

# The Disappearance of Smallholder and Peasant Farmers and the Coming of Agricultural Entrepreneurs

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**Abstract:** *This article deals intensively with the disappearance of smallholder and peasant farmers and the industrialization tendencies in agriculture in a global context. The substantial developments are described through seven "spotlights". The paper discusses some of the main trends in global agriculture, criticizes the monopoly-like structures in agribusiness and global trade and argues in the direction that small-scale farming and structures adjusted to local communities should be supported and, similar to the agrarian crisis at the end of 19th century in central Europe, a systematic creation of cooperatives should be initialized again. It should aim at strengthening the local (regional) production, promoting the regional exchange of products as well as reinforcing the interfaces to regional handicraft, small scale industry and modern services. There is a need for substantial political reforms on a global (WTO, IMF) and local level (land reforms).*

**Keywords:** *agriculture, agricultural development, small-scale farming, global hunger, global agricultural trade, food industry.*

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*"The man of letters regards peasant farmers with depreciation in an unjust way. These anticipate sometimes their future. The end of the peasant farmers announces perhaps also the end of a certain European culture. Europe always consisted of a huge variety of landscapes. There are no unaffected regions like in America. Our continent consists of extraordinarily different landscapes and utilized areas both within the countries and from country to country. All this is changing. Extensive consolidations of farmland are under way, agriculture is going to be industrialized, people leave the country... in the name of Europe, on which we are just working. I think that this proves to be a disservice to Europe, the inheritance we just begun to live."* (Quote: "A discussion with Alain Finkielkraut – philosopher" (Finkielkraut 2000))

It is of course interesting that also cosmopolitan philosophers reason about the disappearance of the small scale farmers, because their profession deals with the cultural, social and political centre, which is usually not placed in the countryside. But these are only two sides of the same coin, because the problems of social compression and urbanization are parallel to the problems of disappearance of the peasants in rural areas. In the following article this disappearance is illuminated through a few spotlights, in order to describe the process, which currently takes place with the rural structures of land management - not only in Europe but world-wide. The aim of this article is not only to create knowledge about this process, but to stimulate a deeper understanding. Though the perspectives are global, the standpoint from where these perspectives are described is certainly a central European one.

### **Spotlight 1 – the Austrian agricultural policy – just one example**

In a current article of the daily Austrian newspaper "Die Presse" of February 2006 it is said, what one can still imagine with the small-scale agriculture in Austria from the liberal perspective. Two thirds of the farmers would manage less than 20 hectares, and therefore according to economic criteria they are not able to survive: *"What about thinking about forms of co-operation, which might result in viable farm sizes, without creating equivalent soulless "large-scale farms". In this case the farm subsidies would be used much better than in the traditional way of support, which petrifies structures. Because without competitive structures the farmers will never come to reasonable incomes - and this is something they do not deserve."*

It was high journalistic art of beautiful speech (euphemism), to make the reader believe that there is a "necessity of the disappearance of peasant farming". The farmers should unite to

larger enterprises, if the normal structural change, occurring through the hand-over of farms from one generation to the next one, is not sufficient. This is roughly how the president of the Austrian Chamber of Agriculture put it on the occasion of the so-called “agricultural winter-conference 2006” held in Vienna, because only "sufficient innovative, competitive enterprises" would keep the rural area lively.

Similar are the words of many top exponents of Austrian agriculture, when they talk about structural change even after a decade of the most radical disappearance of farmers. However, if only entrepreneur farmers remain alive in the countryside, then there will be only few of them left. In the 1990ies in Austria - starting from a number of 282 000 - over 63 000 farms closed down, and in the recent 5 years more than 30 000 followed. To the majority, these had been small and part time farmers; however, this categorization should not mislead us, that most family farms have become displaced and mismatching economic units in modern European and global agribusiness. The goal of a "reasonable income" is like a barrel without bottom, there is no end to it, and it seems almost, the more subsidies are fed into agriculture the more farmers are leaving the countryside (see also DER SPIEGEL 2006).

The ones, who feel they are too small, get themselves a complementary income through farm lease or sale, and the other ones, who think they are still competitive, try to exploit their holdings to the utmost. At the same time the salesmen of agricultural machinery, farming equipment and other farming inputs rub their hands. In western industrialized countries nationally financed agribusiness is going to prevail everywhere. This means farms, the number of which is steadily declining, mutate to agricultural enterprises and in the long run end up in a kind of raw material factories for the large agrarian industry.

## **Spotlight 2 – on a global level subsistence-farming is still dominating**

All the rice farmers of this world produce about 600 million tons rice on more than 150 million hectares and they thereby are feeding more than three billion humans - thus half mankind. "Alone in Asia more than a billion people are cultivating rice, covering up to 80 per cent of the calorie demand of these persons. Only wheat is still more frequently cultivated, but used often as feed," thus it was stated in the “Rice-briefings” of the German World Hunger Aid (Deutsche Welthungerhilfe). The average size of these rice farms is far under one hectare. According to European standards they would not be counted at all in agricultural statistics, because they would fall under the category "back gardens" or “smallholder hobby farmers”.

Moreover, they would not have any right to get any subsidy at all. But exactly these smallholders who are aligned to self-sufficiency, feed the majority of mankind, as they always did.

Our industrial system of agriculture is in contrast to this panopticum of small-scaled subsistence farming. What ever we understand in the western industrialized world by the term “agriculture” is actually something like a luxury production, a sophisticated industry, which serves a full table for the wealthy ones of this earth according to their nutritional habits. This industrialized agriculture dominates the world agricultural market as well. In particular through the mass-feeding of poultry and pigs, this industry is even destroying the majority of the food energy because one livestock calorie consumed as meat needs 7 to 12 calories at feed-level (EU 2005, see also Figure 1).

### **Figure 1. Global growth of meat consumption**

The remainder is surplus produced by industrialized agriculture, which is used as food aid or dumping exports to drive the developing countries, which before had been rather self-sufficient, into political and economic dependences. However, hunger is often not eliminated by this hidden competition of dumping and driving out smallholder and subsistence farmers, but the opposite happens: the cornerstones for unequal economic development and unjustified dependences are laid (see also GERMANWATCH 2005).

### **Spotlight 3: the EU-enlargement to the east – a new driving force for displacing farmers in the West – as the example of German reunification demonstrates**

In connection with the German discussion on agricultural structure - which took place actually only 7 years after the German reunification in a superficial way only - Arno Henze (1996), professor for agricultural policy and agricultural markets of the University of Hohenheim (Germany), announced the “credo” of comprehensive economic efficiency for German agriculture in the agricultural journal "Agrarwirtschaft", as if it was about winning the production battle of the Second World War once again: *"In connection with the agricultural protectionism, labour who just perform a small fraction of economic results compared to other workers remain in agriculture, who in turn, are set free within other sectors with conditions of paid labour. Therefore it is necessary to diminish the agricultural protectionism and to increase the flexibility of wages within the conditions of paid labour."* And later he also addresses the consequence of such thinking in categories of (apparent) efficiency: *"The withdrawal from market of un-competitive agricultural enterprises should*

*not be prevented, so that enterprises with strong competitive power can grow.... Considerations to differentiate the direct payments - which had been granted to compensate for the reduction of agricultural prices and are paid in relation to farm size – in favour for smallholder farmers, should be flatly refused.”*

The intentional production of unemployed persons in agriculture and industry seems to be all the same to this kind of academic science and it has even become a dogma. Behind this economic jargon there is also a part of the end-time philosophy of Friedrich Nietzsche according to the slogan, "What falleth, that shall one also push!" (see translation by Common Thomas 1998). And behind the linear thinking of economic theory there is an ideology of "growing and stepping aside". It results in a guidance, how to create an impoverished rural and industrial proletariat even in the 21st century by politics as quickly as possible.

It is not said or only rarely said that the large scale structure of the former communist German Democratic Republic (GDR) after the reunification was not opened up to the free play of the market forces at all - otherwise it would have been broken up. However, the specific property forms were transformed intentionally as large-scale enterprises. Later, they became highly profitable enterprises for the new owners because of the subsidy system of the EU that pays farms according to size. Political interferences in favour of certain legal and organizational forms have just led to developments, which, probably, under the conditions of really free markets would not have taken place (Hagedorn 1998, Mann 2003). Of course, something similar applies also to the transformation of the agrarian structure of the other Eastern European countries accessing the EU; here, however, East Germany signed the path.

The strange thing in the German transformation is that the structures had been shaped only by the interests of return on investment for the new investors, and at the same time however the workers were set free in masses without any substantial discussion. Buchholz (1997) then simply stated that the reduction of the labour force in the agriculture of the East German countries had been, regarding the speed and the extent of reduction, *"unexpected and without example in the past development of the German agriculture."*

From 834 000 persons employed in the GDR-agriculture in 1989, already in 1992 634 000 workers had lost their farm job, and in 1997 only a little more than 150 000 had been counted. Simultaneously the development of a small group of small and medium-sized farms ("Wiedereinrichter") should not mislead us about the fact that large privatized agricultural enterprises have come to control the German East more and more, while unemployment and

migration is going to be the main social characteristic in the rural areas. Agricultural compensation payments and the money for regional development from the EU led exactly to the opposite result as it had promised in its objectives. And German West pays now twice into a "nearly bottomless barrel": once in the context of the EU-compensation schemes and once for unemployment. The agricultural entrepreneurs may now be competitive; however, the rural areas of eastern Germany are nearly deserted.

In 2005, in German East (former GDR) out of overall 27 600 enterprises 8 900 farms had more than 100 hectares and 3 100 farms planted on even more than 500 hectares of land. That corresponded to a percentage of 33 percent and/or 11 percent of the enterprises, which, however, at the same time managed 93 percent or respectively 68 percent of the utilized agricultural area (UAA). This large-scale enterprise structure proves in the last ten years as relatively stable. There is only a very small change and that must be logical, if one considers the subsidy-system of the EU, which is almost exclusively related to the size of the farms: who would change "a horse bound to a regular promise of great profits" (money per hectare).

However, there is a special snag to the German reunification. In recent years in western Germany a relatively extreme structural change was observed, which was accelerated also because of the transformation in the eastern parts. Here, the farm categories with over 200 hectares in size show annual growth rates of more than +7 percent - both concerning the number and also the area which they farm - and the category over 100 hectares has growth rates of nearly +5 percent. Enterprises between 75 and 100 hectares nevertheless still have a slight increase (0.8 percent), but all smaller farms are diminishing in number. While in the 2000 just 16 600 west farmers had over 100 hectares which farmed 22 percent of UAA, in 2005 already 21 200 large-scale farmers had over 100 hectares and utilized 30 percent of the western farmland. The category over 200 hectares is still modest in the west - there are at present only approx. 3.200 farms – however, they increased their proportion in farm land from 6,3 percent to 8,7 percent between 2001 and 2005 (all structural data from DEUTSCHER BUNDESTAG 2001 and 2006).

These agribusiness-like structures will inevitably determine the landscape also "in the West", and we will have to get accustomed to the fact that the farm work is more and more performed by people, who are locked up inside into the cabs of large farm machinery like industrial workers or who are packed in plastics, in order to minimize poisoning and hygiene risks. If they are not coincidentally owners of large farms, these persons usually belong to the

category of the lowest paid labour force we know in our society. Cheap seasonal labour and harvest assistants, most times coming in and hired in by legal and illegal paths from Eastern European or Third World countries, will enormously change the social picture of the rural areas especially in Europe.

#### **Spotlight 4: grain is already burned, because it is profitable**

On the 1<sup>st</sup> of February 2006 a short article over "grain as future energy" appeared in the Austrian TV-on-line magazine (ORF 2006). The farmers and their representatives would have great hopes of "heating with wheat". The price comparison with a ton of wood-pellets would result in a price advantage of more than half for feed grain as fuel. The burning of grain "causes a smell like fresh bread". It was stated that also the ethical dimensions were discussed within the farm community, but in the future there would be the cultivation of special varieties of feed grain, so called "non-food-grain" or "energy grain". The present relations to the fuel oil prices are similarly profitable, if not still more favourable.

From articles and experimental and practical reports it is well-known that in Austria and Germany already more than 80 grain incinerators are in operation. They were optimized even with public research. Also some environmental groups and environmental protection authorities have supported this strategy of direct energy use of renewable raw materials, since this would be CO<sub>2</sub>-neutral with a much better energy balance like other biofuels (ethanol, biodiesel). Through special "energy grain" with a possibly more extensive cultivation system, the direct burning of grain might be defined as relatively environmentally friendly and regionally adapted - in such a way some expert opinions sounded.

But a lot of involved experts are surprised, if it is pointed out that with the present mineral oil prices it is already highly profitable to withdraw whole shiploads of grain from the world market and to burn it in power stations. This, however, would not (yet) happen, because probably it is not (yet) to be justified before the global public that we burn grain in view of more than 850 millions of undernourished human beings. Likewise, trade restrictions cannot be expected to be implemented in the case of "energy grain" because at the same time trade barriers are removed for food and feed products at WTO-level (the same goes to renewable raw materials general).

The profitability of burning grain is a clear symbol for how the industrialization of the agriculture devalued agricultural activities and concomitantly also food. Thus one can

interpret this also to the effect that the consumers have substantially participated in the process of this devaluation (see also Hoppichler 2003).

### **Spotlight 5: renewables are not a regional project, but a global disaster**

The renewable raw materials from agriculture are experiencing a renaissance, since due to global conflicts the prices of crude oil are rising, and since crude oil as energy basis is to become scarcer and scarcer and thus more expensive. The finiteness of fossil fuels can already be foreseen. Not only the direct burning of grain or the gasification in biogas facilities is going to be highly profitable, but also the transformation of palm and rapeseed oil and other vegetable oils into fuel as well as the ethanol production from grain and sugar beet (and/or cane) becomes increasingly competitive in relation to rising oil prices. Although at present public support, tax exemptions and admixture obligations are still required, a further price-rally of crude oil would be sufficient in order to turn agricultural land really into profitable "oil fields". Some articles already state that "Farmers are 'tomorrow's sheiks'" (Reuters 2005a). Apparently and undoubtedly agriculture of the industrialized countries might mutate to an energy industry and this would result in advantages only: prices of agricultural products would be stabilized, the CO<sub>2</sub>-emissions would decrease, dependence on energy imports would decline, new economic possibilities would be created and even job effects might be expected. Those are the promises, which are told to the public.

However the reality of the globalization has to offer different dimensions of the renewable raw materials, because the wheel of investments into the new sector is already turning around and behind these investments the global agricultural trade with completely different potentials on savings and profits is already lurking.

Austria, just as an example for a small European industrialized country, is already fully participating: Austria in particular promised to add 5.75 percent of biofuels to the mineral fuels till 2008. When the Federal Chancellor went to visit China in 2005, he took a bunch of business people with him, who signed contracts over an Austrian-Chinese biodiesel project (FORMAT 2006). The result: 250 000 Chinese farmers are going to harvest 700 000 tons of rapeseed on 600 000 hectares. It is processed in China to 250 000 tons of rapeseed oil, which is then refined to biodiesel. Thus, nearly the entire Austrian demand will be covered by one contract and as it was stated by the first press release from the China-visit, "*starting from 1<sup>st</sup> January 2007 the first Chinese biodiesel will stream out from Austrian gasoline pumps*"



(Kittner 2005). But Austria is not only active in China, but also in Egypt. Parallel to this contract signed in China, a biodiesel plant was exported to Egypt with an annual capacity of 40 000 tons (APA 2005b).

At the same time, the Austrian agroindustry prepares for new manufacturing plants, but not in the proximity of the most favourable cultivating areas, but directly at Danube ports. The leading regional bank of Upper Austria "Raiffeisenlandesbank" wants to establish a biodiesel plant with an annual capacity of 100 000 tons in the port of Enns (APA 2005a). As Austrian agriculture is planting only approx. 40 000 hectares of oilseed rape, the remainder of the raw material just will be imported alongside the Danube. The operator company will be a 51 percent joint venture with a German enterprise, so that the whole project is embodied in the German market as well. The direct effect for additional labour will be only 30 workers in the new biodiesel plant. In May 2006, another biodiesel refinery started production in the oil-harbour of Vienna. The Bio-Diesel Vienna GmbH will produce 95 000 tons of biofuel and is going to expand to 400 000 tons within two years (AIZ 2006). In order to substitute 5 per cent of mineral gasoline with renewables, the Austrian sugar and starch industry 'Agrana' has already projected a biofuel plant with a capacity of 200 000 cubic meters ethanol near Tulln, Lower Austria. The energy for this ethanol factory will come from a nearby power station which works on coal and garbage incineration. From a critical point of view it looks like as coal is transformed to biofuel.

Nevertheless, Austrian capacities are small scale. In January 2006 it became obvious that a Dutch consortium was planning a biodiesel plant with a capacity of approx. 430 000 tons per year in the German neighbouring city of Emden. This refinery is to be operated with palm oil from Southeast Asia (IWR 2006). Although the "Greens" stated that this is "economically and ecologically doubtful", this will probably have only a small effect on the future world trade in palm oil (Emder Zeitung 2006). Especially in the Netherlands, a significant increase of palm oil imports took place within the last years, from about 1.2 MMT in 2004 to more than 2.2 MMT in 2006. *"On top of the increased imports for food use, the production of "green electricity" and biodiesel has the potential to boost demand for palm oil by more than 1 MMT annually. Electricity generation already accounts for about 400 000 tons of palm oil utilization in The Netherlands"*, a recent USDA-GAIN report stated (USDA 2005). The background of this story is that the Dutch firm "Biox" signed two 10-year contracts with the company IOI and "Malaysian Golden Hope Plantations" to buy palm oil by-products to produce electricity. And at the same time "Biox" will build four power plants in the

Netherlands, one of which will be constructed near IOI's new palm oil refinery at the Rotterdam port, which has a capacity of about 900 000 tonnes a year (Reuters 2005b).

Millions of hectares of plantations with palm trees - this is the most productive oil-plant - were already planted in countries such as Malaysia, Indonesia, Ecuador or Cameroon, often by simultaneous clearing of the rain forests. From 1985 to 2000 the development of oil-palm plantations was responsible for an estimated 87 per cent of deforestation in Malaysia, and an estimated 66 per cent of Indonesia's plantations have involved forest conversion. In Sumatra and Borneo, approx. 4 million hectares of forests had been converted to plantations, and in Indonesia, the productive area will increase to 16.5 million hectares by 2020, whereas in Malaysia, around 6 million hectares are projected to be cultivated if current trends continue (FOE et al. 2005). In Borneo, the future plantation of oil palms threatens to destroy the rain forest and the last habitats of the Orang Utan are sacrificed to the world market of biofuels (REGENWALD 2006). However, already more than ten new palm-oil-refineries had been projected in Malaysia and Singapore, to fit the new trend in renewables (see various press releases, Monbiot 2005).

There are only few people who draw attention to the mad game with renewable raw materials and who point out the fact that, by neo-liberal world market conditions and by the expansion of agriculture into the last natural habitats, much more CO<sub>2</sub> and greenhouse gases are set free than can be won by the substitution of crude oil, and that biodiversity is destroyed irresponsibly (see Monbiot 2005). Usually it is not said that, at present, the global fossil energy consumption contains 400 times the carbon which could be bound by organisms in natural carbon sinks in form of the net primary productivity (NPP) (Dukes 2003). More simply we use four centuries worth of plants and animals every year (Monbiot 2005). Even if biomass is transformed into energy as directly as possible, we would have to use 22 percent of organic matter in form of NPP for energy to meet the current demand. It means that humans would have to increase the human exploitation of the terrestrial biomass resource by approx. 50 per cent from 58.1 Pg (38%) to 86.2 Pg (58%) biomass of the planet's potential terrestrial organic matter production of approx. 149.6 Pg (100%) (Dukes 2003). That again would cause dramatic consequences for the global ecosystem. On the other hand the energy balances of the biofuels are very questionable as well. *"Bioethanol and biodiesel from energy crops compete for land that grows food and return less energy than the fossil energy squandered in producing them; they are also damaging to the environment and disastrous for the economy,"* that is the central statement with which the globally acting scientist Mae-Wan Ho (2006) and

Director of “The Institute of Science in Society” introduced her highly interesting article on “Biofuels for Oil Addicts – Cure Worse than The Addiction?” (recently published at <http://www.i-sis.org.uk/isisnews/sis30.php>).

Some environmental NGOs like FOE or WWF are protesting against the present exploitation of the last Asian rain forests, but as it had been stated above, in Amsterdam, palm oil is already used for generating electricity; and since the atomic power story we know, it is easier to switch on a system than to switch it off.

The Russian roulette, which agribusiness and global markets are playing, seems to advocate "bread or rain forests into the fuel tank!", and apparently only those are winning, who decide for both. The structures of small-scale and peasant farming world-wide, global ecology and those, who are threatened to become undernourished, are going to be losers in this global game. Here it is about dimensions of huge plantations with tens of thousands of hectares and about refinery-capacities of hundreds of thousands of tons. Those who are responsible for these huge centralized calculations do not know anything about the various and decentralized needs of the ecosystems and the social entities involved. Thus, “The New Biofuel Republics” will be crated as Elizabeth Bravo and Mae-Wan Ho (2006) state: *“Poor developing nations are to feed the voracious appetites of rich countries for biofuels instead of their own hungry masses, and suffer the devastation of their natural forests and biodiversity”*.

### **Spotlight 6: genetic engineering and new agricultural techniques enable a new kind of large scale agriculture in South and North America**

The no-tilling cultivation, also referred to as “direct drilling“, “no-till”, “lo-till” or “conservation tillage”, depending on slight variations in technique, was originally developed in the USA to save costs and to minimize soil erosion in erosion-endangered areas like the plains. The land is not ploughed, but farmers use special techniques to incorporate the old crop residue into the top few centimetres of soil, drill in the seeds and press down the soil. With the machinery developed for this purpose, the whole process can be completed in a single operation by one man, whereas in relation to ploughing, smaller tractors and machines which are usually lighter are used. However, leaving organic material at the surface has the disadvantage that plant-associated diseases can develop more easily, in particular fungi; thus the disease pressure increases.

The ploughless direct drilling is predominantly used in the US, Canada, Australia, Chile, Brazil and Argentina and recently it is promoted even world-wide. Although perhaps not originally developed to promote chemicals, direct drilling has now become widely associated with the use of glyphosate and genetically engineered herbicide-tolerant crops; since herbicides are a necessity to counter the growing pressure of weeds in direct drilled land, the combination with herbicide-resistant plants seems to be perfect. These techniques are especially promoted by the US-based chemical and biotechnology company Monsanto under the term “con-till” (Joenson 2004), as through the patent system this company controls both the herbicide RoundUp and the according genetically engineered gene for glyphosate tolerance. That’s why these crops are called RR-plants or RoundUp Ready plants.

Since the introduction of RR-soybeans in the US and Argentina and the introduction of RR-canola in western Canada, the whole world watches a new dimension of weed control by one technique and one single chemical. The first resistant weeds have already been observed in the US; and in particular as regards RR-canola, a tremendous selection pressure is created by Roundup for RR-traits in volunteer canola populations. According to an involved scientist, the consequences seem to be clear: *“In this situation Roundup Ready volunteer canola has a very large positive fitness advantage over non-Roundup Ready volunteer canola and, according to population genetics theory and experience with herbicide resistant weed populations, the frequency of the Roundup Ready trait will rise rapidly in the volunteer canola populations.”*(vanAckern 2003)

According to general assessment in the US approx. one third of the soy bean area is cultivated already ploughless – this means that nearly 10 million hectares, almost exclusively cultivated with genetically engineered RR-soybean-seeds from Monsanto, are dedicated to direct drilling. In 2003, 48% of the canola grown in western Canada (2.25 of approximately 4.7 million ha in 2003) was Roundup Ready. Here glyphosate use is extensive and farmers who usually practice direct seeding use RoundUp every spring for pre-seeding weed control.

A lot of people asking themselves why the first generation of genetically engineered plants spread that fast in South and North America; and they think this was caused by the “superior” breeding technology of genetic engineering. The point was not so much the breeding, but the possibility to combine this new technology with the techniques of direct drilling. This was the driving force for spreading of RR-crops and this interaction cannot be transferred everywhere. On the other hand, there is also a wide range of ecological risks connected to this package of

technology – resistant weeds, aggressive fungi which are the cause for even more pesticides to be used, leaching of glyphosate metabolites into ground water, as well as health risks to rural communities (Benbrook 2005). In particular as regards soybeans, fungi seem to be a serious problem: “*Asian soybean rust (Phakopsora pachyrhizi) is the primary reason for the jump in fungicide sales. For instance, soybean rust boosted BASF’s fungicide sales by 21%; soybean rust in Latin America contributed to an 18% increase in Syngenta’s fungicide sales in 2004*” (ETCGROUP 2005a).

Especially in Argentina, which shifted its soybean acreage to RR-soybeans already to the extent of 98 per cent, but also in Brazil more and more UAA is included into ploughless cultivation. In Brazil in particular, extensive pastures, savannahs (Cerrados) and recently also more and more rain forests are converted into soy-fields. However, the Brazilian Cerrado-savannah would contain 207 millions of agricultural land, but only 47 millions hectares are used at present. According to the Brazilian research organization EMPRAMPA further 60 to 89 millions hectares might be changed to ploughing in the near future; this would mean that the given range characterizes those quantities of land, which - according to present government politics - should be systematically transformed to ecological compensation areas (Mattson and Koo 2006).

Nowadays, in soybean-plantation massive, specialised and expensive use of machinery allows to employ labour very economically; one labour unit is able to work large areas by direct drilling in a rather short time, e.g. up to thousand hectares and more can be operated by one person. This creates an additional competition advantage of large-scale enterprises as compared to small and medium-sized farms, so that this technology package is predominantly used in South America by such very large enterprises, which manage thousands to ten thousands of hectares. Now they have the perfect technology, which fits their huge size.

These huge enterprises are financed by globally operating banks and companies which also organize soybean-processing (Dros 2004). However, in Argentina the enlargement of the soybean area has amounted to approx. 5.5 million hectare since 1996 (without the inclusion of the additional cultivation of 2.35 millions hectares as secondary plant in crop rotation). An estimated 27 percent of this area were made available by conversion of pastures and hay fields, and approx. 41 percent (i.e. approx. 2.3 millions hectares) came from wild lands, including forests and savannahs (Chaco) (Benbrook 2005). In the last few years, the area of forest loss amounted up to 450 000 to 500 000 hectares in Argentina. From 1998 to 2002, an

average of 272 000 hectares were converted from forest to agricultural production each year across the seven provinces.

The ecosystems of the Cerrados and Chacos and in the long run also the rainforests will be transformed from natural ecosystems to agricultural ecosystems, similar like Europe in the Middle Ages was transformed, but this time not by peasants but by modern industry with the help of genetic engineering and modern machinery.

### **Spotlight 7: agrochemical and pharmaceutical multinationals are controlling the seed sector**

The leading global agrochemical companies foresaw already in the 80ies and therefore also strategically planned that seed markets could be controlled both in a technological way, by genetic engineering, and in a legal way, by the patenting of the transformed genes and plants as well as by using the traditional seed variety laws. Thus, the existing multinational agrochemical companies started to buy systematically into the seed-business. At the same time, these companies bought also small biotech start-ups and consequently transformed to a large extent into a biotech-industry, because they were integrating genetic engineering into future plant breeding and product development. On the one side, it was of great interest to adapt the seeds to the existing herbicides and to develop technology packages of seeds combined with herbicides (e.g. the herbicide-tolerant genetically engineered plants like RR-soybeans), and on the other hand, it was very interesting to use the technological innovations also from the pharmaceutical and medical sectors to speed up innovations, because those sectors were also going to use genetic engineering as main tool in product development. Thus, the huge global pharmaceutical companies began to take interest also in the seed business and as a result the so-called life science industry began to merge and to take over the traditional seed companies. Within two decades pharmaceutical and agrochemical companies were the main players in the global commercial seed-markets (Table 1).

**Table 1. Top 10 enterprises of global seed market – approx. 33 per cent market share**

The commercial seeds market accounts of approx. 21 billion dollar turnover world-wide and 33 percent of this market is controlled by 10 leading seed companies. Six out of these 10 leaders are controlled by pharmaceutical or agrochemical multinational companies. The Top 3 seed companies, Monsanto, Pioneer and Syngenta, are split-offs from the huge pharmaceutical enterprises Pharmacia, DuPont and Novartis. Monsanto and Syngenta are

leading manufacturers of plant protection agents, as is Bayer CropScience, ranking eighth in seed-business, which would like to push plant breeding by genetic engineering in Europe.

These leading companies spent enormous sums within last the 20 years to buy out traditional plant breeding enterprises. In January 2005, Monsanto bought Seminis at \$1 400 million, and thus takes a new dominant position in the fast-growing vegetable seed market. Under a variety of brand names, Seminis supplies over 3 500 seed varieties to fruit and vegetable growers in 150 countries. Monsanto assumed a leading market share in the global vegetable seed market, where they had been virtually invisible before: Now, Monsanto apart from 41 percent of corn-seeds and 25 percent soybean-seeds controls 31 percent of normal beans, 38 percent of cucumbers, 23 percent of tomatoes and 25 percent of onions in the global seeds market (ETCGROUP 2005b). Just recently it was announced that a \$ 1.5 billion cash deal, in which Monsanto acquired the seed company Delta and Pine Land, *“would give Monsanto control of half the American market for cotton seeds and could face tough antitrust scrutiny at a time when smaller seed companies are being gobbled up by larger ones”* (NY Times 2006).

But it should also be mentioned that the commercial seed market at present still represents only approx. a third of the world seed production, because approx. another third is still produced by farmers themselves mainly through traditional subsistence farming, and another third comes from the public sector or farming cooperatives. But this also means that by further global modernization of agriculture the commercial seed market will have an enormous growth potential especially through privatization and integrating co-operatives into the commercial sector (Hoppichler 2005).

Genetic engineering and the patenting of living matter like plants stimulated an enormous concentration of plant breeding industry and created monopoly-like structures in the commercial seed market. Pushing the technical possibilities and the political environment to allow to introduce “suicide” seeds and developing the so-called “terminator technology” further, is just another strategy to expand market shares to all sectors of seed breeding similar like they did in the past with the hybrid maize markets. By doing so, these companies can fix their global monopolies even more.

Besides, in the industrialized countries the trend to ever more comprehensive plant patents is going to advance not least because of automatic sequencing of the plant genome. In the future the possibilities to synthesize genome fragments better and better might boost the use of synthetic genes in plant breeding und thus speed up the patenting trends as well. For example

Swiss gene giant Syngenta, the world's largest agrochemical corporation and third largest seed company recently applied for patents that might effectively allow the company to monopolize key gene sequences that are vital for rice breeding as well as dozens of other plant species (ETCGROUP 2005c). In the international patent application WO03000904A2/3 Syngenta claims monopoly control of DNA that regulates flowering development, flower formation, whole plant architecture and flower timing in rice – in up to 115 countries. And according to Oldham (2004) the scope of the patent application is virtually limitless – extending to flowering plants in general; and the claims may also extend to species and genera that have yet to be described by taxonomists. And that's just one example. Thus it seems to be very logical that the huge seed-companies and the industrialized countries, where these companies are based, long for the political and economic control of human nutrition and thus, for the future global power as such.

### **Spotlight 8: monopolies in agricultural trade - especially oil seed trade**

Monopolization of the seed industry and industrialization of agriculture find their continuation in monopolization of trade of agricultural raw materials and this is further connected with monopoly-like structures in the food and beverage industry. It is almost a phenomenon of the international trade of agricultural commodities that millions of farmers produce the raw food and raw materials, which are usually gathered by a huge bundle of farmers' cooperatives, and only a handful of commercial firms is left to process and trade these materials and to hand them over to a similar centralized food and feed industry, if the world agricultural market is concerned. At the end of this chain only a handful of retail companies distribute the usually highly processed food to the millions of consumers. Just at present a rapid global expansion and concentration of the retailing companies and supermarket chains takes place, and more and more people in the world especially also in developing countries know the names of Wal-Mart, Carrefour, Tesco and Metro. As a consequence the economic chances in the food retail trade are diminished increasingly, thus creating an enormous potential to dislocate the retail and small processing labour especially in developing countries (Figure 2).

**Figure 2. Agro-Multies - the bottleneck in global trade and the expansion of transnational supermarkets**



If we look at this phenomenon of concentration and distribution we may speak about a “bottleneck of global agricultural trade. In the long run there seems to be little choice. Most of the globally traded agricultural products are commercialized by view big companies.

This becomes most obvious however within the oil seed sector and especially within the world market for soybeans and soybean meal. For example at present ADM (Archer Daniels Midlands), Bunge and Cargill (all US-American companies) and the French company Louis Dreyfus control already 43 per cent of the oil mill capacity in the most important soybean exporting country Brazil. (In the US the first three firms control even 75 percent of all oil seed capacities.) In short, these processing and trading companies are already called, according to their initial letter, ABCD monopoly (see also Table 2 – top 10 food & beverage enterprises). The remaining oil mills of Brazil, which are controlled by local business or cooperatives, depend again very strongly on the mentioned large trading companies, if they want to export and do not supply the home market alone. If the soybeans, the soy oil or the soy meal come to Europe, then again the same companies control the European market. As regards oil mills, the ABCD monopoly holds 78 percent of the capacity in the EU-15. As a result, strategies in trade or production, which contradict these companies - like e.g. a GMO free feed production– can hardly be implemented or only at higher costs. At a global level, in oil seed processing ADM alone has a 40 percent market share in the USA, 27 percent in China, 21 percent in Europe and 12 percent in South America (Gelder/Dros 2003). According to its own data, ADM, with altogether 25 500 employees in 250 locations world-wide, helps "to nourish 130 million humans day by day". In addition, ADM is leading in the global biofuel sector, i.e. it is market leader with bioethanol in the USA and with biodiesel in Germany (ADM 2006). As trading company, ADM controls up to 80 percent of Toepfer International (with the headquarters in Hamburg) one of the largest grain and oil seed dealers for Central Europe.

These companies are not only active in the western hemisphere, but the opening of the European Union to the East and the future agricultural commodities markets between Russia, Asia and Europe are also substantially shaped by their strategies. In this respect, ADM announced already in 2004 that it is going to participate in a 50 percent joint venture for a large oil mill near Odessa, Ukraine, which is a prominent world producer with 4.2 million tons of sunflowers, because just one month before the co-competitor company, Bunge, did the same (NUTRAINGREDIENTS EUROPE 2004). On the project list for Agribusiness of the European Bank for Reconstruction and Development (EBRD) someone can find a little “Who is who” of these enterprises (EBRD 2006): The expansion of ADM, Bunge, Toepfer Ukraine,

Louis Dreyfus into Ukraine and Russia is co-financed by public funds. That seems to be the global future development agenda. The financial demand rises thereby up into hundreds of millions of dollars.

Likewise, by the way, the financing and banking sector does not play an insignificant role in advancing the international agribusiness and the global trade of agricultural products. Also for example in South America the expansion of the soybean planting and of the oil mill capacities was financed by huge bank syndicates with up to 20 partners including all large banks of Europe and the US and sometimes even relatively small banks like the Austrian “Raiffeisen Zentralbank” (Gelder/Dros 2003).

The goal of this global expansion has to do little with food security, but it aims at a global maximization of profit by means of agricultural raw materials. The global monopoly-like market power is predominantly used to push down the prices of producers and/or to extract as much as possible from the consumers through market access control. Interestingly, as trends in the last years show, the nearer to the rich consumers of the industrialized countries these companies act, the higher the return on shareholder equity seems to be. Thus, all these companies align their marketing activities to get as near as possible to the rich western consumers, and as a result the abundance of our supermarkets seems to be positively correlated with the global hunger (see also Table 2 - the top10 with food and beverages).

**Table 2. Top 10 enterprises - Food & Beverage Corporations + Processing Industry, 2004**

In connection with the increasing control power of these companies and in view of the ever more aggravating global hunger problem the Swiss sociologist, Jean Ziegler (2005) diagnoses just now that a "brutal, substantial re-feudalization" takes place: *"The new colonial gentlemen, the multinational companies - I call them Cosmocrates – take over the wealth of the world. This new feudal rule is 1000 times more brutal than the rule of aristocracy at times of the French revolution.... Also the genes of humans, animals and plants are taken in possession and are patented. Everything is subjected to the principle of profit maximization. The companies use two weapons of mass destruction: hunger and indebtedness."*

In the context of these provocative words, we should keep in mind that of over 800 millions humans who suffer from malnutrition and hunger, 50 percent are smallholder and peasant farmers and further 20 percent landless farmers (see Figure 3; concerning the hunger problem

see also FAO 2003/2004/2005). Certainly, it is legitimate to ask who is going to be responsible for this disaster. The announcements of the huge agro-companies that they want to fight world hunger with the new industrial tools of genetic engineering and biotechnology become ever more ridiculous and seem to be really a dangerous threat. In the light of these global power games it becomes understandable that the WTO-negotiations and the subsequent liberalisation of the world agricultural commodity markets, which are also pushed by the interests of these companies, will not solve the global problems of undernourishment, on the contrary. It is more likely that the global monopolization and imbalances in the food sector contribute to global and local conflicts; and thus it is one of the main causes to stabilize the global problems of undernourishment and hunger.

### **Figure 3. The social groups of the hungry**

#### **An outlook: fight the hunger, change the WTO and make co-operatives!**

The agricultural production system is organized increasingly through huge industrial networks and it is adjusted to the possible future profits of the world market. If the rising feed demand of Southeast Asia and China, caused by the growing production of pork and chicken, or if the prices for non-food products and biofuels in industrialized countries promise to enhance these profits, production and trade are directed to these markets. The multinational plant patentees and the global agro-companies envisage these new markets and try very hard to develop these markets, whereas the administration of hunger is left to the "global community of states". The hungry, it does not matter whether they are smallholder farmers, landless, indigenous or the people in slums, become part of a fixed system, similar to the unemployed in capitalistic industrial societies.

Until now, the peasant and smallholder farmers have nourished the people and they have impressively proven that they can do it, if they are left in peace – nevertheless we know that the principal reason of global hunger are wars and local conflicts. That means the farmers need a fair chance of peace to do what they are expected to do, and in peace they are unsurpassed in their diligence. And certainly they are also extremely flexible as regards the natural conditions and the social and political environment.

Smallholder farmers even survived communism and/or kept longer alive communism, than it would have been possible by means of the famous economic five-year-plans, through their subsistence strategies. Only like that it is conceivable that China nourishes 20 percent of the

global population with 7 percent of the world utilized agricultural area (Stein 1998). However, the paradigm of modernization already affects China as well, and if China follows the example of Japan, the rice surface might be halved in short time and it might be replaced by "luxury food". As an example, the retired Austrian industrialist Gernot Langes-Swarovski already produces so called "premium wines" on 200 hectares in China (Lessing 2006). Certainly, he may be not the only one. Apparently Deng Xiao Ping, the great transformer to modern China, said it in vain: "Without agriculture there is no stability, without rice and grain there will be chaos" (cit. Kern 2002). This is something which might apply far beyond China.

By contrast, however, the modern trends are waiting, with all their industrial concepts for land management and with all the demands for global trade. Agriculture and especially also animal husbandry are more and more specialized up to the limits of biological feasibility by means of fossil energy and machine industry, i.e. all agricultural sectors are regionally and locally concentrated and organized by division of labour as well as according to efficiency criteria, as it happens in other industrial sectors. There seems to be no difference between underwear and food.

Economies of scale, the allocation of production factors by minimal costs, the laws of incremental costs as well as the market potentials, and other dimensions of politics of power are the main driving forces for the endogenous development of the structures of ever larger units. The main playing field is the global arena of agricultural commodity markets, and the rules are made according to the WTO. However, whether the huge multinational companies and their industrial environment, which together form the modern agribusiness, will be really able to nourish all humans in the future must be doubted. The only thing which seems to be certain is that these giant enterprises will be able to burn and destroy wheat, rice and other grain in incinerators, bioreactors or in engines by huge profits. The more complex these processes are, the higher are profits.

A possible way out of this global dilemma seems to be a systematic protection policy for smallholder farmers and the support of these farmers with a systematic creation of cooperatives - as it happened in the Central European agrarian crisis at the end of 19th Century in Europe. Above all, this new cooperative strategy should aim at strengthening the local and regional production, promoting the local and regional exchange of products as well as to reinforce the interfaces to regional handicraft, small scale industry and modern services.

At the same time, there is a strong need to bridge the gap between traditional structures of farming and food processing and the new requirements, which are given by modern trends, through education and training. And there is a need at all levels to find creative ways of exchange with marginalized social groups to support their self-empowerment. If the global centres and cities are accelerating and speeding up, the countryside also has to move to keep the balance.

Concerning the world markets, effective mechanisms of cutting oneself off and of protecting oneself from the enormous forces of global agro-trade should be created especially for those countries which suffer from undernourishment and strong underdevelopment. E.g. it is simply not acceptable that in areas, in which hunger crises prevail regularly, the agricultural exports exceed the imports systematically (see Figure 4); or the western world has to accept the consequences of migration. To liberalize financial capital and markets, especially food markets, and to lock out the adjustment of labour is not only disastrous in practise, but unjustified also theoretically, if we take the neo-classical theory serious. But as we know that migration is highly unaccepted in industrialized countries, there is a need to look for other solutions at political level - and since this neo-classical theory is solidified to a single dogma of the World Trade Organization (WTO) and the International Monetary Fund (IMF), there is a strong need to reform and restructure them. Or like Jean Ziegler, the UN Special Rapporteur on the Right to Food, puts it – certainly in a provocative way: "*World Trade Organization and IMF must be dissolved!*"

We do not have to go that far, but we should accept that the “neo-liberal paradigm” has failed and that a new paradigm of substantial political reforms on a global and local level has to come: This includes also land reforms, organizational reforms and institutional reforms. And this includes strengthening local economies, local resource productivity and local markets, supporting the collective traditions of smallholder farmers, developing their subsistence tradition as well as the various ways of organic farming and strengthening their links to regional markets. Most of these approaches have been integrated to the so called “Concept of Food Sovereignty” (Rosset 2003). For the future this concept might be extended to a “Concept of Energy Sovereignty”.

**Figure 4. Agricultural exports and imports of sub-saharan Africa**

## Summary

The article deals intensively with the disappearance of small-scale and peasant farmers and the industrialization tendencies in agriculture in a global context. The substantial developments are described through seven "spotlights".

On the one side, in western industrialized countries nationally financed agribusiness prevails. This means farmers, the number of which is steadily declining, mutate to agrarian enterprises and in the long run end up in a kind of raw material factories for the large agrarian industry. On the other side, the majority of mankind is still living on rural subsistence farming. However, in Asia, 1 billion farmers produce rice on small parcels of land, which forms the basic food for 3 billion humans.

The acceleration of the structural change of farms in the western Central Europe was analysed in relation to the EU-enlargement to the East. Global implications of the strategy of renewables were investigated. Main Result: renewables are not a regional, but a global project and through the forces of the world markets they might increasingly become an ecological hazard.

Further spotlights of the articles describe the interaction of genetic engineering and new agrarian techniques as driving force for a new kind of large scale agriculture, the monopolization of the seed industry and the trade in agrarian raw materials, as well as the monopoly-like structures in food and beverage industry.

Conclusion: At a world-wide level the agricultural production system is increasingly industrialized. If the rising feed demand of Southeast Asia and China, used for producing meat, or if the prices for plant products used as raw materials or biofuels especially in developed countries promise to be economically more successful, then production and trade are brought into line with these conditions. The monopoly-like agribusiness focuses on these new global markets and gives special attention to develop these markets, while the administration of the hunger is left to the "global community of states".

A possible way out of this global dilemma seems to be a systematic protection policy for smallholder farmers and the support of these farmers with a systematic creation of cooperatives - as it happened in the Central European agrarian crisis at the end of 19th Century in Europe. Above all, this new cooperative strategy should aim at strengthening the local and regional production, promoting the local and regional exchange of products as well

as reinforcing the interfaces to regional handicraft, small-scale industry and modern services. This includes also land reforms, organizational reforms and institutional reforms. As these aims are in a contradicting position to the main tendencies of the World Trade Organization (WTO) and/or the International Monetary Fund (IMF), there is a need to reform and restructure them.

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## Tables

**Table 1. Top 10 enterprises of global seed market – approx. 33 per cent market share**

Seed-Company	Country	Sales (US) Millions
1. Pharmacia (Monsanto + Semenis)	USA	\$ 2 803
2. DuPont (Pioneer)	USA	\$ 2 600
3. Syngenta	Switzerland	\$ 1 239
4. Groupe Limagrain	France	\$ 1 044
5. KWS AG (partner BASF)	Germany	\$ 622
6. Land O'Lakes'	USA	\$ 538
7. Sakata	Japan	\$ 416
8. Bayer CropScience (Aventis)	Germany	\$ 387
9. Taikii	Japan	\$ 366
10. DLF-Trifolium	Denmark	\$ 320
11. Delta & Pine Land	USA	\$ 315

Source: ETCGROUP (2005a,b)

**Table 2. Top 10 enterprises - Food & Beverage Corporations + Processing Industry, 2004**

Company	2004 Food & Beverage Revenues US\$ millions	2004 Total Revenue US\$ millions	Profit 2004 US \$ millions	Return on Shareholder Equity 2004	Return on Shareholder Equity Av. 5 Years
1. Nestlé	\$ 63 575	\$ 69 862	\$ 6 038	17.13 %	18.96 %
<b>2. ADM -Archer Daniels Midland</b>	<b>\$ 35 944</b>	<b>\$ 35 944</b>	<b>\$ 552</b>	<b>6.43 %</b>	<b>6.26 %</b>
3. Altria Group	\$ 32 168	\$ 69 963	\$ 10 511	30.66 %	44.94 %
4. PepsiCo	\$ 29 261	\$ 29 261	\$ 4 702	31.03 %	32.18 %
5. Unilever	\$ 29 205	\$ 52 267	\$ 2 604	42.50 %	8.40 %
6. Tyson Foods	\$ 26 441	\$ 26 441	\$ 450	9.39 %	7.59 %
<b>7. Cargill</b>	<b>\$ 24 000</b>	<b>\$ 62 907</b>	<b>\$ 2 347</b>	<b>17.16 %</b>	<b>11.44 %</b>
8. Coca-Cola	\$ 21 962	\$ 21 962	\$ 5 410	30.42 %	29.08 %
9. Mars, Inc.	\$ 18 000	\$ 18 000			
10. Groupe Danone	\$ 17 040	\$ 17 040			
<b>Bunge</b>		<b>\$ 28 096</b>	<b>\$ 524</b>	<b>13.90 %</b>	<b>11.26 %</b>
<b>RWA-Austria</b>	<b>\$ 740</b>	<b>\$ 1 920</b>			

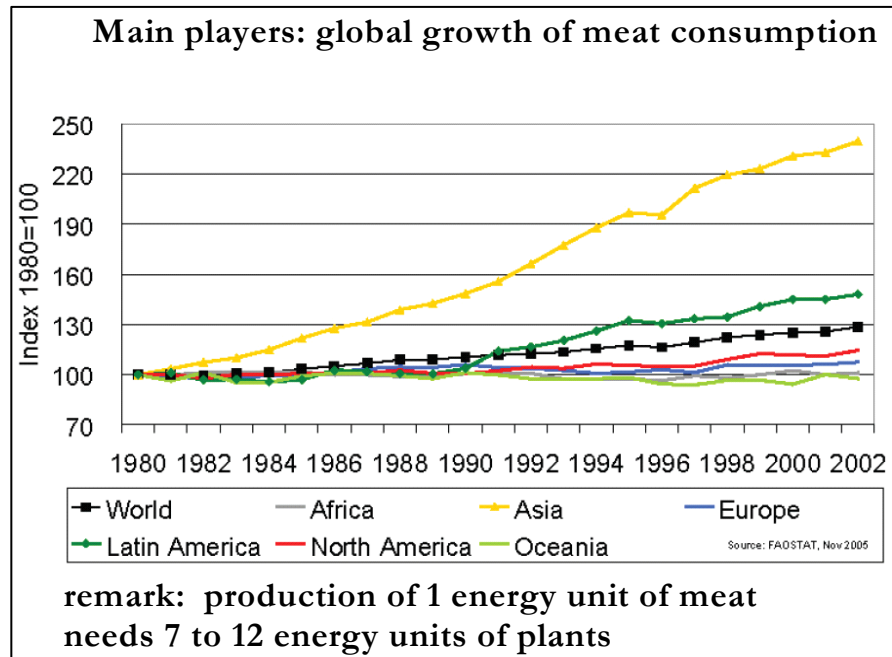
Source: ETCGROUP (2005a); own additions according to Global Food Markets (GFM), Leatherhead Food International – [http://www.agribusinessaccountability.org/pdfs//338\\_The-Farm-Crisis-and-Corporate-Profits.pdf](http://www.agribusinessaccountability.org/pdfs//338_The-Farm-Crisis-and-Corporate-Profits.pdf)

Orange: trade and processing of raw materials;

Yellow / white: food and beverage industry

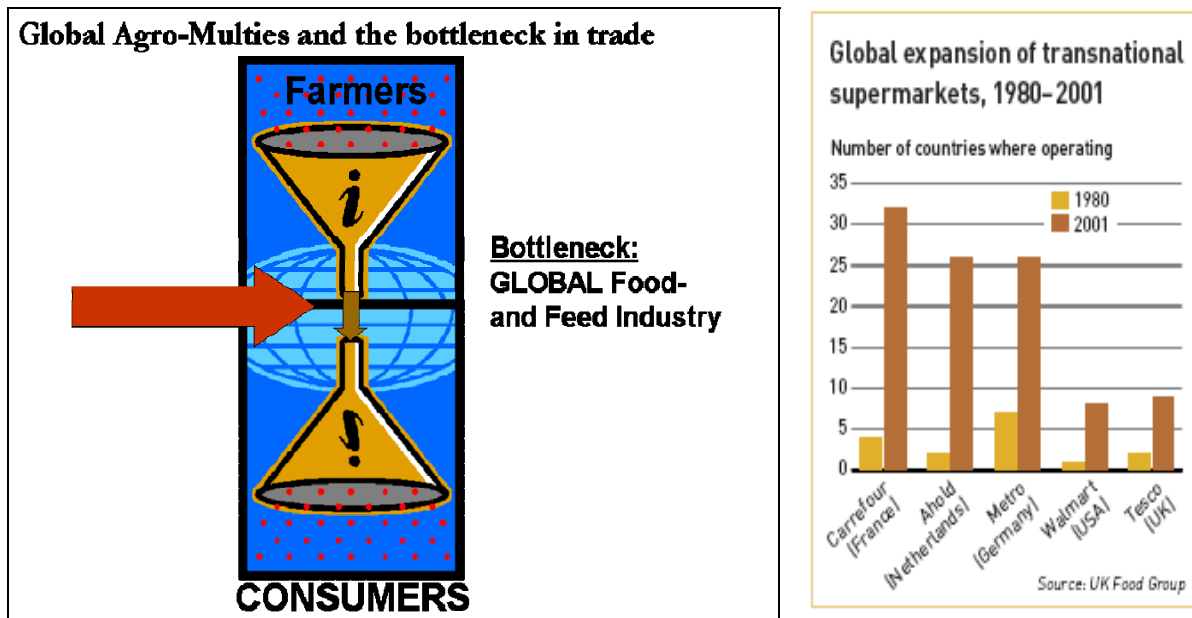
Violet: comparison to Raiffeisen-Ware-Austria

## Figures



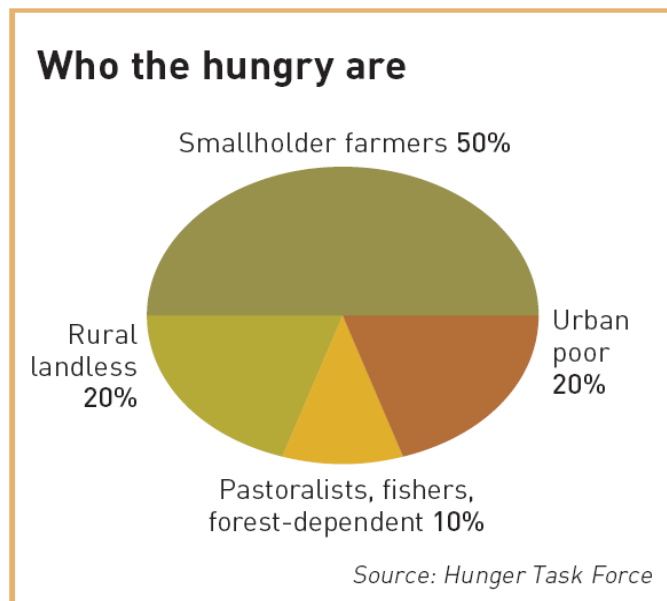
Source: EU (2005)

Figure 1. Global growth of meat consumption



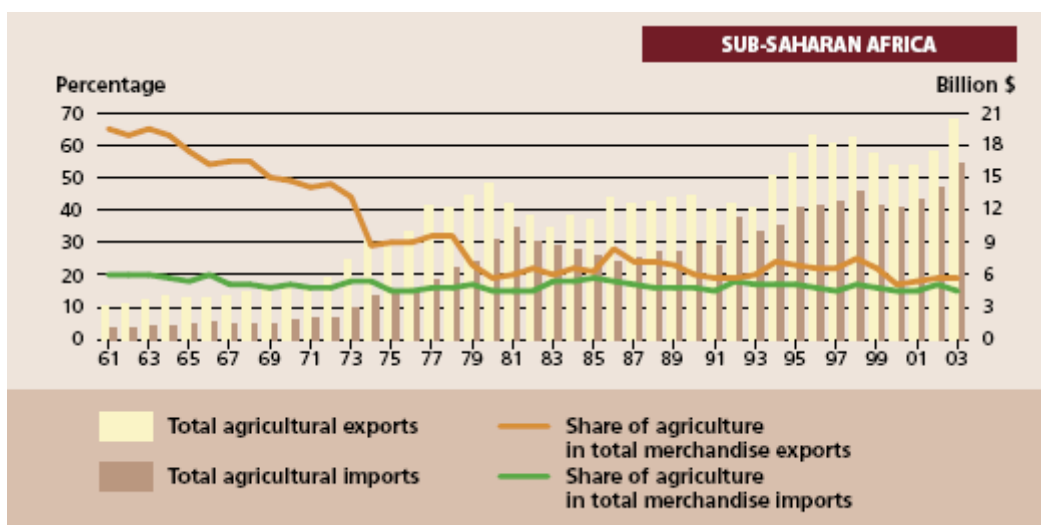
Source: own; FAO (2005)

Figure 2. Agro-Multies - the bottleneck in global trade and the expansion of transnational supermarkets



*Source: FAO (2004)*

**Figure 3. The social groups of the hungry**



*Source: FAO.*

*Source: FAO (2006)*

**Figure 4. Agricultural exports and imports of sub-saharan Africa**