



IFCN

**International Farm
Comparison Network**

Dairy Case Study: Bangladesh vs. the EU

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1 Introduction

The aim of this paper is to describe the dynamics of the dairy markets. The impacts of reduction of national milk price on both Bangladesh and EU 'dairy farmers' livelihood is analysed. A special focus is given on policy instruments like tariffs and export subsidies for dairy products. This project applies the methods developed by International Farm Comparison Network (IFCN). This method uses the concept of 'Typical' farms and utilizes the TIPI-CAL model developed by Hemme (2000).

2. Developments in the EU -15: 1996 - 2008

Macro picture – the Dairy sector:

- EU is producing 126-129 mill. t milk (ECM milk with 4% fat and 3,3% protein) and has annually a milk surplus of 5,8-11,4 million t. In the period of 1996-2006 the EU milk price was 40-120 % above the world market price.
- This milk price level was possible to have for three reasons: a) A milk quota system controlling milk supply, b) tariffs for dairy products of 60- 210% which avoid imports, and c) export subsidies to market the EU milk surplus on the world market.
- In the period 2007-2008, the world market prices were at record level when the EU milk price increased in line with the world market price in 2007 and stayed on this level in 2008.

Micro picture – the dairy farms:

- In 2008, EU -15 has 0,45 million farms having an average farm size of 40 cows. The farm numbers are declining from 1996 to 2008 at a rate of 5-7% per year.
- Farm structure: This analysis is based on France and Germany being the largest milk producers in the EU. The majority of dairy farms have 20-49 cows. 26% of the farms have less than 20 cows where the remaining 26% of the farms have more than 50 cows.
- A typical average size dairy farm analysed by the IFCN has 31 cows with a milk yield of 6712 kg milk per cow. In 2008 the family generates its income out of 3 sources: a) dairy farming 53%, other farming activity 29%, and off farm income 18%. This typical farm has a labour productivity of 66 kg milk/hour. This means that by producing 1 million kg of milk 7,6 jobs are created.

3. Developments in Bangladesh

Macro picture – the Dairy sector:

- Bangladesh is producing 2-3 mill. t milk (ECM milk with 4% fat and 3,3% protein) and has annually a milk deficit of 0,1-0,2 million t milk. The main importing product is SMP (Skim Milk Powder). About 20-50 % of the SMP imports into Bangladesh which are coming from the EU (time period 1999-2006).
- Only 6-9% of the milk is delivered to milk processors, the rest is consumed by the farming households or sold to the informal market.
- The formal milk processors source about 50% of their milk from local farmers and the other 50% via imports of dairy products mainly SMP. Therefore the local dairy market and the related milk prices for the farmers are strongly linked to the global dairy market developments.
- In the period of 1996-2006 the farm gate milk price for the Bangladeshi farmers was significantly above the world market. Its development was not affected by world market price fluctuations as the tariff of 75% has ensured that imported "milk" was not cheaper than local milk.
- During the period of 2007-2008, the world market price was at record level and the Bangladesh milk price increased but stayed below the world price level.

Micro picture – the dairy farms:

- Bangladesh has in 2008, 1,39 million farms having an average farm size of 3 cows. The farm numbers are estimated to follow an increasing trend by 0,3 – 0,5 % per year.
- Farm structure: The majority of dairy farms 90% have an average farm size of 1-3 cows or (96%) have an average of 1-10 cows. The remaining 4% of the farms have more than 10 cows.
- A typical average size dairy farm analysed by the IFCN has 2 cows with a milk yield of 721 kg milk per cow. In 2008 the family generates its income out of 3 sources: a) dairy farming 16%, other farming activity 11%, and off farm income 74%. This typical farm has a labour productivity of 1,4 kg milk/hour. This means that by producing 1 million kg of milk 350 jobs are created.

4. World market price developments for milk

The charts in Annex 3-4 illustrated the developments of the world market price for milk in relation to the EU and the Bangladeshi price. In the time of 1996 – 2006 the world price was ranging between 13-24 Euros per 100 kg milk. In the period begin of 2007 – end of the year 2008 the world price was on record high level. This was driven by a) strong milk demand, c) weak milk supply, and c) the fact that all government stocks were zero. In the end of 2009 the milk price reduced significantly as a result of a) lower demand driven by the financial crisis, b) lower demand driven by the Melamine crisis, and c) a strong milk supply growth. In this period the EU policy had, via export subsidies, destabilising effect, and via building government stocks, a stabilizing effect on the world market price for milk.

5. EU-15 milk price vs. world market price for milk

Theory of export subsidies: In general this policy instrument has a milk price stabilizing effect for the EU market and at the same time lowering the world market price. In the past years 1996 – 2006 the EU had a market share of 23 – 40% and was ranked as the second largest milk surplus region of the world. Without export subsidies the EU would not be able to export these milk volumes which would mean there would have been less milk supply on the world market. In this case (*ceteris paribus*) world milk price would be significantly higher. There have been done a number of studies analysing the impact of different types of trade liberalization. The results range between +5% (GTAP model, Harbinson proposal, done by Brockmeier et al. 2004) and +17 for SMP/ 40% for butter (OECD model, Full trade liberalisation of the EU, done by Vavra 2004).

EU- Export subsidies 1996 – 2006: In this time frame the EU has used export subsidies of 4 – 16 Euro per 100 kg milk. The annual budget spends for this subsidy was ranging between 475 – 1812 million Euro per year. It should be mentioned that in general the EU-15 has reduced its export subsidies over time and also its milk surplus.

EU- Export subsidies June 2007 – December 2008: In this time frame the Export subsidies have been reduced to zero as world market price was very high. During this time period the EU was able to export its milk surplus without export subsidies.

EU- Export subsidies January 2009 – June 2009: In January 2009 the EU has reintroduced its export subsidies and also increased the level over time from 3,6 – 5 Euro per 100 kg milk. Compared to the historic level these export subsidies are significantly lower. Moreover, they are not 100% bridging the gap between the EU and the world market price.

Tariffs: The EU Dairy Industry is protected. The world market price for milk + tariff was in all case above the EU farm gate milk price. This means the EU milk price is driven by the local supply, demand and how the EU policy makers use the instruments export subsidies as well as the government stocks.

6. Impact of world dairy markets on Bangladeshi milk price

Theory of imports affecting local milk prices: A milk processor in Bangladesh has two options for sourcing milk a) from local farmers and b) via imports. Once the world market price + tariff is higher than the local milk price in local market can be defined as protected. Once the world market price for milk + tariff is lower than the local milk price, the market is not protected. As a result the local milk price will reduce to the level of World market price + tariff. In the early 90th Bangladesh has introduced dairy tariffs to protect its local milk producers.

1996- 2006: In this time the Bangladesh milk market could be defined as protected. The local milk price showed a stable development and stayed above the world market price.

2007 – August 2008: In this period the world market price was significantly below the world market price. In this period the Bangladesh government has reduced the import tariff for skim milk powder from 75% to 35%.

September 2008 – January 2009: The melamine crisis in China had an impact of the preference of Bangladeshi consumers. They preferred dairy products from local milk more than imported dairy products. As a result the local farm gate milk price increased significantly.

February 2009 – June 2009: In February the difference between the local farm gate milk price and the world market price + tariff was becoming very low. At this time the local consumers shift their preference from high price local milk towards cheaper dairy products from imported milk as the issues of melamine crisis was formally solved. As a result local farmers milk prices dropped towards the level of world market price + tariff which is in June 2009 approximately 2000 Taka / 100 kg milk or 20,4 Euros.

7. Impact of the dairy crisis on dairy farmer's livelihood

This section illustrates the impact of milk price crisis on both EU and Bangladesh dairy farmers' livelihoods. Table in Annex 6 illustrate how the changing milk and feed prices from January 2006 – June 2009 have affected the dairy farm economics and the livelihood of the dairy farming families in Bangladesh (need to add the table in Annex 6: Table is added)

EU - Germany - The case for a typical 31 cow farm

The status of the typical farm: This farm is representing about 40% of the dairy farms in Germany. The cost of milk production only is above 45 Euro per 100 kg milk. With a milk price of 30 Euro per 100 kg milk this farm is able to cover its cost from the profit and loss account (cash cost and depreciation) but is not able to cover its opportunity costs for family labour, own land and own capital. Nevertheless with the farm income in 2006 this farm is able to cover its basic living cost requirements. The farm is receiving direct payments from the government of 3,1 Euro / 100 kg milk as coupled payments and additionally 6,5 Euro per 100 kg milk payments which are decoupled from milk production.

Developments Jan 2006 – June 2009: Until June 2007 the farm was able to cover its basic family living requirements. The very high milk prices in the period July 2007 – October 2008 have increased the income significantly. In this period the farm has generated an income which was 50% higher than the basic family living requirements. From January 2009 on this farm type was not able to generate an income which was in line with its family living requirements.

Situation in June 2009: The milk price level is the lowest since 1996 and the feed prices are the highest since 1996. In this situation the farm is not able to cover its costs from the profit and loss account. The farming family does not get any income from milking cows. The income generated out of milking cows and all government payments are able to generate an income which covers 32% of the family living requirements. This means the farm is under huge pressure and will not be able to sustain such a situation for long. This situation is the case for all dairy farms - 0,45 millions in the EU-15.

Bangladesh - The case for a typical 2 cow farm

The status of the typical farm: This farm is representing about 96% (90%) of the dairy farms in Bangladesh. The cost of milk production only is in a range of 1650-2300 Taka / 100 kg milk of 18– 24 Euro / 100 kg milk. This means this farm is producing milk 50% cheaper than the typical 31 cow farm in Germany. With a milk price and feed price in 2006 the farm is able to cover its cost from the profit and loss account (cash cost and depreciation) and is able to cover its basic living cost requirements.

Developments Jan 2006 – June 2009: Until August 2008 the farm was able to cover its basic family living requirements. The very high milk prices in the period September 2008 – January 2009 have increased the income significantly. As dairy is providing about 16% to the household income a doubling of dairy income meant basically an increase of the overall household income by 16%. The cut of milk prices in February towards a level of 2000 Taka has created a reduction in dairy farm incomes.

Situation in June 2009: The milk price is at a level of 2000 Taka the feed prices significantly increased. The farm is not able to cover its costs from the profit and loss account. The income from dairy farming is able to cover approximately 60% of its normal contribution to the family living need.

8. Answers on key questions

What has driven the Bangladeshi farmer's protests in February: Facing a cut of farm gate milk price by 25% within one month and decision of milk processors not collecting milk one day per week was the key driver for the protests.

Would an elimination of EU-export subsidies improve the livelihood of dairy farmers: In Bangladesh we would see a slight positive effect improving the livelihood of 1,39 million dairy farming families. In the EU-15, a 0,45 million of dairy farming families would suffer more than currently.

What about milk production and rural employment effects: Bangladesh is importing about 0,24 million t milk/ year. This milk can be produced in the EU by 1150 farming families keeping 31 cows or in Bangladesh by 111.000 farming families keeping 3 cows per farm. Producing milk in Bangladesh is creating more jobs than doing it in the EU.

9. Scenario analysis – Impact of a milk price reduction on livelihoods of the Bangladesh dairy farmers

The scenario definition: It is often questioned what the contribution of export subsidies is on livelihoods of dairy farmers' in developing countries. The most critical issue is to define the export subsidy specific reduction on world milk prices. As this is very difficult to quantify, a scenario definition approach was used in this case. In this scenario we define that an export subsidy level of currently in the EU of 5 Euro per 100 kg milk will reduce the world market price by 2,5 Euro per 100 kg. Under the current price situation this would mean world dairy prices could be 17,5 Euro (without subsidy) instead of 15 Euro (with subsidy) per 100 kg that represent an average increase of 16.7% when there is no export subsidy.

Goal and concept: The goal of this section is to analyse the impact of world milk price reduction of 2,5 Euro per 100 kg milk on the economics of a typical 2 cow dairy farm as well as how this reduction of milk price affect the livelihoods of dairy farmers. As a reference, the economic situation of 2008 before the milk price increase was taken into consideration. As the level of off-farm income plays a major role for these farms the analysis has been done for three off-farm income categories (Type 1 with 100%, Type 2 with 50% and Type 3 with 25% off-farm job).

Milk price impact in Bangladesh: Based on the analysis in Annex 4, a reduction of the world market price (2,5 Euro per 100 kg) would lead in the current situation to a similar reduction of the farm gate milk price in Bangladesh (238 taka/100 kg).

Farm level impacts: The described milk price reduction leads for a two cow farm to an income reduction of –238 taka/100 kg milk, 9,4 taka per day or 3425 taka per year. In percent, this means a reduction of 43% dairy income. Depending on the level of off-farm income this translates for the different types described in Table 1 to reduction of household income of 7 – 16%.

Families affected: The typical 2 cow dairy farm represent 90% of the 1,4 million dairy farming families in Bangladesh. Any milk price decrease is affecting the livelihood of these 1,4 families. Assuming an average household size of 5,6 people this means 7 million people are affected.

How many people are affected?

Now if we apply the reduction of milk price on the changes of livelihood status of the farm family in Bangladesh, it is quite clear that milk price reduction acts as a catastrophe for the farm family because 90% of the farm families or 6% of the total country's population are under trouble as they are not able to cover their daily living expenditure.

What means 10 taka less per day?

Such a income reduction affect mainly the very poor families having two cows and limited access to off farm jobs. So far these families of Type 3 (5,6 people) make a living from 60 Taka or 0,63 Euro per day. With 9.4 taka per day less means this type of family can neither buy their daily foods nor meet cost of their school going children. Since foods get the priority, this family will focus on cheaper food items and cut the budget for education of their children.

Although education is free (school fee, books, etc) in Bangladesh but children do not go to school if they don't get any cash money of 2-4 taka per day for transportation or buying something else. There are other costs also involved in educating their children. Therefore, these children will stop to go to school pushing the farm further in illiterate situation.

While considering other aspects of livelihoods such as necessary calorie, this farm families are not able to get daily 2000 kcal/day, this means that their health status is under stress. The recreation, social contact, mobility, other activities are also not possible for those farm families and ultimately they will be isolated from the society and living condition gets from poor to the poorest to generation after generation. If this is the case, it will impede the government's implementation strategy of Millennium Development Goal (MDG) of cutting half of the hunger people by 2015.

Conclusions

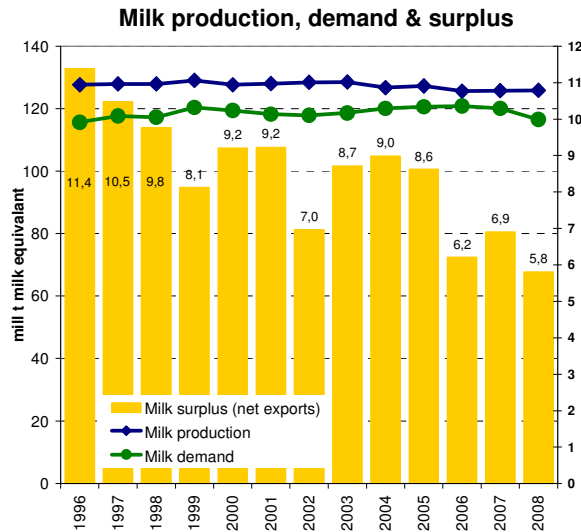
A reduction of world milk price like defined here affects significantly both dairy farm incomes as well as the livelihood status more than 5 million people. Due to the decrease livelihood status of dairy farming families with 2 cows other parts of the society are affected as well. This will increase the poverty generation and keeps more people captured in the "poverty cycle".

Table 1: Impact of milk price reduction on dairy farming households with 2 cows

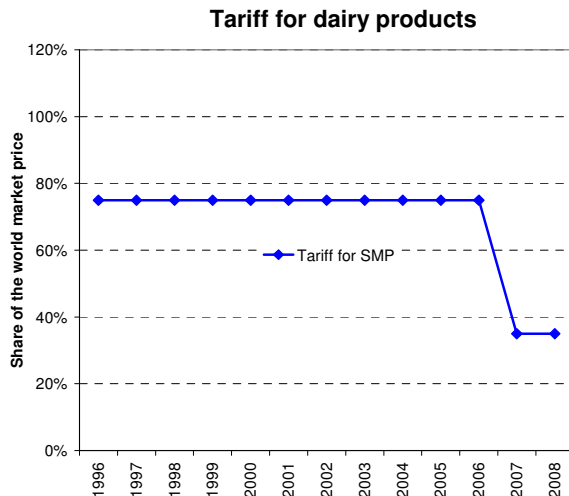
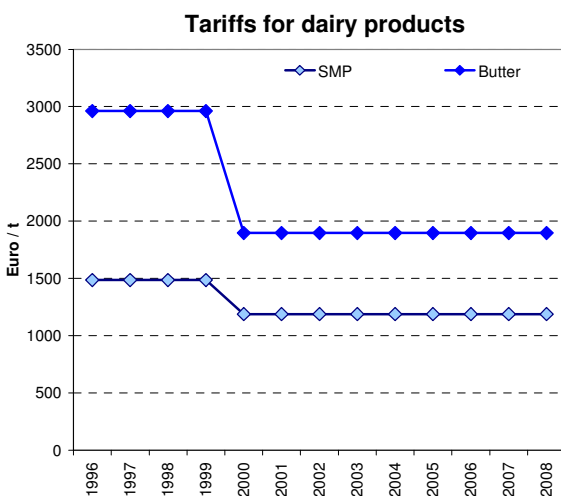
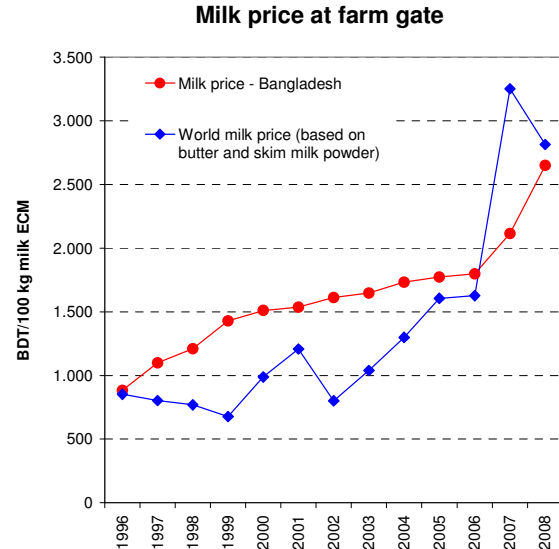
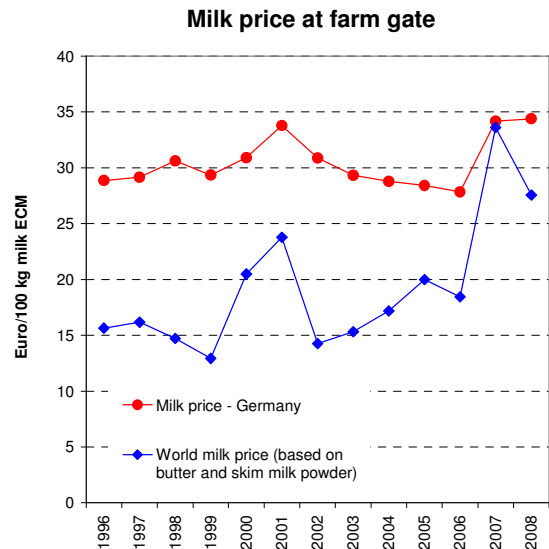
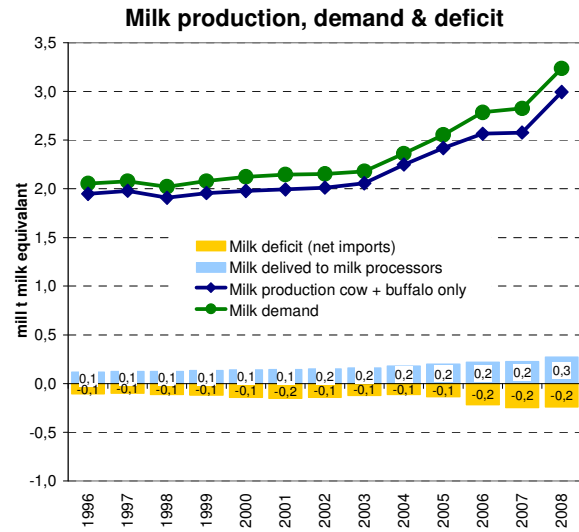
Farm type		Type 1	Type 2	Type 3
Livelihood status		moderate 100%	poor 50%	very poor 25%
Status of off-farm income		off-farm job	time off-farm job	off-farm job
% of the 2 cow farms on Bangladesh		25%	50%	15%
No. of farms (est.)	million	0,35	0,70	0,21
No. of people (est.)	million	1,96	3,92	1,18
Milk production	kg/year/cow	721	721	721
Family living requirements*	Taka/year	50.000	50.000	50.000
Description of the dairy farming households income (until June 2008)				
Income structure				
Income per year	taka/year	48.262	30.762	22.012
Off-farm income	taka/year	35.000	17.500	8.750
Income from dairy**	taka/year	7.931	7931	7.931
other agriculture	taka/year	5.331	5.331	5.331
% off-farm	%	70	70	70
% dairy	%	16	16	16
% other agriculture	%	14	14	14
Household income status				
per day	taka	132	84	60
per day	Euro	1,39	0,89	0,63
Dairy income status				
per 100 kg milk**	taka	550	550	550
per 100 kg milk	Euro	5,8	5,8	5,8
Impact of a reduction in milk price: - 2,5 Euro or - 237,5 Takka / per 100 kg milk				
Reduction of milk price	taka/100 kg	238	238	238
Change of income due to milk price reduction				
per 100 kg milk	taka/100 kg	-238	-238	-238
Per day	taka/day	-9,4	-9,4	-9,4
Per farm	taka/year	-3.425	-3.425	-3.425
% of dairy income	%	-43%	-43%	-43%
% household income	%	-7%	-11%	-16%
Household income status after milk price reduction				
per day	taka/day	123	75	51
per day	Euro/day	1,29	0,79	0,54
* Based on farmers interviews in bangladesh Nov 2008, Dinajpur district				
** Farm income is based 550 takka per kg milk (level 1-2006 - 6/2008)				
Other farm income: based on the farm economic situation in 2008,				
Source: IFCN calculations, exchange rate: 95 Taka = 1 Euro (oanda.com for 2008)				

Annex 1: Dairy sector analysis

EU-15

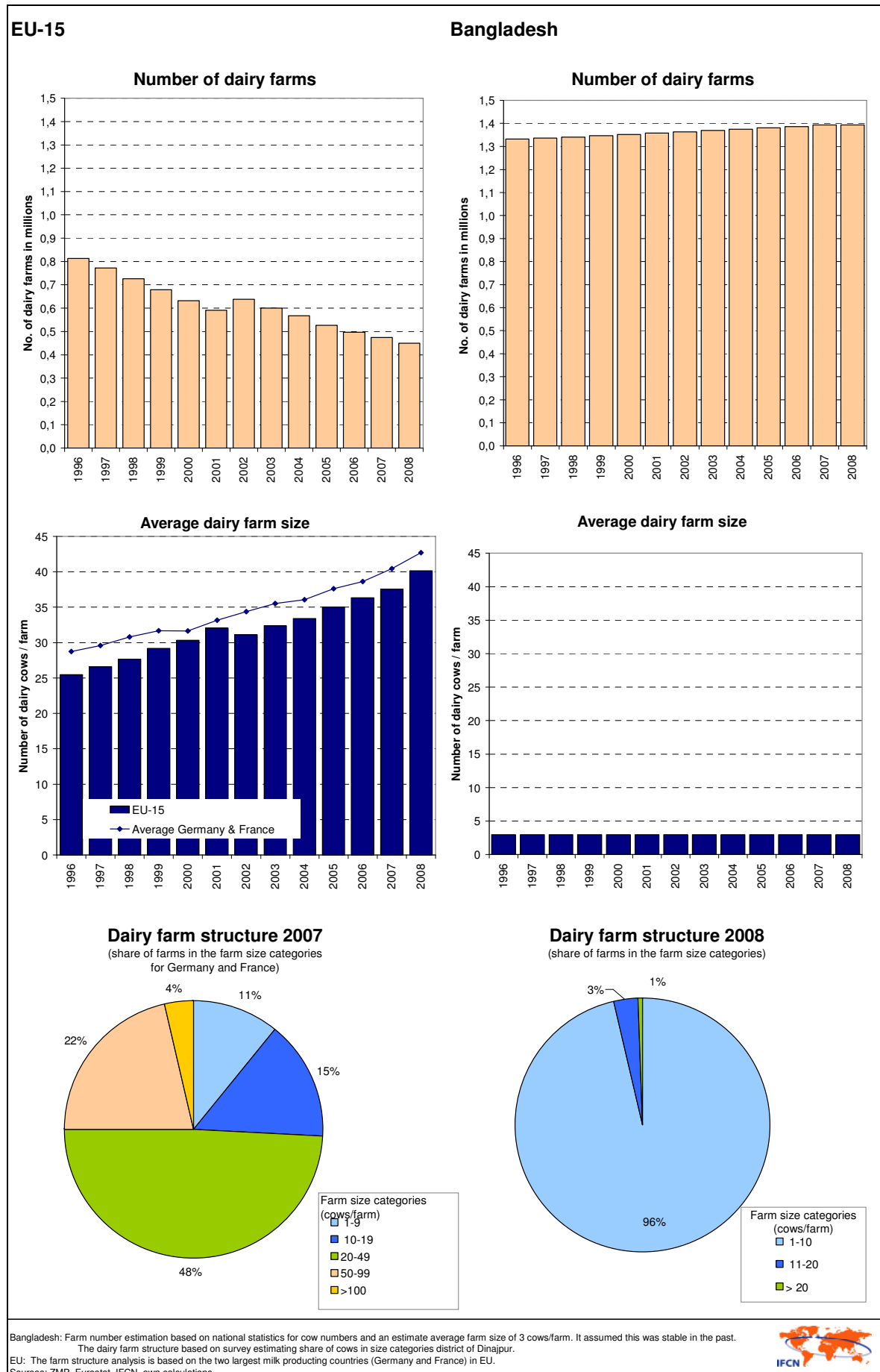


Bangladesh

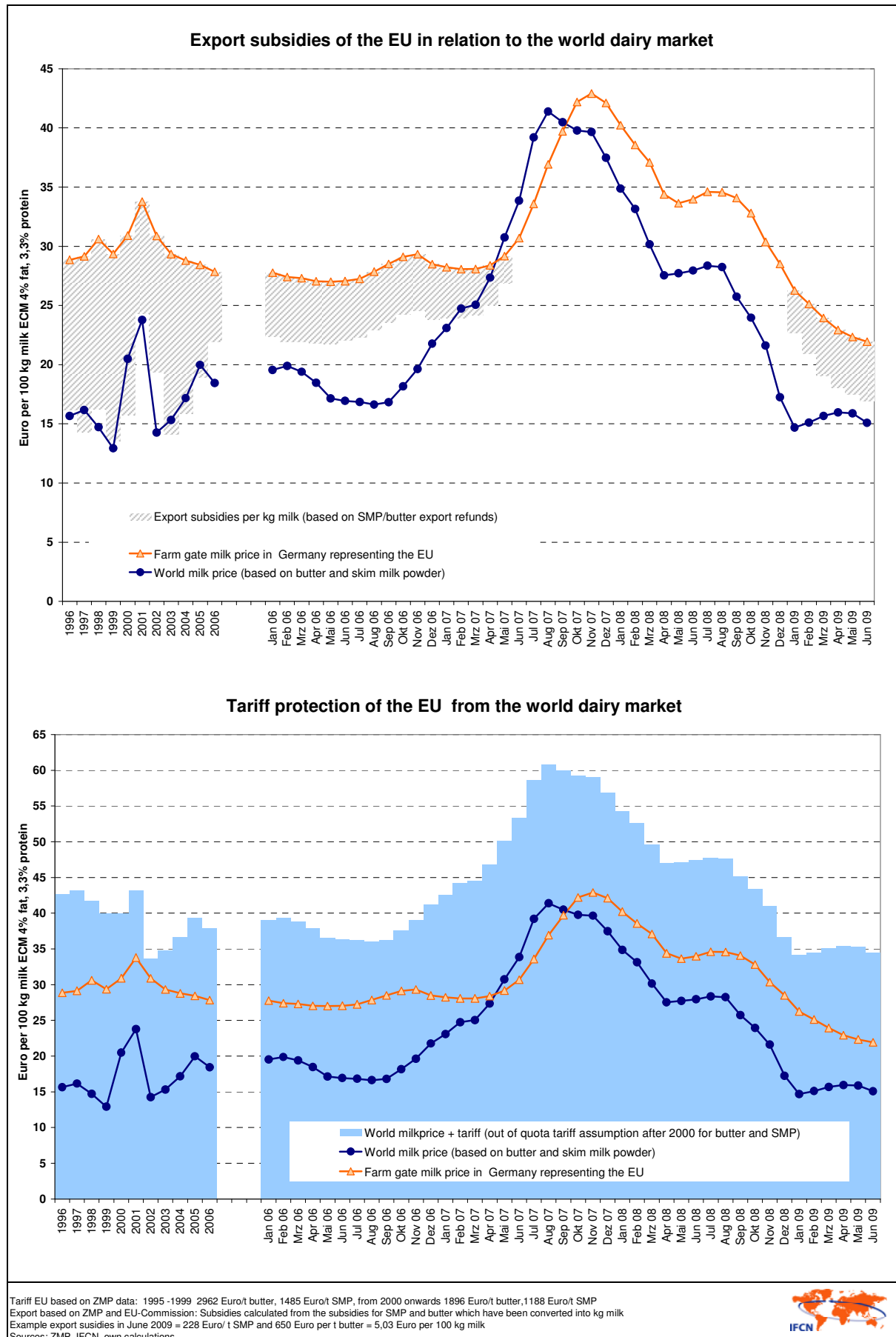


Bangladesh: As the main import product in SMP, we used SMP imports converted to milk equivalents using the total solids concept
 EU-15: Milk surplus calculated from balance of EU exports - imports in milk equivalents using the fat protein solid method
 Tariffs EU: based on ZMP Bilanz, different years, Tariff Bangladesh: Based on national statistics.
 Tariff Bangladesh: based on the report of Chittagong customs and duty office via daily news paper (www.prothom-alo.com date 19.04.2009)
 Sources: ZMP, IFCN, own calculations

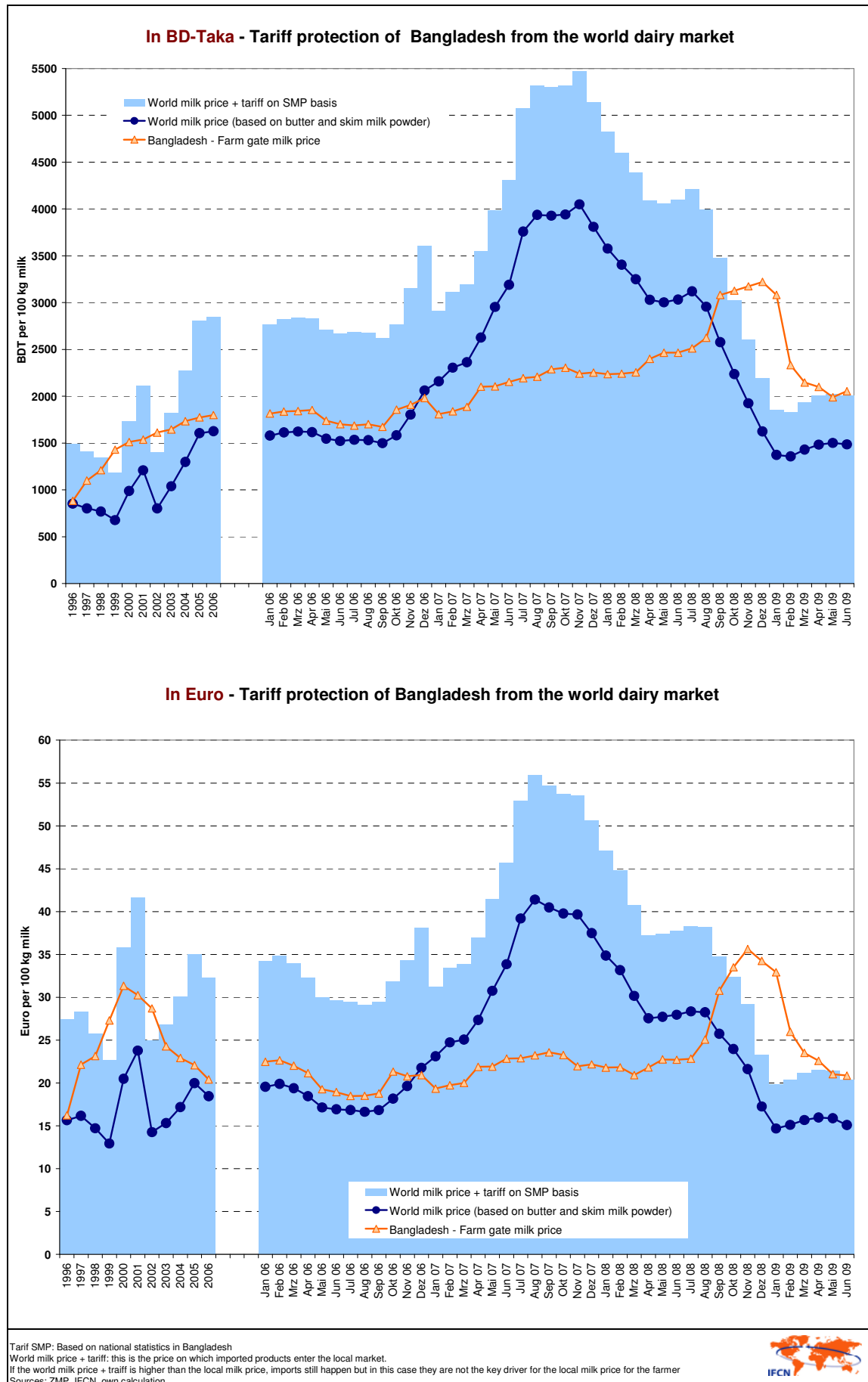
Annex 2: Farm structure analysis



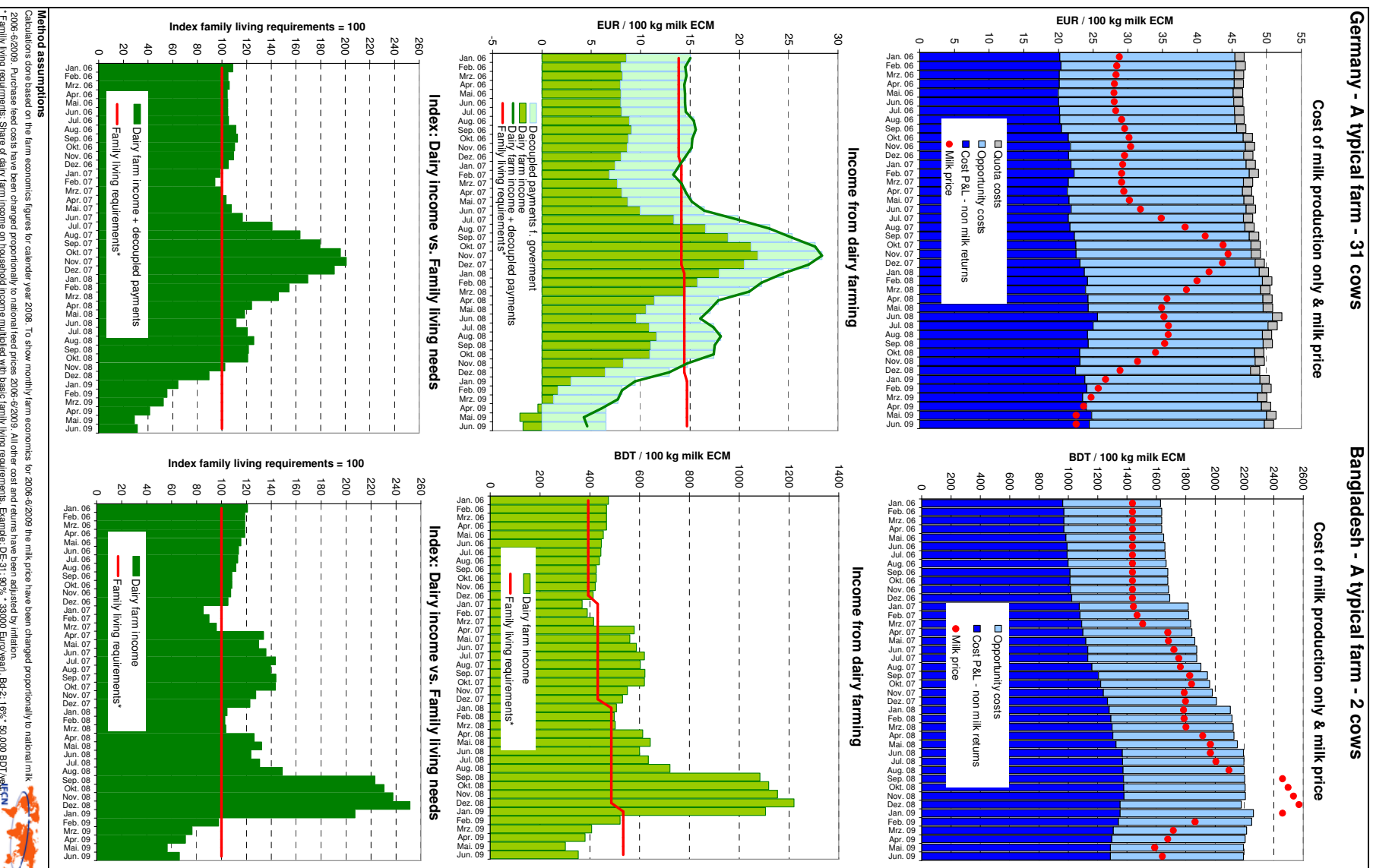
Annex 3: EU-15 milk price vs. world market price for milk



Annex 4: Bangladeshi milk price vs. world market price for milk



Annex 5: Economics of dairy farming January 2006 - June 2009



Annex 6: Description of the typical farms analysed

	Bangladesh	Germany
Typical farm type	BD-2	DE-31
Region	Dinajpur	Bavaria
No of cows	2	31
Milk yield (kg ECM/ cow/year)	721	6715
Milk production (t ECM/year)	1,4	208
Land base (ha)	0,45	40,16
Dairy labour input (hours/year)	1.008	3.172
Labour productivity (kg milk/ hour)	1,4	66
Basic family living requirements		
Euro/year	510	33140
Euro day	1,40	90,8

Annex 7: What is IFCN?

The analysis is based on the IFCN dairy research network. In a rapid changing dairy world the IFCN acts as an ongoing knowledge creation system.

Via its research partnerships in 80 countries it represents 95% of milk production volume.

It is following the mission to “Create a better understanding of milk production world wide”.

Based on harmonised data it is analysing global dairy trends to guide the various stakeholders in the dairy sector.

The ambition of the IFCN is to provide facts not recommendation what to do. Via we hope to support especially political discussions.

A more details illustration you find on the IFCN world dairy map 2009 and also our website – www.ifcndairy.org



Our Mission: Create a better understanding of milk production world-wide

