

Dynamism, Framing and Standards:

Challenges and Opportunities for Land Protection in CEE

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Abstract

Land Protection has to react to the dynamic challenges for the economics of farming in a global competition driven by consumer demand. Smart farming has to include the total supply chain by a vertical integration of standards from farm to fork. But today's economics have additionally to be enriched by sustainability goals to secure resources over a long-term and to counterpart the global climate change. Part of the traditional profession of farmers should be transformed to landscape rangers not to be measured any more in economic terms of agricultural output, but in terms of preservation of landscape to secure the present climate in Europe and its traditional culture. Last but not least ethics should underline the high value of food and food- security and optimize a fair sharing of the production-value along the chain from farm to fork ; also reflecting by animal care the conditions of growing, transporting and slaughtering animals.

Key-Words

Economics of Farming, Climate Change, Sustainability Goals, Smart Farming, Total Supply Chain, Vertical Integration of Standards.

Introduction

Taken the long-based tradition in infra-structure Central and Eastern Europe had been within the last centuries strong performers in AgriBusiness for wood, crops and cattle. The soil and climate as well as the availability of land and last but not least of cheap labour had been key-factors within the competition on European level.

Within the change from an agricultural society towards industry-orientation and even towards a post-industrial era the topic of Land Protection is a well-selected field for academic discussion and input for master-plans within civil society. Will the growing cities of the 21st century and shopping -/ distribution-centers in rural areas erode nature ? Will the sustainability of agriculture be destroyed by new living habits and global sourcing of consumer products ? What effects will have this especially for countries of CEE?

Taken the above scope of Economics - also in respect to the 50 years of socialism in CEE after World War II – an additional factor has to be seen by the climate change watched within the last decade.

Ecology is not only an aspect of sustainability but also part of consumers' expectations like the growing market-share of organics shows in the supermarkets. Last but not least also Ethics is gaining power in the mind of the people : it is seen in relation of Fair Trade among the human beings along the production/distribution chain but also in respect to the growing, transport and slaughtering of animals. This essay will deal therefore in the beginning with the sub-chapters:

- New Economic Challenges for Agriculture

- The Holistic Trias of Economics, Ecology and Ethics

Due to the limits of a Conference Paper the points of discussion have been selected and should be understood as input either for the Conference as a kick-off to be enlarged or challenged by other contributors or taken later as material for further research.

Nevertheless this essay does not want only to remain in the academic description of changes but in the sense of applied sciences and cross-fertilization it is listing within a third sub-chapter selected solutions to optimize the Total Supply Chain :

- Selected Standards within the Total Supply Chain

1. New Economic Challenges for Agriculture

Since the theory of Thomas Malthus about the growth of the population and the potential food-supply the economics of agribusiness (also in respect to food security) have been interpreted as a sector analysis of single countries. Within today's situation however there are impacts to be considered like belonging to international cooperations like in former times to COMECON or now to the EU , worldwide volatilities of changing amounts of supply or values of currencies, or climate change leading to losses of production on the one hand side and potential opportunities on the other hand to grow certain fruits never thought of in the past.

1.1 Socialism versus Market Economy

Agricultural production in Socialism was planned by the national administration and operated for example in East Germany via 15 regional areas in a top-down approach towards the local production units. In general demand was bigger than supply – and imported products like for example bananas exceptions. The author of this essay remembers also the case of barter-trade where the export of 1x1 bananas from the Bremen based company (West Germany) Scipio to Hungary had been enabled by an order of the Bremen City Administration for Hungarian buses.

This situation changed then dramatically by the introduction of the market-economy.

The national agricultural production was no longer a top-down process – but a bottom-up process starting at the decision level of consumers at the point of sales. Insofar retail-technologies and data-mining became part of AgriBusiness also in the former COMECON countries.

Another aspect of market-economy is that the demanded output is no longer an algorithm of the availability of land, but that due to global competition the demand for national production has also to be seen in respect of international quality and prices.

Especially due to the empowerment of retail-/wholesale companies the demand-side is not only focused on „the netto-value of a product“ concerning quality and price but also

on factors like proven good agricultural practice , tracing/tracking, packaging and terms of transport and delivery dates for example.

1.2 RFID, Smartphones and QR-Codes

Smart Agriculture will be the economic key for modern AgriBusiness Management : based on RFID and Clouds fertilization of the fields will be determined by laptop or even smartphones – riping processes will artificially slowed or speeded up – fields will have to be connected with cooling/ripping depots, packaging and transport-systems . QR-Codes and the Internet of Things will be part of the marketing from farm to fork.

Volume of standardized products fitting into this scheme of mass marketing will be of bigger importance than the absolute number of squaremeters . It will become a more holistic challenge – also in cross-fertilization of human brain! Learning has to be on all levels along the Total Supply Chain – and Standards have to be agreed on across all steps of the product-flow.

1.3 Risk factors

Economics of AgriBusiness suffer more by risks than other sectors. A wholesaler or retailer very quickly can change the source of his supply – a farmer has to think in several life-cycles of crop or animals as the increase of his volume is not infinitely on short term;

once having invested it is difficult (or only by heavy losses) to divest and to shift the capital to other markets.

Globalization offers big chances to increase markets – but unfortunately agriculture quite often is also target of political pressure : examples in the recent past are trade embargoes with Russia or threats with the USA – and uncertainties about the BREXIT.

2. The Holistic Trias of Economics, Ecology and Ethics

The author of this essay promotes already for several years the idea of „a Global House of Harmony based on a balance between Economics, Ecology and Ethics“.

The main point is to give each of those big „E“ weight in an optimization model – but to fit it to national, regional or local abilities.

Such a new Frame of Thinking is also reflected by the defined 17 Sustainability Goals of the United Nations for the year 2030. It is an interdisciplinary benchmarking which can be applied as a set of mosaic stones individually optimized at local, national or supra-national levels. The 17 goals are: no poverty; zero hunger; good health/well being; quality education; gender equality; clean water/sanitation; clean energy; decent work/economic growth; infrastructure/innovation; reduced inequalities; sustainable cities/communities; responsible production/consumption; climate action; life below water; life on land; justice/strong institutions ; partner-

ships to fulfill the sustainability goals.

Taken the topic „ Central European Initiative on Agricultural Land Protection“ this could be interpreted as a partnership to fulfill the UN-sustainability goals: dealing with infrastructure/innovation, life on land, responsible production/consumption, sustainable communities, decent work/economic growth, good health/well being.

2.1 Sustainability in a closer sense

While the broader way of sustainability defined by the UN could be covered for the Slovak Republic or by a comparison of a panel of CEE-countries by a potential PhD-candidate within this Conference paper only selected examples of sustainability in a closer sense are listed.

2.1.1 Food Losses

Within a Conference in Nairobi/Kenya in March 2017 about food losses and food waste local reports showed that about 60 percent of the mango harvest was lost due to a lack of right transportation and storage – and fluctuation in the demand. For investment for processing the mango for juices or canning alternatively drying there was not enough capital or know-how available. Similar studies were presented about tomatoes.

2.1.2 Water Waste/Spoiling

The Ecological Foot Print of cattle shows us that beef is an enemy to water resources and climate if pushed to the maximum of production and consumption. In Spain the greenhouses for tomatoes caused water problems for whole areas. Connecting this fact with the spoiled over-production in Africa the question makes sense why to subsidize tomato greenhouses in Spain : and why not to channel the capital to Africa. And one example from Germany: where North-Rhine Westfalia is Europe's biggest pork-industry. The water in several districts is spoilt already from excrements of the German pork industry – but still worsened by the import of excrements from the bordering Netherlands which have higher environmental laws concerning the water quality in context with farming.

2.1.3 Mono-culture versus Bio-diversity

Mass-demand and concentration within farming (changing sometimes also into „industries“) promote mono-culture compared with farming in Western Europe in the 50/60ies. The size of the farm /number of animals in selected categories pushed farms in the economies of scale / concentration on products/animals. Bio-diversity was neglected or lost. The lack of bees now becomes so evident that in Bavaria/Germany within six weeks 1.8 million people signed to put

pressure on the regional government to improve environmental laws to shelter bees and other insects.

Also (well-intended) initiatives like changing cars from traditional fuel towards bio-fuel pushed farmers into mono-culture as it was subsidized heavily in the beginning and it turned out to be much more profitable to farm for fuel instead of food.

2.2 Ethics

As well as in the case of „sustainability“ also concerning „ethics“ the main-stream is defined within the UN-Goals : reducing inequalities , no pverty , zeroHunger, decent work/economic growth, quality education. But also for this section three selected examples will demonstrate the relevance of Ethics within a concept of agricultural land protection.

2.2.1 Food Security : a split of rich and poor

Already today migration shows that millions of people lack of the right amount of food or the necessary proteins – while other parts of the population of the globe waste food upto 30 percent or more . If land for growing food is decreasing due to infrastructure or a change of the climate prices of food will increase which will hit those who have already now problems with

living costs. Those observations fit as well the national as also the international levels.

In Germany in the 19th century poor people in industrial areas started gardening („Schrebergärten“), in Russia the private owned „datcha“ provides some basic stuff – and nowadays „urban gardening“ is topic at a lot of conferences.

Interesting in this context might be also the concept of Fair Trade : consumers spend an additional fee on top of the original price to be passed on to the producers in Africa as a kind of developing aid. Similarly a milk-product company in Germany raises additional money to support small farms.

Last but not least Food Banks have to be mentioned which as volunteers collect oversupply in supermarkets and distribute it to underprivileged groups of the society. Food Banks can be watched not only all over Europe but also nowadays all over the developed world.

2.2.2 Sustainable Cities and Communities

Due to different living standards in cities and in rural communities there is worldwide the mega-trend towards cities. Less and less people want to live in the

country-side. In Germany in the big cities there is a lack of space for living in flats or own houses – while in the country-side in villages or small towns there is a lack of people.

There is a big scope to create programs for people to make holidays in the country-side, to build weekend-homes or even to return permanently to the country-side. New technologies which enable home-offices might be such strategic tools to make living in the country-side more sexy.

2.2.3 Landscape Rangers

To a certain degree farming could be organized not as a „profit-center“ but as a „landscape protection“. Equivalent to masterplans for cities also rural areas could be protected to serve as sustainable counter-parts for recreation or „climate-channels“ for nature and human beings. Fauna and Flora are the natural partners to deescalate the danger of climate change.

Especially the Climate Change should teach human beings how important woods are to cool down the summer-heat at night. Farms and farm animals can be part of recreation concepts. The Value of Landscape has to be re-discovered. It is an ethical task to improve the image of farming.

Due to the macro-economic development of the stages agriculture – industry - trade – services the profession of the farmers declined in image values : the farmers status should be improved – his task for the local societies more honored. Perhaps the name and content of the profession of some part of the farmers could be changed to „Landscape Rangers“ : being potentially to a certain degree some kind of UN-cultural heritage !

3.0 Selected Standards within the Total Supply Chain

Taken the fact that farming is part of the Total Supply Chain Management and that we live in a century of mass production/mass consumption one has to understand that STANDARDS are the drivers of the economics of TSCM and that standards help to optimize efficiency and are ex definitione by this sustainable – and last but not least it is ethical to develop those standards jointly around the globe and to teach all participants how to use them for their own and the joint sake.

Like in part 1 and 2 of this essay selected examples are also listed in part 3 – starting with Agriculture and ending with bar-coding/scanners at the super-markets.

3.1 Globalgap

One of the important internationally recognized standard-providers in the Agro-Sector is Globalgap. Its competences for the Total Supply Chain is reflected in its split of members in 12 percent coming from retail, 46 percent from the supply side and 42 percent associated member.

3.1.1 History

Today's Globalgap was founded in 1997 as a Proactive Food Safety initiative responding to a decade of food-scandals: not in solving concrete crises after their appearance – but in looking in advance to risk factors within the Total Supply Chain from farm to fork. In the 80ies in Germany the public became increasingly aware of insufficient food controls and sometimes even criminal acts. In 1994 in the UK the Mad Cow Disease (BSE) culminated in the threat that a possible epidemic might cause 10.000 people's death. British retailers established a work-group to analyse their buying-sources of the agro-sector to make sure that on those farms being suppliers for retail no dangerous cross-overs of diseases might happen. The first informal inter-national get-together took place in 1996 in Almeria/Spain to visit the sprawling plastic greenhouses. The workshop was in search of „ good agricultural practice (GAP)" for fruit and vegetables. German retailers and staff of the EHI Retail Institute joined those meetings. In the UK the retailer SAFEWAY hosted the group. Quickly it became clear, that on the one hand side a benchmark was needed; secondly that the benchmark had to be shared

by more than one retailer/supplier because farmers have to be able to supply different retailers/markets; thirdly that the costs of control was a too high burden for the partners to be taken individually. To be efficient as a system the workshop had to be institutionalized and the control costs have to be shared. It was the EHI-CEO of that time (Prof.Dr.B.Hallier) who offered free space for a coordinating office in Cologne and Dr.K.Moeller as a coordinator. At this stage retailers like Ahold/Netherlands, Migros/Switzerland and Tesco/UK joined the EHI to help to finance the kick-off of the EurepGap (European Retail Produce GAP). To demonstrate the international character EHI appointed Nigel Garbutt from the UK to become the first Chairman of EurepGap and the group used English as the working language of the workshop.

In 1999 more than 15 retailers of EurepGap did go on stage in a first Global Conference being visited by 300 fruit and vegetable suppliers to whom the idea of third-party certification was sold. As the first global interprofessional organization of its kind in the fresh produce sector, EurepGap established a comprehensive, simple and clear structure covering all relevant market participants and stakeholders. The EurepGap Council and Committees started with

- Standard setting
- Technical issues
- Scientific Issues

EurepGap was registered as a Trademark in the function of a Certification Body. After initial Audits in Italy and Spain the first Certificates were handed over at the Bologna-

Conference in 2001. Once it became clear that the Gap-vision would be able to survive through its own Membership and control fees - the working group was transformed into an own legal entity by the name of FoodPLUS - with EurepGap as its first Trademark. BUT it was clear from the beginning that it was not to be used as a Brand in the eyes of the consumers: it is a trademark of food security - a benchmark which keeps the opportunities open for additions for real brands.

The pyramid of food security is:

- Legal standards as the lowest category
- EurepGap/GlobalGap as a benchmark
- Individual Branding as an add on

The success-story of EurepGap culminated in 2007 when at the Bangkok Conference the name of the organization was shifted from the European perspective to a Global focus and acceptance; from now on it works under the trademark GlobalGap. More than 155.000 producers followed 37 Globalgap standards and programs operating in 119 countries. Globalgap is backed up by 48 National Technical Working Groups, 36 accreditation bodies, 145 certification bodies, more than 1.000 inspectors and more than 700 auditors.

3.1.2 Certification

Following the announcement in Paris in 1999 within the next two years two accreditation bodies (UKAS and RvA) as well as two certification bodies (SGS AgroControl and CMI Checkmate International/NSF) shaped the first full operational EurepGap concept and controlled the pilot system. It has to be kept in mind that Eurep-Gap/GlobalGap is applied sciences and that local circumstances and experiences do show discrepancies between theory and practical implementations. Further on the whole system is in permanent adaption/improvement due to the demands of the markets. Those changes could be segmented into three Vectors.

- Vector 1 is the enlargements in terms of product-categories. It all started in 1997 with Citrus fruits - followed in 2003 by Flowers & Ornamentals, and Aqua-culture in 2004. Livestock was added in 2005 and Compound Feed Manufacturing (CFM) in 2009. But also the development of Risk Assessment for Social Practices (GRASP) in 2004 and the Integrity Program in 2008 could be accounted into this Vector.

- Vector 2 is standing for the globalization process in which regional differences could be balanced by modifications into ChinaGap, ChileGap etc. – showing in protocols the difference measured by the benchmark-system! In this Vector special highlights had been the China National Certification in 2004 and the North America Chapter in 2010.

- The third Vector is the Permanent Evolution. The local/national but also international experience is considered by EurepGap/GlobalGap by a permanent development of the benchmarks: the launch of the Zero-Version was followed by improvements by Version 1, Version 2 etc. Part of this vector are also the licensed consultants to facilitate the preparation of farms for certification (FarmAssurers) in 2011, the GlobalGap Academy in 2012, as well as the Abu Dhabi Declaration for food security with the SAI Platform in 2014, the first Consumer Communication Channel in 2016 and the Future by Digitalization Discussion in 2017.

Certification bodies are selected based on:

- Strict independence
- Competence and structure that meet demands from accreditation bodies
- Auditor and Inspector Minimum Qualification
- Participation in Annual compulsory Globalgap training
- Signing an agreement with Globalgap reflecting the criteria and General Regulation.

3.2 Tracing/Tracking

Tracing/Tracking of animals started with cows; it became only relevant in Germany during and after the BSE/Mad Cow Disease in 1994/96. As an act of Civil Society the Workshop Meat of the EHI Retail Institute created together with the Central Marketing Association of the Agricultural Sector (CMA) the standard provider Orgainvent. In 1997 the EU Agriculture Council adapted the EHI/Orgainvent proposals and initiated the EU Regulations 820/97 and

later the EU Regulation 1760/2000 to standardize tracing/tracking for cows and beef within the EU as well as for suppliers from outside of the EU.

3.3. HACCP

HACCP is standing for Hazard Analysis and Critical Control Points; its principles are required to be put in place, implemented and maintained permanently by food business operators according to the EU Regulation No. 852/2004 of the European Parliament and of the Council on the hygiene of foodstuffs. There are seven main steps of HACCP: Hazard analysis – Identification of critical control points – Critical limits at critical control points – Monitoring procedures at critical control points – Corrective actions – Verification procedures – Documentation and record keeping.

3.4 IFS

The IFS (International Featured Standard) was created in 2003 by the German Trade Association HDE and its French counterparts FCD; later Italian Trade Associations joined. Today IFS is acting worldwide. The basic idea of IFS is the fact that on the one hand side the European Law and National Laws require from food companies or food outlets to implement all relevant actions to secure food safety and on the other hand also individual suppliers/retailers develop marketing profiles with „add-ons“ to the legal requirements to gain higher margins. Those companies then need a control/audit for their claims. IFS's ambition is to harmonize those individual demands to one level of control to get more efficiency via an

unified standard. The IFS-standard is benchmarking the individual steps and partners of the Total Supply Chain by an evaluation system which has four main categories:

- A: full compliance with the requirements (20 points)
- B: almost full compliance – but small deviations (15 points)
- C: only a small part of the requirements are implemented (5 points)
- D: the requirements are not implemented

All scorings are reported and explained in an IFS Audit Report. Based on the first evaluation all enterprises have the chance to secure and improve their market position by an action plan of continuous optimization of their products and services.

3.5 ISO

The International Standardization Organization (ISO) was founded in 1947 and is headquartered in Geneva/Switzerland. More than 150 countries are member bodies, corresponding members or subscriber members. ISO standardization needs the following seven procedures: preliminary work item – new work item proposal – working draft – committee draft – draft international standard – final draft international standard – publication international standard. Those standards are descriptions - they are not a guarantee for a quality itself.

Since the 80ies Prof. B. Hallier pushed within the food business the ISO Packaging norms as a rationalization tool: based on the module 400 x 600 mm sales-cartons and palettes by 1200 x 1000, 1200 x 800 and 600 x 800 can flow most easily from production via transportation units and depots finally into the shelves of retail. Not only efficiency was increased by this system but also damage in the transportation flow decreased: saving food waste too.

3.6 Circular Economy

In December 2015 the European Commission published a Circular Economy Package to encourage more sustainability in the UN reflected by the UN Sustainability Development Goals for 2030. In 2018 the Association EuroCommerce discussed the status quo in Brussels and the plans to revise various waste directions and to minimize waste and losses. The motto was typical for applied sciences: "Scaling up market solutions in Retail & Wholesale".

That EuroCommerce meeting of 250 experts was attended also by high level administration officials like Dr. J.Potocnik/UN International Resource Panel and former EU-Commissioner, D.Callejo Crespo/ General Director DG Environment, B.Poisson/ French Ministry for Ecology, MEPs like A.J.Valean or K. van Brempt. Retail was represented among others by Carrefour, IKEA, METRO, BGA, FCD, Virke and Prof.Dr.B.Hallier, EuroCommerce President Regis Degelcke and Christian Verschuere Managing Director EuroCommerce.

Such a mix of experts guarantee the penetration of the ideas not only as theoretical points but also as a kick for trial and error applications in the real world of business.

3.7 Barcoding

Mass distribution via self-service like since the 70ies of the last century in the USA and Western Europe would have been not possible without product-identification by barcodes and scanning in the cash-zones of supermarkets. Since 2005 the national bar-code institutions are harmonized towards a Global Standard (GS 1) worldwide. Barcodes and in future QR-codes are driving forces for modern distribution from farm to fork.

3.7.1 History of Product Identification

Mass-distribution started in Western Europe in the middle of the 50ies and was defined by pre-packed products, branded goods, advertising - all under the leadership of the manufacturers - while retail contributed by self-service/ super-markets, increasing product ranges and bigger stores. In the end of the 60ies the control of the items became a problem : product identification via bar-codes was tested by pioneers like Doderer/Augsburg/Germany, Migros/Switzerland and Ahold/ Netherlands. It was the proposal of Albert Heijn (Ahold) in the beginning of the 70ies to merge the national test-systems to start on a joint European level with a standardized European Article Numbering System (EAN). In Germany the retail-institute's workshop (at that time RGH/now EHI) was out-sourced and became in 1974 a national 50/50 joint venture with the Association of the Branded Goods Manufacturers. The task was reflected in the name of the company: „Centrale für Coorganisation GmbH (CCG)". Other countries in Europe also created EAN-organizations - each country with its own national flavour – but connected via a kind of franchise

coordinated by a headquarter in Brussels/Belgium. Similar developments happened in the United States, which created the UniformCode Council (UCC) with the Universal Product Code (UPC). Similar efforts started in Japan. While the first tests mainly started at the shelves in the supermarkets - the real roll-out was the connection with scanners at the cash-zone. Nevertheless it took about 25 years from the pilot installations up to a national full-scale penetration. But it was beside the system of self-service the second root of organized modern retail – seen as a benchmark also for the developing countries and uptill the fall of the wall between East and West. Within that evolution process the key-words mass data collection, data mining, consumer-basket-analysis, Efficient Consumer Response (ECR) branded the state of the art of retail distribution. In 2005 due to the ongoing globalization the international suppliers and retailers supported the harmonization of the American/European and other national barcode institutions towards a Global Standard (GS 1) worldwide - and insofar also CCG Germany was renamed to GS 1 Germany - like the Austrians are now GS 1 Austria.

In 2018 GS 1 had 111 member organizations comprizing 1.300 000 member companies and can offer services within 150 countries. The GS 1 standards create a common foundation for business among supply networks by uniquely identifying, accurately capturing and automatically sharing vital information about products,locations, assets and more.

3.7.2 The Bar-Code

The bar-code having started in Europe in 1974 as EAN due to the change to GS 1 now since 2009 is renamed to Global Trade Item Number (GTIN). But the bar-code system is still the same and consists out of 8 or alternatively of 13 sections:

- in the example of the GTIN 13 the first three bars identify the country of the producer like 400 - 440 for Germany
- the next bars are the name of the producer
- next the article is identified
- and finally a mathematical cross-check secures the code.

The bar-codes are handed out by the national GS 1 organizations - which all operate as non-profit institutions.

Historically the first innovation of barcodes is the chip-technology. The advantages are to be able to store many more data into a chip than onto a barcode - and the possibility to read the data from a bigger distance. The second innovation is the QR-code by which consumers can intertwine their smartphone Apps to be able to read additional information beyond the normal barcode or to order electronically for example products been seen at shelves or at posters.

3.7.3 IoT for Agriculture

For the Agro-Sector the identification with GS 1 standards play an important role together with the Internet of Things (IoT). An EPCIS - (Electronic Product Consumer Information System) for sharing product information across supply chains helps small farming entrepreneurs as well as big agro-companies to become state of the art today and being already connected with future perspectives jointly developed by the big standard providers and their global partners. The IoT is transformational to systems, devices, technologies and applications across the involved industry and around the world. The IoT is driven by the following facts:

- an expectation by businesses and consumers that all things will be „connected“,
- increasing technological capabilities combined with lower cost of micro controller and communications technologies,
- an explosion of cloud-based data gathering, processing and sharing platforms.

Within that context GS 1 is playing the role of the Global Language between the involved partners; GS 1 connects the physical and digital worlds. The identification of objects, assets, locations, etc. and automatic data capture are powered by GS 1 bar-codes and EPC/RFID.

Those standards for data-sharing enable interoperable, trusted and transparent data that are foundational to unleashing IoT capabilities. The cooperation with GS 1 is an enabler for the agro-entrepreneurs:

- the Global Language of GS 1 provides the agro-sector with an access beyond the own sector

- local/national farmers get globally recognized numbers in an international tradeworld where tracing/tracking of products is essential for listing by global players of wholesale/retail
- beside those basics also other informations of potential relevance for processors,retailers and consumers like rearing, antibiotics, special treatment, animal-welfare and other aspects can be added for the Total Supply Chain from farm to fork.
- Last but not least the cooperation does also decrease costs for otherwise own developments who alternatively would have to deal with a chaos of individual solutions.

One of the future technologies being potentially used from farm to fork is the QR-Code. In Germany the kick-off between the agro-sector and the distribution using QR-codes started in 2011 with an anti-crisis action for pork. After a dioxin-scandal the task was to create "trust" by revealing the local source of the raw material for meat-products. The discounter Aldi South together with its supplier Toennies as a cutting-house and several producers of "meat-brands" placed on their packages QR-codes which can be read by the consumers' smartphones. The smartphones guide the customer towards an App coordinated under the Label "f-trace" (F standing for the German word Fleisch = meat) – where for the raw-material the local source of the animal, the locations of slaughtering, cutting and processing can be found.

Conclusion

Taken the topic of Land Protection it has to be seen that the factor „Land“ is never absolute and insofar cannot be discussed „ceteris paribus“ but its economics are dependent on changes by time – periods and values of societies ; and especially in CEE also in the dynamic changes after the 90ies of the last century transforming from socialism to global market economies.

The optimization of the use of land furtheron should not be just limited to economic aspects but the frame should be enlarged to include also ecological aspects like the UN goals of sustainability and ethics for a global house of harmony based on economics, ecology and ethics. In this sense land protection has also a value to counteract by fauna and flora the danger of climate change.

Last but not least within that optimization standards could help within the daily processes to be more efficient in economic terms but also by reducing waste of resources being more sustainable. Needed is an interdisciplinary vertical integration of standards. The wealth earned by those savings could be shared among all participants of the total supply chain from farm to fork - helping by this national or international groups of underprivileged.