0.14	0.02
Common squids preserved	0.01	0.00	0.00	0.01	0.01	0.03	0.00	0.00	0.01	0.05	0.01	0.00
Mud crab or swim crab	0.03	0.09	0.01	0.06	0.07	0.08	0.04	0.01	0.15	0.01	0.12	0.06
Inland												
Mozambique tilapia	0.35	0.72	0.93	0.96	2.32	0.59	0.95	0.38	0.24	0.61	0.58	1.57
Catfish	0.11	0.51	0.01	0.11	0.06	0.05	0.00	0.21	0.06	0.04	0.17	0.30
Common carp	0.90	0.60	0.04	0.13	0.21	0.02	0.01	0.13	0.00	0.01	0.21	0.41
Snake head	3.98	1.11	0.00	0.23	0.49	0.61	0.06	0.54	0.03	0.14	0.57	1.07
Snakeskin gourami	1.38	0.20	0.00	0.01	0.11	0.06	0.00	0.11	0.00	0.00	0.02	0.00
Snake head preserved	0.14	0.13	0.00	0.01	0.04	0.01	0.00	0.03	0.01	0.00	0.01	0.19
Non identified												
Others	7.27	4.30	1.67	2.45	3.86	4.14	2.90	4.10	11.33	3.33	4.51	2.33
Other preserved fish	0.90	1.24	0.33	0.36	0.78	0.62	0.31	2.06	0.41	0.14	0.23	0.16
Fish paste	0.26	0.28	0.03	0.13	0.21	0.15	0.04	0.08	0.09	0.19	0.13	0.09
Canned fish	0.09	0.20	0.03	0.04	0.06	0.00	0.07	0.05	0.01	0.05	0.21	0.31
Fried fish	0.19	0.05	0.16	0.17	0.05	0.17	0.11	0.06	0.14	0.01	0.02	0.01
Other shrimps	0.02	0.03	0.02	0.02	0.02	0.02	0.05	0.06	0.03	0.01	0.03	0.12
Total	**20.96**	**18.55**	**21.43**	**18.25**	**23.11**	**24.94**	**19.82**	**23.04**	**26.90**	**24.46**	**20.73**	**13.40**

Lao PDR

Year – 2007/2008

Fish and fish product consumption (kg/capita/year)	National level	Urban	Rural
Fish captured	10.04	5.33	11.94
Fresh fish	5.07	9.16	3.43
Prawns, crabs, squid	1.02	2.01	0.62
Fermented fish	0.95	1.72	0.62
Frozen fish	0.66	1.28	0.40
Fish cultivated	0.51	0.58	0.47
Dried and smoked fish	0.33	0.40	0.33
Fish/shrimp sauces/paste	0.33	0.62	0.18
Canned fish	0.18	0.15	0.18
Preserved fish	0.04	0.07	0.04
Total	**19.13**	**21.32**	**18.21**

Share of protein consumption from fish and fish products	% of total protein consumption
National level	9.80
Urban	11.30
Rural	9.20

Consumption comparison	kg/capita/year
FAO Apparent consumption 2007-2009 average (Live weight)	18.2
Household Survey 2011 (Actual consumption)	19.1

Comparison between reported statistics and estimates based on fish consumption survey	**Aquaculture Production (tonnes)**	**Inland capture fishery Production (tonnes)**
FAO FishStatJ (2012)	101 895	34 105
Calculated from Household Consumption Survey	2 838	100 065

Fish and fish product consumption on provincial level (kg/capita/year)	Fresh, captured fish	Dried,smoked, fermented, preserved	Prawns, crabs, squid etc.	Frozen and canned fish	Fish/shrimp sauces and paste	Cultivated fish	Total
Champasack	23.87	3.65	2.77	1.61	0.47	0.33	32.70
Saravane	25.62	1.42	1.68	0.50	0.11	0.44	29.77
Savannakhet	20.62	1.75	1.83	1.57	0.37	0.91	27.05
Khammuane	23.94	0.77	0.47	1.20	0.29	0.04	26.72
Sekong & Attapu	16.17	1.79	0.66	0.26	0.11	0.15	19.13
Vientiane capital	12.78	1.53	1.28	1.42	0.88	0.15	18.03
Xiengkhuang & Borikhamxay	14.16	0.62	0.29	0.33	0.22	0.66	16.28
Vientiane Prefecture	13.29	0.91	0.62	0.44	0.29	0.40	15.95
Xayabury	10.29	1.61	0.55	0.77	0.37	0.80	14.38
Phongsaly & Bokeo	9.89	0.29	0.07	0.26	0.04	0.22	10.77
Luangprabang	5.84	1.02	0.44	0.22	0.18	0.44	8.14
Luangnamtha & Oudomxay	6.90	0.15	0.18	0.15	0.04	0.26	7.67
Huaphanh	5.29	0.11	0.07	0.11	0.04	1.83	7.45

Mongolia

Year – 2008

Consumption of fish and fish products	Share of total protein consumption (%)	Edible quantity consumed g/capita/day	Edible quantity consumed kg/capita/year
National Level	0.13	0.48	0.18
Urban	0.17	0.64	0.23
Rural	0.07	0.26	0.10
West region	no data	0.19	0.07
Highlands	no data	0.33	0.12
Central	no data	0.47	0.17
East	no data	0.19	0.07
Ulan Bator	no data	0.78	0.28

Consumption of fish by type (kg/capita/year)	Fresh Fish	Dried, smoked, salted fish	Canned fish	Other fish and seafood	Total
National level	0.12	0.01	0.05	0.00	0.17
Urban	0.15	0.01	0.07	0.00	0.23
Rural	0.07	0.00	0.03	0.00	0.10
West	0.06	0.01	0.01	0.00	0.07
Highlands	0.08	0.00	0.04	0.00	0.12
East	0.04	0.00	0.03	0.07	0.07
Ulan Bator	0.21	0.01	0.07	0.00	0.28
Central	0.08	0.02	0.07	0.00	0.17

Average food protein consumption from fish and fish products	kg/capita/year
Lowest quintile	0.02
Quintile 2	0.05
Quintile 3	0.06
Quintile 4	0.12
Quintile 5	0.34

Consumption comparison	kg/capita/year
FAO Apparent consumption 2007-2009 average (Live weight)	0.40
Household Survey (Actual consumption)	0.18

Myanmar

Year – 2006

Fish and fish products	National level	Urban	Rural
Quantity Consumed (g/person/day)	57.60	55.50	58.30
Quantity Consumed (kg/person/year)	21.02	20.26	21.28
Marine (kg/person/year)	4.93	4.60	5.00
Inland (kg/person/year)	6.61	8.03	6.06
Misc (kg/person/year)	9.49	7.63	10.22
Fresh	9.82	10.69	9.49
Processed	11.21	9.56	11.79

Quantity Consumed (kg/capita/year)	Marine	Inland	Misc	Total
Kayin	7.86	8.02	51.81	67.69
Tanintharyi	7.50	1.23	23.13	31.87
Yangon	4.51	11.50	9.55	25.56
Ayeyarwady	4.67	9.07	11.63	25.37
Mon	8.65	9.19	5.81	23.64
Bago East	2.94	10.24	9.56	22.74
Rakhine	9.84	1.05	11.26	22.15
Bago West	6.16	7.50	7.41	21.07
Magway	6.81	4.74	8.17	19.72
Saging	4.01	4.54	6.69	15.24
Mandalay	3.62	4.87	6.45	14.94
Shan State East	1.77	4.97	5.65	12.39
Kachin	2.81	5.33	3.58	11.72
Shan State South	1.51	4.13	5.43	11.07
Kayah	1.55	3.86	3.86	9.27
Chin	2.75	0.37	4.06	7.18
Shan State North	0.97	3.77	1.69	6.42

Fish and fish products as a share of total protein consumption	%
National	22.6
Urban	22.7
Rural	22.6

Consumption comparison	kg/capita/year
FAO Apparent consumption 2007-2009 average (Live weight)	46.50
Household Survey 2006 (Actual consumption)	21.02

Myanmar

Quantity Consumed (kg/capita year)	Nationwide	Urban	Rural
Dried Prawns	0.40	0.51	0.33
Fish Paste	3.21	2.26	3.61
Fish Sauce	1.83	1.97	1.75
Hmyin Ngapi (Shrimp paste)	1.64	1.13	1.83
Kakatit (Baramundi/Sea bass)	0.15	0.15	0.15
Kakuyan (Indian threadfin)	0.00	0.04	0.00
Ngabokechauk (Dried Indian threadfin)	0.18	0.07	0.22
Ngabokethin (Croakers/Jew fish)	0.29	0.15	0.33
Ngagyee (Stinging catfish)	0.22	0.26	0.18
Ngagyichauk (Dry stinging catfish)	0.04	0.04	0.04
Ngagyinn (Mrigal carp)	2.08	2.70	1.83
Ngakhu (Walking catfish)	0.77	0.84	0.73
Ngakunshutchauk (Dried Indo-Pacific Spanish mackerel)	0.11	0.11	0.11
Ngamoke (Silver pomfret)	0.04	0.07	0.04
Ngamyitchinn (Rohu carp)	1.10	2.19	0.69
Nganutchauk (Dry Bombay duck)	0.40	0.51	0.37
Ngapikaung (Assorted semi-dry fish)	0.22	0.11	0.26
Ngapi yay (Semi-liquid fish paste)	0.26	0.26	0.22
Ngapyayma (Climbing perch)	0.37	0.18	0.44
Ngashwe (Indian/yellow pike conger)	0.04	0.04	0.04
Ngathalauk (Hilsa shad)	0.66	0.77	0.62
Ngaton (Yellow tailed catfish)	0.26	0.29	0.26
Ngayant (Striped snakehead)	1.39	1.02	1.53
Ngayantchauk (Dried Striped snakehead)	0.40	0.51	0.37
Other Dried Fish	1.64	1.24	1.83
Other Prawns	0.40	0.29	0.40
Pickled Fish	0.11	0.07	0.11
Pickled Prawns	0.07	0.15	0.07
Prawn sauce	0.40	0.44	0.40
Sardine (All Kinds)	0.15	0.18	0.11
Other Fish	2.23	1.72	2.45
Total	**21.02**	**20.26**	**21.28**

Myanmar

Quantity Consumed (kg/capita/year)	Ayeyarwady	Bago East	Bago West	Chin	Kachin	Kayah	Kayin	Magway
Fish Paste	4.67	5.08	3.72	1.46	0.47	1.50	46.49	0.61
Ngayant (Striped snakehead)	2.60	2.24	1.16	0.01	0.29	2.37	2.72	1.60
Other dried fish	1.33	1.19	1.62	0.31	0.84	0.73	2.37	1.31
Ngagyinn (Mrigal carp)	0.90	3.04	3.12	0.24	4.02	0.88	2.30	2.61
Ngathalauk (Hilsa shad)	1.33	0.99	0.90	0.13	0.07	0.05	2.23	0.24
Nganutchauk (Dry Bombay duck)	0.23	0.75	0.03	0.00	0.04	0.07	2.06	0.14
Ngakhu (Walking catfish)	1.74	1.62	0.69	0.00	0.18	0.22	1.27	0.09
Other Fish	1.25	0.83	0.36	0.55	1.28	1.10	1.19	2.93
Hmyin Ngapi (Shrimp paste)	1.28	0.20	2.15	1.75	1.57	0.66	1.15	3.93
Fish Sauce	3.93	2.16	1.24	1.02	0.22	0.15	0.97	2.70
Ngapyayma (Climbing perch)	1.29	0.39	0.06	0.00	0.15	0.00	0.65	0.01
Ngayantchauk (Dried Striped snakehead)	0.44	0.80	0.28	0.02	0.29	0.29	0.53	0.14
Sardine (All Kinds)	0.03	0.07	0.04	0.69	0.11	0.26	0.49	0.16
Kakatit (Baramundi/Sea bass)	0.18	0.06	0.01	0.00	0.00	0.01	0.44	0.03
Ngapi yay (Semi-liquid fish paste)	0.11	0.17	0.34	0.70	0.07	0.10	0.43	0.31
Dried Prawns	0.38	0.24	0.28	0.03	0.26	0.04	0.39	0.31
Ngakunshutchauk (Dried Indo-Pacific Spanish mackerel)	0.07	0.14	0.02	0.00	0.00	0.11	0.37	0.07
Prawns Sauce	0.32	0.20	0.70	0.05	0.47	0.02	0.31	1.28
Ngapikaung (Assorted semi-dry fish)	0.16	0.03	0.11	0.02	0.11	0.29	0.27	0.31
Ngamyitchinn (Rohu carp)	1.45	0.81	1.59	0.10	0.18	0.01	0.26	0.09
Ngabokechauk (Dried Indian threadfin)	0.05	0.03	1.94	0.00	0.07	0.04	0.20	0.30
Ngagyee (Stinging catfish)	0.22	0.65	0.10	0.00	0.15	0.01	0.15	0.02
Other Prawns	0.47	0.12	0.05	0.05	0.15	0.26	0.10	0.26
Pickled Fish	0.17	0.10	0.02	0.00	0.58	0.00	0.09	0.00
Ngamoke (Silver pomfret)	0.03	0.02	0.01	0.00	0.00	0.00	0.07	0.02
Ngaton (Yellow tailed catfish)	0.42	0.60	0.45	0.00	0.04	0.06	0.07	0.13
Ngagyichauk (Dry stinging catfish)	0.02	0.08	0.04	0.00	0.04	0.02	0.06	0.04
Pickled Prawns	0.09	0.02	0.01	0.00	0.04	0.02	0.04	0.00
Ngabokethin (Croakers/Jew fish)	0.17	0.03	0.03	0.00	0.04	0.01	0.01	0.07
Ngashwe (Indian/yellow pike conger)	0.01	0.03	0.00	0.05	0.00	0.00	0.00	0.00
Kakuyan (Indian threadfin)	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Total	**25.37**	**22.74**	**21.07**	**7.18**	**11.72**	**9.27**	**67.69**	**19.72**

Myanmar

Quantity Consumed (kg/capita/year)	Mandalay	Mon	Rakhine	Saging	Shan State East	Shan State North	Shan State South	Tanintharyi	Yangon
Fish Paste	1.14	3.61	0.05	0.64	0.27	0.26	0.57	0.46	3.86
Ngayant (Striped snakehead)	1.04	2.89	0.16	0.87	1.24	0.14	1.38	0.36	1.23
Other dried fish	2.08	0.74	4.77	1.03	0.30	0.33	1.75	4.25	1.21
Ngagyinn (Mrigal carp)	2.33	1.93	0.04	2.52	1.76	1.94	1.71	0.02	2.62
Ngathalauk (Hilsa shad)	0.14	2.11	1.05	0.05	0.01	0.02	0.03	0.37	0.85
Nganutchauk (Dry Bombay duck)	0.06	2.71	0.04	0.05	0.06	0.05	0.01	0.17	0.98
Ngakhu (Walking catfish)	0.34	1.53	0.25	0.06	1.57	0.19	0.10	0.36	1.26
Other Fish	1.14	0.54	6.26	2.77	2.49	0.32	1.40	17.66	1.37
Hmyin Ngapi (Shrimp paste)	1.97	1.01	2.06	2.27	0.17	0.35	0.58	3.70	0.38
Fish Sauce	1.47	0.65	0.03	1.28	0.60	0.18	0.64	0.37	2.77
Ngapyayma (Climbing perch)	0.06	1.75	0.16	0.07	0.03	0.00	0.01	0.19	0.39
Ngayantchauk (Dried Striped snakehead)	0.49	0.29	0.07	0.31	0.16	0.38	0.68	0.05	0.52
Sardine (All Kinds)	0.12	0.24	0.01	0.09	0.68	0.21	0.42	0.32	0.14
Kakatit (Baramundi/Sea bass)	0.02	0.20	0.92	0.01	0.00	0.00	0.04	0.08	0.16
Ngapi yay (Semi-liquid fish paste)	0.25	0.15	0.15	0.31	1.53	0.31	0.64	0.04	0.17
Dried Prawns	0.25	1.12	0.26	0.23	0.07	0.14	0.12	0.62	0.84
Ngakunshutchauk (Dried Indo-Pacific Spanish mackerel)	0.19	0.29	0.10	0.02	0.02	0.03	0.05	0.22	0.09
Prawns Sauce	0.27	0.07	0.05	0.54	0.10	0.07	0.07	0.18	0.50
Ngapikaung (Assorted semi-dry fish)	0.26	0.05	0.01	0.54	0.28	0.18	0.41	0.10	0.08
Ngamyitchinn (Rohu carp)	0.25	0.51	0.02	0.21	0.11	1.02	0.16	0.07	4.55
Ngabokechauk (Dried Indian threadfin)	0.10	0.02	0.07	0.21	0.03	0.07	0.08	0.08	0.07
Ngagyee (Stinging catfish)	0.05	0.14	0.06	0.32	0.03	0.03	0.02	0.02	0.45
Other Prawns	0.19	0.06	2.50	0.15	0.61	0.01	0.06	1.00	0.21
Pickled Fish	0.11	0.07	0.00	0.12	0.17	0.12	0.02	0.24	0.09
Ngamoke (Silver pomfret)	0.00	0.01	0.19	0.04	0.01	0.00	0.01	0.18	0.06
Ngaton (Yellow tailed catfish)	0.24	0.11	0.26	0.13	0.06	0.03	0.06	0.12	0.42
Ngagyichauk (Dry stinging catfish)	0.07	0.04	0.03	0.05	0.01	0.02	0.01	0.04	0.05
Pickled Prawns	0.21	0.02	0.01	0.12	0.01	0.01	0.00	0.28	0.10
Ngabokethin (Croakers/Jew fish)	0.10	0.76	2.31	0.23	0.00	0.01	0.03	0.21	0.07
Ngashwe (Indian/yellow pike conger)	0.00	0.01	0.23	0.01	0.00	0.01	0.00	0.08	0.03
Kakuyan (Indian threadfin)	0.00	0.01	0.03	0.01	0.00	0.00	0.00	0.00	0.03
Total	**14.94**	**23.64**	**22.15**	**15.24**	**12.39**	**6.42**	**11.07**	**31.87**	**25.56**

Pacific Island Countries

Year – 2001-2006

Quantity of fish and fish products consumed (kg/capita/year)	Household Income and expenditure surveys (HIES)			Coastal settlement surveys	Standard error (+/-)	FAO Apparent consumption 2007-2009 average (Live weight)
	National	**Urban**	**Rural**			
Melanesia						
Fiji	20.7	15	25.3	113	6.18	35.6
New Caledonia (a)	25.6	10.7	54.8	43.2	3.16	25.5
Papua New Guinea	13	28.1	10.2	53.3	2.29	17.4
Solomon Islands	33	45.5	31.2	118.3	3.98	32.8
Vanuatu	20.3	19.3	20.6	29.9	3.1	33.6
Micronesia						
FSM	69.3	67.3	76.8	96.0	6.36	44.0
Kiribati	62.2	67.3	58	115.3	5.32	73.8
Naura (b)	55.8	n/a	n/a	62.3	2.78	24.0
Palau	33.4	27.8	43.3	78.6	7.91	67.7
Polynesia						
Cook Islands	34.9	24.8	60.9	78.5	4.9	
French Polynesia	70.3	52.2	90.1	60.9	4.16	57.4
Niue (b)	79.3	n/a	n/a	49.5	2.01	48.1
Samoa	87.4	45.6	98.3	94.1	4.35	46.8
Tonga (b)	20.3	n/a	n/a	84.6	n/a	35.0
Tuvalu	110.7	68.8	147.4	145.5	5.45	41.3
Wallis & Futuna (b)	74.6	n/a	n/a	56.2	5.13	42.9

Note: (a) HIES carried out 1991
Note: (b) Due to small size of island there is no distinction between urban and rural.

Pakistan

Year – 2010/2011

Fish and fish product consumption	g/capita/day	kg/capita/year
Nationwide	1.65	0.60
Urban	2.05	0.75
Rural	1.45	0.53
Punjab	0.55	0.20
Sindh	4.27	1.56
KPK	0.14	0.05
Balochistan	5.86	2.14

	Edible quantity consumed kg/capita/year	% of total meat consumption
Beef	1.88	28.58
Mutton	0.69	10.54
Poultry	3.41	51.78
Fish and fish products	0.60	9.11

	Beef		Mutton		Poultry	
Average edible quantity consumed (g/person/day)	g/capita/day	kg/capita/year	g/capita/day	kg/capita/year	g/capita/day	kg/capita/year
National level	5.16	1.88	1.90	0.69	9.34	3.41
Rural	4.83	1.76	1.41	0.51	7.97	2.91
Urban	5.81	2.12	2.89	1.06	12.11	4.42
Punjab	4.15	1.51	2.24	0.82	9.61	3.51
Sindh	5.71	2.08	1.48	0.54	10.09	3.68
KPK	7.81	2.85	0.75	0.27	6.47	2.36
Balochistan	6.64	2.43	3.19	1.17	10.74	3.92

Sources of fish and fish products consumed (%)	Purchased	Own production	Other sources
Nationwide	89.68	2.38	7.94
Urban	92.87	2.84	4.29
Rural	87.42	2.06	10.52

Consumption comparison	kg/capita/year
Household Survey 2010/11 (Actual consumption)	0.60
FAO Apparent consumption 2007-2009 average (Live weight)	1.90

Philippines

Year – 2008

Fish and fish product consumption	g/capita/day	kg/capita/year	% of total mean one day per capita food consumption
National level	110	40.2	12.8
Regions			
NCR	96	35.0	11.1
Iiocos	125	45.6	14.3
CAR	77	28.1	8.2
Cagayan Valley	103	37.6	11.3
Central Luzon	111	40.5	11.9
CALABARZON	108	39.4	12.1
MIMARO PA	119	43.4	13.9
Bicol	119	43.4	12.9
Western Visayas	128	46.7	14.9
Central Visayas	102	37.2	13.8
Eastern Visayas	121	44.2	14.9
Zamboanga Peninsular	120	43.8	15.9
Northern Mindanao	96	35.0	11.9
Davao	122	44.5	12.7
Soccsksargen	102	37.2	12.2
Carraga	128	46.7	15.0
ARMM	124	45.3	16.1

Commonly consumed fish and fish productS	% of consuming households
Fresh fish	
Galunggong (mackerel scad)	13.9
Bangus (Milkfish)	10.9
Tilapia	10.1
Tulingan (tuna)	5.4
Tamban (Rainbow sardine)	3.3
Dried fish	
Tamban, tuyo (Goatfish)	9.2
Galunggong , Daing (Milkfish)	3.7
Dilis (Anchovy), tuyo	2.5
Silinyasi, tuyo (Fringescale sardinella)	1.4
Sapsap (Ponyfish), tuyo	1.0
Processed fish	
Canned fish, sardines	15.3
Bagoon isda (Fermented Anchovy), ginamos (shrimp)	10.1
Patis (Fish sauce)	6.1
Shrimp paste (alamang)	4.7
Galunggong (Mackerel scad), tinapa (Sardine)	2.7
Crustaceans and molluscs	
Pusit (Squid)	2.1
Shrimp, greasy black	1.4
Shrimp, small marine	1.3
Shrimp, freshwater	0.9
Alimasag (Blue/Swimmer crab), laman	0.5

Consumption of fish and fish products by age group	Consumption (kg/capita/year)	% of daily total
6m - 5y	13.1	7.3
6 to 12	27.7	12.7
13 to 19	39.1	13.4
20 to 59	46.7	14.7
60+	39.4	15.6

Consumption comparison	kg/capita/year
FAO Apparent consumption 2007-2009 average (Live weight)	35.9
Household Survey 2008 (Actual consumption)	40.2

Sri Lanka

Year – 2010

Consumption of fish by type	kg/capita/year
Fresh Fish	
Marine Large Fish	4.30
Marine Small Fish	4.40
Freshwater Fish	1.70
Other	0.40
Dried Fish	
Marine Dried Fish	3.70
Freshwater Dried Fish	0.05
Canned Fish	0.70
Total	**15.25**

Consumption of specific fisheries products (kg/capita/year)	Balaya (skipjack tuna)	Kelavalla (yellowfin tuna)
Sri Lanka	1.00	0.83
Sector		
Urban	1.08	1.62
Rural	1.01	0.73
Estate	0.64	0.73
Province		
Western	0.81	1.48
Central	0.63	0.34
Southern	3.01	1.41
Northern	0.11	0.01
Eastern	1.11	0.53
North-Western	0.48	0.53
North-Central	1.13	0.16
Uva	0.52	0.26
Sabaragamuwa	0.70	0.52

Sri Lanka

Quantity Consumed	kg/capita/year
Large Fresh fish	
Balaya (Skipjack tuna)	1.00
Kelawalla (Yellow fin tuna)	0.83
Mora (Shark)	0.09
Thalapath (Sail fish)	0.34
Paraw (Trevallies)	0.54
Seer (Spanish mackerel)	0.07
Other	1.46
Small fresh fish	
Sprats	0.22
Hurulla (Trenched sardinella)	1.21
Salaya/ Sudaya (Goldstripe/White sardinella)	1.23
Karalla/Katuwalla (Ponyfish/Wolf herring)	0.11
Kumbala (Indian mackerel)	0.25
Others	1.34
Inland fish	
Lula (Striped Snakehead)	0.05
Tilapia	1.30
Others	0.31
Crustaceans	
Prawns	0.22
Crabs	0.07
Cuttle & Others	0.11

Quantity Consumed	kg/capita/year
Dried fish	
Sprats	1.67
Keerameen (Smoothbelly Sardinells)	0.21
Salaya (Goldstripe sardinella)	0.15
Hurulla (Trenched sardinella)	0.10
Seer (Spanish mackerel / Wahoo)	0.02
Katta (Queenfish)	0.24
Koduwa (Sri Lankan Seabass)	0.01
Anjila (Indo-Pacific king mackerel)	0.00
Balaya (Skipjack tuna)	0.42
Mora/Keelan (shark/	0.28
Paraw (Trevallies)	0.02
Anguluwa (Giant Catfish)	0.21
Prawns	0.03
Cuttle fish	0.00
Fresh water fishes	0.05
Jadi	0.00
Other dried fishes	0.36
Canned fish	**0.70**

Consumption comparison	kg/capita/year
FAO Apparent consumption 2007-2009 average (Live weight)	21.10
Household Survey 2009/10 (Actual consumption)	15.30

Timor Leste

Year – 2011

Consumption (kg/capita/year)	Fish	Meat	Total
Urban	6.0	19.1	25.2
Coastal	17.6	12.1	29.7
Non-Coastal	4.0	11.6	15.6
Mean *	6.1	13.3	19.4
By District			
Baucau	5.9	11.6	17.5
Dili	7.7	18.2	26.0
Bobonaro	2.7	7.0	9.6
Covalima	5.5	6.6	12.2
***Mean was generated from 4 districts, excluding Oecussi**			

Fish type consumption (%)	Urban	Coastal	Non-Coastal	Weighted Average
Fresh water fish (from river/lake)	-	-	1.8	1.2
Salt water fish and other seafood	6.7	45.0	10.1	14.5

Ranking

Species of fish/seafood consumed by district/area	1st	2nd	3rd	4th
Baucau	Sardine (74.1%)	Longtail Tuna (44.4%)	Prawn (21.3%)	Flying fish (11%)
Dili	Sardine (49.7%)	Snapper (36.1%)	Longtail Tuna (31.8%)	Prawn (26.7%)
Bobonaro	Sardine (81.2%)	Longtail Tuna (42.6%)	Prawn (15.8%)	Long Tom (13.9%)
Covalima	Mackerel (52.5%)	Sardine (41%)	Long Tom (37.7%)	Longtail Tuna (32.8%)
Oecussi	Mackerel (59.3%)	Sardine (53.8%)	Longtail Tuna (37.4%)	Snapper (19.8%)
Urban	Sardine (55.1%)	Snapper (44.9%)	Longtail Tuna (34.8%)	Prawn (30.4%)
Coastal	Sardine (42.6%)	Longtail Tuna (39.2%)	Prawn (38.6%)	Mackerel (34.3%)
Non-Coastal	Sardine (63.0%)	Longtail Tuna (36.1%)	Mackerel (23.1%)	Prawn (15.6%)

Consumption comparison	kg/capita/year
FAO Apparent consumption 2007-2009 average (Live weight)	3.3
Household Survey 2011 (Actual Consumption)	6.1

Thailand

Year – 2010

Consumption of fish and fish products	Fish and fish products as a share of total protein consumption	Edible quantity consumed (g/capita/day)	Edible quantity consumed (kg/capita/year)
National	11.70	85.97	31.38
Urban	9.50	61.69	22.52
Rural	12.80	83.48	30.47

Quantity Consumed (kg/person/year)	National consumption	Urban	Rural	Bangkok + 3	Central	North	Northeast	South
Inland fish	11.35	8.32	13.65	6.10	8.47	14.20	15.04	7.85
Marine fish	10.00	7.70	11.28	4.96	9.56	7.81	9.23	20.99
Inland Other Aquatic Animals	0.47	0.15	0.66	0.04	0.15	0.62	0.99	0.07
Marine Other Aquatic Animals	4.67	5.07	4.53	5.11	6.31	2.99	2.08	11.02
Miscellaneous	4.89	3.47	5.58	2.45	5.07	5.80	6.13	2.59

Quantity Consumed (kg/person/year)	National consumption	Urban	Rural	Bangkok + 3	Central	North	Northeast	South
Fresh	22.85	17.92	26.24	13.40	19.75	21.57	25.11	33.84
Preserved/processed	8.54	6.79	9.45	5.26	9.82	9.86	8.36	8.69

Consumption comparison	kg/capita/year
FAO Apparent consumption 2007-2009 average (Live weight)	26.50
Household Survey 2011 (Actual consumption)	31.39

Thailand

Quantity Consumed (kg/capita/year)	Nationwide	Urban	Rural	Bangkok and 3 provinces nearby	Central	North	Northeast	South
Baby clam(fresh & ready to eat)	0.11	0.18	0.11	0.18	0.26	0.04	0.04	0.18
Blood cockle (fresh & ready to eat)	0.44	0.44	0.44	0.37	0.51	0.18	0.33	1.06
Blue swimming crab (fresh & ready to eat)	0.07	0.07	0.07	0.07	0.11	0.04	0.00	0.29
Catfish (fresh & ready to eat)	2.81	1.46	3.54	0.80	1.57	4.09	4.05	1.93
Chub mackerel (fresh & ready to eat)	2.34	1.79	2.63	0.91	1.79	0.44	0.80	10.99
Dried shrimp (preserved)	0.04	0.07	0.04	0.07	0.07	0.04	0.00	0.11
Dried snakehead (preserved)	0.22	0.15	0.26	0.07	0.26	0.51	0.18	0.07
Dried snakeskin gourami (preserved)	0.22	0.33	0.18	0.58	0.33	0.18	0.07	0.22
Fermented fish (preserved)	1.35	0.62	1.72	0.15	0.62	1.83	2.41	0.22
Fish balls (preserved)	0.18	0.18	0.15	0.22	0.15	0.07	0.11	0.37
Fish sauce	3.36	2.66	3.72	2.08	4.31	3.91	3.61	2.01
Frog (fresh & ready to eat)	0.47	0.15	0.66	0.04	0.15	0.62	0.99	0.07
Giant tiger prawn (fresh & ready to eat)	0.18	0.22	0.18	0.18	0.29	0.07	0.11	0.44
Green mussel (fresh & ready to eat)	0.18	0.22	0.15	0.33	0.55	0.04	0.07	0.07
Indian mackerel (fresh & ready to eat)	0.18	0.15	0.22	0.00	0.22	0.00	0.00	1.02
Nile tilapia (fresh & ready to eat)	4.12	3.94	4.20	3.58	3.76	5.18	5.07	1.42
Other fishes and seafood (preserved)	0.95	0.73	1.06	0.37	1.13	0.99	0.95	1.17
Others fishes and seafood (fresh & ready to eat	3.21	2.08	3.83	1.06	2.52	3.87	4.09	3.39
Oyster sauce	1.06	1.20	1.02	1.24	1.39	1.10	0.80	1.13
Pomfret (black/silver) (fresh & ready to eat)	0.07	0.07	0.07	0.07	0.07	0.04	0.04	0.29
Red snapper/giant Seaperch (fresh & ready to eat)	0.33	0.47	0.26	0.47	0.26	0.04	0.04	1.42
Salted chub mackerel (preserved)	0.26	0.18	0.29	0.15	0.58	0.22	0.11	0.37
Salted crab (preserved)	0.04	0.00	0.04	0.00	0.07	0.00	0.00	0.00
Salted Spanish mackerel (preserved)	0.07	0.11	0.07	0.11	0.15	0.04	0.04	0.26
Salted trevally (preserved)	0.15	0.07	0.18	0.00	0.26	0.00	0.00	0.58
Sea crabs (blue crab) (fresh & ready to eat)	0.07	0.07	0.07	0.07	0.11	0.04	0.00	0.22
SheatFish (fresh & ready to eat)	0.33	0.22	0.37	0.07	0.07	0.00	0.04	2.01
Shrimp (fresh & ready to eat)	0.15	0.18	0.15	0.26	0.22	0.04	0.07	0.44
Shrimp paste	0.66	0.47	0.73	0.22	0.51	0.99	0.07	2.19
Snakehead (fresh & ready to eat)	3.14	1.64	4.64	0.73	1.97	3.50	5.44	0.95
Squid (fresh & ready to eat)	0.84	0.91	0.80	0.80	1.02	0.29	0.51	2.23
Steamed chub mackerel (fresh & ready to eat)	2.04	1.50	2.30	1.06	1.97	1.93	2.99	0.84
Tilapia (fresh & ready to eat)	0.73	0.91	0.66	0.84	0.84	0.91	0.26	1.46
Whiteleg shrimp (fresh & ready to eat)	1.02	1.24	0.91	1.50	1.50	0.22	0.18	3.10
Total	**31.39**	**24.71**	**35.70**	**18.65**	**29.57**	**31.43**	**33.47**	**42.52**

Viet Nam

Year – 2011

Edible quantity consumed (kg/capita/year)	Fresh fish, shrimp	Dried and processed fish shrimp	Fish sauce and dipping sauce	Total
National level	9.74	0.83	4.03	14.60
Urban	9.50	0.70	3.96	14.16
Rural	9.80	0.90	4.10	14.80
Red River Delta	7.00	0.40	3.60	11.00
Midlands and Northern Mountainous Areas	3.40	0.80	2.60	6.80
Northern and Coastal Central Region	11.40	0.90	4.20	16.50
Central Highlands	6.40	1.60	3.70	11.70
Southeastern Area	8.10	1.10	4.02	13.22
Mekong Delta	18.10	0.90	5.40	24.40

Fish and fish products as a share of total protein consumption	%
National	8.50
Urban	7.90
Rural	8.90

Consumption of main animal flesh/meat products	kg/capita/year
Pork	11.76
Fresh fish, shrimp	9.74
Fish sauce and dipping sauce	4.03
Chicken	3.12
Duck/other poultry	1.54
Beef	1.53
Dried and processed fish/shrimp	0.83
Buffalo	0.10

Consumption comparison	kg/capita/year
FAO Apparent consumption 2007-2009 average (Live weight)	32.5
Household Survey 2011 (Actual consumption)	14.6

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