

For the Development of Agriculture in Georgia based on the Organic and Sustainable Model

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World Experience for Georgia

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Introduction

Since the Rose Revolution in 2003, Georgia has undergone important economic development through institutional and market reforms, resulting in a steady increase of GDP and activity in diverse areas such as industry, communication, tourism, banking etc...

Nevertheless, the agricultural sector has been moving in the opposite direction, and a number of data and statistics illustrate this situation. The share of agriculture in GDP was only 8.5% in 2011 (26% in 1998), while half of Georgian workers are employed in this sector. Total agricultural production decreased by 20% since 2005, and is barely above 1990s' production level, when the country was emerging from a very difficult period after the fall of the USSR. Now, Georgia imports 3.5 times more agricultural products than it exports. Agriculture includes farming, where we also see negative changes: passage from about 4 million grazing cows in the early 1990s' to only 1.7 million in 2010.

However, from the geographical point of view, the country has a high agricultural potential: abundance of rivers, rich and fertile land, a very favourable climate for cultivation and livestock. To this advantageous geographical context, we can add a millennium of agricultural traditions in various fields related to certain regions: wine, tea, nuts, cereals, fruits, vegetables etc. Finally, we must call to mind the Georgian culinary tradition, Georgians' love for food and food quality.

Original conditions are met for successful farming on a quantitative and qualitative point. We will try to analyse the failure of this sector, and show why organic farming, promoted and supported by the government (and those in the future) represents a solution for reviving this sector sustainably, benefiting the greater portion of the Georgian population (both farmers and consumers), and their environment.

The aim of this work is to explain firstly why agriculture is a key issue for Georgia and therefore advocate a policy of strong support, financing and activity for its recovery and development. The second part, more consistent, is a study of a conventional agricultural model, technically and economically, and in the same way for the "enlightened" biological agricultural model. This part includes the analysis of socio-economic and environmental impacts of these two models. In the third and final part, we will return to the case of Georgia and prove the benefits of implementing the biological model for its agricultural development. A study of the current model in use will be provided, explaining the problems and difficulties which lead to the failures in agriculture, and possible solutions will be suggested. Finally, we will review the policy implemented in the recent years and discuss the models of agricultural development favoured by the current authorities.

To conclude, this paper is easily understandable and does not require advanced knowledge in agronomy, economics and other fields. Personally, I am not an expert in the field of agriculture, but after extensive reading and research of the consequences of nearly 40 years of conventional agriculture practices worldwide, the potential of organic agriculture on which many misconceptions are conveyed (particularly on its low returns), and after studying the current state of agriculture in Georgia, it seemed important to write this article, accessible and aimed at all. All sources are available at the end of the article.

1. Why should we give first concern to and prioritize agricultural development in Georgia?

The first reason is purely statistical: almost half (48%) of the labor force in Georgia is working in this area, which makes agriculture the first sector of employment in Georgia. Effective changes in agriculture, improvements in this sector represent a direct change for a very large part of the population. The reforms launched to encourage the development of the tertiary sector or the industry, are certainly very important, but they should not be held at the expense of agriculture and relegate it to the background. **The desired resemblance with the European countries and their models, should not make us forget that our society is still very different structurally** (for example less than 4% of the total workforce in Switzerland are farmers), and by scale (the average size of a French farm is 55 hectares, against 1.22 h. in Georgia).

Moreover, we have seen it in the past, and we are still observing it currently around the world, **the impoverishment of rural areas due to degradation of the agricultural sector, automatically leads to a rural exodus.** The same phenomenon has been taking place in Georgia since recently, where we can see a shift of population from rural areas to cities and their suburbs, especially to Tbilisi. Despite the increased activity in urban areas, it is very difficult for newcomers to find work in town, where unemployment, housing problems and other obstacles already exist and are compounded by the influx of rural populations.

In other words, focusing the efforts mainly on the industrial sectors and services in the cities at the expense of agriculture, leads to the impoverishment of rural populations, pushing them towards the exodus to the cities, which are not ready economically (job offers), structurally (housing, etc..), to receive a population influx as hard. This approach mainly results in urban pauperization (rising unemployment, poor housing), precipitated sprawl and densification of urban areas, in turn leading to increased pollution and negative effects on the environment. Instead, a successful, sustainable and dynamic agriculture enriches and improves living conditions in rural areas (where more than half of the population lives), inhibits the rural exodus, allowing a gradual and reasonable development in urban areas. **Thus, neglecting agriculture leads to the degradation of conditions not only in rural, but also in urban areas. On the other hand, investing in agriculture and providing support to small farmers, leads to improved living conditions in rural areas, and a healthy and progressive development potential in urban areas, including growth in economic, social and environmental sectors.**

Another issue related to agriculture is food security. Georgia currently imports 3.5 times more food than it exports: this balance is very unfavourable from an economic standpoint, and most importantly, it indicates food dependence on outside sources. For example, the Russian embargo in 2006 and the conflict in 2008 substantially increased the prices on a number of products. The question is to decide if we want to increase domestic production to reduce imports and be more self-sufficient, or to export more and thus even out the relative import-export, which always leads to dependence on outside products. In terms of food security and sustainable development, the first solution is most beneficial for the country and its farmers.

2. What does an efficient and sustainable agriculture mean? Study and comparison of two major agricultural models: conventional and biological

The conventional model

The conventional model, the most famous, influential and standard model, is employed by international organizations such as WTO, World Bank or IFM. We can describe this model by distinguishing the technical and economic aspects:

Technical standpoint: The agricultural model is the one based on the "Green Revolution", widely spread in most parts of the world from the 1970s' (after numerous scientific studies during the 1960s), aimed at increased agricultural production to meet the future global demands for food, due to a very high population growth. It is based on the use of seeds called HYV (high-yielding varieties), which require the use of pesticides, fertilizers and a controlled irrigation.

At first, on short-term views, the results were definitely positive in terms of yields, the impact on economic growth and modernization of agriculture. But in the long term, many negative aspects of this model were revealed, however it still carries a good image in the minds of the general public (Nobel Peace Prize awards in 1984).

We began by noting the dependence of developing countries on the agro-industrial corporations of the developed countries, which provide agricultural machinery and chemical products, almost all of which are made from oil: in fact, the industrial and petrochemical multinational corporations found a huge market to be exploited in agriculture. Many farmers from developing countries were forced to borrow great amounts of money, in order to be able to acquire these products and materials every year. Ultimately unable to pay off the debts, they were led to sell their land, to banks or landlords, and become agricultural workers on these lands, or move out to the suburbs of the cities, where unemployment and misery were awaiting them. In India, the opening to globalization in the 1980s' pushed by the IMF, allowed agribusiness corporations like Monsanto to penetrate the immense agricultural market. According to the Indian Ministry of Agriculture, 50% of farming households were in debt in 2006. In the worst cases, the debts pushed farmers to commit suicide (150 000 cases in India since 1993, according to NGOs). It is interesting to see that in the EU and the USA very high subsidies are given to farmers on the purchases of different farming products: without these subsidies, farmers would not be able to make any profits. Therefore, this agricultural model is considered to be limited economically, especially for small independent farmers, as investments in seeds, pesticides, fertilizers, are difficult to absorb through the sale of crops produced.

Concerning yields, sometimes, they can even be very negative, because in general, the new hybrid seeds are not tested in areas where they are imported. Directly sold to and cultivated by farmers, expecting the promised miraculous yields, they can sometimes be totally unsuited for the region, its climate, insects, worms or other features of the place, and crops can be fully destroyed. At this point, it is too late for those farmers who purchased the seeds and pesticides on credit, as they become unable to pay off. This is not the general case, of course, but it does take place and should be considered.

In addition to these social impacts, ecological impacts and biological effects are numerous. The massive use of chemical fertilizers and pesticides, along with a massive irrigation, contaminates the soil and eliminates all microbiological organisms over the years: this causes depletion of the land, which becomes much more compact, and therefore much more vulnerable to floods. These agricultural practices are also combined with intensive monoculture, which breaks the ecological balance. **Soil erosion is especially bad when employing these methods and requires a much longer and specific rehabilitation.** All given phenomena have been researched in numerous scientific studies: for example the studies of Claude and Lydia Bourguignon, French specialists in soil microbiology, founders of LARMS (Laboratory of Analysis in Soils' Microbiology). **Negative effects on the health of farmers using these chemical pesticides are also found.** Parasites more resistant to the pesticides may appear, leading to the use of more pesticides or more powerful ones (which are more harmful for the farmer, the environment and sometimes the consumer).

Finally we must recognize **the considerable loss of biodiversity** related to the use of similar seeds by farmers all around the world, while thousands of varieties exist even within the same country (rice in India, maize in Mexico...). Traditional varieties may be subject to patenting, depending on the jurisdictions, the country policies and multinational corporations, which may result in a cultivation ban. While for many hybrid varieties sold by corporations, it is prohibited by contracts to use the seeds from the crops for the next year, forcing farmers to buy seeds again every year. We see that this dependence on multinationals (for example American Monsanto, the most powerful and famous one), can easily lead to negative results in the case of farmers of developing countries, often accompanied by a loss of biodiversity, and therefore cultures and traditions.

It is possible to develop an entire study about **lobbying and the influence of these multinational agro industrial corporations, on political and juridical international institutions (WTO, WB, IMF, WHO, Codex Alimentarius), and government practices**, but this is not the purpose of the given article. These kind of studies have been done and published, and perfectly explain many political decisions that go against the interest and willingness of farmers and consumers: for example in 2011, France, by request of the European Court of Justice, had lifted the prohibition on the marketing and use of genetically modified corn seeds Monsanto 810, while 80% of French are opposed to GM crops in France (IFOP survey / West France). On the subject of power and influence of these large groups in agro-industry, I urge you to view the documentary released in 2008: "*The World According to Monsanto*" by Marie Monique Robin.

-Economical standpoint: The economic model that accompanied the Green Revolution, and which the WTO, the WB or the IMF are trying to impose, aims at the agricultural policies of all states of the neo-liberal and globalized economic model. This results in a complete **liberalization of agricultural markets (lack of protectionism on imported agro products), and the removal of state aid to farmers** (single aid of environmental protection may be granted). The 2009 report of the World Bank, prepared during the worldwide economic crisis, recalls on agricultural development, which was not included among the priorities for development, and states that it is essential to fight against the political support for agriculture and calls to go "*still further*" on liberalization of agricultural markets.

It should be noted that **this model is mainly supported at the WTO by the Cairns group (15 countries, who are heavy agricultural exporters into the world), the giant agribusinesses and retailers companies, interested in the reduction of agricultural prices.** Similarly, it is essential to clarify that if the guidelines of the WTO, World Bank or IMF become widely used in developing countries, countries like the USA, Canada, or the European Union (through the CAP), will continue to heavily subsidize their farmers.

This globalized market model without rules applied to agriculture also implies the international competition it engenders, that is, if the small farmers are not subsidized by their own state, they face competition from the entire world, this is especially true against the big farmers familiar with the markets, practicing monoculture in order to export, using the whole products range from petrochemicals, and sometimes even being subsidized by their own governments, the CAP etc. Moreover, **this neo-liberalism applied to agriculture generates volatility and reversals of agricultural prices, increased by speculation on futures markets, which represent a major threat to global food security, and especially for small farmers**, as demonstrated by the studies of the think tank MOMAGRI (Movement for a World Organization of Agriculture). **One thing is essential: despite a global agricultural production largely sufficient to meet the global needs, hunger affects nearly 1 billion people worldwide, including more than half are farmers, showing that the economic model implemented does not allow for an equitable sharing of food as needed.**

Therefore, the "conventional" agricultural model is based on the dependence of agriculture on the industrial and petrochemical sector, and on oil, a fossil resource. It favours production and export rather than food self-sufficiency of farmers (more than half of the people suffering from hunger on the earth are farmers) and food needs of the local population. By introducing a competition without limits on global food, it causes problems for small farmers, and leads to a society where the small peasantry gradually disappears in favour of large farms, to a rural exodus and a concentration of population in urban areas. The effects are harmful for agricultural lands, biodiversity, and the health of farmers and consumer. More importantly, it fails in its primary mission which is to meet global food needs.

The biological model

We will now move onto the analysis of the agricultural model opposed to the previous one: the organic farming model. For a long time it was considered as a "step backward" when compared to the modern characteristics of the Green Revolution, which was based on the technological, petrochemical and biological industry. Many prejudices are still in place when it comes to organic farming and one in particular, conveyed by the supporters of agribusiness: organic farming would yield too low and would not be able to achieve global food security. This thesis was proven to be totally false by multiple models, which are the bases of the FAO report of 2007, drafted after a two days conference on organic agriculture and food security where it is written: "*These models suggest that organic agriculture has the potential to meet global food demand, just as conventional agriculture today, but with a minor impact on the environment*".

I would like to specify that we are now considering "enlightened" organic farming, using methods and means of efficient production, whether traditional or modern, but always in an organic and sustainable manner. Organic farming is not synonymous with denial of change, progress and exchange of the know-how. It is neither a rejection nor a literally application of traditions inherited from millenary agricultural practices. For a deeper understanding of the subject, it is essential to view the documentary of Cauline Serreau: "*Think global, Act Rural*"

- On the Technical Plan: We must first clarify that there is no single model of organic farming, but many across the different regions of the world, leaning on the expertise and local resources existing: however, many gatherings, conferences, and established connections between farming organizations are made to exchange and disseminate the practices and knowledge of the different areas to improve the efficiency of organic farming around the world.

Organic farming is based on certain fundamental ideas: a production without the use of chemical fertilizers, synthetic pesticides, or genetically modified seeds (GMOs). It emphasizes the culture and breeding of traditional local varieties and therefore biodiversity. The inputs used are natural, and often available in the surrounding nature: "*The main feature of organic agriculture is its reliance on capital goods available locally and does not use fossil fuels*" (FAO report, 2007). The organic agriculture requires significantly fewer imports and thus less transportation of goods (environmental benefits). **It requires much less investment, borrowing money and frees the farmer from the dependence on agribusinesses and Western multinational companies.** The 2007 FAO recognizes this fact and emphasizes the extremely serious consequences of such dependence, which we described earlier: "*Another advantage of organic farming breaks the vicious cycle of debt for the purchase of agricultural inputs, debt which causes an alarming rate of suicides in rural areas*".

We talked about the negative impacts of conventional agriculture on the environment, the agricultural lands and further serious dangers in the long term. **The environmental impacts are significantly lower with organic farming, using no chemical inputs, and not destroying the micro-organisms present in soils, guarantors of healthy land.** Organic farming also respects the ecological cycles of the land, leaving land fallow that can be enhanced and fertilized by the cows graze etc., based on multi-cropping rather than monoculture. Organic farming requires less irrigation compared to the conventional model (especially compared with the latest GM varieties), and therefore saves the use of water, a scarce resource in the future. **Based on the culture of local and traditional varieties, it also guarantees certain biodiversity.** The biological system is finally summed up in this sentence issued by the Codex Alimentarius Commission: "*Organic agriculture is a system of global production, which excludes the use of fertilizers and synthetic pesticides and genetically modified, minimizes pollution of air, soil and water, and optimizes the health and productivity of interdependent communities of plants, animals and human beings.*"

A passage in the 2007 FAO report, referring to the conditions and constraints of a farmer's transition from conventional farming to organic farming, shows an essential feature of organic farming: "*Organic management is an approach requiring a good knowledge of agro-ecological processes ...*" This quote reveals very well the core difference between the agricultural model and the conventional one: the first one requires an interest and a thorough knowledge of the land, plants and agro-ecological systems in general; the second, in contrast, is rather the use of products of agribusiness, almost as if it just requires the application of certain instructions that do not require very advanced knowledge in the field. This constraint, if you think about it, is actually a good one, as it suggests advancement! Another constraint, the availability of workforce, which is discussed in this report from another point of view, also appears as an opportunity for developing countries: **the need of workforce for the development of organic farming represents an opportunity to save and even create many jobs in rural areas, and therefore a barrier to rural exodus.**

Concerning the yields of organic agriculture "enlightened", compared to conventional agriculture, the studies are numerous with often very different results. It is not possible in this paper to detail all the results of these studies, but we can draw certain conclusions. It should be noted that the varieties grown, their places of culture, and knowledge and techniques used in these farming lead to vary widely yields, so it is impossible to give an exact comparison between the yields of these two models. We note nevertheless that the yields of organic crops are rarely less than 80% of

conventional ones (weakness of these yields is sometimes due to time required by the soils washed by inputs to become fertile again). In other cases, yields are equivalent and sometimes they are superior to conventional agriculture. **It is no longer possible to discredit organic farming because of these so-called low yields, and FAO has recognized that organic farming was able to meet global food needs.**

There is also two other very important factors. **Yields on long term (beyond ten years) on the same field are favor of organic farming because it does not use agricultural land in the same way that conventional agriculture: this factor increased with the phenomena of future climate change, as lands where conventional agriculture is applied are much more prone to flooding. The second factor is the cost of two types: organic farming back significantly cheaper than the conventional, to yield an average equivalent**, as recognized by the FAO: "*the use of natural processes increases both the cost efficiency that the resilience of agro-ecosystems to climatic stress.*"

- On the economic and societal point: Organic farming is not represented by such organizations as The World Bank or WTO. However, according to different organizations, cooperatives or independent farmers practicing it, organic farming shows a radically different business model than that of conventional agriculture.

The term illustrating the economic model associated with organic farming is that of food sovereignty, developed by the international movement Via Campesina in 1996. This concept comes in complete dissent with the application of neo-liberalism in agriculture; recall this excerpt from the text distributed by Via Campesina at the 2003 Social Forum in Porto Alegre: "*The neo-liberal policies give priority to International trading and not to feed people. They have done nothing to eradicate world hunger; on the contrary, they have increased the dependence of populations to agricultural imports. They have strengthened the industrialization of agriculture, endangering the genetic, cultural and global environmental benefits and our health. They have forced hundreds of millions of farmers to abandon their traditional agricultural practices, to urban migration, or emigration. International institutions like the IMF (International Monetary Fund), World Bank and WTO (World Trade Organization) have implemented these policies dictated by the interests of transnational companies and superpowers. International agreements (WTO), regional (Free Trade Agreement of the Americas FTAA) or bilateral "free" trade in agricultural products actually allow them to control the globalized food market. The WTO is an institution totally inadequate to address issues relating to food and agriculture. Therefore, Via Campesina calls the WTO to withdraw from agriculture.*"

Food sovereignty promotes first of all the self-sufficiency of food producers, giving priority to food crops. Second, it aims to supply local, regional and national ones. This is a type of local agriculture. It does not exclude international trade, but does not prioritize it and puts limits on it: State permission to practice protectionism on excessively cheap imports, authorization of public support for farmers provided that the products are not intended for export, ensuring agricultural prices stability (fight against agricultural price volatility) by mastering international agreements. Food sovereignty is therefore designed to protect small farmers and local agriculture.

Obviously, organic farming is sometimes used to export, and does not always give priority to the local market. But these steps would rather be taken willingly by some farmers in order to get benefits by meeting the demand of a western segment of the population concerned about consuming products from organic farmers, not to come in controversy with the conventional model of organic farmers, which manifests itself both technically and economically. It is also very difficult to go against the tide of the neo-liberal model in a country ruled by this type of economy, particularly in developed countries: this is why organic farmers sometimes practice exporting, just to survive and return to make their business profitable again.

There are certain types of organizations, cooperatives or concepts based on solidarity, helping to set up an organic farming unit, or helping to improve its efficiency and simplify the work of farmers. These concepts and cooperatives are numerous: we will just cite two examples.

The concept of AMAP, existing in France, deserves to be presented. AMAP directs to establish a contract, followed by a meeting between a consumer and a producer, who agree on the diversity and quantity of food to be produced during a season, agronomic practices to be used (always organic farming), the price of baskets (fresh products harvested) and dates of distributions. The AMAP establishes a direct link between consumers and producers. The consumer supports local, organic and environmentally friendly agriculture, and gets quality products at affordable prices. The producer is assured financially because his products are bought in advance, and he works for consumers he directly knows. Therefore, AMAP leads to beneficial agriculture according to an environmental plan (organic products thus protecting soil, water and biodiversity and requiring less energy; not travelling thousands of miles to be consumed, and requiring much less packaging), but also socially, by helping local farmers and by establishing links between urban dwellers and countrymen. There is also a form of solidarity between consumers and producers, as if the harvest is bad due to weather conditions for example, the consumers share this risk with the producer.

One of the most famous organizations practicing organic farming is the Landless Workers' Movement (MST) in Brazil. Established in 1984 in a country that followed the conventional model from the 1970s, where nearly 50% of agricultural lands belong to 1.5% of the owners, the MST claims the right for landless farmers to access the idle land, and calls for a land reform in this regard. Since 1984, the MST permitted more than 250,000 families to obtain lands, while 100,000 other families still occupy the lands illegally, until their right to access will be recognized. On all these managed lands, the biological model and the concept of food sovereignty are applied.

Besides the political struggle and the success of the social model on which the MST is based (access to education by building schools in villages, participatory democracy, gender equality in these representative bodies, absence of violence and drugs in MST villages etc.), **their farming organisation referring to solidarity, contributes to the success of the movement. The MST is organized into multiple cooperatives by region, and by the following areas: agricultural production, marketing, technical assistance, and issuing credit. A production centre for organic seed also provides the seeds to farmers.** This proves that the organization based on solidarity and co-operatives, founded without any help from the authorities, allows the success and development of organic farming in Brazil. And while media actively criticize them and even called the MST terrorists, while successive governments have not implemented the demanded agrarian reform, the sampling of the Brazilian population shows that 85% of them support the land occupations, 94% consider the struggle of the MST for land reform as fair, 88% say that the government should confiscate and redistribute idle land to the landless.

According Ritimo, Documentation Centre and Information for Sustainable Development and International Solidarity, in Brazil, the generalization of organic farming as practiced by the MST, would allow for providing about 26 million new jobs in agriculture, while the generalization of conventional agriculture would lead to the disappearance of 12 million jobs! The example of Brazil shows very well the fact that organic farming represents a sector supplier of sustainable employers for the working classes, whereas the industrial farming leads to the disappearance of small farming communities and leads to massive rural exodus. The fact that the agrarian reform, promised for decades by politicians still has not been introduced, illustrates the influence of large owners and the agro-industry sector on political decision making, opposed to the general interest.

3. organic farming as a development model in Georgia

Conclusion from the study of the two previous models: which model is more suitable for Georgia in following the development of agriculture?

Georgia has about 50% of its working population in the agriculture sector. The average farm size is approximately 1 ha, and changes in farm sizes are small: there are only very few large farms.

Therefore, Georgia is comprised mostly of small farmers, composing almost half of its workforce. We have discussed the fact that organic farming requires a labour force and serves as a supplier of jobs in agriculture; it means the conservation of small peasantry and the interests of small farmers. In contrast, conventional agriculture, wherever it has been applied, has led to the development of large farms at the expense of small farmers and rural exodus precipitated by placing distressed small farmers.

Georgia has no interest in seeing its small farms disappear instead of large industrial farms, pushing thousands of farmers to the cities, to face unemployment, insecurity and poverty.

Therefore the interest of the state is to help the small farmers make their agricultural holding as effective as possible, with the application of the biological model.

As for the implementation of neoliberal policies advocated by the WTO and the WB in agriculture, which implies the absence of protectionism and taxes on cheap imported agricultural products, and the absences of subsidies for farmers in Georgia, the system is also unfavourable for small farmers and Georgian agriculture stakeholders in general, since they must face the volatility of agricultural prices and unfair competition from foreign producers, pushing them to reduce their selling price.
The neoliberal economic model of conventional agriculture is a threat to small farmers in Georgia, and does not coincide with the interests of the country.

The comparison can be continued from an environmental standpoint. **The Green Revolution-type technical model was applied during the Soviet era in Georgia, where monoculture, massive use of chemical fertilizers and pesticides have led to a catastrophic situation in terms of environment, since erosion now affects about 38% of farmland, and other lands are also affected by salinity and acidity.** The practice of conventional agriculture in Georgia has shown its negative effects on the environment, which now appear economically and socially, since the degradation of agricultural land is obviously bad for production. Moreover, according to scientists, climate change may exacerbate this future land degradation.

It is therefore clearly in the interest of Georgia to promote, support and subsidize the development of agriculture based on the biological model, environmental groups, the security and food sovereignty. Moreover, if Georgia wants to export, it is better for it to focus on organic products and traditional crops. In the field of traditional agriculture, it will face formidable competitors, with more

experience and resources. When it comes to organic farming, Georgia could compensate quality by emphasizing on the uniqueness and originality of its products. It is clearly in the interest of Georgia to promote, support and subsidize the development of agriculture by the biological model for its farmers, its economy and environment, the security and food sovereignty, and even rural tourism.

What model is applied in Georgia?

Georgia became independent after nearly 70 years of Soviet agricultural policy, planning and a collectivized system. The transition to a liberal model came with hardship, particularly during the troubled period of the early 1990s, and nowadays the country still faces the problems inherited from Soviet agriculture and precipitated by the transition from one model to another.

Privatization of farmland is performed in the aftermath of independence, from 1992. The state distributes in emergency between 1 and 1.5 hectares for families living in the countryside, to avoid famine. This explains why Georgian agriculture is mainly made up of small family farms, about 691,000 in total.

A total change of the agricultural model took place after the collapse of the USSR. The Soviet agriculture was planned, collectivized, exporting, and massively used chemical inputs. After the fall of the USSR, agriculture has reverted to a family farms model, firstly to meet the food needs of rural households threatened by famine (extremely rough times in terms of economy in the 1990s). Family farm in general do not use pesticides and chemical fertilizers, especially in high mountainous regions, or in very small amounts, because farmers cannot afford these products: **therefore, nowadays, Georgian agriculture is basically family farming, and more or less organic. However, the lack of certification for many products, and the use non-traditional seeds make it difficult to describe the current Georgian agriculture as organic.**

Nevertheless, this situation is far from satisfactory and does not meet the expectations and objectives corresponding to the biological model of agricultural development, the kind which we advocate for Georgia. Indeed, 75% of farms produce only to meet their food needs. Poverty in rural areas, the low share of agriculture in GDP, 8% in 2010, compared to 48% of the population active in agriculture, and the fact that 70% of the food consumed in Georgia is imported from foreign countries, explain the failure of the current agricultural model in Georgia. Moreover, the rural exodus is already underway, particularly among the younger generations. Let us study the factors behind the failures of this organic farming in Georgia.

What problems and what reasons hinder the development of agriculture in Georgia?

First of all we must recall **the erosion of nearly 40% of the agricultural land** which remains as a result of industrial agriculture practiced in the USSR. Without reactions and actions, this situation can only be exacerbated by future climate change. It requires a careful and appropriate rehabilitation (which can take up to 30 years) of these lands. Know-how is essential for rehabilitation, and demands a thorough knowledge of soil biology, which is usually not part of a farmer's skillset, who sometimes can continue to exploit these lands, making it less and less

profitable and more and more bruised. **Therefore, it is imperative that the state takes action regarding this problem, by appointing experts in soil biology to examine the soil conditions in Georgia and suggest possible solutions to farmers.** If the experts in Georgia fail to do so, it is possible to train people in places like LARMS (Laboratory of Analysis in Soil Microbiology) in France, or invite foreign experts.

Land fragmentation, resulting from the initial land privatization carried out in the early 1990s is also a major constraint to agricultural production in Georgia. Difficulties due to fragmentation are reinforced by a highly mountainous landscape of certain regions of the country and add up to the lack of resources and infrastructure of the peasants. In this case, the solution would be to encourage farmers to establish cooperatives, unions, to join forces to work together to decide on the choice of products to be grown, to invest jointly in equipment, and organize themselves for marketing purposes. It is very difficult for a farmer working alone to deal effectively both with agricultural labor, to stay informed of market demands and prices, marketing and sale of products: it becomes more difficult to find the time to read or learn about new agricultural techniques. The formation of cooperatives may allow the union of farmers to form a more effective organization based on the division of tasks and specialization of members according to their areas of expertise. However, currently, the tax system is not favorable of cooperatives, and it even takes away certain tax privileges and other benefits in these cases. **It is advisable to encourage the foundation of the cooperatives, which can both meet the technical problems posed by land fragmentation, and both allow farmers to organize themselves better to cope with all processes.**

The Lack of knowledge of effective organic farming techniques by the farmers, who for decades took the habit of applying monoculture and the conventional model during the Soviet era, is also a shortfall for Georgian agriculture. The loss of old techniques and lack of knowledge of the new know-how in the field of organic farming, is combined with the loss of traditional and local varieties of seeds. **Indeed, the farmers do not have the traditional seeds previously adapted to the different regions, climates, and used in organic farming.** The Soviet agriculture based on monoculture, sometimes used varieties introduced from outside the country, and generalized the use of seeds made to support the chemical input. This led to a decrease in the diversity of the cultivated varieties in Georgia, which were previously carefully selected for their adaptation according to climate and region, the legacy of accumulated experience transmitted from generation to generation through centuries of local agriculture. These traditional varieties, endangered, were kept in Soviet research institutes. But the collapse of the USSR led to their neglection and even disappearance of some of them. Therefore Georgian farmers applying organic farming mostly use the old Soviet seeds designed for industrial farming.

Regarding these previous problems, we must insist on the important efforts made by the NGO ELKANA: Biological Farming Association. Since its founding in 1994, it took charge of finding and multiplying the seeds of traditional varieties (wine, fruit, vegetables, wheat and other cereals) that had been kept in the Soviet scientific institutions. ELKANA experiments and studies their culture, their potential by region, and today provides these varieties to nearly 450 farmers, who grow them organically and get very good yields and high quality products. Open to any citizen of Georgia interested in the development of organic agriculture in the country, and the protection of the environment, ELKANA tries to spread its available knowledge and organic know-how to help the farmers increase their production. In this regard, ELKANA says: *"Most of the Georgian peasants need support for appropriate management of their farm, they get to harvest the highest quality on the small area of land is theirs, and that in applying improved agricultural tools, and being able to fight against drought, floods, locusts, siskins, and thousands more enemies than an educated person may avoid more or less".* For the state, follow the instructions to ELKANA can only be beneficial for its farmers and the environment, since this NGO favors an organic and sustainable approach

theoretically and practically: "*We aim to improve of socio-economic conditions of the population of Georgia and environmental protection by encouraging the development of sustainable organic agriculture and increasing the autonomy of the rural population*" ELKANA also conducts studies and publishes annual reports on the situation of agriculture in Georgia and is trying to educate the public with nearly 20 years of work, study and field experience. This NGO is definitely a player to consider and listen closely to.

We also have to present the organization AFRD (Association for Farmers Rights Defense), founded in 1999, which deals with representing the interests of small farmers of Georgia, and promoting the development of organic agriculture. Their work is diverse and involves: organization of training courses and educational seminars for the diffusion of knowledge and know-how on organic farming, conservation of biodiversity, climate change etc., assistance to farmers for effective agricultural business activity, legal help and information about market demands; influence and lobbying on policy makers such as Parliament or the Ministry of Agriculture. As for influencing policy makers, the AFRD has campaigned for nearly 10 years for the establishment of a tax law facilitating the set up of cooperatives and a union for farmers to be more efficient in production as in marketing.

The Georgian government should provide maximum support to these efforts and work together with ELKANA and AFRD. **It is imperative to encourage the creation of farmers' cooperatives, and to develop several study centres in each region for dissemination of traditional Georgian varieties, training in agricultural techniques to farmers, not only for preservation of traditional food and biodiversity, but especially for very satisfactory (both qualitatively and quantitatively) yields for small local farmers.**

To these technical and environmental problems, we must add the problems of the lack of infrastructure (roads, irrigation systems etc..), and problems concerning the market. Small farmers lack information and knowledge about the demands of domestic and foreign markets. They were the main victims of the Russian embargo in 2006 because they had great difficulty finding other markets for export, unlike large companies. **They also seriously lack financial means to invest in new materials, or even to expand farmlands in order to improve their production.** All these problematic aspects and possible solutions (grant credits as well as insurance for farmers) are very well explain and detailed in the article "*Agricultural Insurance and Credit System General Context and the development of Agriculture in Georgia*", written by members of the association Elkana.

Finally, it should be noted that small farmers lack unity and have no support from organizations as well as their representatives and government authorities. Therefore they haven't got enough influence on the decision makers. There even is a certain **passive approach among many small farmers**, the lack of initiative, a legacy of the prevailing mentality in the Soviet era. Many farmers do not exploit their land fully, do not try to organize themselves in order improve their situation, it is believed that changes can only come from central government

Which model does the state exercise in the recent years?

In the draft of the document "Strategy for development of agriculture of Georgia 2012-2020", the importance of the development of organic farming is not mentioned, and little attention is paid to problems of small farmers, who represent 98% of Georgian farming. **The current government, according to its acts, is moving more towards the conventional model, both technically and economically.**

Economically, the liberalization of the country also took place at the level of agriculture, since free trade was introduced and imported agricultural goods were allowed. The changes placed strong

competition on small Georgian farmers on the local markets, and forced them to lower their prices to compete with the imports from countries with major industrial and agricultural production such as Turkey, whose product quality is generally quite poor.

According to the government strategy, agricultural development in Georgia is planned through the development of large-scale industrial agriculture, based on private investment (including FDI) through the privatization of land, thus increasing the risk of land grabbing in the country.

The initial 5-year plan for agricultural development, for the 2006-2010 period was incorporated and gave priority to: improving infrastructure in rural areas, promotion of Georgian products (especially wine) and finding new markets for export, as well as privatization of agricultural land belonging to the state.

In fact, the third priority cited has been the main activity of the state since the Rose Revolution, with the Act of Privatization of Agricultural Lands Belonging to the State. Between 2006 and 2010, the State gave special awards to local farmers who wanted and could afford to expand their land. Since 2011, prices are identical for all investors. It should be noted that the privatization of land was ruled within the framework of the 5 years European Neighbourhood Policy EU-Georgia. This law is in favour of conventional agriculture, especially with the objective of attracting private investors, who would be able to buy huge pieces of lands, since they can afford the price. The purchase of land appears much more difficult for a Georgian peasant in terms of financial resources. The first priority for small Georgian farmers is to improve the efficiency of their production on the land they currently own.

It should also be noted that **in 2010, in a campaign supposed to support food security, the state distributed hybrid maize seed of the company Pioneer to the farmers, with the condition that they would pay for these seeds after harvest. The results were very mixed**, especially in the southwest of the country, because the cultivation of this variety had never been experienced in Georgia, where the climate and soil are very diverse across regions, and moreover farmers were poorly informed about the culture conditions of the hybrid maize, which greatly differ from those of local varieties.

However we must acknowledge, the efforts and investment of the government into the construction of infrastructure in rural Georgia, including road construction, and progress on access to water and electricity in villages, even if the work is not finished in this field.

Some regional centres have also been created in order to inform farmers about the demands of markets, and to provide new equipment, machinery and products. If the creation of the centre is actually a positive step, it is very unfortunate that these centres are not used to experiment with traditional Georgian varieties and disseminate them, to spread the knowledge and know-how concerning organic farming: on the contrary, these regional centres are used to highlight and provide foreign or hybrid varieties manufactured by large companies for industrial agriculture.

As for priorities and actions, the measures taken for **rehabilitation of land affected by erosion, salinization and acidification** are insufficient. As explained above, these are all areas which require urgent actions.

Similarly, no action, tax law, encouraging the creation of unions, agricultural cooperatives has been introduced against land fragmentation.

However, the fact that about 37% of farmland is unused, pushes the government to increase property tax or encourage farmers to grow their entire plot, or rent/sell it partially. It is not certain that this is the best solution to encourage farmers to benefit from all of their land: on the contrary, it can lead to greater hardship and be another reason for rural exodus. A better understanding of market demands, more expertise and financial resources would be better incentives to exploit the land. Moreover, perhaps there is a correlation between the non-operation of agricultural land and land erosion, because these two phenomena have similar rates (approximately 40%).

In 2007, the first local organic certification body, Caucascert, was founded, and has been internationally accredited since 2008. The number of farmland and certified organic products has rapidly been increasing in Georgia, however it still remains low. These accredited products are sold and exported without difficulty, which is evidence that proves that there is a real interest among farmers, merchants and consumers for organic products in this country.

There is however no prohibition on misleading marking, such as "green", "organic" placed on products not certified yet, in order to attract customers. This represents a serious certification failure and interferes with the development of organic production.

In summary, the state and the government have given more importance to agriculture in the recent years and have apportioned a higher budget share to it than in the 2000s. Many efforts have been made, particularly in the field of infrastructure. However, sadly these efforts lead towards the development of industrial agriculture instead of the organic one, and no measures have been taken yet concerning very pressing problems such as erosion and land fragmentation. It is also unfortunate that the State, which is very active in the field of tourism, has currently not developed a plan for rural tourism, which still has considerable potential. It has been developing slowly through private initiatives.

Conclusion

The worldwide dissemination of the Green Revolution agricultural model from the early 1970s, combined with globalization and openness to neo-liberal systems of many developing countries has brought great hope and craze: we saw an easy way to feed the entire planet and to enable farmers worldwide to live a prosperous life.

But it is clear that these objectives have failed. Neo-liberalism applied to agriculture must be questioned because hunger and malnutrition in the world are still highly present, while food production is sufficient to feed the entire planet. The use of products from petrochemical industries must also be questioned for their negative impacts on the environment (very strong and very long land erosion due to monoculture and intensive use of pesticides and chemical fertilizers, loss of biodiversity and traditions due to widespread cultivation of hybrid varieties at the expense of local varieties, extinction of animal species around the fields ...), on health of consumers and especially farmers (exposed to chemical input), on food product quality. More importantly, the social and societal impact of this agricultural model is alarming: if the multinational agribusiness companies and the supermarkets are gaining considerable profits, the same can not be said for the farmers (who constitute almost half of the world population), especially the smallest of them which constitute the vast majority of them farmers in the world. In developed countries, the peasantry has almost disappeared and farmers are heavily subsidized by the government to survive and make their business profitable. In developing countries, it is encouraged by the WB, the IMF or the WTO not to subsidize farmers and open markets, therefore small farmers face harsh global competition and become dependant on products of agribusiness (seed, pesticides, fertilizers) which they obtain by borrowing from banks: they are often unable to repay these loans, or do so with great difficulty. This leads to rural exodus, very disturbing for the future of the world: What is the expected evolution of our planet with a population concentrated around cities and rural areas almost empty?

Critics of the industrial agricultural model are accompanied with the slow emergence on the international scene of the biological model in 2000s, now recognized by FAO in particular, as able to

feed the entire population while preserving the environment, biodiversity and traditions. At this technical model, we can add the economic and social concept of food sovereignty: the production is prioritized first for local markets, then regional and then national. Governments, at the opposed to neo-liberalism, should tax imports and subsidize their farmers. Organic farming does not require the annual purchasing of seeds and chemical inputs, so there would be no dependence on agribusiness firms and less investment for the farmers. Moreover, food sovereignty protects small farmers from international competition and price volatility. In contrast, effective organic farming requires a good knowledge of the land and agro-ecological systems, agricultural techniques and know-how, and a knowledgeable workforce: therefore, the organic farming model is in line with the preservation of small peasantry, and slows down rural exodus: it can maintain agriculture as a sector providing the most jobs in the world, while being the most environmentally friendly sector, because requiring almost no fossil fuels and creating only low polluting, or even no polluting products. Agricultural policy must be one of the main pillars of sustainable development.

Nevertheless, misconceptions about organic farming are still very common within population and policy makers (insufficient production thus unable to respond to global food demands, too expensive, etc). Moreover, its implementation requires strong support from international Institutions and national political powers, which unfortunately, for various reasons including the influence and lobbying of multinational agribusiness companies, grant it only a marginal importance.

Until the early 1990s' Georgia as part of the USSR, has suffered from the impacts of conventional agriculture, set in place by the centrally planned economic policy of Moscow, which was economically and ideologically opposed to neoliberalism, but used the same practices as agriculture was geared to productivity, monoculture, and export at the expense of the food needs of local people, and did not pay importance to the damage caused to the environment (soil erosion), to loss of biodiversity and traditions.

Georgian agricultural transition from the USSR model to a traditional model with a large number of shortfalls and problems explains its current disappointing state. Its agriculture employs about half of the workforce of the country and is composed mostly of small family farms; It is in the interests of Georgia to establish a protection policy and give assistance to these small farmers. This policy involves supporting the development of enlightened and effective organic farming, potentially by subsidizing its farmers, by taxing imported products to better support local farmers. This approach will improve its agricultural production and thus the food security; it will allow its rural population to prosper, break the ongoing rural exodus, leave the cities to develop peacefully and achieve a more balanced, gentler and kinder society; finally it will ensure the protection of its environment, its biodiversity and its traditions, and also encourage the development of rural tourism.

Being exposed to globalization for only a short period of time, with a peasant population still high and slightly penetrated by agricultural industry, Georgia is currently at a critical turning point: following the standard model of agriculture, which has demonstrated its long-term failures and the shortfalls of the society it created, there is need for sustainable development and raising awareness about the damages caused by humans on the planet, as well as the benefits of developing organic agriculture, which guarantees the preservation of small farming communities, a balance between urban and rural areas and therefore a peaceful society. To make these choices is the responsibility of the policy makers of course, but also of farmers, NGOs, and even all citizens of Georgia, since it requires a high level of awareness.

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