www.trjfas.org
ISSN 1303-2712
Turkish Journal of Fisheries and Aquatic Sciences 11: 499-506 (2011) DOI: 10.4194/trjfas.2011.0318

REVIEW

Trends in Fish and Fishery Products Consumption in Turkey

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Received 04 March 2010
Accepted 20 December 2010

Abstract

This paper analyzes fish and fishery products consumption patterns and trends from five nationally representative cross-sectional surveys' raw data conducted in 1994, 2003, 2004, 2005 and 2006 totalling of 77.744 householders in Turkey within the last 12 years period. In particular, we analysed the influences of different years, rural-urban locations, gender, age, income, education and occupation on fish and fishery products consumption in Turkey. According to results, the shares of total fish and fishery product consumption in total households' expenditure were overall 32% in Turkey within the last 12 years period. The results also showed that fish and fishery product consumption has been steady increasing in Turkey. Between 1994 and 2003 there was 6% increase of fish consumption. The increase witnessed over the nine - year period continued to rise in 2004, 2005 and 2006 regardless of the participating households being less in number. A monthly average of 8.7 TL was spent on fish and fishery products between the years 2003–2006 in Turkey. There was a 5% difference between rural and urban location and while in average 8.7 TL in cities and 8.8 TL spent on fish in rural places. According to the results of this article, there is a statistically significant difference between socioeconomic factors and fish and fishery products consumption in Turkey.

Keywords: Fish and fishery products, consumption patterns and trends, households, Turkey.

Türkiye de Balık ve Balık Ürünleri Tüketimi Alışkanlıkları

Özet

Bu çalışmada, Türkiye'de 1994, 2003, 2004, 2005 ve 2006 yıllarında toplam 77.744 hanenin balık ve balık ürünleri tüketimi alışkanlıkları, kır-kent, cinsiyet, yaş, aylık gelir, eğitim durumu ve mesleki kategorilerine göre analiz edilmiştir. Bu çalışmanın sonuçlarına göre, Türkiye genelinde son 12 yılda hanelerin balık ve balık ürünleri tüketimi harcamalarının ortalaması genel olarak %32 düzeyindedir ve Türkiye'de balık ve balık ürünleri tüketimi yavaş fakat istikrarlı bir şekilde artmaktadır. Türkiye'de haneler 2003-2006 yılları arasında balık ve balık ürünleri tüketimi için ayda ortalama 8,7 TL harcamışlardır. Kentlerde balık ve balık ürünleri tüketimi oranları kırsal yerleşim yerlerine göre %5 daha fazladır. Kentlerde aylık ortalama balık ve balık ürünleri harcaması 8,7 TL iken kırsal yerleşim yerlerinde 8,8 TL'dir. Araştırmanın sonuçlarına göre Türkiye'de balık ve balık ürünleri tüketimi ile sosyoekonomik ve demografik faktörler arasında anlamlı istatistiksel farklar ortaya çıkmaktadır.

Anahtar Kelimeler: Balık ve balık ürünleri, tüketim alışkanlıkları, hane halkı, Türkiye.

Introduction

In this article, we explore fish and fishery products consumption pattern and trends from five nationally representative cross-sectional surveys conducted in 1994, 2003, 2004, 2005 and 2006 totalling of 77,744 householders in Turkey within the last 12 year periods (TUİK, 1994, 2002, 2003, 2004, 2005, 2006a). In particular, we analysed the effect of different years, rural-urban locations, gender, age, income, education and occupation on fish consumption in Turkey. Questions that will be addressed in this paper are following:

What trends in fish consumption can be detected between 1994 and 2006 in Turkey? How is fish consumption correlated with the factors of years, gender, rural-urban, age, income, education and occupational status? To answer these questions the expenditure on fish consumptions were cross-tabbed, Chi-Square and A one way ANOVA statistical techniques were used to explore how socio-economic and demographic factors affected fish consumption

pattern in Turkey.

In following pages, we discussed previous research findings regarding fish consumption and production in Turkey and then followed by data and statistical techniques used. In the second part, we summarized results using cross-tabs, chi-square and one way ANOVA statistical techniques.

Fish Consumption in Turkey

One of the products being necessary for a balanced diet is fishery products. The fact that the fishery products are the important food sources among animal proteins is an important alternative in protein consumption. Turkey has a crucial potential in terms of fishery products with its lakes, dams, and rivers that it has as well as its being a country, three parts of which is surrounded by seas. In fact, in Turkey, which has 8,333 km length of coastlines, there are approximately 25 million hectare areas suitable for production of fishery products (Sayın *et al*., 2006). Fishery products having 3.9 % share in total production in 1980 reached 32.4% in 2004 (Doğan, 2003). 81% (662,000 tones) of total production of fishery products in Turkey is consisted of fishing, whereas 19% (129,000 tones) is consisted of fishery products (Yılmaz *et al*., 2008). As of the year 2004, fishery products (aquatic production) were 140 million tones in the world, and only 0.4 (551,000 tones) of it was produced in Turkey. Turkey ranks the 32nd in fishing and 26th in fishery products (Doğan, 2003).

Despite all these developments, fish consumption in Turkey is still at very low levels. While the annual average fish consumption in the world is about 50 kg in Asian countries, generally 16 kg in the world, 23 kg in the European Union countries, this rate is annual average only 6 kg per person in Turkey (TUİK, 2006b; Akbay, 2006; Akpınar *et al*., 2009). The reasons why fish and fishery products consumption is low, are both related to economics and cultural factors. Nutrition habits in Turkey depends on vegetables and cereal products, and fish is consumed seasonally more in winter. Socio-economic factors that affect fish consumption in Turkey have not completely analysed. There are very limited numbers of studies in literature which do not exceed 500-750 respondents. In a study conducted by Hatırlı *et al.* (2004) with 750 houses, monthly average fish consumption per family and person was determined to be 3.78 kg and 1.03 kg respectively. According to the results of the study, it was found that the family's having a small child (in the no need family), not consuming red meat due to dieting and being in the middle and high income levels increased their preference of fish consumption significantly. In contrast, education level and average age of the family members were not found to be statistically significant (Hatırlı e*t al*., 2004). 70% of the total fish consumption in Turkey is composed of fresh fish, 4% is frozen canned fish and 0.4% is salted fish (Fidan e*t al*., 2005).

Materials and Methods

In this study, raw data obtained from the *Households Budget and Consumption Expenditure* surveys, conducted in 1994, 2003, 2004, 2005 and 2006 by Turkish Statistical Institute, have been used. These surveys are the most important ones which demonstrate the consumption structures of households in Turkey. Consumption patterns, types of consumption expenditures and the diversity of goods and service expenditures have been recorded in terms of socio-economic and demographic features of the households.

As it is above-mentioned, fish expenditures of total 77,744 houses including 26,126 in 1994, 25,764 in 2003, 8,544 in 2004, 8,559 in 2005 and 8,751 in 2006 have been analysed in terms of rural-urban, age, gender, monthly disposable income, education, and occupational categories. Review of previous literatures on fish consumption in Turkey suggests that this article has been the most comprehensive study on fish expenditure until today.

The surveys in question are presented to researchers' service as raw data in CDs as three different files for a fee. The files can be integrated with the bulletin number. In this article, education level, income and age groups have been recoded with the SPSS program, and the incomes have been denominated in the new Turkish lira. The socioeconomic condition of the households and the file of consumption expenditures have been integrated according to the bulletin numbers based on household head. The entire members of the households that live within the borders of the Republic of Turkey were included within the scope. Settlement that have population equal to or above 20,001 defined as urban and population equal to or below 20.000 defined as rural.

Because the data have not individually been categorized according to fish type, the fish consumption analysed in the study includes all categories related to sea products (capture fish, culture fish, and frozen fish etc.). Cross tables, "Chi-Square" independence test and one-way ANOVA (Variance Analysis) statistical techniques have been used in this study. Cross tables and chi square tests have been used to test whether there is a statistically significant relations among fish consumption habits of socioeconomic and demographic groups in Turkey. Similarly, ANOVA "one way variance analysis" techniques have been applied in order to test whether the fish expenditures among socio economic and demographic groups are different from one another.

These surveys used to be conducted with approximately 25 thousand householders every 10 years until 2003, but after the year 2003, it has been conducted every year with approximately 8.500

householders. Thus, 1994 and 2003 results deserve a separate attention due to similar sample size. Secondly, how much money spent on fish in 1994 data was unavailable to analyze in ANOVA test but 1994 survey only included whether householders consumed or not fish and fishery products. Therefore we were able to cross-tabs and conduct chi-square tests for all years. On the other hand ANOVA test included 2003, 2004, 2005, and 2006 data. For these reason we had separate tables for chi-square and ANOVA analysis.

Results

Five different cross-sectional surveys in the years of 1994, 2003, 2004, 2005 and 2006, were conducted by Turkish Statistical Institution, overall, out of total 77,744 family, 24,510 of them or 32% of them were reported that they had consumed fish and other sea food in all years considered. As it can be seen in Table 1, there has been 6% increase in fish consumption within 9 years period. Chi-square test indicated that percentage of fish and fishery products consumption were statistically different by years tested, with 4 degrees of freedom, Chi-square (χ^2) value was 46, and P=0.000, P<0.05 (Table 2).

A one way ANOVA was conducted to compare spending patterns for fish and fishery products between 2003, 2004, 2005 and 2006. In average 6.8 TL in 2003, 8.6 TL in 2004, 11.3 TL in 2005 and 12.3 TL in 2006 were spent on fish. There was a statistically significant differences on mean spending on fish between years, F=268.8, df=3, P=0.000, P<0.05. Eta-square indicated a moderate effect of years (Table 2).

The total of 32% of the rural and urban dwellers reported to had been consumed fish and fishery products (Table 3). Fish consumption significantly differed between rural and urban locations. There was more or less 5% difference between rural and urban locations in fish and fishery product consumption. However, fish and fishery product consumption steadily increased from 1994 to 2006 and there was a statistically significant differences between rural and

Table 1. Years and fish consumption rate (1994-2006)

Year	%	n	Total N
1994	28%	7.353	26.126
2003	34%	8.788	25.764
2004	31%	2.651	8.544
2005	34%	2.938	8.559
2006	31%	2.780	8.751
Total	32%	24.510	77.744

Table 2. Mean spending of fish consumption by year (2003-2006)

Cases	Included		Excluded		Total	
Spending on fish x year	N	Percent	N	Percent	N	Percent
	17.158	33.2%	34.460	66.8%	51.618	100%
Year	Mean	N	Std. Dev.	Median	Total N	
2003	6.8	8.788	8.8	4.5	25.764	
2004	8.6	2.651	10	6	8.544	
2005	11.3	2.938	12.4	7.5	8.559	
2006	12.3	2.781	13.1	8.3	8.751	
Total	8.7	17.158	10.7	5.5	51.618	
ANOVA	Sum of Square	Df	Mean Square	F	Sig	Eta	Eta Squared
Between groups	8.9	3	2.9	268.8	0.000****	0.212	0.045
Within groups	1.9	17.154	1.1	-	-	-	-
Total	1.9	17.157	-	-	-	-	-

Table 3. Fish consumption by rural and urban location (1994-2006)

Year	Rural	Urban	Total	Total N
1994	25%	30%	28%	26.186
2003	31%	35%	34%	25.764
2004	29%	32%	31%	8.544
2005	30%	36%	34%	8.556
2006	29%	35%	31%	8.556
Total	29%	34%	32%	77.606
N	6.395	18.182	24.577	-

urban locations in fish consumption with chi-square value χ^2 (90 df= 1 N = 77,606) = .000, P<0.05 (Table 3). While rural dwellers in average spent 8.8 TL, those who lived in urban locations spent 8.7 TL on fish between 2003, 2004, 2005 and 2006. Results in Table 3, indicated that there was no statistically significant differences between mean spending in fish and fishery products between rural and urban residents with F value 0.011, P=0.917, P>0.05.

In 1994 comparison to data, there was a 5% increase in households headed by female and 7% increase in households headed by male. From 1994 to 2006, average fish consumption rate was 26% for female and 33% for male headed households (Table 4). The percentage of fish consumption significantly differed between male and female household heads, χ^2 (27 df= 1 *N* = 77,606)= 0.000, P<0.05. In terms of mean spending differences, while male headed householders spent an average 9 TL, female headed householders spent 7 TL with 1.08 and 9.05 standard deviations respectively. ANOVA results showed that there was a significant differences on mean spending of fish between male and female, F value= 23 with 1 degree of freedom P=0.000, P<0.05 (Table 5).

In terms of the age of household heads, the biggest increase of fish consumption was 50-59 from 27% in 1994 to 37% in 2003. There was 9% increase above 60 age groups as well. Among the others the rate varied between 30% to 35% (Table 6). The rate of fish consumption between grouped ages were significantly different, χ^2 (79 df=4) = 0.000, P<0.05. The monthly average expenditure on fish was 9 TL with 1.07 standard deviation. Monthly mean expenditure on fish were significantly different from each other as well, (F=46.8, df=4), P=0.000, η^2 =0.01. Eta square displayed as small age effect (Table 7).

Average fish consumption rate in 1994 was 28% which has increased to 34% in 2000s. 20% of households in first quintile, 25% to 30% of second quintile, 30 to 35% of third quintile, 35 to 38% in fourth quintile and 45% of households fall in fifth quintile reported consuming fish products in those years (Table 8). Thus, as income increased so did fish products. However, even in the fifth quintile 55% of them did not consumed fish at all. The chi-square statistics of the whole sample with 4 degrees of freedom was 18 which was statistically significant at P=0.000 (Table 9).

Monthly average expenditure on fish and fish products between 2003, 2004, 2005 and 2006 for quintiles were 10, 5, 6, 7, 10 TL respectively. Whole sample spent average 9 TL with 1.07 standard

Table 4. Mean spending of fish consumption by rural and urban locations (2003-2006)

Rural-urban	Mean	N	Std. Dev.		Median		Total N
Rural	8.8	5.759	11.1		5.5		18.672
Urban	8.7	11.398	10.5		5.3		32.751
Total	8.8	17.157	10.7		5.5		51.423
ANOVA	Sum of Square	Df	Mean Square	F	Sig	Eta	Eta Squared
Between groups	1.24	1	1.24	0.011*	0.917	0.001	0.000
Within groups	1.97	17.155	1.15	-	-	-	-
Total	1.97	17.156	-	-	-	-	-

Table 5. Fish consumption by gender (1994-2006)

Year	Female	Male	Total	N
1994	23%	28%	26%	26.186
2003	28%	35%	32%	25.764
2004	25%	32%	29%	8.544
2005	29%	35%	32%	8.556
2006	25%	33%	29%	8.556
Total	26%	33%	30%	77.606
N	5.575	22.673	28.248	-

Table 6. Mean spending of fish consumption and gender (2003-2006)

Gender	Mean	N	Std. Dev.		Median		Total N
Male	8.8	15.787	1.08		5.5		46.312
Female	7.4	1.370	9.05		4.5		5.108
Total	8.7	17.157	1.07		5.5		51.420
ANOVA	Sum of Square	df	Mean Square	F	Sig	Eta	Eta Squared
Between groups	2.70	1	2.70	23.46	0.000****	0.037	0.001
Within groups	1.97	17.155	1.15	-	-	-	-
Total	1.97	17.156	-	-	-	-	-

Table 7. Fish consumption rate by age groups (1994-2006)

	29 and below	30-39	40-49	50-59	60 and over
1994	26%	30%	30%	27%	23%
2003	30%	33%	35%	37%	32%
2004	25%	31%	33%	33%	29%
2005	28%	33%	37%	36%	34%
2006	29%	33%	36%	32%	32%
Total	32%	33%	35%	35%	32%
N	12.033	10.910	11.651	8.378	8.448

Table 8. Mean Spending of fish consumption by age groups (2003-2006)

Age	Mean	N	Std. Dev.	Median	Total N
29 and below	10.5	3.784	12.1	7	12.033
30-39	7.3	3.540	9.4	5	10.910
40-49	8.5	4.109	1.01	5.2	11.651
50-59	9.1	3.025	1.14	6	8.378
60+	8.2	2.699	1.01	5	8.448
Total	8.7	17.157	1.07	5.5	51.420

ANOVA	Sum of Square	df	Mean Square	F	Sig	Eta	Eta Squared
Between groups	2.13	4	5.34	46.8	0.000****	0.104	0.011
Within groups	1.95	17.152	1.14				
Total	1.97	17.156					

Table 9. Monthly income quintile and fish consumption rate (1994-2006)

Income	1994	2003	2004	2005	2006	Total
1st20%	21%	23%	21%	21%	22%	22%
2nd20%	25%	29%	27%	30%	27%	28%
3rd20%	28%	34%	31%	33%	35%	33%
4th20%	32%	38%	34%	42%	37%	38%
5th20%	35%	44%	43%	47%	45%	45%
Total	28%	34%	32%	35%	34%	34%
N	26.126	25.764	8.544	8.559	8.556	77.549

deviation in those years. Monthly average expenditure on fish and fish products among quintiles was significantly different and eta squared indicated a moderate income effect on fish consumption, F=156 df= 4, P=0.000, P<0.05, $\eta^2 = 0.035$ (Table 9).

As it was in monthly disposable income quintiles, similar trends can be see in educational status as well. 22 to 32 % of elementary and below educational level, 30 to 40% of secondary and high school, 40 to 50% of college graduate and almost 50% of graduate degree holders consumed fish in those years (Table 10). Percentage of fish and fish products differed significantly across educational status, χ^2 (43 df= 5 N = 77.606) = 0.000, P<0.05 (Table 11).

There was a big variation on average expenditure on fish and fish products across educational levels. Mean spending on fish from the lowest to the highest education was 6, 8, 9, 10, 13, and 18 TL with 7, 10, 11, 11, 14, 20 standard deviations respectively. Therefore, monthly average expenditure on fish and fishery product significantly differed between educational status using a critical α of .05, (F=100, df=5, p=.000, $\eta^2 = .04$). As eta square showed educational levels had the strongest effect on fish consumption. 40 percent of fish consumption can be explained by educational level (Table 11).

Fish and fishery product consumption from the highest percentage to the lowest as from white collar occupations such us professionals, technicians, administrators to those working in service sector and blue collar as service, sale and shop, craft, machine, agriculture and unskilled occupations. There was statistically significant variations among occupations tested as χ^2 (12, df= 8, N= 77.606) = 0.000, P<0.05 (Table 12).

As it can be seen in Table 7-A, White collar occupations spent more on fish than the rest of the other occupational categories and spending on fish and fish products significantly differed across occupational status as well, F value= 41, with 8 degree of freedom, P=0.000, P<0.05.

Table 10. Monthly income quintile and spending on fish consumption (2003-2006)

Income quintile	Mean	N	Std. Dev.	Median	Total N
1st20%	6.3	2.488	1.19	6	10.449
2nd20%	5.2	3.002	5.20	4	10.076
3rd20%	6.2	3.360	9.18	4	10.250
4th20%	7.1	3.804	7.18	5	10.127
5th20%	10.2	4.503	1.23	6	10.518
Total	8.7	17.157	1.07	5.5	51.420

ANOVA	Sum of Square	df	Mean Square	F	Sig	Eta	Eta Squared
Between groups	6.96	4	1.74	156.3	0.000****	0,188	0.035
Within groups	1.90	17.152	1.11				
Total	1.97	17.156					

Table 11. Educational degree and fish consumption rate (1994-2006)

	1994	2003	2004	2005	2006	Total
Below primary	22%	26%	20%	23%	20%	2.618
Elementary	29%	32%	29%	32%	31%	12.160
Secondary	31%	35%	34%	36%	33%	2.623
High school	31%	38%	37%	41%	38%	4.800
University	32%	45%	44%	51%	52%	2.167
Graduate	31%	55%	40%	59%	52%	152
Total	28%	39%	34%	40%	38%	24.520
N	26.186	25.764	8.544	8.654	8.765	77.913

Table 12. Educational degree and spending on fish consumption (2003-2006)

Education	Mean	N	Std. Dev.	Median	Total N
Below primary	6.3	1.536	6.5	4.5	6.434
Elementary	7.9	8.249	9.7	5	26.126
Secondary	8.7	1.897	11.1	5.5	5.441
High school	9.6	3.745	11.3	6	9.779
University	12.8	1.596	13.8	8	3.387
Graduate	18.3	134	20	11	253
Total	8.7	17.157	10.7	5.5	51.420

ANOVA	Sum of Square	df	Mean Square	F	Sig	Eta	Eta Squared
Between groups	5.60	5	1.12	100	0.000****	0.168	0.048
Within groups	1.92	17.151	1.12				
Total	1.97	17.156					

Table 7. Occupational status and fish consumption rate (1994-2006)

	1994	2003	2004	2005	2006	Total	N
Administrators	30%	39%	36%	37%	36%	38%	5.398
Professionals	32%	43%	40%	48%	52%	45%	2.536
Technicians	31%	38%	38%	44%	39%	39%	1.962
Office clerks and costumer	32%	37%	37%	40%	38%	38%	1.982
Service, shop, sale	28%	34%	28%	34%	30%	33%	1.617
Agriculture	20%	30%	25%	28%	28%	29%	8.089
Craft and related trade	32%	31%	31%	32%	34%	32%	1.942
Machine operators	33%	33%	30%	35%	34%	32%	4.632
Unskilled occupations	28%	29%	26%	30%	25%	28%	4.932
Total	30%	35%	32%	37%	35%	35%	33.090
N	26.186	25.764	8.544	8.654	8.765	-	77.913

Table 13. Occupational status and spending on fish consumption (2003-2006)

Occupations	Mean	N	Std. Dev.		Median		Total N
Administrators	11.3	1.948	13.8		7		5.118
Professionals	11.1	1.008	12.3		7.1		2.233
Technicians	11.6	665	13.5		7		1.694
Office clerks	8.5	605	8.5		6		1.585
Service	7.4	1.105	9.6		5		3.414
Agriculture	8.8	2.105	12.1		6		7.341
Craft and trade	7.4	1.963	8.4		5		6.137
Machine oper.	7.9	1.365	9.1		5		4.154
Unskilled ocp.	6.2	1.212	6.2		4.5		4.353
Total	8.8	11.976	1.1		5.5		36.029
ANOVA	Sum of Square	df	Mean Square	F	Sig	Eta	Eta Squared
Between groups	3.92	8	4.90	41.6	0.000****	0.165	0.027
Within groups	1.40	11.967	1.17				
Total	1.47	11.975					

Discussion and Conclusion

Overall, the results of this paper on fish and fishery products consumption, taking the average of the last 12 years displayed that 32% of households in Turkey consumed fish and fishery products while the remaining 68% did not consumed fish at all during the months for which the surveys was conducted. Even though the level of fish and fishery product consumption is low in general, as the results also showed that fish consumption overall is on the increase. To elaborate; compared to the 7.353 (28%) out of 26.126 households in the year 1994 a significant increase of 6% in fish consumption can be seen in these figures in 2003 (8.788-34% of 25.764 households). The increase witnessed over the nine year period continued to rise in 2004, 2005 and 2006 regardless of the participating households being less in number. A monthly average of 8.7 TL was spent on fish between the years 2003–2006. Considering how expensive the cost of red meat is at present it seems inevitable that the amount of fish consumed will continue to rise in the future (Table 1, Table 2).

There was a 5% difference between rural and urban location and while in average 8.7 TL in cities and 8.8 TL spent on fish in rural places (Table 3). According to the data obtained from the various age categories in the research a difference can be seen on the ratio of fish consumption and money spent on fish. A correlation can be established between respondents' socio economic status and fish consumption. Considering income groups, when data taken from the lowest to the highest income group is analyzed an increased consumption rate of 22%, 28%, 33%, 38% and 45% respectively can be seen over the last 12 years. Especially in 2000s the fish consumption rate in high-income groups reached at 50% (Table 9). The same aspect is applicable to different levels of education (Table 11). The discrepancy between low-income and high-income groups in terms of money spent on fish is not huge. In comparison to the 6.3 TL per month spent on average by households in the lowest 20% segment, households in the highest 20% monthly spent 10.2 TL on average (Table 10). The level of education is directly proportional to the amount of fish consumed; the higher the level of education the more fish is consumed. The amount of fish consumed by illiterate households, primary school graduates, elementary or equivalent school graduates, high school graduates, university graduates and postgraduate during the months the survey was applied were 20%, 31%, 33%, 38%, 52% and 52% respectively. White-collar occupations come out on top, as with levels of education, in the occupational criteria (Table 11).

The most important factor behind the rate of fish consumption in Turkey being lower than in other countries is beyond any doubt the difference in eating habits. In Turkey eating fish is misinterpreted as a luxury food. When we compare the cost of fish to red and white meat we see that it is relatively lower, which leads us to make the assumption that not buying fish is more to do with eating habits than affordability. The eating habits in Turkey are predominantly based on grains and vegetables. Eating fish only makes up 3% of the need to satisfy protein deficiency. Energy and protein needs are more commonly fulfilled with grain and red meat consumption. As we mentioned fish and fishery product consumption has been increasing steadily. The fishing industry needs to explain the public the health advantages of fisheries to reach the desired level. With good publicity the current fish consumption level of 32% can be increased to 40% in near future.

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