European Commission

JRC SCIENTIFIC AND POLICY REPORTS

Ukraine's agriculture: potential for expanding grain supply. Economic and institutional challenges.

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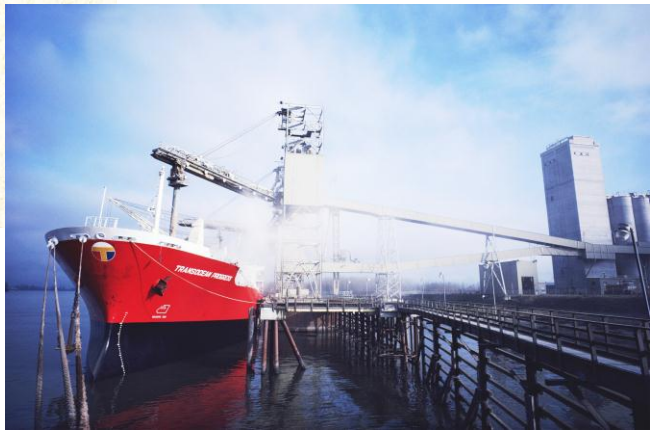
2013



Report EUR 26170 EN

Joint Research Centre

European Commission
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Institute for Prospective Technological Studies

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JRC 84652

EUR 26170 EN

ISBN 978-92-79-33205-0 (pdf)

ISSN 1831-9424 (online)

doi:10.2791/22957

Luxembourg: Publications Office of the European Union, 2013

Printed in Spain

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Acknowledgements

The authors wish to thank Prof. Michiel Keyzer and Dr. Max Merbis of the Centre for World Food Studies (SOW-VU, Amsterdam) for the valuable comments they provided to the draft report.

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Executive summary

Ukraine is one of the few countries in the world that is in a position to significantly increase grain net exports, due to its strategic location and agro-ecological potential of its soils. Unleashing its potential would allow Ukraine not only to secure its own production and economic development of the country, but also to contribute to global food security.

The main objectives of this study is i) to understand the potential of Ukraine to increase grain production and export and ii) to explore the current state of institutional reform that is needed for unleashing Ukraine's production and export potential.

Global food security is one of the main concerns of many policy makers and international organizations due to population increase and limited resources available worldwide. Ukraine could contribute to global food security by increasing its own grain production and expanding grain exports. However, to realize both of these targets, good institutional settings need to be put in place to protect interest of investors as well as of the local population.

The grain production potential of Ukraine depends on the two main factors: land area cultivated and yield. The share of land under grain production is very high in Ukraine, however shows a rather unstable character, growing or falling from year to year. Besides changes due to extreme weather conditions, the strong fluctuations across years relate to unsustainable mid- and long-term state policy in grain production, lack of control for crop rotation and other environmental measures, absence of crop insurance system. In terms of yields, Ukrainian grain yields look poor and are below the corresponding worldwide averages for the last decade, despite the fact that environmental conditions in Ukraine are above average. The average yield ratio for grain crops shows that there is 10% to 40% gap between the actual and potential yield that could be achieved given the soils and agro-climatic conditions in Ukraine.

The rapid emergency, in the last decade, of large intensive agricultural enterprises and agro-holdings, which currently dominate in the agricultural sector of Ukraine, and as a rule are efficient business projects (with easy access to capital, markets, policy facilitation and innovation), contribute positively to agricultural sector growth in Ukraine. However, the induced intensification of agricultural production resulted in adverse consequences and has not resulted in overall rural development. It also worsens environmental quality through high fertilization rates and absence of necessary crop rotations. Without adequate regulations, these trends may lead to further land degradation, loss of fertile soils, water, air and soil pollution.

Effectiveness of large-scale production is being widely promoted by policy makers over the last couple of years, at the same time claiming that small and medium producers are ineffective in farming. But if we look into statistics it is not always the case. Even though areas and yields are important factors to measure increase in grain production, operational efficiencies are important as well. In terms of efficiency, there is a significant difference between large agricultural enterprises and peasant farms. The assessment of productivity in monetary terms illustrates that for corn and industrial crops net revenues per ton are higher in case of agricultural enterprises, while for wheat and livestock products (except milk) net revenue is significantly higher for peasant farms.

The main challenges for increasing grain exports from Ukraine relate to infrastructure, export restrictions and customs regulations. The logistics and trade infrastructure should be improved not only to cope with higher production in Ukraine but also with transit of grain from other countries such as Russia and Kazakhstan. Increase of grain exports is impossible without improving

Ukraine's infrastructure, but also without removing current barriers for free and timely export of grain from Ukraine. Improved infrastructure and transparency in grain export market could reduce transportation and marketing costs, increase competition and attract further investment into agribusiness. In addition, it could generate higher farm gate prices for grain producers.

Several studies argue that Ukraine's failure to tap its full production and export potential is mainly a result of its market-unfriendly institutional base. According to the 2013 Index of Economic Freedom Ukraine is scoring 161 out of 177 countries, with scores well below the European average in property rights, freedom from corruption, fiscal freedom, government spending, business freedom, labor freedom, monetary freedom, trade freedom, investment freedom, and financial freedom. Even though there is a significant support from the EU and other international organizations there is still a lot of work to be done to develop an adequate institutional framework. The necessary measures to support grain market liberalization include clearly defined property rights, enforcement of contracts, credit access, and better market infrastructure.

In terms of the National Program for Rural Development until 2015 the government shall improve coordination between central and local authorities on program implementation, improve monitoring and provide sufficient financing to cover all important measures of the Program. According to the 2012 report of Accounting Chamber of Ukraine there was no financing provided for construction of social infrastructure, support for development of depressed areas, funding for protection, restoration and improvement of soil fertility as well as other measures of the Program. The critical situation in agriculture has also been confirmed by the audit of the State Program of Technical Assistance to Agriculture until 2015 which observed continued decrease in the numbers of agricultural equipment, including tractors and combine harvesters.

Ukraine participates in the European Neighborhood Policy (ENP) framework, which aims at deepening the relationship between the EU and its neighbours. Ukraine has started negotiations with the EU on the establishment of a Deep and Comprehensive Free Trade Area (DCFTA), which shall go further than classic free trade areas, as it will both open up markets but also address competitiveness issues and the steps needed to meet EU standards. The DCFTA is basically designed to deepen Ukraine's access to the European market and to encourage further European investment in Ukraine.

Achieving Ukraine's ambitious but still realistic plans of production improvement and export increase, and establishment of a good base for agricultural development in Ukraine will only be possible in case of supportive policy making. Policy should move to the following directions: i) support to increase of overall farm productivity with more attention given to farm sustainability from the environmental point of view (i.e. protection of soils, air and water); and ii) assistance in reduction of excessive market transaction costs from the farm gate to the markets with more financial and technical support provided to small farmers iii) creation of an open grain market without export restrictions and the monopoly position of grain exporters. In terms of transport infrastructure (i.e. railways and roads) and storage facilities the state shall be able to attracting foreign direct investments into such projects by improving the rule of law (e.g. protection of property rights and fight against corruption) as well as creation of open grain market.

List of acronyms

ACC	American Chamber of Commerce
AGLINK	OECD Partial Equilibrium model: Economic model of World agriculture
AGMEMOD	Agricultural Member State Modelling for the EU
DES	Dietary Energy Supply
EBA	European Business Association
EBRD	European Bank of Research and Development
FAO	Food and Agriculture Organisation
IAASTD	International Assessment of Agricultural Knowledge, Science and Technology for Development
IEF NASU	Institute of Economics and Forecasting, National Academy of Science of Ukraine
IERPC	Institute for Economic Research and Policy Consulting
OECD	Organisation for Economic Co-operation and Development
WB	The World Bank
WHO	World Health Organisaiton
WTO	World Trade Organisaition

1. Introduction

Ukraine is the largest European country (after Russia) of around 60,3 mln. ha and covering 5,7 % of the total land area of Europe. It has key location between the EU and Russia and access to the Black Sea. In the Ukrainian economy agricultural sector has always played an important role both during the Soviet era as well as after becoming independent in 1991. Agriculture contributes significantly to the employment (15% of economically active population[1]) and GDP (8% of Gross Value Added in 2010) and has a pivotal role in foreign trade[2]. In the last 10 years Ukraine gained considerable share of international agro-food markets as exporter of grains, rapeseed, sunflower oil and seeds.

Ukraine's natural resources provide great opportunities for expanding agricultural production. Almost 69% (or 41,6 mln. ha) of total available land in Ukraine is classified as agriculture land, which makes the share of arable land to be about 78%, which is significantly higher than for many developed countries. Due to its fertile soils (25% of all rich black earth soil in the world[3]) Ukraine has a significant agricultural potential, which has yet to be unleashed (Deininger *et al.* 2011). Therefore, Ukraine is one of the few countries in the world that is in a position to significantly increase grain net exports. The main question underlying this study is therefore how Ukraine farming sector can unleash its potential in order to contribute to the economic development of the country and global food security through improvement of its institutional arrangements and practices.

Ukraine, since its independence went through a transformation process with several changes. Even though most Eastern European countries faced challenges, Ukraine had specific problems derived from its relationship with Russia and also with the critical economic situation and the financial crisis (Hagemann 2012)[4]. Ukraine´s governmental system still has some remains of the former Soviet regime, which has been subject to stepwise revision (D´Anieri et al., 1999)[5]. Development of the Ukrainian economy took more time compared to the other post-Soviet countries in Europe, and its GDP started to grow only from 2000[6]. Despite of the internal problems Ukraine aims to establish stronger ties with the EU and tries to improve its standards. This effort has been confirmed by bilateral agreements with the EU, including Partnership and Cooperation Agreement of 1998, European Neighbourhood Partnership (ENP) Action Plan of 2005 and National Indicative Programme for 2011-2013, where the institutional reforms are included together with the support to development of the agro-industry sector and to trade facilitation. As a consequence, several new institutions and governance structures had been established. However, until today among others the

[1] The official data in this section are from the 2010 Statistical Yearbook of Ukraine, issued by SSSU, the State Statistics Service of Ukraine. Other data on Ukraine, when not explicitly referenced to, are also from the SSSU. Most of its statistical tables are available in English from its website via http://www.ukrstat.gov.ua/

[2] Ukraine's main trading partner in agricultural production is the EU, both in terms of imports and exports

EC-DG-Agri 2009 Agriculture & Rural Development: Agricultural Trade Policy Analysis unit: The Agricultural Sector and Trade in Ukraine, July 2009. Accessed 10 September 2012: http://ec.europa.eu/agriculture/publi/map/03_09_fullreport.pdf

[3] United Nation 2007 Environmental Performance Reviews: Ukraine. Second Review (p12) Accessed 15 September 2012: http://www.unece.org/fileadmin/DAM/env/epr/epr_studies/Ukraine%20II.pdf

[4] Hagemann, N. 2012. Institutional obstacles for the implementation of a River Basin Management concept in Western Ukraine. Helmholtz-Zentrum für Umweltforschung GmbH (UFZ) Discussion Paper. Accessed 20 June 2013 http://www.ufz.de/export/data/global/38006_11%202012%20Hagemann_Water%20policy%20submission_Gesamt_internet.pdf

[5] D´Anieri, P.J., Kravchuk, R., & Kuzio, T. 1999. Politics and society in Ukraine. Boulder et al., Westview Press.

[6] World Bank data: http://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG; Accessed 20 June 2013

supportive trade practices and institutional settings to support the increasing grain supply are still not completely developed.

Based on the purpose of the study, Chapter 2 assesses the grain production and export potential of Ukraine and major limitations, Chapter 3 analyses current state of institutional reform focusing on the major constraints and challenges related to supply of grain production to the world market.

2. Grain potential of Ukraine and major limitations

Agriculture in Ukraine is an important sector of the national economy and plays a crucial role in rural life and national food security. Many recent studies (ACC EBA 2011, Heyest 2009, IERPC 2008) show that it could contribute much more to the economic growth in Ukraine and provide much better supply to the world food market. Ukraine's unique agricultural potential (its soils) are discussed in several studies (Borodina 2012, IAASTD 2009, Keyzer et al. 2012.), at the same time, the use of this resource claimed to be extremely inefficient and not safe in terms of environment and water protection. The impact of the Ukrainian agricultural production system on the environment is estimated to cause 35-40 percent of the total environmental degradation including soil erosion and degradation, loss of biodiversity, water contamination, mismanaged agricultural waste, soil contamination, and inadequate storage of obsolete pesticides (Stefanovska and Pidlisnyuk 2002, World Bank 2007). 20 years after Independence in 1991, the striking thing about Ukrainian agriculture is no longer its outstanding potential but rather the fact that this potential continues to be wasted as a result of misguided policies (ACC EBA 2011). Before describing in details the main constraints unleashing Ukraine's production potential, first the state of its grain production and export potential are explored in the next subchapters 3.1 and 3.2, respectively.

2.1. Grain production potential

Ukraine is one of the few countries in the world that are in a position to significantly increase grain production, since Ukraine's soils agri-ecological potential has not yet been fully exploited. The aim here is to explore to what extent the grain production can be increased and to understand what type of farms could provide this production in order to fulfil the national food demand and produce surplus for export in order to contribute to global food security.

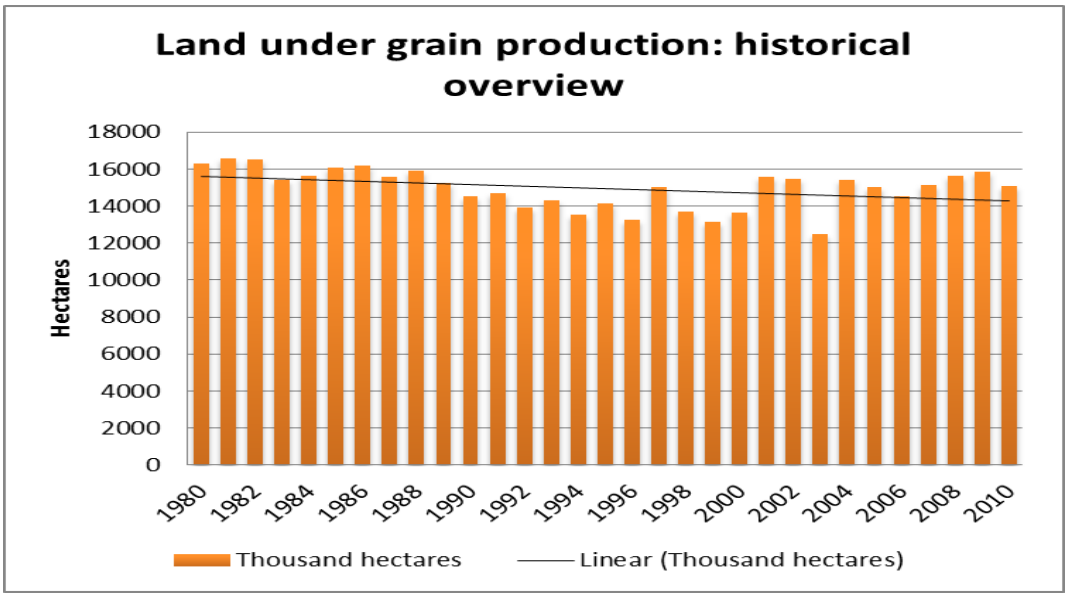
The grain production potential of Ukraine depends on two main factors: land area cultivated and yield. Below an overview is given on these two factors, first at macro level or national level, and then at micro level to reflect the current dual farming system in Ukraine.

2.1.1. Land under grain

Land use issues remain very important for agricultural production and its sustainability in the long run. The share of land under grain production is very high in Ukraine, despite the fact that the trend is decreasing. In 1950 more than 20 mln ha of land in Ukraine were under grains, thus it has decreased by 25% (to 15 mln ha) in the last half century. **Error! Reference source not found.** shows trends since 1980. A declining trend is visible starting from year 1988, which has been followed by a rapid increase in 2001 and relative stabilization until 2010. A rapid increase in 2001 was a result of adoption of the State Program "Grain of Ukraine-2001" with a main focus on increase grain production in Ukraine. The Program envisaged state support of "effective" grain production, allocation of more land under grains, development of so-called technological production cards to increase the productivity of grains, etc. Such policy initiative, supported by state funding been gladly accepted by big industrial business entities and then the production significantly increased[7].

[7] Order of the Ministry of Agrarian Policy and Food #159/78 from 27.08.2000 (full text http://ua-info.biz/legal/baseap/ua-zmtgvt/str4.htm)

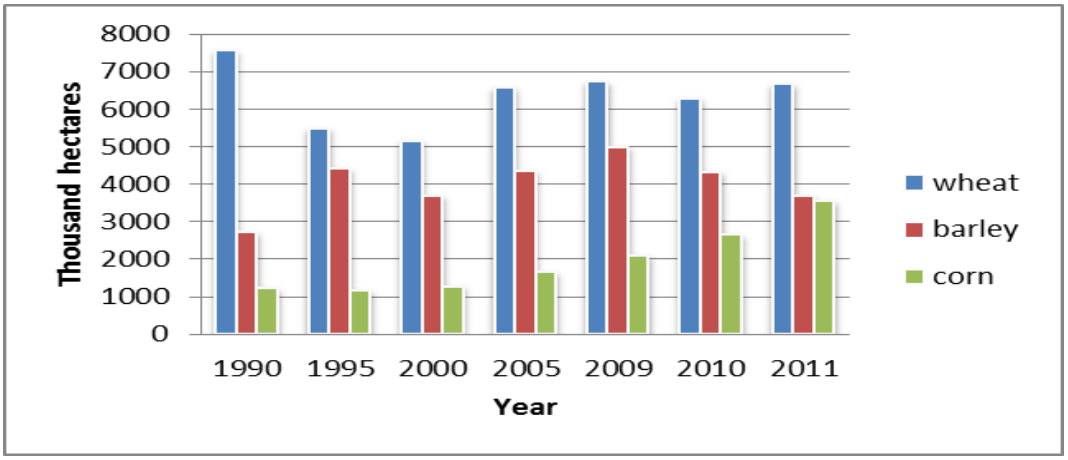
Figure 1. Land under grain production in Ukraine



Source: Data from State Statistical Committee of Ukraine

It can also be seen, that land area under grains if fluctuating by millions of hectares from year to year. For example, a strong decrease in land in 2003 has been caused by extremely unfavorable weather conditions in the previous year. As a result of great crop losses in 2002, many producers lost money and had to decrease sown areas under grains in the following year. In turn, such situation led to significant deficit on internal grain market in 2003-2004 marketing year and influenced domestic food prices significantly, especially for livestock products (due to high feeding costs). Besides changes due to extreme weather conditions, the strong fluctuations across the years are related to the unsustainable mid- and long-term state policy in grain production, lack of control for crop rotation and absence of crop insurance system (Von Cramon-Taubadel et al. 2001).

Figure 2. Land under wheat, barley and corn production in Ukraine



Source: Data from State Statistical Committee of Ukraine

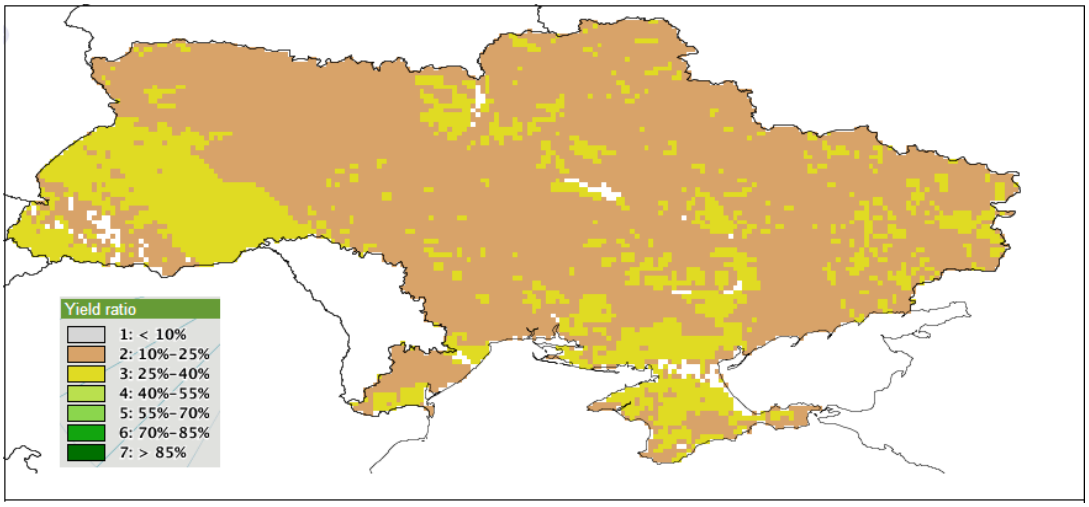
The recent situation of land use for grain production is presented on Figure 2 for major grain crops, such as wheat, barley and corn. It can be seen that in terms of land area wheat is occupying around the half of the grain area and the rest is divided between barley and corn. While the wheat area had dropped considerably after the Independence (in 1990 wheat was produced on 7557.7 thousand ha

and in 2000 – on 6284.1 thousand ha, thus production area decreased by 17%)[8], it has increased again in the last decade close to its original size from 1990 though it is still smaller. Barley production increased after the 1990s, though corn is the one showing a strong increasing tendency within grain crops in the last decade. As of 2010 around 35% (~15 mln ha) of the agricultural land area was under grain production, the rest was occupied by around 16% oilseeds, 6% fodder crops, 19% permanent grassland and 16% bare fallow, the remaining 8% constitute of permanent crops, potatoes, vegetables, sugar beet and protein crops[9].

According to M. A. Keyzer et al. 2012, around 13 mln ha of arable land would need to be removed from production: 3 mln ha due to degradation[10] and 10 mln ha would need to be converted into natural grasslands and reforestation[11]. This means that the total arable land area of 32.5 mln ha would need to be reduced considerably (by 1/3rd) to 19.3 mln ha, for sustainability concerns. This would have consequences on the land use and also on the potential grain production of Ukraine. In terms of sustainability and environmental safety removing of land would be a step forward, at the same time it may influence potential production in case modern technologies and approaches in crop production will not be applied.

2.1.2. Grain yields

Figure 3: Ratio of actual over potential yield of grain crops in Ukraine



Source: GAEZ v3.0., IIASA & FAO 2010 http://www.gaez.iiasa.ac.at

Current and attainable yields, the yield gaps, provide important information for identifying causes and addressing rural poverty and food insecurity issues. Based on the IIASA & FAO study[12], yield gaps have been estimated (in GAEZ v3.0) by comparing potential attainable yields and actual yields from downscaling year 2000 statistics of main food and fiber crops (statistics derived mainly from

[8] Crop production of Ukraine: Bulletin of State Statistics Service of Ukraine, 2011, p.60

[9] Source: State Statistics Service of Ukraine

[10] Project of Law on National program of land use and protection. Available at: http://w1.c1.rada.gov.ua/pls/zweb_n/webproc4_2?id=&pf3516=5755&skl=5

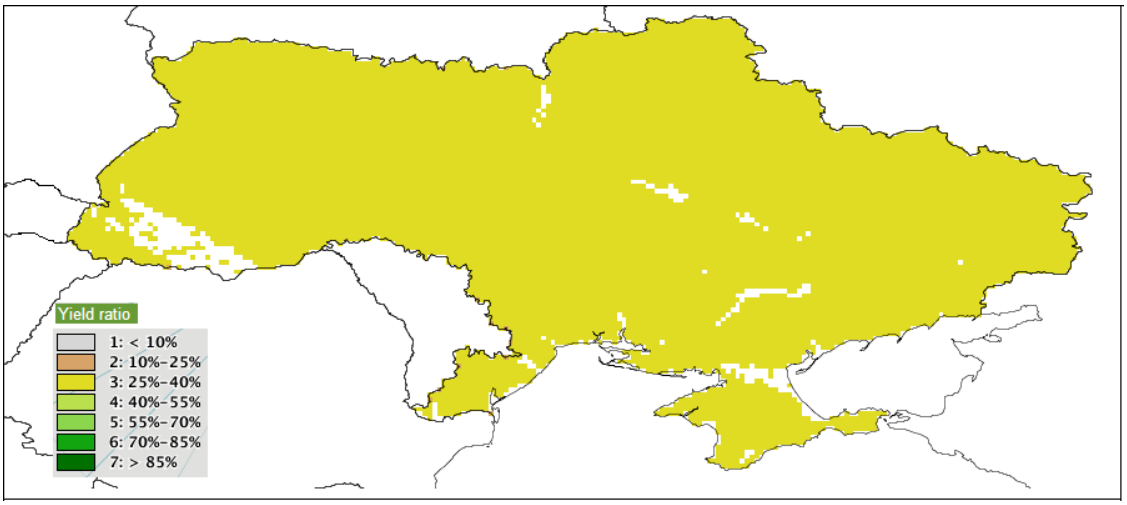
[11] Collection of scientific papers of the National Research Center "Institute for Agriculture by the National Academy of Agrarian Sciences of Ukraine" - K.: "EKSMO" Press, 2010. – Issue 3. – P.6.

[12] IIASA/FAO, 2012. Global Agro-ecological Zones (GAEZ v3.0). IIASA, Laxenburg, Austria and FAO, Rome, Italy Accessed 3 May 2013 http://www.fao.org/fileadmin/user_upload/gaez/docs/GAEZ_Model_Documentation.pdf

IIASA 2012. Land Use Change and Agriculture Program, Accessed 3 May 2013 http://www.iiasa.ac.at/web/home/research/modelsData/LandUseMetaData.pdf

FAOSTAT and the FAO study AT 2010/30). The average yield ratio for grain crops can be seen in Figure 3. It shows that there is more than 10% up to 40% yield gap between the actual and potential yield that could be achieved given the soils and agro-climatic conditions in Ukraine. By observing the yield gap for wheat crop it can be seen that the difference of actual and potential yield ranges between 25% and 40% (Figure 4 below).

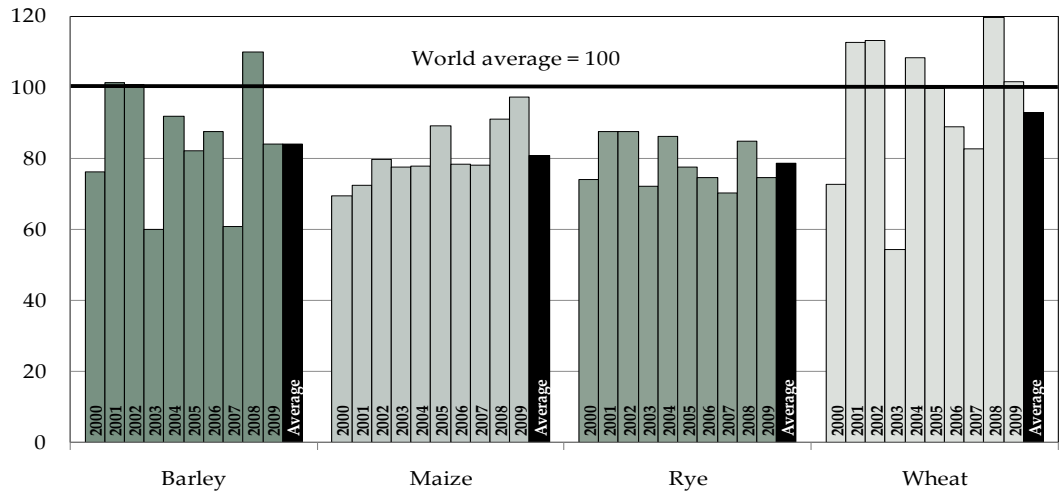
Figure 4: Ratio of actual over potential yield of rained and irrigated wheat in Ukraine (2000 vs. 2020)



Source: GAEZ v3.0., IIASA & FAO 2010 http://www.gaez.iiasa.ac.at

The agro-climatically attainable yields[13] with projection to 2020 can differ for each crop type depending on the level of input intensity (see Annex 5: Agro-climatically attainable yield for grain crops). For wheat the yields would range from 2.75 t/ha (low input) up to 10 t/ha (high input), for barley showing a very similar picture. For corn it would range from 4.45 t/ha (low input) to 12.25 t/ha (high input). These higher yields with rain-fed production could be attained especially in the Western region, however with irrigation these yields could be reached also in the South-Eastern

I **2009)**



Source: American Chamber of Commerce, European Business Association in Ukraine.

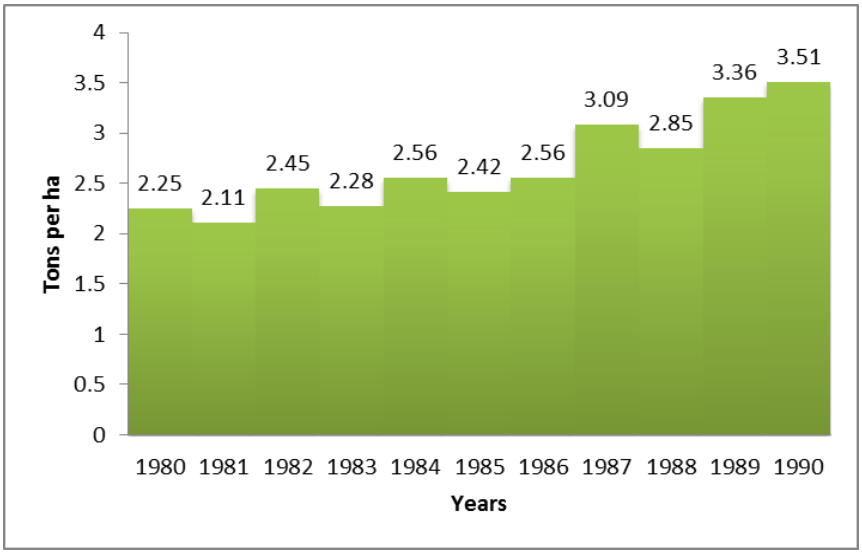
[13] Agro-climatic yields are calculated for individual land utilization types for prevailing temperature and radiation regimes using the GAEZ eco-physiological model. Results account for temperature and moisture constraints that are affecting growth and development and yield reducing effects caused by pests, diseases and weeds as well as climate related workability constraints. Estimated yields are referred to as agro-climatically attainable yields. (IIASA & FAO 2010)

Ukrainian grain yields in international comparisons look also poor. Figure 5 shows that in most cases the yields of major crops in Ukraine are below the corresponding worldwide averages for the last decade, despite the fact that environmental conditions in Ukraine are above average. Only in case of wheat there is some indication that Ukrainian yields are catching up to world levels (ACC EBA 2011).

According to the estimation of American Chamber of Commerce and European Business Association, if Ukraine had been able to achieve at least world average yields in each year for all main grain crops mentioned in Figure 5, it would have given additional production of around 33.8 mln tons of grain over the decade of 2000-2009. Comparing Ukraine to a neighbour country of Poland, with similar climate and economic condition (ACC EBA 2011), over the last decade, yields of major grains in Ukraine were on average just over 70% of corresponding yields in Poland. Thus, if in Ukraine had been achieved at least same average yields level as in Poland, it would increase production by almost 130 mln tons of grain over the decade. If we look at the fact that the potential yields could reach even higher level (e.g. 7 ton/ha or in some areas up to 10 t/ha instead of the current 3 tons/ha for wheat, Keyzer et al. 2012, IIASA &FAO 2010), than it would mean even higher productivity increase, though it would require capital investments in crop production e.g. improving/acquiring fixed assets as well as improving liquidity to cover additional input costs. To achieve such a high yield supportive policy measures would be needed. Figure 6 shows growing dynamics of Ukrainian average grain yields in the past, before the independence and current figures on the right. It should be noted though, that recent comparison of data by types of producers is available for 2010 only, while disaggregated data of yields by crops (wheat, barley, corn) for more recent periods 1990-2011 is available and presented in

Figure 7.

Figure 6. Average grain yields (wheat, barley, rye) in Ukraine (1980-1990, 2010)



2010

Average yield of grain (enterprises)

2, 76 tons per ha

Average yield of grain (household plots)

2, 50 tons per ha

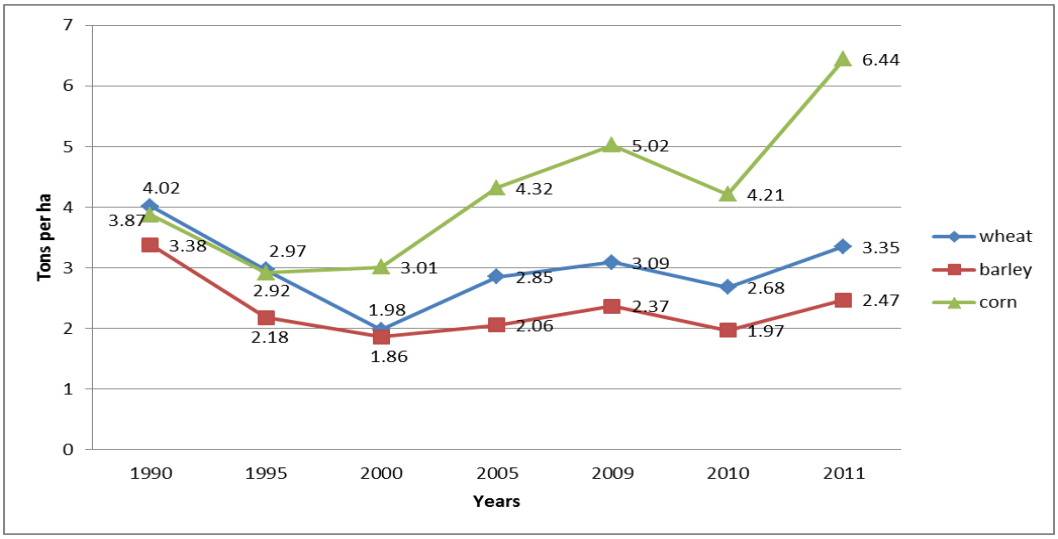
Average yield of grain (peasant farms)

2, 19 tons per ha

Source: calculated based on data from State Statistical Committee

As it can be seen in Figure 6, 2010 average yield for all types of producers was at least 20% lower than average yield for the last five years of the Soviet times. At the same time, effectiveness of grain production in household plots (small and medium producers) is 10% lower and in case of peasant farms is 20% lower compared to the domestic corporate producers. As we can see, productivity is low for all types of producers and comparing to the average wheat yield of the EU 27 in 2011 Ukraine made only 62.6% of EU yield levels, while for barley and corn 57.3% and 85.1%, respectively (JRC 2012).

Figure 7. Average yields by type of grain crops (1990-2011)



Source: State Statistical Service of Ukraine

2.2. Duality in production and production efficiency

2.2.1. Duality in production

In the early 1990s the agricultural sector of Ukraine started a process of dualisation, which is still ongoing, dividing the primary sector into two main groups of producers: large agricultural enterprises and small and medium sized individual farms, i.e. peasant farms (farmers) and household plots (households) (Keyzer et al. 2012). Agricultural enterprises in Ukraine are being actively restructured and integrated, forming large agro-holdings. During 2005 and 2006 the number of enterprises, which operate more than 10 thousand hectares of land, has increased by 27%; the average size of the total area in these enterprises has increased by 7% to more than 20 thousand hectares (Borodina 2009).

Agro-holdings concentrate primarily on intensive profitable production such as cash crops for export and raw-materials for biofuels, which increases socio-economic and environmental risks in rural areas. As a consequence the decreasing production diversity and diversion of land and water resources from direct food production undermines food security. It also worsens environmental quality through high fertilization rates and absence of necessary crop rotations[14]. Without adequate regulations, these trends may lead to further land degradation, loss of fertile soils, water, air and soil pollution.

Small and medium production by household plots and peasant farmers is usually more sustainable and environmental-friendly (Prokopa & Berkuta 2011). In terms of crop production smallholders usually produce wheat, rye and barley. In most cases low quality crops used as fodder and some produced crops of better quality are supplied to large traders. In addition, as small and medium producers usually live within their production area, they perform environment-friendly production, saving water, air and land resources.

Effectiveness of large-scale production is being widely promoted by policy makers over the last couple of years, at the same time claiming that small and medium producers are ineffective in

[14] Information on legal norms of crop rotations can be found at: http://zakon1.rada.gov.ua/laws/show/164-2010-%D0%BF

farming. Strong support of large producers by the government was mostly justified by their extreme production effectiveness. But if we look into statistics it is not always the case.

In spite of domestic unfavorable conditions (such as high interest rates, tangled taxation, government pressure), small and medium producers keep surviving and producing, playing and important role in the national food security. Main assets of households are time and own labor, which helps them to survive. Households existed historically, survived through Soviet times and motivation for conducting household production is still in place, despite the fact that it is weaker than in the Soviet Union.

2.2.2. Production efficiency

Even though areas and yields are important factors to measure increase in grain production, operational efficiencies are important as well as they can make grain production unprofitable. In terms of efficiency, there is a significant difference between farm types (large agricultural enterprises, and peasant farms / household plots). The assessment of productivity in monetary terms is shown in Table 1. It illustrates that for corn and the industrial crops the gross margins (net revenue) per ton are higher in case of agricultural enterprises compared to peasant farms, except for wheat where average net revenue is significantly higher for peasant farms. This is the case for livestock products (except milk) as well, particularly due to lower input costs.

Table 1. Average revenues and cost per 1dct (100 kg) by farm type and by commodity, UAH (2010)*

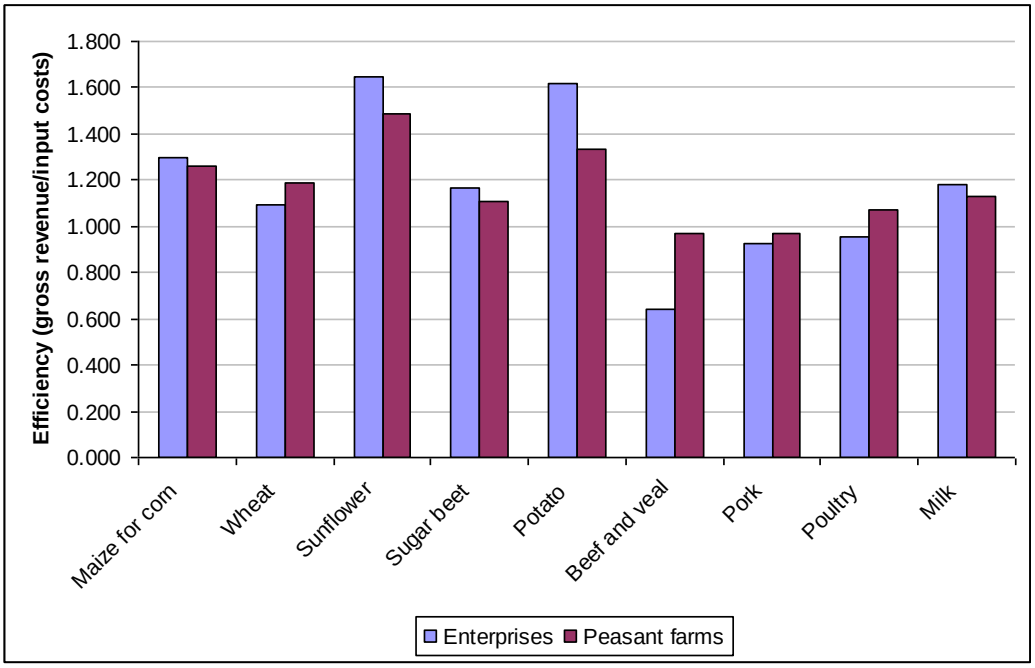
Agricultural products	Enterprises			Peasant farms		
	Average gross revenues	Average input costs	Average net revenue	Average gross revenues	Average input costs	Average net revenue
Wheat	109,12	99,60	9,52	105,19	88,31	16,88
Corn	124,20	95,65	28,55	113,23	89,94	23,29
Sunflower	302,80	183,88	118,92	282,52	190,29	92,23
Sugar beet	48,73	41,76	6,97	32,58	29,34	3,24
Potato	225,30	138,97	86,33	247,19	185,85	61,35
Beef and veal	896,08	1397,24	-501,16	996,01	1028,83	-32,82
Pork	1220,40	1323,69	-103,29	1287,88	1325,44	-37,57
Poultry	989,29	1034,37	-45,08	1017,49	948,96	68,53
Milk	269,81	228,94	40,87	250,43	222,16	28,26

Source: State Statistical Service of Ukraine

* 1 dct = 100 kilograms; gross revenues is production valued at farm-gate price; input costs cover current inputs including own produced feed, and a remuneration of labor.

The difference between the two farm types in terms of efficiency is also illustrated in Figure 8, which is measured as a proportion of gross revenue and input costs of each product group seen in Table 1.

Figure 8. Efficiency of agricultural enterprises and peasant farms



Note: Calculations based on Table 1 above, Source: State Statistical Service of Ukraine

According to estimations of USDA, constant lack of modern equipment remains one of Ukraine's main obstacles to increase grain production and quality. In late 1980's Ukrainian winter wheat harvest could be finished in roughly three weeks, while nowadays the same process takes twice as long to complete, and both yield and grain quality suffer as a result of these delays. USDA estimated that 10 to 20 percent of the standing crop is typically lost due to outdated, inefficient machinery. While custom combining is available, operators charge 20 to 25 percent of the crop in exchange for their services.

Table 2 shows availability of technical resources in households, but in spite of good numbers it should be taken into account that most of that machinery is old, left from Soviet times and requires modernization. Also, land and crops cultivated with such old machinery are not in compliance with good agronomy practices and of course, fuel consumption of those machines is enormous. At the same time as of 2010, over 86.6% of enterprises have tractors, 87,7% have seeders, 86.4% of enterprises have combines[15].

Table 2. Availability of equipment in rural households in 2011

	Total households, %	**Including households with land area**		
		0.5 ha or less	*0.51-1.00 ha*	*1.01 ha and more*
Households, which use:				

[15] Data according to State Statistical Committee of Ukraine "Agriculture of Ukraine-2011"

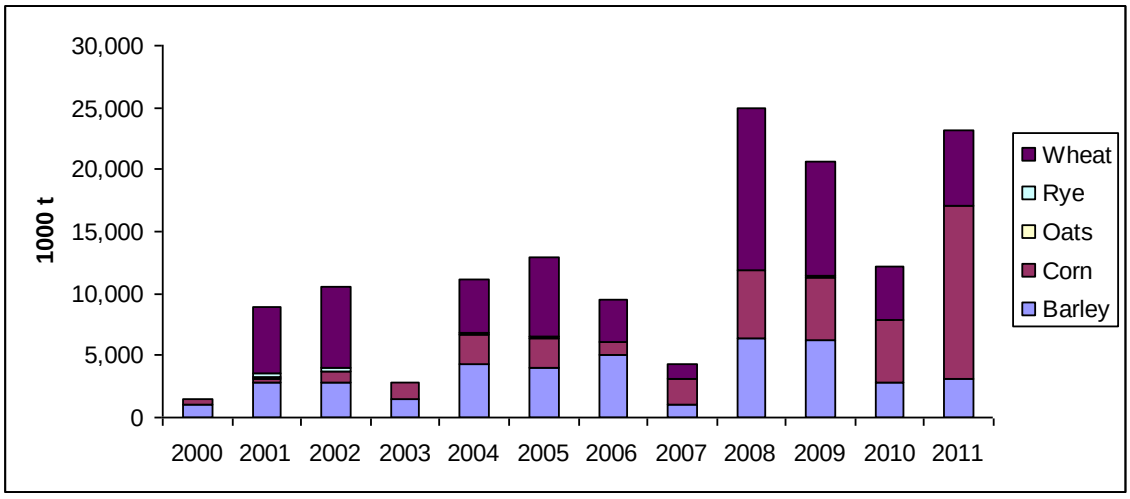
Combine	1.7	0	0.4	3.9
Tractor	16.5	4.3	10.2	29.9
Seeder	11.9	2.3	12	19.3
Cultivator	13.5	5	10.1	22.1
Plough	39.4	15.4	40.2	57.9
Truck	2.9	0.8	1.3	5.5

Source: State Statistical Committee, 2011

2.3. Grain export potential

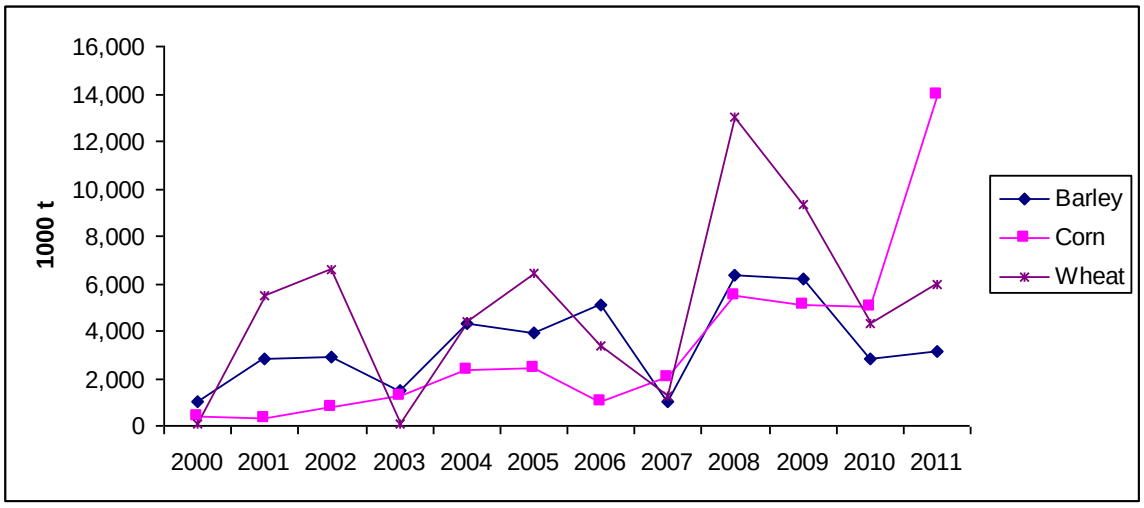
After fulfilling its domestic consumption requirements, Ukraine has a grain production surplus to provide to the world market which is illustrated in Figure 9 and Figure 10. It can be seen that since 2000 export of Ukrainian grain is increasing especially for wheat, corn and barley crop commodities (the main export destinations are illustrated in Annex 6). The total amount of grain crops exported constitutes to 25% of the total agricultural exports of the country and plays an important role in the domestic economy.

Figure 9. Total grain export of Ukraine by crop type (1000 tons)



Source USDA, 2012.

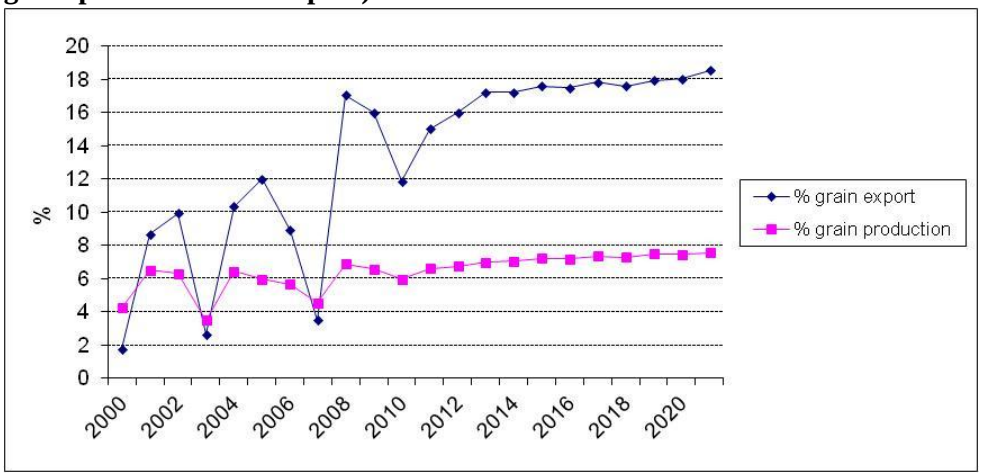
Figure 10. Grain export of Ukraine per main grain crop type separately (1000 tons)



Source USDA, 2012.

The growing importance of Ukraine in world grain market can also be observed by looking at the proportion of grain contributed to the total world supply (Figure 11). The wheat, corn and barley from the Ukraine's grain crops have the most important contribution to the world market. Currently Ukraine contributes to the total world grain production by around 6%, and to the world export of grain by close to 15%, and the figures are expected to rise to 8% and 18% by 2020 respectively (Figure 11). Based on the most recent macroeconomic market models that have been developed and are dealing with future agricultural market projections [OECD-FAO Agricultural Outlook (2011), EU AGLINK (2011) and AGMEMOD (2012)] the role of Ukraine in the world grain market is significant and is expected to increase in the future.

Figure 11. Ukraine grain production and export: historical trend and projections (% of the world grain production and export)



Source: Own calculations based on EU AGLINK, 2011[16]

According to the most recent AGMEMOD projections (Table 3) up to 2025 the grain area is expected to increase slightly, since some of the abandoned land is expected to get into production (van Leeuwen *at al*. 2012). Under assumption of normal weather conditions, steady trends for demand and yield and current policy environment, wheat exports are projected to reach around 13 mln tons (with 3.7 t/ha yield), barley 5.3 mln tons (with 3.6 t/ha) and maize 3.2 mln tons (with 6 t/ha) in 2025.

Table 3. Current state and projections in grain production, yield and land area used

	Current (2009-2010)				Projections 2025				% change			
	wheat	barley	maize	total grain*	wheat	barley	maize	total grain*	wheat	barley	maize	total grain*
area (ha)	6300	4550	2100	12950	6713	4318	2453	13483	7	-5	17	4
yield (t/ha)	2.89	2.15	4.62	3.22	3.7	3.6	6.0	4.43	28	67	30	38
production (t)	18176	9760	9692	37628	25013	15741	14673	55426	38	61	51	47
domestic use (t) **	12000	5400	6000	23400	12000	10494	11419	33912	0	94	90	45
domestic use (%)	66	55	62	62	48	67	78	61	-27	20	26	-2
net-export (t)	6176	4360	3692	14228	12965	5259	3220	21444	110	21	-13	51
net-export (%)	34	45	38	38	52	33	22	39	53	-25	-42	2
self-sufficiency	1.5	1.8	1.6	1.6	2.1	1.5	1.3	1.6	38	-17	-20	2

* excludes rye, oats and other grains
** food, feed seeds and losses

Source: Own calculations based on State Statistical Service and AGMEMOD projections (van Leeuwen et al 2012)[17]

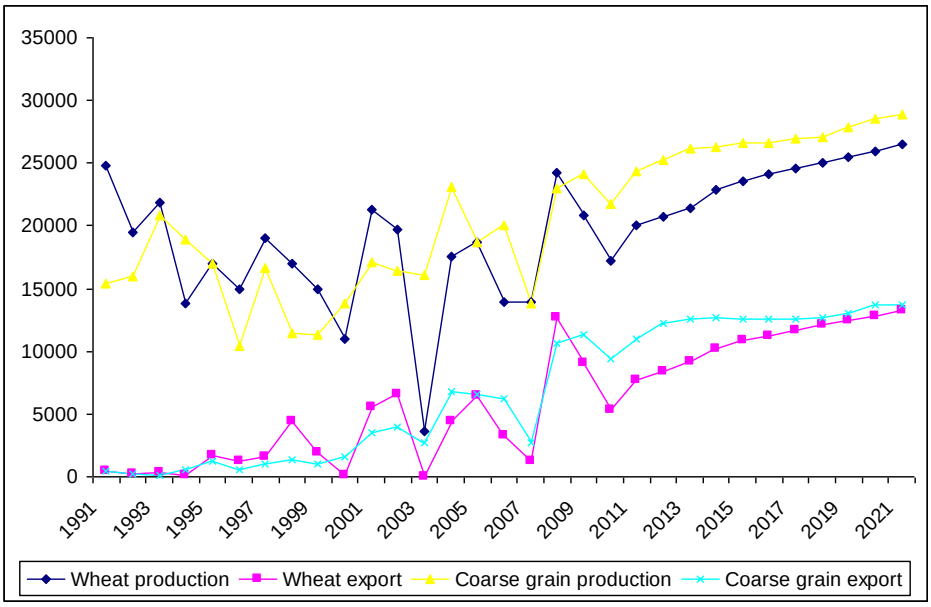
[16] The historical data and projections in EU AGLINK (2011) of grain production and export are illustrated as a percentage of the total grain production in the world.

[17] The current figures (average of 2009-2010) for the area, yield, production, domestic use and net-export are based on State Statistical Service data. The projections to 2025 are based on the AGMEMOD calculations (van Leeuwen et al. 2012). The percentage difference between projections and current state is based on own calculations. Self-sufficiency is calculated as a proportion of production and domestic use.

Despite that these projections do not reflect the maximum potential of Ukraine (i.e. assuming only slight yield increase up to 3.7 t/ha in 2025 instead of 7 t/ha), with the expected 12 mil. t/year of wheat for domestic use, even relatively low production increase on the level of around 38% of current production would make Ukraine an important supplier for international grain markets (i.e. double of the current wheat export level). This will also contribute to the welfare of the rural population.

In order to increase this export production volume the main obstacles need to be identified and examined. While analyzing the historical data of grain production and export of Ukraine from 2000 to 2011 (prior to 2000 export was very minor) it can be said that there is a significant difference in the variability[18] between the grain production and export, equal to around 23% and 60% for production and export respectively (Figure 12). Since export variability exceeds production variability it means that the there are other external factors beyond the production uncertainty (e.g. due to weather conditions) that are impacting the total amount of grain export from Ukraine. If we split grain variability between wheat and coarse grain (other than wheat, e.g. barley and corn), it can be said that there is a higher variability in case of wheat compared to other coarse grains, since the former has 33% production and 72% export variability, while the coarse grain has 20% production and 55% export variability, though, the difference concerning uncertainty beyond production are quite similar (39% for wheat and 35% for coarse grain).

Figure 12. Variability of grain production and export



Source: EU AGLINK 2011

This indicates that based on the amount of grain production (taking into account the risks of extreme weather conditions) one cannot predict the export volumes, In other words, busting of production is not enough and the problems related to other factors influencing grain export should be explored. These factors are related to several issues, such as insufficient development of export infrastructure including grain storage and processing capacities[19], lack of finance to invest in export logistics, challenges related to governance and institutional organization, administrative restrictions on grain

[18] Own calculations based on using the coefficient of variation of grain production and export.

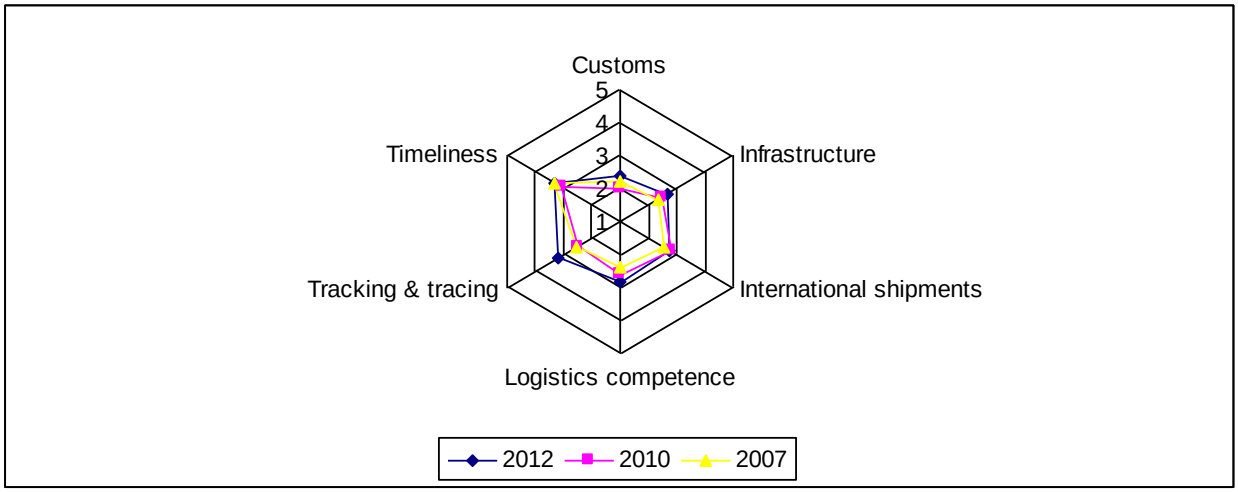
[19] Prior to 2000 the low export can be partly explained by insufficient elevator facilities and low transshipment capacity of the ports.

export, problem of VAT recovery for exporters and problems related to the quality of grain (FAO 2012, USDA 2011; World Bank/OECD 2004).

2.4. Grain transportation infrastructure

Since Ukraine has one of the key east-west transport corridors between Asia and Europe, it gives Ukraine a good opportunity for involvement in the world trade as exporter/importer and also to play an important role as a transit country. Despite Ukraine's good location, there are several trade-specific barriers[20] that put a burden on current and potential exporters from Ukraine. One of the trade specific barriers is related to transport infrastructure (the quality, quantity and capacity of physical infrastructure i.e. roads, railways, rivers, ports), storage facilities and logistics.

Figure 13. Logistics Performance Index of Ukraine in 2012 (1=low to 5=high)



Source: World Bank 2012[21]

According to the World Bank (2010b) Ukraine's trade and transit potential is far from fully exploited (i.e. most export commodities have relatively low added processing value while manufactured goods are mainly designed for the Russian market), thus the quantity of goods traded from and transported through Ukraine can still be expanded. At the same time, there is a strong demand for transit routes in Ukraine due to increased transit volumes which appeared after the Soviet era. Unfortunately the transport infrastructure inherited from Soviet times is not able to support these increased volumes, thus infrastructure for all modes of transportation shall be modernised and integrated better with each other in order to allow Ukraine to compete with alternative east-west routes through the Baltic countries, Belarus and Poland, the Black Sea and the Balkans / Bosporus.

Efficiently of the transport infrastructure can be measured using the Logistics Performance Index (LPI) developed by the World Bank[22]. According to 2012 LPI Ukraine was ranked 66th out of 155 countries (it was ranked 102nd in 2010). This performance measurement includes a range of services

[20] In Ukraine trade specific barriers are mainly related to complicated regulatory and legal environment (e.g. lengthy customs procedures, instability in legislation, up-hock export restrictions), problem with standardisation, high level of corruption[20], difficulties in obtaining refunds for VAT, and bottlenecks related to trade infrastructure and logistics (i.e. transport/storage infrastructure) (OECD 2012; World Bank 2010; World Bank 2005).

[21] World Bank 2012: Connecting to Compete 2012 Trade Logistics in the Global Economy: The Logistics Performance Index and Its Indicators. Accessed 10 May 2013 http://siteresources.worldbank.org/TRADE/Resources/239070-1336654966193/LPI_2012_final.pdf

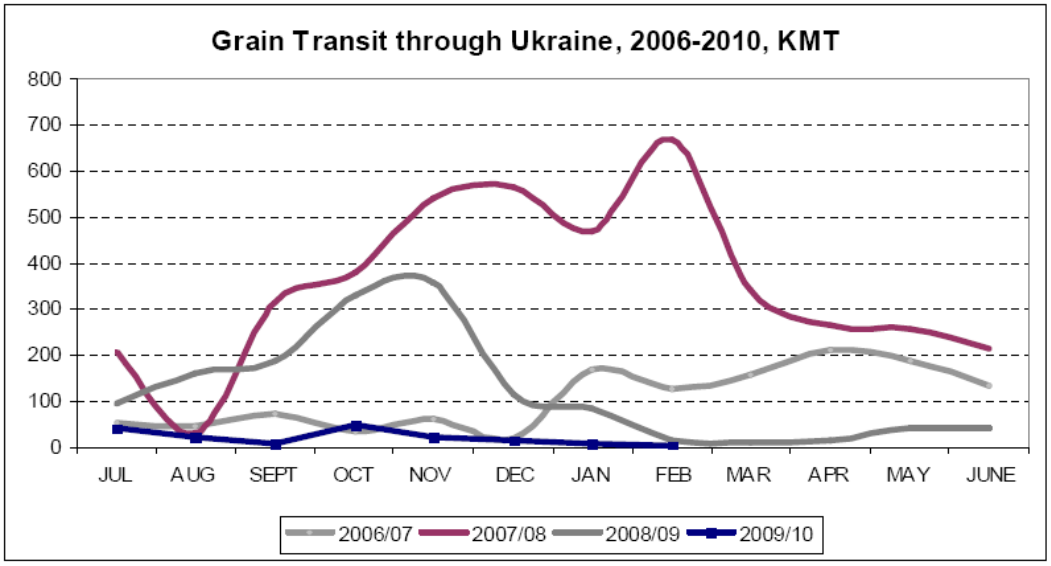
[22] Source: http://lpisurvey.worldbank.org/ Accessed 15 July 2012

and processes that are involved in moving goods from one country to another and grouped under six main categories: customs, infrastructure, international shipments, logistics competence, tracking and tracing, timeliness (Figure 13). Ukraine scores between 2.41-3.31 in all these categories (maximum score is 5), with the lowest scores received for customs and infrastructure, 2.41 and 2.69, respectively. Despite the fact that some improvements have been observed in the last 5 years, further improvements are needed in all of these aspects.

According to the World Bank[23], customs procedures in Ukraine are extremely inefficient, especially in terms of the clearance processes (i.e. speed, simplicity and predictability of the formalities). The current clearance time is around 2 days on average, and the average charge for a 40-foot dry container or a semi-trailer ranges between 866$ (662 Euros) (port and airport supply chain) and 1061$ (811 Euro) (land supply chain), this including agent fees, port / airport, and other charges (World Bank 2012[24]). With improved customs operations and avoidance of grey payment schemes, indirect logistics costs for Ukraine could be reduced by $US5 billion per year, and direct logistics costs (such as freight) by $US1 billion. Ukraine's total logistics costs for 2008 were estimated at $US23 billion, or 15.1% of total trade value, or 12.1% of GDP (The World Bank 2010).

Bottlenecks in the supply chain may cause excessive transit times, which can lead to spoilage and delays in supply to people in need (World Bank/FAO 2012[25]). For example, transportation of grain within the territory of Ukraine requires six different permits and five more to ship it abroad[26]. Such practice results in significant delays that transform into losses across the entire logistical chain decreasing competitiveness of Ukrainian grain. Simplification of administrative procedures and improvement of grain logistics in this respect are extremely important in order to avoid huge losses caused by unnecessary delays.

Figure 14. Grain transit through Ukraine (2006-2010)



[23] World Bank 2010: Ukraine: Trade and Facilitation Study; Accessed October 2012 http://siteresources.worldbank.org/UKRAINEEXTN/Resources/TTF_April2010.pdf

[24] World Bank 2012: Connecting to Compete 2012 Trade Logistics in the Global Economy: The Logistics Performance Index and Its Indicators http://siteresources.worldbank.org/TRADE/Resources/239070-1336654966193/LPI_2012_final.pdf

[25] World Bank/ FAO 2012. The Grain Chain Food Security and Managing Wheat Imports in Arab Countries http://www.fao.org/fileadmin/user_upload/tci/docs/The%20Grain%20Chain_ENG.pdf; Accessed 10 May 2013 http://siteresources.worldbank.org/TRADE/Resources/239070-1336654966193/LPI_2012_final.pdf

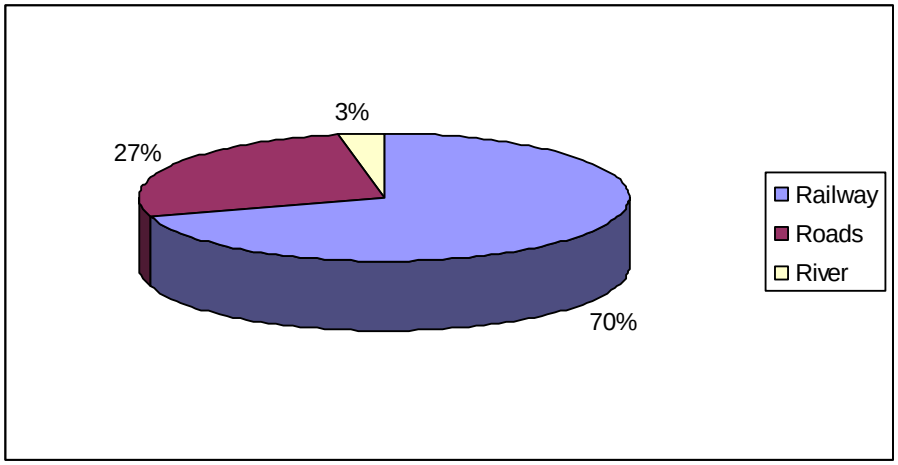
[26] http://blog.chamber.ua/2012/11/ukraines-grain-market-development-what-are-the-further-steps/; Accessed 10 May 2013

Source: www.blackseegrain.net[27]

Besides the current high level of production, the potential increase in grain production surpluses also need to be taken into account when analysing the state of the physical infrastructure for grain trade as well as potential increase of transit to Europe from countries such as Russia or Kazakhstan as was the case in 2006-2007 (**Error! Reference source not found.**.

The transportation of grain from producers to the borders in Ukraine is undertaken by several means of transportation. The extent to which these transportation means play a role in grain deliveries can be seen in Figure 15. Currently, railway transportation accounts for approximately 70% of grain transportation, 27% of grain deliveries undertaken by road using trucks and 3% are by using river vessels.

Figure 15. Internal grain transportation by means of transport (% of grain transported)



Source: www.blackseegrain.net[28]

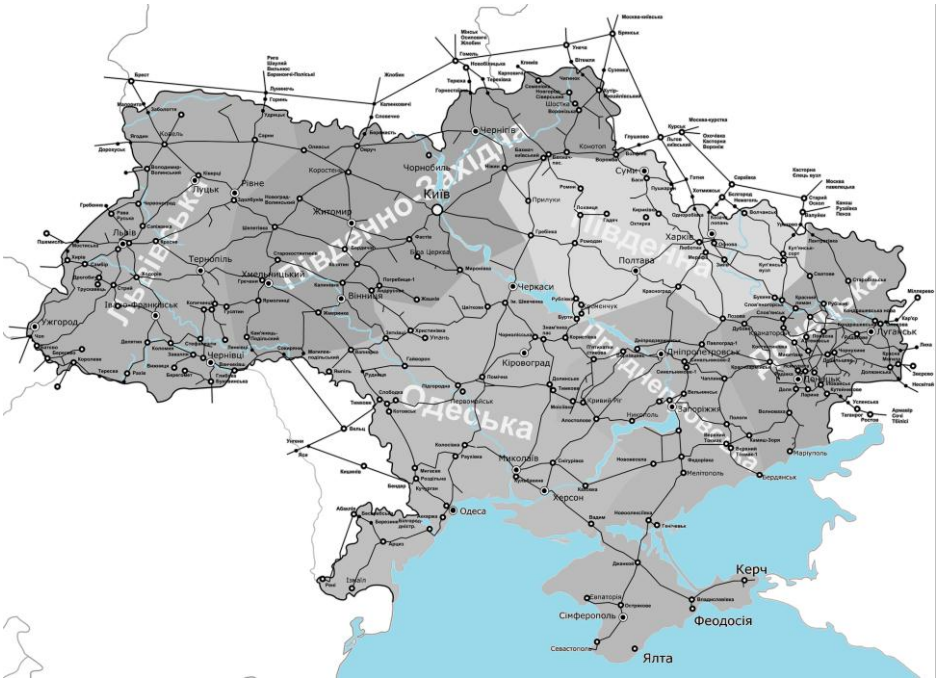
2.4.1. Railways

Figure 16. Railways of Ukraine[29]

[27] Accessed 15 July 2012 http://www.blackseagrain.net/pdfs/bsg-1/Logistics%20and%20transport%2024_03_10.pdf

[28] Accessed 15 July 2012 http://www.blackseagrain.net/pdfs/bsg-1/Logistics%20and%20transport%2024_03_10.pdf

[29] Source: http://commons.wikimedia.org/wiki/File:Uz_map_big_grey.png Accessed 18 July 2012



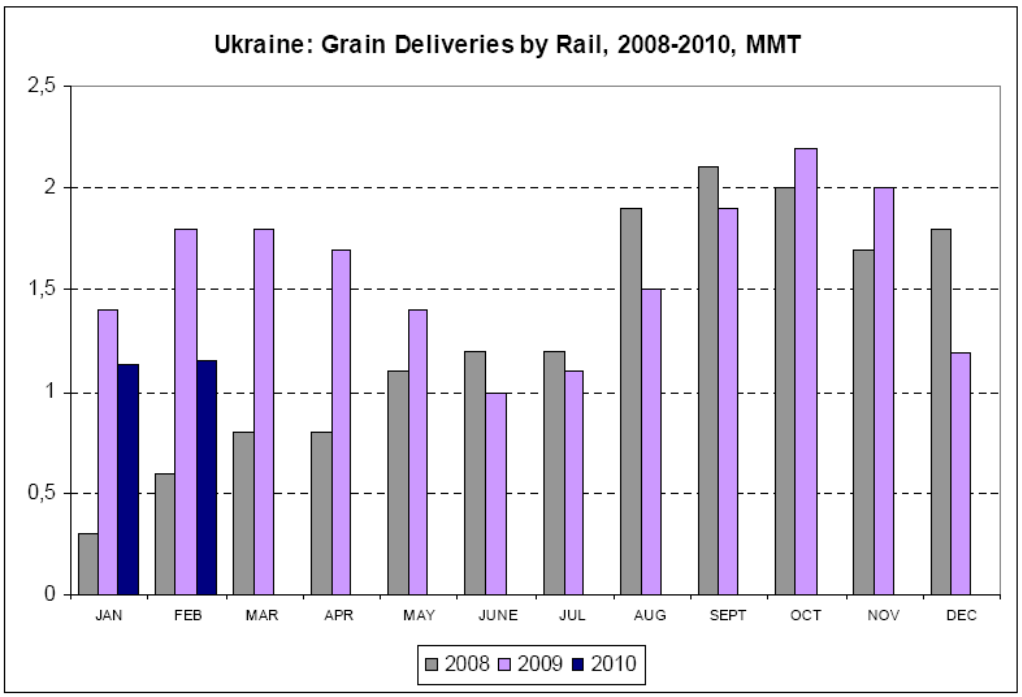
Rail is an efficient way of transporting crops after harvest. Ukraine has the most dense rail network in the world (CIA World Fact Book) that covers all the regions, providing transportation of crops across the whole country and to the sea ports (Figure 16).

The Ukrainian Railways (Ukrzaliznytsia), is a government owned transportation company that has a monopoly on railway transportation of grain in Ukraine (Socrat 2010), while industrial railways are managed locally on a regional level. The total length of railway tracks is over 22,000 km, which makes the Ukrainian railroad network the 14th largest in the world, and 3rd in Europe (Precedent 2012). It is the world's 7th largest freight transporter. Ukrzaliznytsia has a total of 11.6 thousand grain hopper wagons, however, this number has declined over the last three years, as a result of the wagon depreciation (nearly 80%) and underinvestment by the state monopoly (Socrat 2010). Currently, a large part of the Ukrainian Railways rolling stock is obsolete or will be soon. Based on expert estimates, less than 9 thousand wagons are actually used (World Bank 2010b), while the average loading rate is 632 wagons a day[30].

The grain delivery by rail also differs according to the season, having the peak period in September and October. The grain delivery by rail per month can be seen in Figure 17.

Figure 17. Grain deliveries by rail (2008-2010)

[30] Source: http://www.blackseagrain.net/pdfs/bsg-1/Logistics%20and%20transport%2024_03_10.pdf Accessed 18 July 2012



Source: www.blackseegrain.net[31]

Transportation by rail is limited due to lack of specialised rolling stock (OECD 2012). However, besides the lack of grain wagons, the other bottleneck is low capacity of railway stations located near main grain exporting ports and lack of railways in the areas close to these ports (World Bank 2010b). Occasionally, the railway administration temporarily bans grain supply to some port destinations as the railways become blocked with rail cars (USDA 2010). These congested sections would require double tracks (World Bank 2010b). These bottlenecks of the rail network restrict the mid-term potential for increasing grain production and transit.

The inflexible wagon reservation practices also complicate exports and contribute to inefficient operations of Ukrainian Railway (World Bank 2010b). There were evidences when the railway could not supply rail cars due to overbooking, e.g. in the period of November 2011- February 2012 the grain traders were booking 2,500 wagons per day while the railway could provide them with 1,250 rail cars only[32]. When the market pushes the volumes and rates of grain transportation, the infrastructure cannot cope with it. Rent of grain wagons is relatively cheap, since railway transport tariffs are still state controlled (OECD 2012), thus traders try to keep them as long as possible. UkrZaliznytsya has tried to address the problem by raising fines for the downtime of railcars to quicken their turnover. However, it will be impossible to resolve this problem in future without a substantial increase in the number of grain carriers (FAO/EBDR 2010). According to the local grain traders' union UZA[33] Ukraine's grain exports were unlikely to exceed 20 million tonnes in the 2011/12 season due to shortage of railway grain wagons. The grain production surplus of this year is estimated to be around 26 million tons.

Inefficiencies occur, next to deficit of rail cars, also due to administrative procedures i.e. problems with drawing up of the required documents on time. According to the analysis of the Ukrainian

[31] Accessed 15 July 2012 http://www.blackseagrain.net/pdfs/bsg-1/Logistics%20and%20transport%2024_03_10.pdf

[32] According to Vladimir Klimenko, President of the Ukrainian Grain Association, during the eleventh international conference "Grain Forum - 2012" on June 8 http://www.apk-inform.com/en/conferences/grain2012/news/1005343

[33] Source: http://www.reuters.com/article/2012/02/03/ukraine-railway-ban-idUSL5E8D31PA20120203 Accessed 12 July 2012

Grain Association[34] in 2011/12 “A wagon loaded with grain, passing through the territory of Ukraine, loses 85% of its time on the road due to handling and processing of documents. Turnover of grain cargoes in Ukraine is eight days, which is too long. Two to three thousand wagons with corn are idle because of the lack of transfer points". Thus, only 15% of the general transit times the rail cars spend on the road.

Some private companies have invested in grain wagons by purchasing them for themselves in order to ensure their own grain transportation and offering it as a service for its customers. For example the Eurobank currently owns 250 rail cars and plans to extend it to 1500 in future[35]. Though, logistic problems are still a significant obstacle.

In 2009 there was a significant drop in exports of metal and some other commodities from Ukraine, which helped grain trading companies to export grains. If there were active exports of metal, grain exporters would face heavier competition for the railway infrastructure (USDA 2010).

2.4.2. Roads

Currently, there is a relatively good road network across Ukraine (

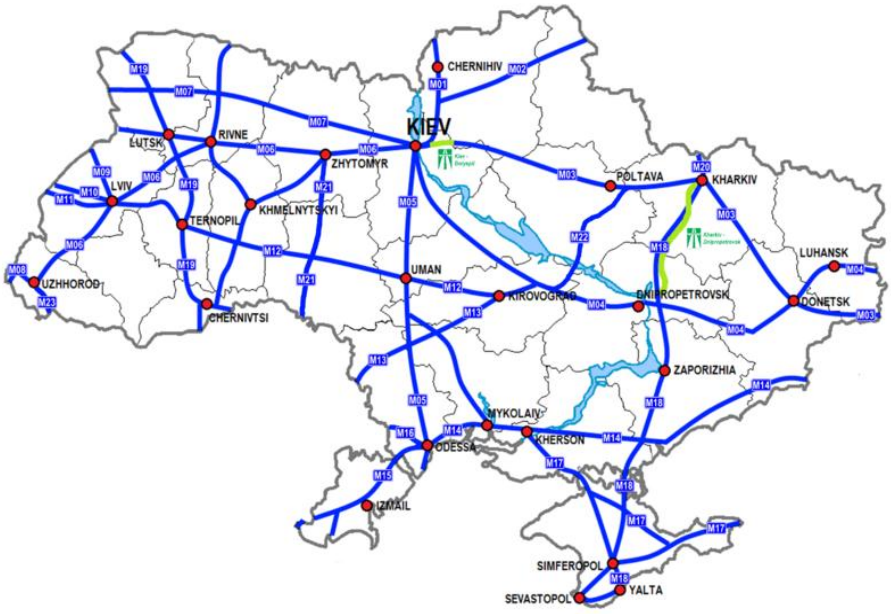
Figure 18), however, the operational condition of roads is very poor: around 51.1% of roads do not meet minimum standards, and 39.2% require major rebuilds. The average speed on roads in Ukraine is 2 - 3 times lower than in Western countries (Precedent 2012). Despite the fact that a large part of road network is in poor condition, a financing for road construction and maintenance has so far been limited (World Bank 2010b).

Figure 18. Ukraine major roads[36]

[34] Source: http://www.neurope.eu/article/russia-kazakhstan-ukraine-grain-pool-talks-stall NewEurope May 09, 2012. Accessed 20 July 2012

[35] Source: http://www.eurobank-ua.com/eng/clients_partners/82/205/ Accessed 21 July 2012

[36] Source: http://en.wikipedia.org/wiki/File:Ukraine_Major_Roads.png Accessed 20 July 2012



The main road transportation of grain by trucks is used in the grain growing regions close to the exporting ports (within 200-300 km). Close to the ports, road transportation is preferred to rail or river since it is more profitable and easier in terms of logistics. Several grain producers/traders have invested in trucks to transport grain (USDA 2010). However, the problem is that the current quantity and quality of access roads to ports in Ukraine do not allow increased traffic (OECD 2012).

For larger distances, for example transportation to and from EU, international logistics companies prefer to use Ukrainian trucks whenever possible. However, according to the World Bank (2010b), there are several constraints for road carriers due to the multilateral and bilateral quota systems, EU visa problems for Ukrainian drivers, weak financial position and expensive finance, including nonstandard leasing arrangements.

2.4.3. Rivers

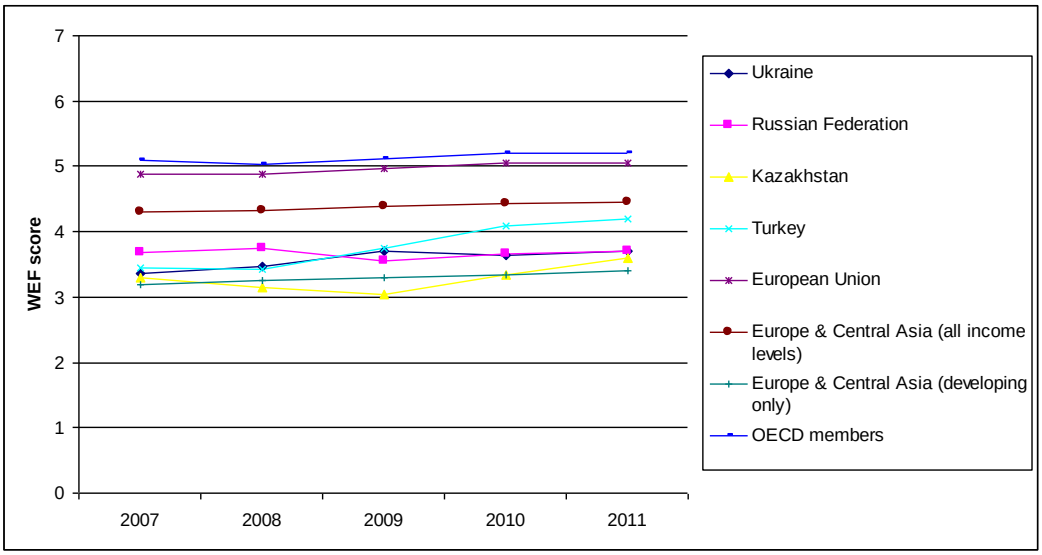
Ukraine has 4.400 km of waterways on 7 rivers, most of them are on Danube, Dnieper and Pripyat rivers. The river transportation is supervised by the Ukrrichflot which operates four major and one minor river ports along the Dnieper river and its estuaries. The major part of sea connections is made via the Black sea ports of Odessa, Sevastopol and Yalta. There is a total of 193 ships: 6 bulk carriers, 145 cargo ships, 3 container ships, 6 passenger ships, 4 passenger/cargo ships, 9 petroleum tankers, 11 refrigerated cargo ships, 7 roll-on/roll-offs and 2 specialized tankers (in 2007) (Precedent 2012).

Some grain suppliers are considering increasing the use of internal water transportation. For example, grain can be transported by railway or roads to river ports and then shipped to exporting sea ports or to importing countries (USDA 2010). Currently, the use of the Dnieper River for grain transportation is not substantial and therefore developing logistics infrastructure along its bed could be explored further (UkrAgroConsult 2010).

2.4.4. Port infrastructure

According to the World Bank, Ukraine scored 3.74 in the quality of port infrastructure in 2011. Figure 19 illustrates the score for selected transition countries and regions for the last five years. In this respect, Ukraine scores close to Russia and Kazakhstan, but below the average level of Europe and Central Asia countries (with a score of 4.44) and of the EU (with a score of 5.04) in the last year.

Figure 19. Quality of port infrastructure by country



Note: WEF: 1=extremely underdeveloped to 7=well developed and efficient by international standards).

Source: The World Bank Database: http://data.worldbank.org/indicator/IQ.WEF.PORT.XQ

In Ukraine there are 25 sea ports (18 state-run and 7 privately owned) and 12 port terminals on the shores of the Black Sea and Azov Sea (USDA 2010). The main seaports and inland waterway ports in Ukraine are illustrated in Figure 20.

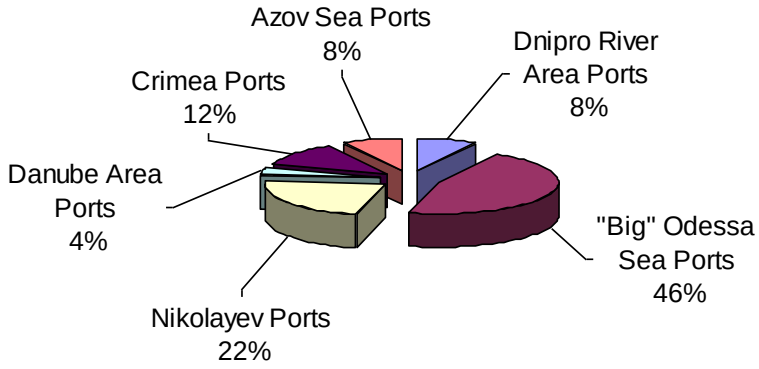
Figure 20. The main seaports and inland waterway ports in Ukraine

Source: http://ukrport.org.ua/index-e.htm

Ukraine's location in the Black Sea region makes it easier to export grain through seaports. Its port infrastructure for grain transhipment has grown rapidly in the last two decades. In the Soviet era the port infrastructure was obsolete and was not able to handle increased grain exports, since the port infrastructure was import-oriented. In the last decade the yearly capacity of grain transhipment has doubled from 15 million tons (2001) to around 30 million tons (2010), with grain storage capacity of around 2 million tons. State ports have approximately 17 million tons of transhipment capacity (1 million tons of storage capacity), and privately owned elevators have capacity of 9 million tons. The private sea ports have appeared only in recent years, due to increased grain export and transit through Ukraine.

The current grain transhipment capacities by port location are illustrated in Figure 21. Almost half (46%) of the total grain transhipment capacities in the country are located in the Odessa sea ports, Nikolayev ports being the second largest (22%), followed by Crimean ports (12%).

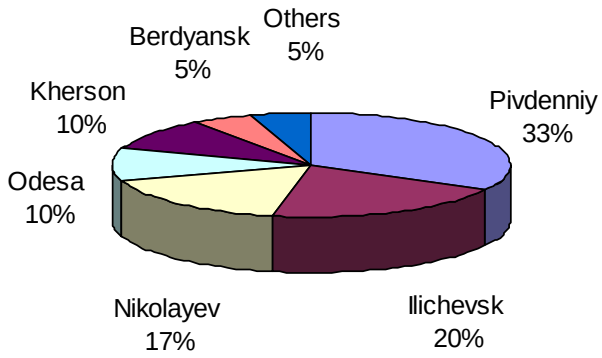
Figure 21. Grain Transhipment Capacities by Port Location (%)



Source: Global Shipping Agency

Currently 90% of total grain exports are shipped through ports (USDA 2010). Approximately 75-80% of all grain is exported via the four biggest ports: the three "Big" Odessa Ports – Pivdenniy (Yuzhny), Ilichevsk and Odessa, and the Nikolayev Port (Socrat 2010). The percentage of grain transhipped through different ports of Ukraine can be seen in Figure 22.

Figure 22. Seaports used for grain exports, 2009

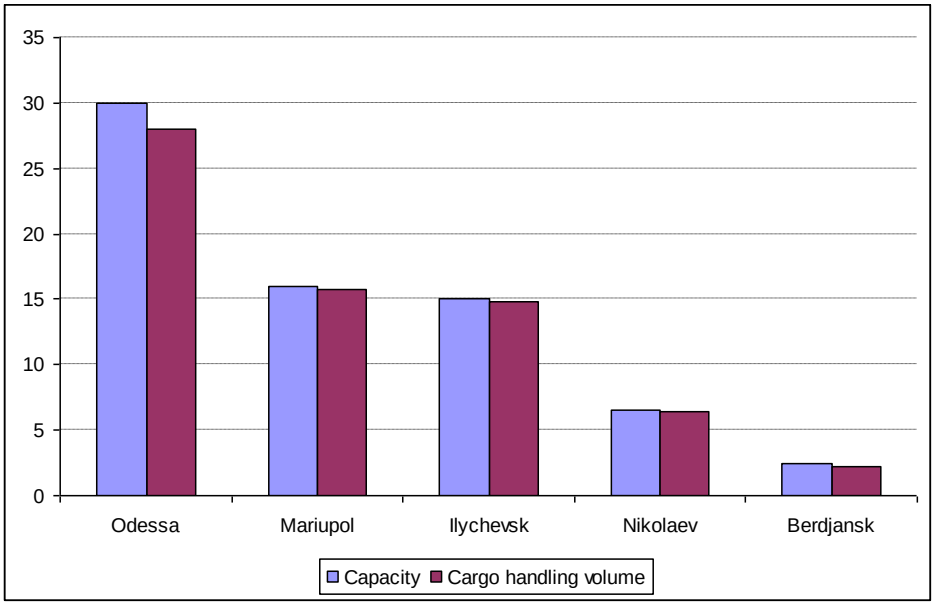


Source: UkrAgroConsult

Leading domestic and international private grain traders have their own updated or newly-built facilities at one of key ports (Socrat 2010). Increased capacity for grain export and transit is attributed to modern *private grain port* terminals, including Avlita, Traninvestservice, Transbulkterminal, Nibulon, Ukrelevatorprom and others (USDA 2010).

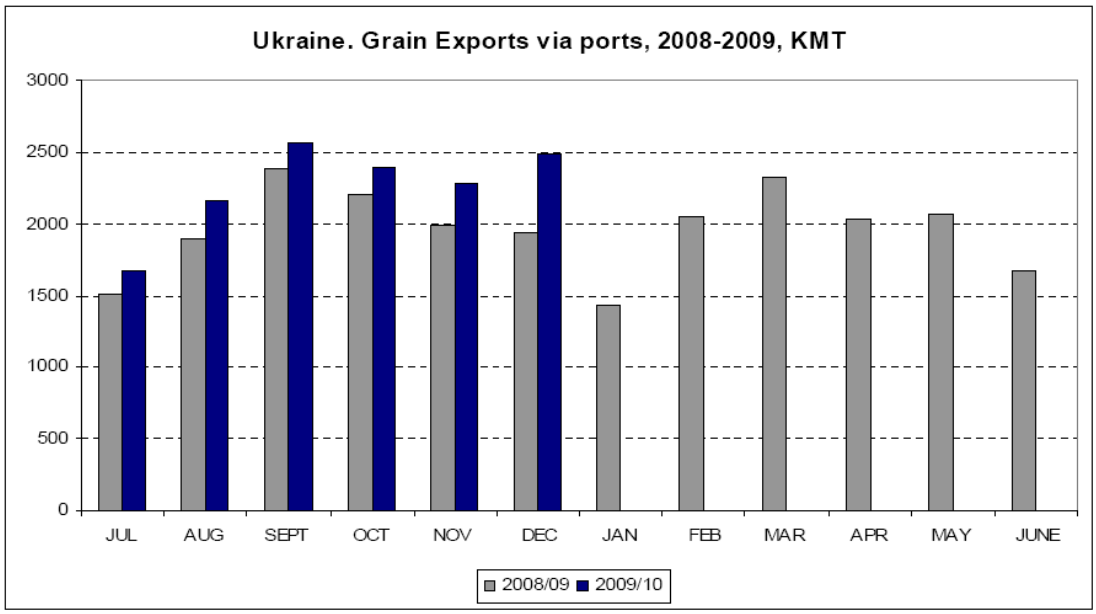
Based on OECD (2010) study, the cargo handling volume of Ukrainian ports is close to the maximum capacity, and therefore it could limit the growth of exports of agricultural products in the medium term (see Figure 23**).**

Figure 23. Cargo handling volume and capacity of main Ukrainian ports



Source: OECD (2010), Ukraine Sector Competitiveness Review, internal working document, OECD, Paris.[37]

Figure 24. Ukraine grain exports via ports



Source: www.blackseegrain.net[38]

Ukrainian port infrastructure can currently tranship around 2.6 million tons per month (USDA 2010) (see Figure 24 for monthly breakdown), which means that currently it can handle around 24-26 million tonnes of grain exports per year. Thus, according to the projections of 26.4 mil tons of grain export in 2011/2012, the total capacity might be sufficient to meet export needs (USDA 2012, UkrAgroConsult 2012). However, since the grain transhipment is not distributed equally thought the year, there are some difficulties related to limited seasonal capacity, especially in the peak shipment period from August to October.

[37] OECD 2012

[38] Source: http://www.blackseagrain.net/pdfs/bsg-1/Logistics%20and%20transport%2024_03_10.pdf Accessed 20 July 2012

Currently, Ukrainian ports continue to receive public[39] and private investments (USDA 2012), however, a national port development strategy is needed to coordinate the plans of individual ports (World Bank 2010b).

2.5. Grain storage facilities

2.5.1. General overview

Grain storage constitutes an important part of the grain production chain, since it helps to avoid losses and excessive costs after the grain have been harvested. All producers and consumers of these products, such as farmers, agrarian companies, intermediaries, processing industries and exporters need services of qualitative grain storage with sufficient capacity available throughout the year, especially during the harvesting season.

There is no official data on the total grain storage capacity, as grain processing plants or other private companies that store grain for their own purposes may not report on the storage capacities they have. However, according to the estimates of APK-Inform[40] in 2011 there were around 40.1 million tonnes of grain storage capacity in Ukraine, and according to the latest estimates there are around 45 million tonnes[41]. In 2010 there were around 1100 silos in Ukraine from which 755 were certified (with the capacity of 31 million tons) with loading capacity of 1.5 million tons per day (Socrat 2010). From the certified grain elevators most are owned by private companies, but the largest operator of grain silos is owned by the state. The government owns around 20% of all capacities ("Khlib Ukrainy" State Stock Company (SSC) with up to 7 million tons[42] and State Reserve Fund with 2.1 million tons. The rest of storage capacities are privately held (the largest ones include leading grain trading companies, such as Kernel, Louis Dreyfus, Cargill, Bunge and WJ Grain) (USDA 2010), Nibulon, Svarog. The breakdown of certified grain storage capacities by regions is illustrated in

Figure 25.

Figure 25. Certified Grain Storage Capacities by Regions, 2010 (in thousand tons)

[39] Ukraine is intending over the next ten years to invest €20bn in the purchase of equipment for Ukrainian ports, according to Vice Premier and Minister of Infrastructure Borys Kolesnikov

http://www.bne.eu/dispatch21788/Infrastructure_Mon_30_Jul#324368 Accessed 20 July 2012

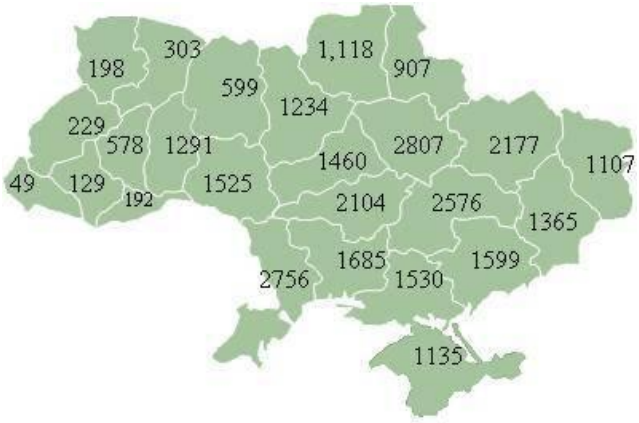
[40] According to APK-Inform Agency (March 4 2011) during recent 10 years infrastructure of the grain market of Ukraine faced essential changes in both qualitative and quantitative concept. Beginning from 2001 till 2011 the general grain storage capacity in the country increased by 70% from the level of 28.2 to 40.1 mln tonnes, and the capacities of port shipment grew 3.3 times from the level of 11 to 36.4 mln tonnes

Available at: http://www.apk-inform.com/en/news/104947 Accessed 25 July 2012

[41] Source: http://www.apk-inform.com/en/conferences/grain2011/news/1005269 Accessed 25 July 2012

"Nearly 16 mln tonnes (36%) are the capacities owned by agricultural producers. In particular, 83% of the storehouses are floor storage, 76% do not have laboratories of quality evaluation, and 67% have not been modernized in the recent 3 years".

[42] Source: http://rada.com.ua/eng/catalog/18112/ Accessed 25 July 2012



Source: Ministry of Agrarian Policy

Based on the estimates of Renaissance Capital (2008) there are more than 700 enterprises specialized in grain storage, with only 573 being licensed for commercial grain storage. Many producers also do have some temporary storage on their farm, even if these are designed to store grain on a temporary basis, many of the producers use these storages all year around. This way they do not need to pay rent and are less dependent on quality loss present on elevator storages and less subject to risks of not receiving their grain on time during the sales period. Other advantage is that this way they do not need to declare their grain production and can sell to anyone at any time at any price without being influenced by regional administrations. In 2008 specialised grain silos had 40% of total storage capacity, with the rest spread between storage facilities on sites of grain producers[43] and grain processors.

The quality of some grain silos built during the Soviet era is low, and their loading capacity is one of the constraints for prompt grain trade.[44] Before the financial crisis of 2008, many grain growing and trading companies had plans to build new modern grain elevators, however only some have managed to accomplish their projects, as most of them, due to lower credit availability, had to reduce their capital expenditures (USDA 2010).

In 2008, when the production exceeded 53 million tons, grain elevators in some Ukrainian regions were reportedly overloaded during the harvesting period and thus producers/processors struggled with the lack of grain storage capacity (USDA 2010). This phenomenon occurred also in 2009 and 2011. Even though, according to APK-Inform grain expert, nearly 45 mln tonnes of grain capacity would be quite sufficient for grain store operations in 2012 (together with the planned increase of grain production)[45], there is still an issue that a significant volume of the crop will be stored in improper conditions (UkrAgroConsult 2012). The global market requires high quality grain, thus the storage facilities would require further investments. Even though the amount of investment in the elevator industry of Ukraine has increased, its flow is still insufficient. Mainly large companies, which focus on export of grains and oilseeds or their products, are engaged in (re)construction of existing elevators, since in the past 40 years no state grain storage facilities werte built (UkrAgroConsult 2012, Socrat 2010).

[43] In 2012 grain storage capacity owned by agricultural producers were nearly 16 million tonnes (36%) Available at: http://www.apk-inform.com/en/conferences/grain2011/news/1005269 Accessed 26 July 2012

[44] For example, there are some grain silos with storage capacity of 100,000 tons which load only 10 railcars per day. Some farmers have developed on-farm storage capacities as a response to both the lack of large grain silos and to the increased price of elevator services.

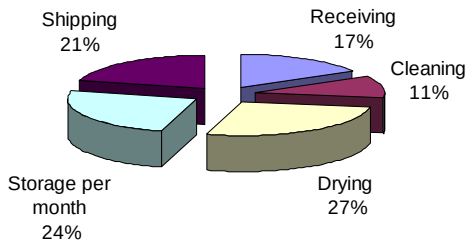
[45] Source: http://www.apk-inform.com/en/conferences/grain2011/news/1005269 Accessed 26 July 2012

According to some experts' preliminary estimates, building of new silos with high capacity and new transfer points for grain would cost Ukraine about 6 billion U.S. dollars.[46] Strategic planning of elevator locations should take into account regional perspectives of grain and oilseed markets development, potential for reducing logistics costs, as well as change of enterprise activities in response to changing world markets (UkrAgroConsult 2012).

2.5.2. Economics of grain storage

Grain producers that do not own elevators run the risk of losing crop quality or being forced to sell their harvest at unfavourable prices (BG Capital 2010). Many grain farmers currently find elevator services for storage and drying expensive and the rising grain storage tariffs during the peak periods badly affect growers' incomes. A number of large agricultural enterprises have thus began constructing their own elevators [47] in order to have the advantage of tighter control of storage conditions, and therefore the quality of product (UkrAgroConsult 2010, Socrat 2010, Renaissance Capital 2008). According to Socrat (2010), the silo service business is highly profitable. The operating margin varies from 20 - 50% depending on the efficiency and closeness to sea and river ports. In 2010 the coverage ratio for elevator capacities was about 70-80%. The silo service cost breakdown in Ukraine can be seen in Figure 26.

Figure 26. Silo service cost breakdown in Ukraine, 2009/10 (% of total costs)



Source: Ukraine Ministry of Agriculture, the figures are taken as a % of total.

The figure shows that the highest costs during the silo storage are drying and monthly storage expenses, which represent around 1/4th of total expenses each, followed by shipping and receiving expenses, with cleaning costs representing the lowest proportion of total storage expenditure.

2.6. Grain export chain

The main economic agents in grain commodity chain in Ukraine can be grouped into: producers, processors and traders. Despite the fact that these agents play different roles in the grain commodity chain, several economic agents are involved in grain production, processing or/and trade/export as well, thus forming large agricultural enterprises that incorporates the grain chain from production to export.

[46] Source: http://www.neurope.eu/article/russia-kazakhstan-ukraine-grain-pool-talks-stallAccessed 9 May 20124

[47] Source: http://eastagri.org/publications/pub_docs/ebdr_Ukraine72c.pdf Accessed 25 May 2012

2.6.1. *Grain producers and processors*

The grain production of Ukraine comes from three different types of farms: households, peasant farmers and agricultural enterprises. Mainly the agricultural enterprises are those that are specialised in crops for export, while smaller sized individual farms (households and peasant farms) produce for internal consumption. Around 70% of the grain production comes from agricultural enterprises while only 30% from small and medium sized individual farms: 21% from households and 9% from peasant farmers[48]. On average almost half of grain production of Ukraine in the last few years was exported and this trend seems to continue and grow in the next years, which would require a well-developed infrastructure starting from producers to subsequent parts of the grain production chain. Grain is usually going from producers to processors or directly to exporters. Around 7 million tons of grain supply goes every year to processing industry[49], however most of the processed grain is utilised internally and only marginal proportion of it is exported (e.g. from 2.2 million tons of wheat flour produced only 150 tons are exported[50]). The majority of grain leaves the country in unprocessed form as bulk product.

2.6.2. *Traders*

Foreign investors play an increasingly important role in infrastructure development in Ukraine due to profitability of grain export from Ukraine to other parts of the word. The export of grain is in the hands of a few companies, most of which are large international agricultural commodity traders. The top ten Ukrainian grain exporting companies and the largest wheat flour exporters with the percentage of production share can be seen in Table 4 and

Figure **27**, respectively. These exporting companies often own grain elevators, private ports, rail wagons and ships to transport, store, process and export their own grain or grain purchased from other producers.

Table 4. Top 10 exporting companies of wheat and barley, 2010/11[51]

Company	Residence	Export volumes (thousands of tonnes)	Share of exports (%)
Nibulon	Domestic	772.0	25.3
Suntrade/Bunge	International	306.4	10.1
Kernel	Domestic	249.5	8.2
UAC	Domestic	181.4	6.0
Cargill	International	140.3	1.6
Sema/Glencore	International	137.0	1.5
Louis Dreyfus	International	126.4	4.1
Alfred C. Toepfer/ADM	International	87.3	2.9
Vitalmar Agro/Nidera	International	60.0	2.0
Agro trade	Domestic	32.6	1.1
Total		***2092.9***	***62.8***

Source: Investment Capital Ukraine (2010), "Sector Primer Agriculture", Investment Capital Ukraine, Kyiv[52]

[48] Calculated based on data from State Statistical Committee 2010

[49] Source : Grain Ukraine

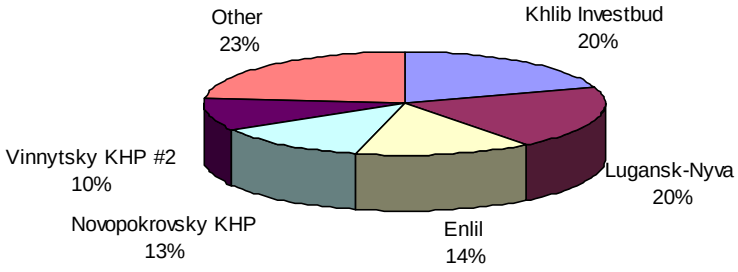
[50] Source: http://anyfoodanyfeed.com/en/news/id/918 Accessed 20 July 2012

[51] Ukraine Exporters Database, Available at: http://www.ukrexport.gov.ua/eng/ukr_export_exporters/

Accessed 20 July 2012

[52] OECD 2012 Competitiveness and Private Sector Development: Ukraine 2011, p 91.

Figure 27. Largest wheat flour exporters in March 2012[53]



Source: Grain Ukraine

Large exporters typically enjoy relatively low transport costs and relatively few border-crossing problems. Their main logistics problems are related to availability of rail and port capacity and non-transparent tariffs in rail and port operation. (World Bank 2010b)

2.6.3. Economics of grain export

In order to obtain better knowledge on the economics of grain export in Ukraine, a cost analysis of the grain export logistics chain is assessed within this section. The transaction costs (including transportation and certification costs) are examined in detail in order to explain the price difference between the producer price (farm-gate price) and border/export price (FOB price =free on board). For this purpose wheat has been taken as an example.

Figure 28 compares the producer price at farm gate with FOB price[54] and international price for wheat for the last decade. It can be seen that the price margin between farm gate price and FOB price has increased after 2006 peaking in 2008 due to increased wheat world market prices (and also export restrictions by quotas), which also profited certain group of exporters in these years, since farm gate prices were even lower (due to good bargaining position of the exporters)[55]. This phenomenon though with a less extent has continued in the following years.

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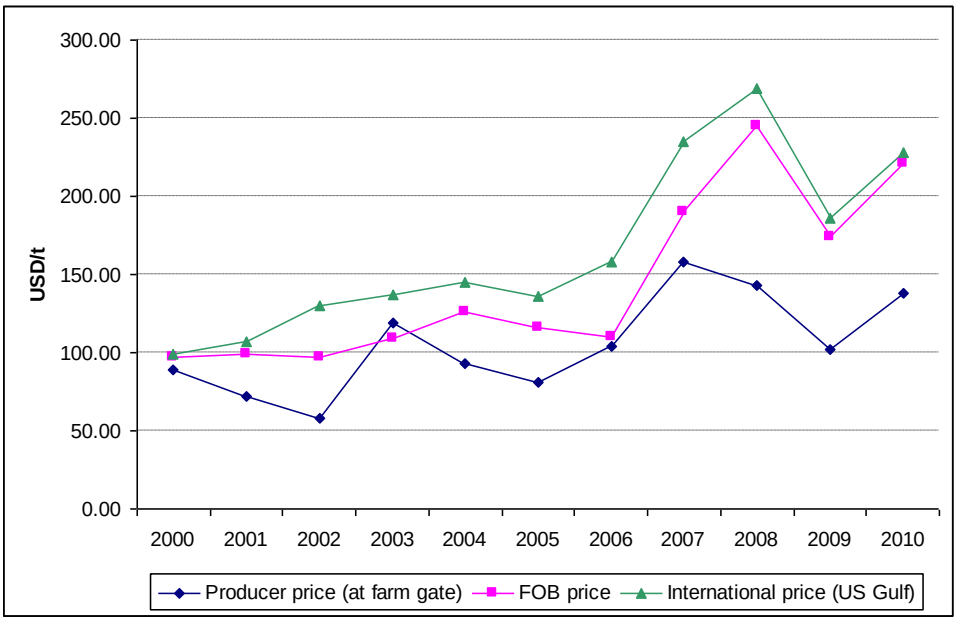
[53] Source: http://anyfoodanyfeed.com/en/news/id/17046 Accessed 30 July 2012

[54] Border prices include transportation, handling and other costs incurred in bringing the product to the point of trade (elevators, railways, ports, quarantine and grain inspection, customs etc)

[55] A farmer's location in relation to the main domestic and international markets, and the proximity of the crop to the grain handling infrastructure and ports also significantly influence the level of the farm-gate wheat prices and revenue. Farmers in remote areas typically receive lower prices than farmers located close to ports. This is especially true in situations where farmers compete in the same export markets. Source: FAO 2009 Agribusiness Handbook: Wheat Flour. Available at: http://www.fao.org/docrep/012/al376e/al376e.pdf Accessed 30 July 2012

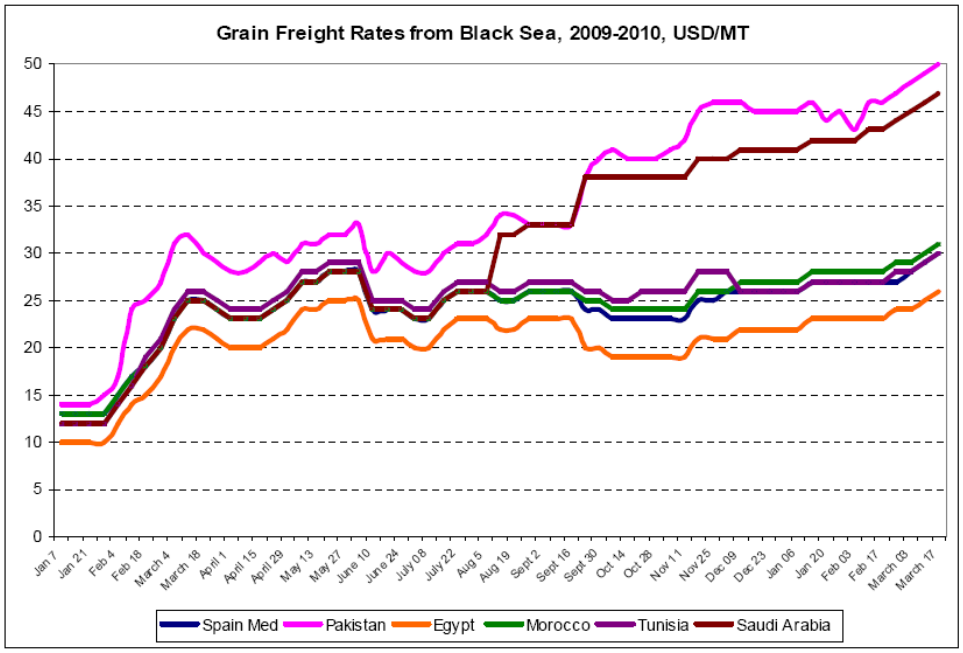
Figure 28. Ukrainian farm gate price of wheat in comparison with border (FOB) prices of Ukraine and USA Gulf price.



Source: FAOSTAT

Domestic grain export prices (FOB) are closely correlated with international grain prices. Ukrainian prices track world prices minus transportation costs and other charges (Figure 29). Proximity to the import markets in North Africa and the Middle East and availability of grain export terminals gives Ukrainian grain suppliers a competitive advantage and provides cost effective opportunities to export.[56]

Figure 29. Freight Rates from Black Sea (2009-2010)

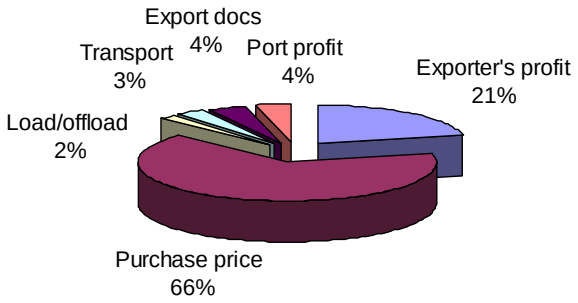


Source: http://www.blackseagrain.net/pdfs/bsg-1/Logistics%20and%20transport%2024_03_10.pdf

[56] Source: http://eastagri.org/publications/pub_docs/ebdr_Ukraine72c.pdf Accessed 30 July 2012

Based on the study of Renaissance Capital (2008) grain exporters in Ukraine in 2007 might have reached a substantial profit from grain trading by suppressing farm-gate prices and obtaining even higher profit margins due to high export prices. Since transport, handling and port charges[57] are relatively low, exporters, due to their quasi-monopoly status, have obtained profits of up to 20% of the export (FOB) price. The distribution of costs of wheat based on FOB price is illustrated in Figure 30. High export prices favoured exporters only, while farmers could not share these profits and received no extra funds so needed for capital expenditures.

Figure 30. Cost of wheat for export (FOB), % total (2007)



Source: Ukrstat, operator's data, Renaissance Capital estimates (Renaissance Capital 2008)

In 2010 the farm gate prices of grain ranged between 105-109 €/ton (see Table 1 in Chapter 3.1.3.) while the export price of Ukrainian wheat (FOB prices at Black Sea ports) rose to 200 €/ton. This suggests that margins of up to 100% of the farm gate price (inclusive of transport and handling costs) could have been earned by producers if they would be able to obtain an export license.

Experts' estimates indicate that it costs approximately 20-25% of producer's price to move grain from an inland elevator to a port (CPT basis).[58] This cost includes inland elevator handling fees (35-45 UHA/ton), railroad tariffs (depending on the distance: 160-180 UHA/ton from central regions, 206-220 UHA/ton from western regions, track transportation (1.50-1.80 UHA/ton km), certification, and the freight forwarder's margin (see also Annex 7). It costs an additional UHA 85-170 per metric ton to move grain from CPT terms to FOB depending on the port and vessel type. At the moment, grain producers in Ukraine are paid slightly more than 60% of the world market price compared with almost 90% in France and other exporting countries with efficient infrastructure and marketing systems (The Chamber and EBA 2011). Thus, at current market prices of roughly 300 USD/ton, producers in Ukraine receive 85 USD/ton less than their competitors in other exporting countries. The world practice is that grain producers should receive at least 80% of the FOB price, thus chain cost from elevator to ship and the profit margin should not be higher than 20% of the FOB price. Non adherence to these rates leads to grain production stagnation[59]. Export restrictions push down

[57] Port charges are regulated by the government, and are limited to covering the costs of grain processing/storage and maintenance of facilities

[58] Source: http://www.expert.ua/articles/7/0/7154/ Accessed 15 September 2012

[59] Source: Volodymyr Klymenko, Costs analysis of the grain export logistics chain, Agrilogistics 2009 Conference, Sept 16, 2009, Kyiv, Ukraine

the export price, so the farm-gate price, thus the profit of traders and, thus, of producers. The fact that grain exporters sell Ukrainian grain at less than world rates is wrong as the state controls it on export contract level.

3. Institutional reform in Ukraine

Several studies argue that Ukraine's failure to tap its full production and export potential is mainly a result of its market-unfriendly institutional base (IMF 2006, USDA 2002). The process of reconstruction of institutions in Ukraine, inherited from the Soviet era, to the market-oriented ones has been slow compared to other post-Soviet European countries. Therefore, the establishment of market enhancing institutions need even more support, since it is a prerequisite for using its resources efficiently. There are several evidences of international support from the EU (e.g. EBRD[60], EU-TACIS[61]), Eastern Partnership (Comprehensive Institution Building[62]) and other international organizations (such as UNDP[63], USAID & USDA, and IMF) to enhance the development of these institutions, however despite some progress made there is still a lot of work to be done to develop an adequate institutional framework that is needed to support the development of liberalised markets (e.g. fight against corruption improvement of judiciary system, improvement of business climate, refraining from introducing protectionist measures) [64].

The necessary measures to support grain market liberalisation include clearly defined property rights, enforcement of contracts, credit access, and better market infrastructure (USDA 1998). In the absence of these measures the factors of production do not have free movements, which slow down the efficiency of the grain sector modernisation. Due to the lack of these the price signals are also not transmitted properly to the producers. Thus, even if relative prices are high (e.g. high international wheat prices) that might favor expansion, the producers are unable to respond to these signals.

3.1. Current institutional settings in Ukraine

According to the 2013 Index of Economic Freedom, Europe is the second-freest region in the world after North America. Ukraine's overall economic freedom score is 46.3 (Figure 31 below), making its economy the 161st freest in the 2013 Index (out of 177 countries). This Index evaluates countries in four broad areas of economic freedom: rule of law; regulatory efficiency; limited government; and open markets. Ukraine is scoring well below the European average in most of the 10 specific categories (property rights, freedom from corruption, fiscal freedom, government spending, business freedom, labor freedom, monetary freedom, trade freedom, investment freedom, and financial freedom), only in fiscal, monetary and trade freedom it scores close to the European average, which means the country is "mostly free" in these aspects. This is also due to the price and trade reforms that has been fully implemented (USDA 2002[65]) which was also a prerequisite for joining the WTO

[60] The European Bank for Reconstruction and Development (EBRD) is the largest financial investor in Ukraine Accessed May 2013; http://www.ebrd.com/pages/news/press/2012/120913.shtml

[61] European Union-Technical Assistance to Commonwealth of Independent States (currently run over 400 programs and projects on technical and financial cooperation); Accessed 10 May 2013 http://ec.europa.eu/world/enp/pdf/country/2011_enpi_nip_ukraine_en.pdf

[62] In Ukraine over €43 million was invested for 2011-2013; Accessed 10 May 2013 http://euukrainecoop.com/2012/12/03/institution/

[63] United Nation Development Assistance Framework for 2012-2016

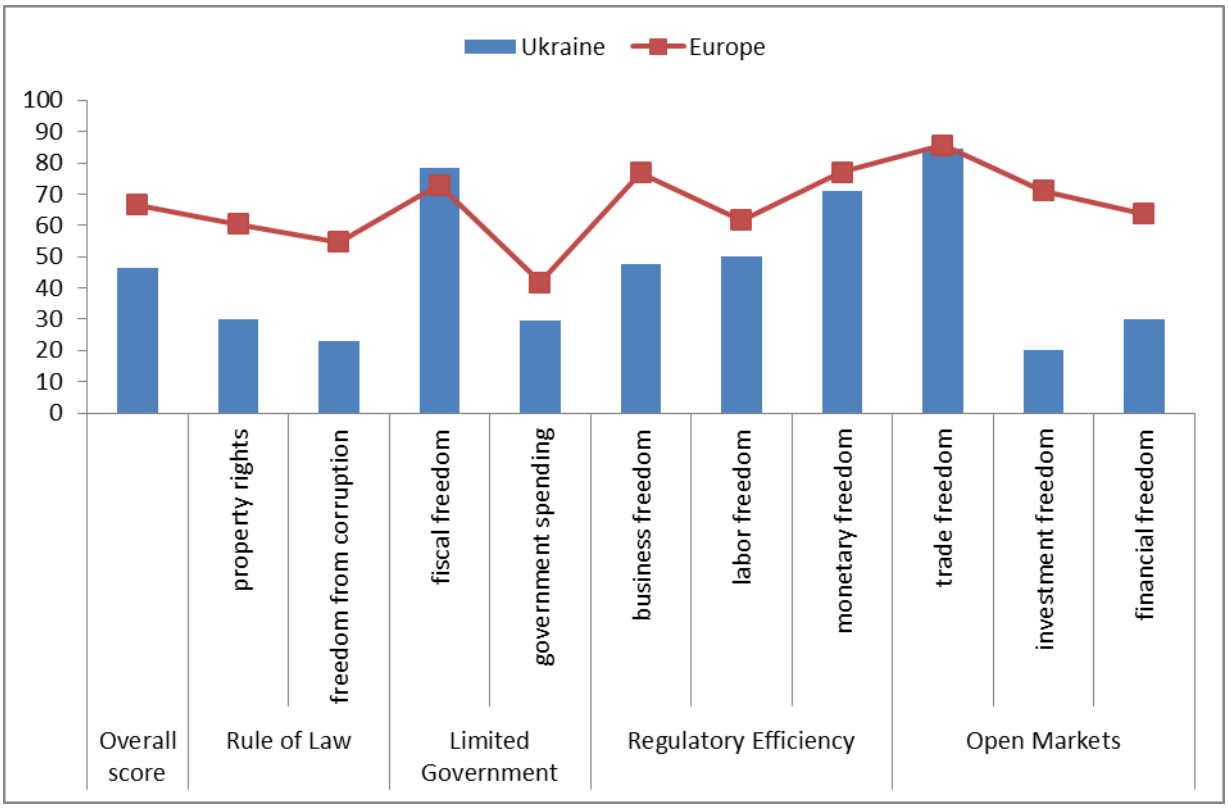
[64] European Commission 2013: Implementation of the European Neighbourhood Policy in Ukraine Progress in 2012 and recommendations for action, SWD(2013) 84 final. Accessed 10 May 2013 http://ec.europa.eu/world/enp/docs/2013_enp_pack/2013_progress_report_ukraine_en.pdf

[65] Stefan Osborne and Michael A. Trueblood (2002) Agricultural Productivity and Efficiency in Russia and Ukraine: Building on a Decade of Reform, Economic Research Service/USDA, AER-813. Accessed 30 April 2012

and opening the markets towards the EU. Currently further reforms are enhanced by the European Neighbourhood Policy Instrument and Association Agreement including the Deep and Comprehensive Free Trade Area (see chapter 2).

In all other aspects Ukraine scores below 50, which means the country is "repressed" concerning these categories, especially low scores were achieved on rule of low property rights and freedom from corruption, as well as on indicators of open markets on investment and financial freedom; corruption and investment freedom representing the lowest scores of all indicators. Since these problems as well as unstable investment climate are preventing Ukraine from implementing structural changes in the agricultural sector, more focus should be paid on improvement of the indicators. Here we highlight the importance of these factors for economic freedom in Ukraine.

Figure 31: Index of Economic Freedom in Ukraine and Europe in 2013



Note: Based on an aggregate score, each country was classified as "free" (i.e. combined scores of 80 or higher); "mostly free" (70-79.9); "moderately free" (60-69.9); "mostly unfree" (50-59.9); or "repressed" (under 50).

Source: www.heritage.org/index

3.2. Rule of Law

The Ukrainian Government has adopted several laws to promote the growth in agriculture, agro-industry and rural development (The legal framework on Agricultural policies can be seen in Box below). However, the market-based legal framework in Ukraine still lags behind other Eastern European transition countries. This is mainly due to weak rule of law that is characterizing the administrative procedures in the country including lack of the property rights and widespread corruption.

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http://www.ers.usda.gov/media/889495/aer813b_002.pdf

Progress in 2012 and recommendations for action, SWD(2013) 84 final. Accessed May 2013 http://ec.europa.eu/world/enp/docs/2013_enp_pack/2013_progress_report_ukraine_en.pdf

Box: Agricultural policy framework in Ukraine

Legal Framework in Ukraine

Ukraine has adopted a number of laws to encourage agricultural and agro-industry growth and rural development, among those are:

State Support of Agricultural Sector of Ukraine (2004) including the Agrarian Subsidies Fund establishment,

Law on Basic Principles of the State Agrarian Policy (2005),

Law on Grain and Grain Market in Ukraine (2002), the Commercial Code (2004),

Law on Wholesale Markets of Agricultural Products (2009),

Law on Support to Utilisation of Biofuel, the Law on Joint-stock Companies (2008),

Law On State Regulation of Import of Agricultural Products, the Law on Public-private Partnership (2010),

Law on Protection of Economic Competition (2009).

Law on Organic Production was drafted together with the Concept of the State Programme of Organic Development in Ukraine.

National Development Programme

The key documents setting out the Government policies for the country, agriculture, rural and agro-industry development include:

Programme of Economic Reforms for 2010-2014 "Prosperous Society, competitive economy and effective state";

Concept of the state target economic programme on development of investment activity for 2010-2015;

National Program for Rural Development until 2015;

National Program of Poverty Reduction and Prevention for 2010-2015.

The Ukrainian government has lately become a supporter of biodiesel production.

Ukraine has with the EU a Partnership and Cooperation Agreement since 1998 with an ENP Action Plan from 2005 and the National Indicative Programme for 2011-2013 where support to agro-industry sector development and to trade facilitation is included.

Together with the UN organisations the country elaborated United Nation Development Assistance Framework (UNDAF) for 2012-2016 entitled: UNITED NATIONS PARTNERSHIP FRAMEWORK 2012-2016.

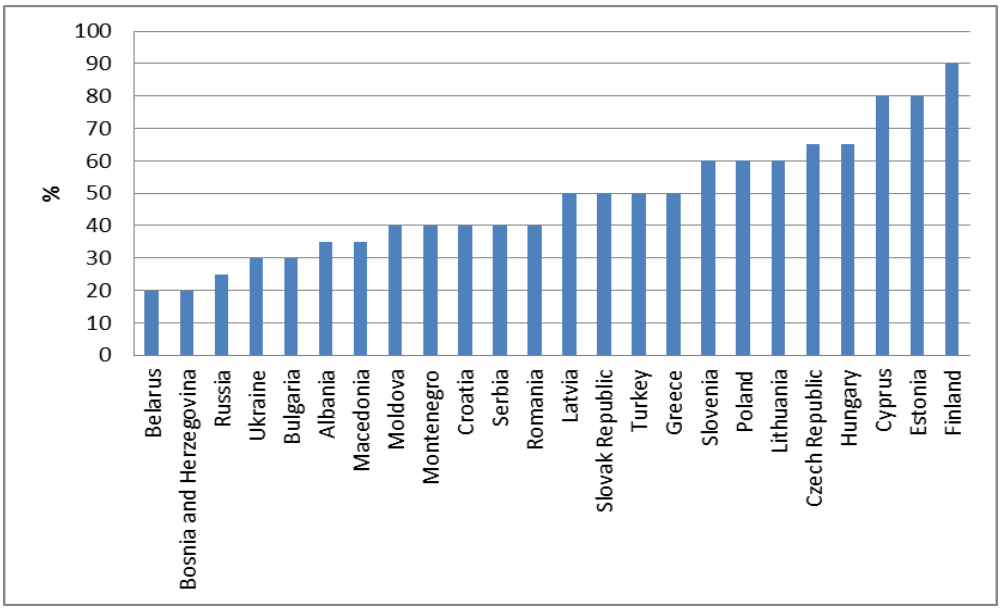
Source:
FAO 2011, http://www.fao.org/fileadmin/user_upload/Europe/documents/Publications/AI_briefs/Ukraine_ai_en.pdf

3.2.1. Property rights

In Ukraine the property rights are not yet clearly defined. A subcomponent of the Index of Economic Freedom, the Property Rights Index measures the degree to which a country's laws protect private property rights, and the degree to which its government enforces those laws. Higher scores are more desirable (cores are from 0 to 100), i.e. property rights are better protected. The index also assesses the likelihood that private property will be expropriated and analyzes the independence of the judiciary system, corruption within it, and ability of individuals and businesses to enforce contracts. Ukraine's Property Rights Index is only at 30%. Compared to the European averages (Europe: 62%; Eastern Europe: 48%, Western Europe: 83%) this figure is very low, which also means that Ukraine lags far behind almost all European countries together with Russia (Figure below). Such conditions greatly discourage the investment in Ukraine. The aim for more liberalised markets would be the score above 80% which is the benchmark for most Western European countries with well-functioning open markets (

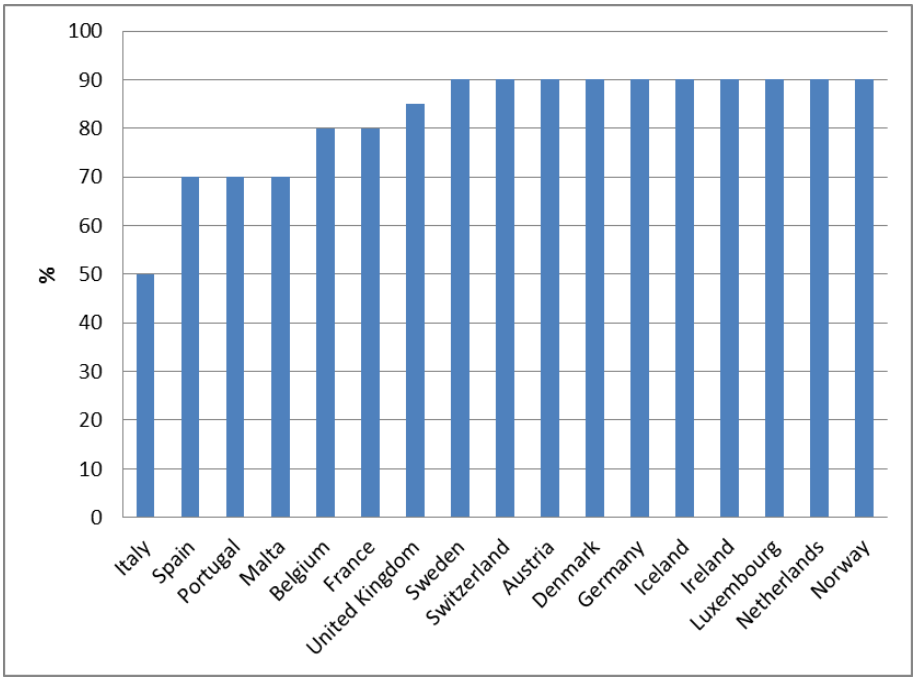
Figure **32** below).

Figure 32: Property rights index in Eastern European countries in 2013



Source: The Heritage Foundation and the Wall Street Journal[66]

Figure 33: Property rights index in Western European countries in 2013



Source: The Heritage Foundation and the Wall Street Journal[67]

The definition of the property rights is essential for the well-functioning agricultural sector. In Ukraine the land privatization is still an ongoing process. The functioning land market would be a prerequisite for attracting investment to the agricultural sector, especially foreign investments in

[66] http://www.globalpropertyguide.com/Europe/Ukraine/property-rights-index#Property_Rights_Index_notes Accessed May 2013

[67] http://www.globalpropertyguide.com/Europe/Ukraine/property-rights-index#Property_Rights_Index_notes; Accessed 30 April 2013

order to boost grain production and export. At the end of 2012, the Verkhovna Rada adopted Law №11315, further extending the moratorium on selling agricultural land until 1 January 2016[68]. Under the draft law, potential buyers of farm land can only be the Ukrainian government; regional state authorities; the State Land Bank; or Ukrainian citizens. Moreover, only the first three categories have the priority right to purchase any agricultural land that is offered for sale. The state already stated that it plans to own at least 30% of the Ukraine's farmland[69]. All individuals who wish to own more than 100 hectares will need to obtain permission from GosZemAgenstvo (the State Land Agency). This is a highly controversial requirement because it allows government bureaucrats to decide which Ukrainian individuals can own large parcels of farm land. Even though foreign investors can acquire land through leasing arrangements (up to 50 years), these mechanism are not absolutely transparent. The leasing costs with payments of 3% of the land value are burdened with further charges by the state in forms of different types of taxes. Such non-transparency and lack of competitiveness discourage foreign investors from investing into the agrarian sector of Ukraine. A revision of this law would be highly recommended in order to attract investment and make the agricultural sector more competitive and efficient in terms of factor use (World Bank, 2012b).

Table 5. Current and potential foreign investors in Ukraine agriculture sector (2013)

Investor Company	Investor country	Aquiered land (ha)	Aim (ha)	Source
Current investors				
	Lybia	250 000		http://www.guardian.co.uk/environment/2008/nov/22/food-biofuels-land-grab
Mriya	Cyprus	240 000		http://landportal.info/landmatrix/get-the-detail/by-target-country/ukraine
Landkom	UK	100 000		http://www.ft.com/cms/s/d0bba4f2-3d65-11dd-bbb5-0000779fd2ac,dwp_uuid=a955630e-3603-11dc-ad42-0000779fd2ac,print=yes.html;
MCB Agricol	Austria	91 088		http://landportal.info/landmatrix/get-the-detail/by-target-country/ukraine
Aston Lloya	UK	82 000		http://landportal.info/landmatrix/get-the-detail/by-target-country/ukraine
AgroGeneration	France	51 000	100 000	http://farmlandgrab.org/post/view/20142; http://farmlandgrab.org/post/view/18651
Morgan Stanley	USA	40 000		http://blogs.reuters.com/global/2008/06/25/enter-the-new-farmers/;
MK Group	Serbia	30 000	100 000	http://farmlandgrab.org/post/view/18626
Alpcot Agro	Sweden	18 500		http://landportal.info/landmatrix/get-the-detail/by-target-country/ukraine
Potential investors				
NCH Capital	Western investors		700 000*	http://farmlandgrab.org/post/view/19672
	China		NA**	http://farmlandgrab.org/post/view/19341; http://farmlandgrab.org/post/view/19195
	South Korea		NA	http://farmlandgrab.org/post/view/18931
	Saudi Arabia		NA	http://farmlandgrab.org/post/view/19845,

* Ukraine, Russia, Eastern Europe

** Chinese Export-Import Bank is ready to invest USD 10 billion into agricultural sector of Ukraine

Despite these facts on restriction of land markets, the Ukrainian government tries to attract foreign investment by softening regulations (e.g. reduced taxes on foreign investment, provision of infrastructure and logistical support to investors). It welcomes investors from China, Saudi Arabia, South Korea, etc. However, pursuit of farmland investments by foreign investors is causing anxiety in local population, since the property rights are not assured and not respected. Currently there are several big investors who acquired land (lease for long term – under the current policy regulations) in Ukraine. The main foreign investor companies and the amount of land they secure in Ukraine are listed in Table below. By summing up, it would mean close to 1 million ha of land (2,5% of total agricultural land) that is managed by foreigners, and probably even more that are publicly not available. Attracting foreign investors is crucial for development of the Ukrainian economy, however, the property rights of the local population should be secured as well. This could be done

[68] http://un.ua/eng/article/421649.html; Accessed 30 April 2013

[69] http://farmlandgrab.org/post/view/18984; Accessed 30 April 2013

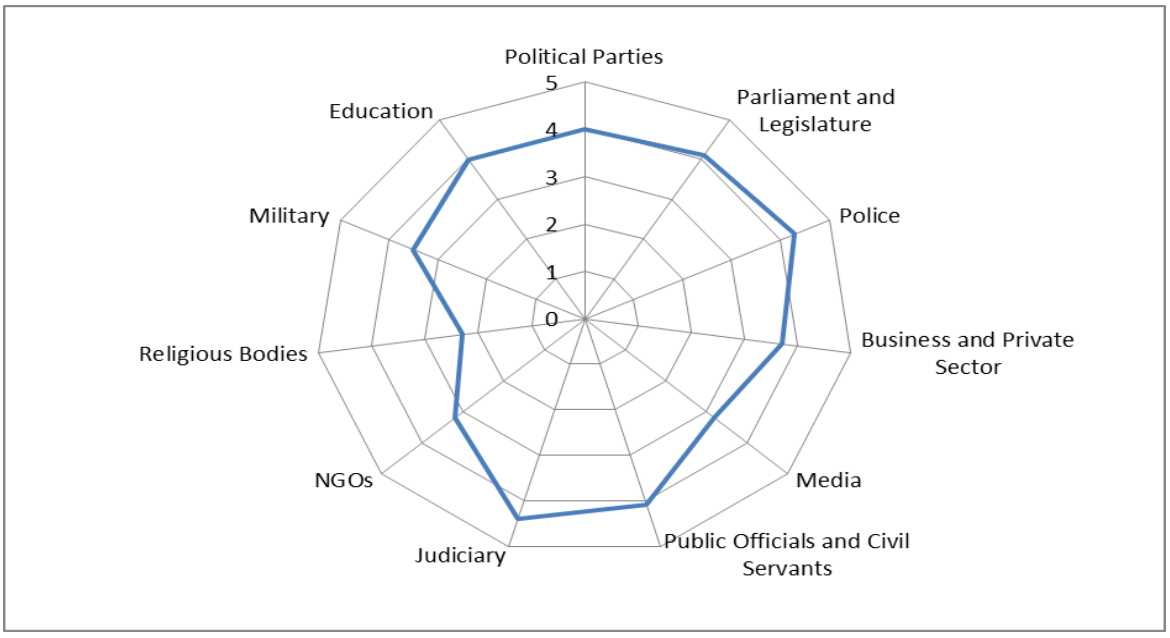
by following the guidelines adopted by United Nations (United Nation 2012[70].) It would be beneficial if Ukrainian Government implements such measures within the country to protect the interest of small farmers.

3.2.2. Corruption

As it was mentioned before, Ukraine scores extremely low on the freedom from corruption index. Ukraine ranks 144 from 174 countries in the Corruption Perception Index[71] with 26 points out of 100 in 2012 (one of the most corrupted countries in Eastern European and Central Asia).

The extent to which different institutions are perceived by the public to be the most affected by corruption can be seen in Figure below. This shows that corruption is quite widespread in Ukraine, and most institutions are highly corrupted, including judiciary system, public officials and civil servants, parliament and legislation, police and also businesses and private sector. While corruption has negative affect on all the society, it greatly hampers reform of the Ukraine's agrarian sector and thus impedes functioning of the grain market as well.

Figure 34: Corruption Perception Index by different institutions in Ukraine (2011)



Note: Scores 0 – Not at all corrupt, 5 - Extremely corrupt

Source: Transparency International http://www.transparency.org/country#UKR_PublicOpinion

3.2.3. Investment climate

Doing Business 2013 data for Ukraine shows attractiveness of Ukraine for investors. Ukraine is currently ranked 134th (out of 185 economies), which shows a 4.6% points increase compared to the previous year of 2012, when it was ranked 152nd. The aim of the current government is by the end

[70] United Nation 2012 Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security, 9 March 2012

[71] Transparency International's Corruption Perceptions Index shows qualitative assessments of a country's level of corruption in the administrative and public sectors; Accessed 4 May 2013 http://cpi.transparency.org/cpi2012/in_detail/

of the 2013 to be between the top-100 countries[72]. The main problems associated with doing business in Ukraine are summarized in the Box 1 below.

Box 1: Doing Business in Ukraine

According to the Doing Business index Ukraine has low attractiveness for investors for doing business. The most cited problems include:

* unpredictability and corruption at borders from custom agents and other technical regulators
* weaknesses of business climate in general preventing investment in the new production
* absence of coherent policies to attract foreign direct investment (FDI)
* inadequacies in the transport network, in particular connecting Ukraine to the European Union
* customs procedures and cumbersome border inspections that reduce the competitiveness of Ukrainian goods, especially those for which timely delivery is critical
* linkages with industries inherited from Soviet times that are slow to be broken up
* specific regulations such as mandatory product standards that prevent integration into new markets
* slow and costly process of VAT reimbursement (the most cited obstacle in exporters' surveys)
* general complexity of regulations relating to export and their unfair enforcement (numerous customs permits, registration licenses, technical regulations and certification, related delays and high compliance costs

Source: The World Bank 2010: Ukraine: Trade and Facilitation Study

Despite these obstacles Ukraine also has shown some improvement in areas such as credit access, paying taxes, and trading across borders (The World Bank 2010). Out of 132 countries, Ukraine ranks 86 in the Global Enabling Trade Index[73] , which considers four main areas: market access, border administration, transport and communications infrastructure, and business environment. In order to improve the attractiveness of doing business in Ukraine the policies should address these obstacles and also be consistent with Program of Economic Reform of Ukraine for 2010-2014. Creating a business-friendly environment, especially in agriculture, should be a top priority in the future.

3.3. State control of the markets

3.3.1. Nationalisation and monopolisation of grain markets

The recent developments in the grain market show significant level of nationalization and monopolizations, which removes transparency in the grain market and is one of the impediments for increasing grain production and export(FAO, 2012) as well as result of increasing corruption. There are several evidences of the monopolization of grain trade; for example, activities of state companies Khlib Investbud Ltd. and the Agrarian Fund (see Box 2 below).

[72] http://ukraine-eu.mfa.gov.ua/en/press-center/news-from-ukraine/364-glava-derzhavi-doruchiv-uryadu-priskoriti-vikonannya-programi-jekonomichnih-reform-na-2010-2014-roki Accessed May 2013

[73] World Economic Forum 2012: The Global Enabling Trade Report 2012 Accessed May 2013 http://www3.weforum.org/docs/GETR/2012/GETR_OverallRankings.pdf

Box 2

Khlib Investbud Ltd. (KhIB) was created in 2010 to be the state trading agent in the grain market, i.e. with exclusive rights to effect all operations connected with grain on behalf of the state. 'KhIB' received a contract to purchase 5 million tons of Ukrainian grain for 7 billion hryven [1,400 hryven/tonne]. Then in 2010 grain export quotas were introduced and the major portion of it was granted to KhIB, whilst other big grain export traders were locked out. Now it is Ukraine's main grain trader. Only a few other firms were granted export permits74, which is clearly not keeping with the rules of a free market.

The absence of free grain exports causes significant losses to farmers and consumers. As a result of this monopolization, other large transnational corporations that worked in Ukraine for years were forced out of the grain business. 'KhIB' monopolised the market and Ukrainian farmers have been forced to sell their grain to the company at depressed prices. At the same time, this main state exporter sells the same grain within Ukraine at a higher price. In 2011 KhIB sold well over 2 million tons of grain to the Ukrainian Agrarian Fund in three batches. Each batch was for an equivalent of 1.4 Bn euros and provided a substantial profit to the 'KhIB' and not to the farmers. Such speculations of 'KhIB' in the domestic grain market were one of the reasons for the increase of flour prices and thus bread prices in Ukraine.

Source: http://foreignnotes.blogspot.com.es/2011/03/grain-export-madness.html

3.3.2. Export restrictions

Signs of monopolization of grain market by the Government were also reviled in the recently formulated draft laws, such as the Draft Law #8053 "On amendment to the Law of Ukraine "On State support to the agriculture of Ukraine" of February 2, 2011 and the Draft Law #8163 "On amendments to the Law of Ukraine "On grain and grain market" of February 25, 2011. These tend to introduce state monopoly on export of agricultural products and in particular grain export.

Other evidences of monopolization are reflected by the introduction of the registration of export contracts[75] via single exchange. This is based on the Cabinet of Ministers Resolution from December 13, 2010 #1254 "Some Aspects of Conclusion and Registration of Foreign Trade Contracts". With this Resolution of February 1, 2011 the Ukrainian Government essentially introduced a monopoly of the State Agrarian Exchange on the execution and registration of foreign trade contracts for basic agricultural products. This introduces controls over all grain export flows and additional expenditures on registration and broker's fees. Registration fee is 0.5%, plus 0.25-0.5% broker's fee which are 10 times higher than current market average rate of 0.05% (FAO 2012).

These draft laws have caused great anxiety both internally and externally (e.g. IMF, World Bank, EBRD, GAFTA, EBA, American Chamber of Commerce and the U.S.-Ukraine Business Council), since these laws and the regulations might cause significant damage to the country. Basically, state monopoly is a form of a non-tariff barrier that restricts and controls the trade, and in combination with these laws could have negative impact on Ukrainian society and hamper the market economy

[74] According to the Ministry of Economic Development and Trade, LTD "Khlib Investbud" received 221.3 thd tons of wheat to export after second quota allocation in January 2011 out of total of 500 thd tons allowed (more than 40%), which was distributed among 15 companies, and besides KhIL, Kernel being awarded 46,100 tonnes and Volary 31,400 tonnes.

[75] According to Decree #832/200 of the President of Ukraine "On Urgent Measures to Promote Production and Development of Grain Market" of June 29, 2000, grain export transactions shall be carried out only under export contracts, made and registered with exchanges duly accredited for such transactions.

by distracting market institutions, increasing non-transparency of administration, rising administrative costs, further monopolizing the agricultural sector and damaging the rule of law.

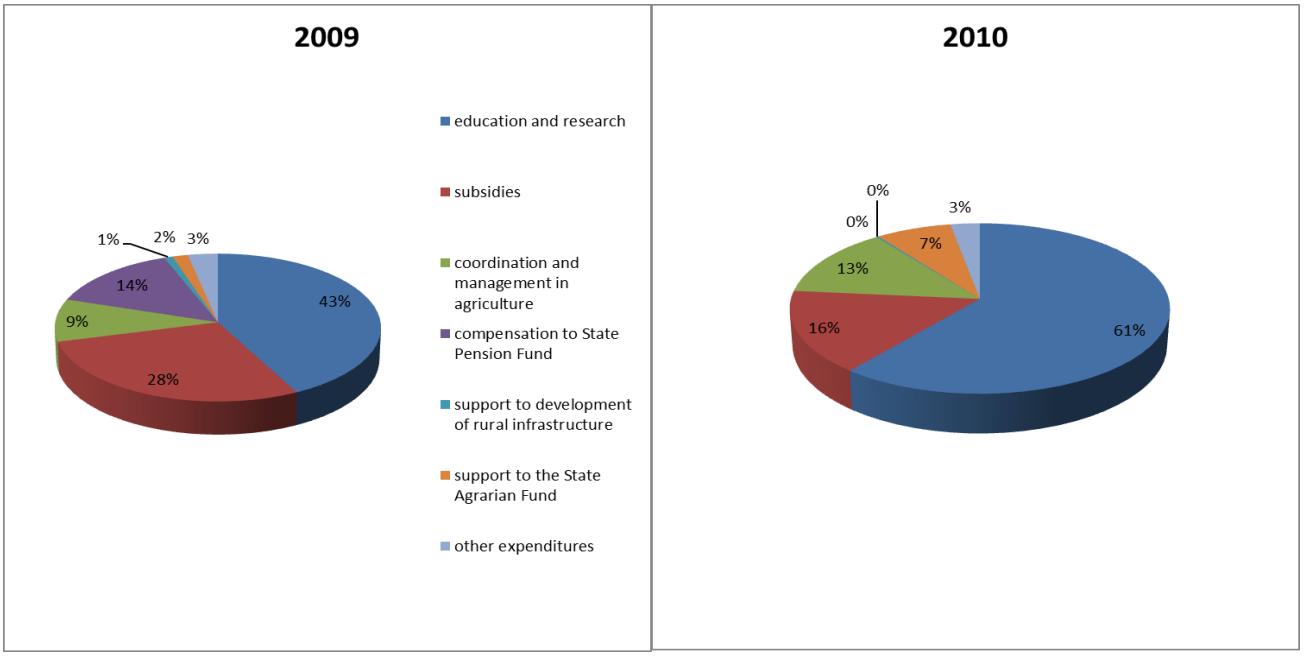
Monopolization of agricultural markets, including grain market, elimination of competition, especially in the domestic grain market, introduction of export limitations, could lead to huge income loss for Ukrainian producers, which could progressively lead to degradation of the agricultural sector of Ukraine. The monopolization causes negative impact on the business environment and restricts the investors from receiving sufficient return on their long term investments. Private traders are the major investors in the agrarian logistics and processing systems and have been attracting international capital and helped farmers with the liquidity constraints during harvesting and seeding campaigns. For the grain producers, export restrictions discourage production of grain by putting downward pressure on the farm gate prices and thus providing disincentives for investment into the sector. Low prices in the long run will discourage investment and thus production will decline[76]. Agrobusiness is one of the opportunities for the better future of Ukraine, but short-term actions of the Government might threatening its future development.

3.4. Financial support to the farmers

3.4.1. Direct state support to agriculture including VAT exemptions

The share of agricultural support in the State budget of Ukraine between 2004 and 2007 was stable at around 4%, with a peak increase to around 6% in 2008 followed by decrease to around 2% in 2010[77]. Distribution of state expenditures for agriculture in 2009 and 2010 is shown in Figure 35.

Figure 35. Composition of the state budget for 2009 and 2010, Ministry of Agrarian Policy of Ukraine



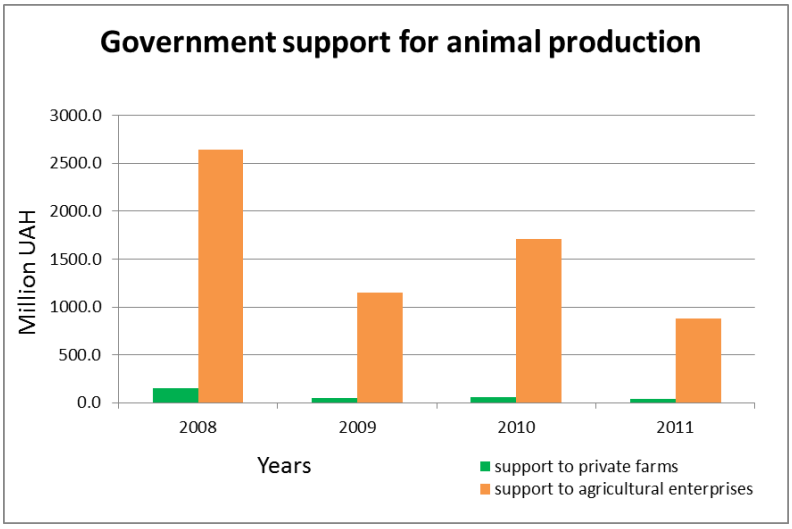
Source: own calculations based on the State Budget data

[76] For example after introducing the export quota in 2010 the domestic price of wheat dropped by 16%, which in future could hamper agricultural growth. Source: Getreideexportquoten: Zum Umgang mit Chancen und Verantwortung. Ausgabe 28, Dezember 2010. Newsletter, Deutsche Beratergruppe Accessed May 2013

[77] T. Vysotskyi, O.Kovtun, Making agricultural support more objective-oriented, presentation for the AgriMBA-AVA Congress, Montenegro, 2013

In 2009 the distribution of state expenditures on agriculture was as follows: 43% for education and research, 28% for various subsidies (interest rate subsidy, support to crop and animal production, young permanent crops, hop production), 9% for coordination and management, 14% for compensation to the State Pension Fund, 2% for support to the State Agrarian Fund and 1% for support to development of rural infrastructure. The largest items of state budget support for agriculture in 2009 and 2010 were subsidies to colleges and universities for agricultural education with 1.7 billion UAH reserved in 2009 and 1.9 billion UAH in 2010. Besides these, there has been a substantial support increase for the State Agrarian Fund to 255 million UAH in 2010, while state support for other activities as well as total budget support for 2010 has decreased.

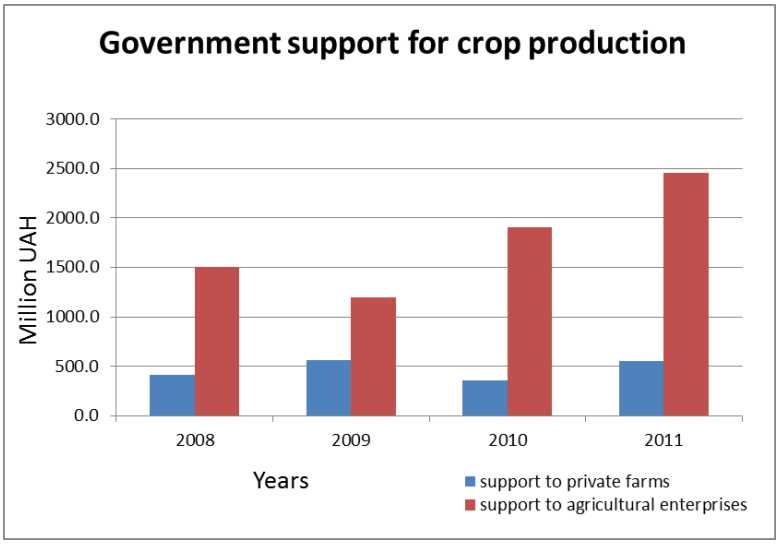
Figure 36. Government support for animal production 2008-2011



Source: own calculations based on data from State Statistical Service of Ukraine

Error! Reference source not found. and Figure 37 show analysis of data from the State Statistical Service of Ukraine on total support to crop and animal production. It is important to mention that data from the State Statistical Service of Ukraine is aggregation of the amounts of subsidies from the state budged of Ukraine as well as VAT payment exemptions applicable to agricultural producers. The data has been analysed for the period between 2008 and 2011 and allows us to separate data for crop and animal production as well as for private farms and agricultural enterprises.

Figure 37. Government support for crop production 2008-2010

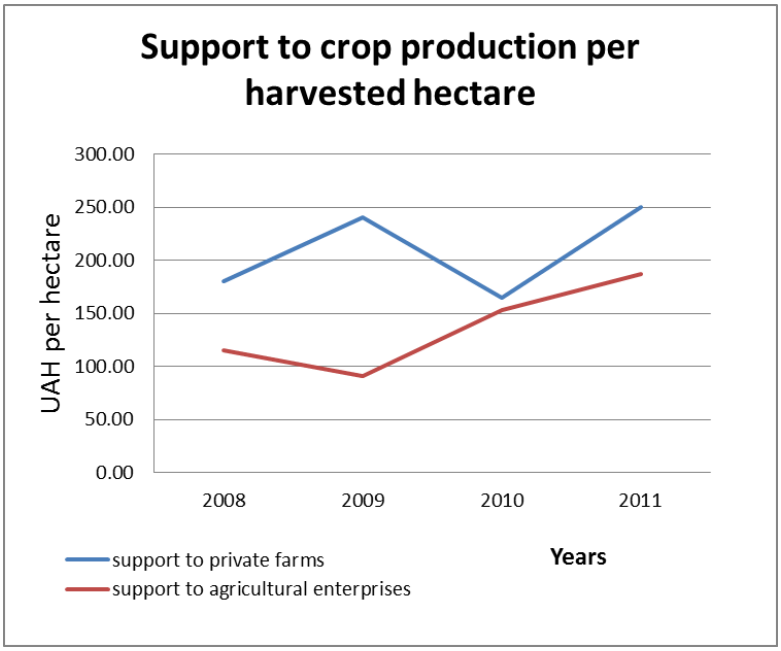


Source: own calculations based on data from State Statistical Service of Ukraine

The figures show that more government support has been provided to large agricultural enterprises than to private farms in terms of value and that support to animal production has decreased by around 2.5 times during the period 2008 - 2011. In terms of support to crop production (see Figure 37) we see a significant increase in support for agricultural enterprises, which in monetary terms has risen from 1.5 billion UAH to around 2.5 billion UAH. There was a drop in support in 2009 though, which is attributable to financial crisis.

In terms of private farms the tendency for rising support has not been observed. Such governmental policy is not very clear if we take into account the facts that larger enterprises have better access to credits, markets in general and can better apply the economies of scale compared to smaller private farms. In Figure 38 we have calculated the government support for crop production per harvested area for private farms and agricultural enterprises to analyse whether the rise in support for crop production for agricultural enterprise is due to increase in harvested area, however this does not appear to be the case.

Figure 38 Government support for crop production per harvested hectare



Source: own calculations based on data from State Statistical Service of Ukraine

The dynamics of support in both Figure 37 and Figure 38 correspond to each other confirming increased governmental support to crop producing for agricultural enterprises, which has almost reached the level of support to smaller private farms per harvested hectare. We can also observe that governmental support to private farms does not appear to be very stable between 2008 and 2011 combining raises and falls of around 30-40% from year to year.

During 2012 the Accounting Chamber of Ukraine (ACoU) carried audits of measures under National Program for Rural Development until 2015 and State Program of Technical Assistance to Agriculture until 2015. As a result of audits it has been determined that a little was done by the government and local authorities to resolve the decline of social infrastructure and deepening demographic crisis in rural communities[78]. This corresponds to our analysis above showing

[78] Report of the Accounting Chamber of Ukraine for 2012, http://www.ac-rada.gov.ua/control/main/uk/publish/

decreased support for rural development programs and low levels of subsidies for small local producers. In the 2012 report, ACoU emphasized on shortcomings of regulatory support to rural areas and lack of coordination between various agricultural support programs. The lack of coordination between central and local authorities in terms of tasks, resources and deadlines has been observed as well. In particular, it has been noted, that the Ministry of Agrarian Policy of Ukraine as coordinator of the State Program for Rural Development until 2015 did not ensure proper monitoring of the program, while implementation authorities did not carry activities in due time.

Similar situation has been observed in implementation of the State Program of Technical Assistance to Agriculture until 2015. The financing of both programs for 2011 was approximately 68,6% and 45,6% of the pre-envisaged expenditures[79]. This resulted in underfunding of some measures, while others have not been funded or completed at all. These include construction of social infrastructure, support for development of the depressed areas, funding for protection, restoration and improvement of soil fertility, reconstruction of distilleries for biofuel production, reform to the state system of agricultural education. The critical situation with technical support to agriculture has been confirmed by the audit of the State Program of Technical Assistance to Agriculture until 2015. During the audit ACoU observed continued decrease in the numbers of agricultural equipment, including tractors and combine harvesters, while dependence on imported spare parts for the agricultural equipment has increased.

3.4.2. State support to credit access

After the Independence and in the transition period between 1996 and 1999, the Government implemented a state commodity credit program that had extremely bad consequences on the performance of agricultural sector (World Bank/OECD 2004). It provided input credit in kind to agricultural enterprises in exchange for the state grain procurement contracts. Private sector input supply and grain marketing activity declined sharply as a result, leading to further declines in agricultural output. Poor collection rates for the state commodity credit program and declining output ultimately led to the abandonment of the program in 1999, and a debt write-off, which represented 44% (5.4 billion in 2000 and 0.8 billion in 2001) of the total amount of debts (World Bank/OECD 2004, OECD 2001).

Prior to 1999, farmers didn't own their land. This eliminated incentives not only for efficiency, but also it was impossible to get a credit system running since no collateral was available (OECD 2004). At the moment, there is still no free market on land and therefore the land cannot be used as collateral for accessing credit. According to the World Bank/OECD (2004) Ukraine is asset rich by estimating the rural land alone to be worth about US$40 billion. Thus, the legal and institutional framework for the use of this land as collateral is important to set.

In order to establish the basis for development of a functioning rural finance and credit market in Ukraine, the following global measures were implemented (OECD 2001): i) debts owed by agricultural producers to the state were written off, ii) agricultural enterprises were restructured, which resulted in improvement of the sector's profitability, iii) the state withdrew from input and product markets, resulting in more competition in these markets and establishment of more favourable producer prices, and iv) a "softer" tax treatment was introduced.

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[79] Report of the Accounting Chamber of Ukraine for 2012, http://www.ac-rada.gov.ua/control/main/uk/publish/

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In early 2000s a more stable macroeconomic framework and decrease in interest rates made access to agricultural credit easier compared to the tight credit constraints of the 1990s (World Bank/OECD 2004). In addition, since 2000, in order to improve access to finance and credit markets, the government implemented a programme of partial compensation of interest rates on commercial bank loans for agricultural producers, funded from the state budget (OECD 2007). Compensation was set at 50% of the National Bank of Ukraine refinance rate with a minimum of 17.5% on loan agreements with commercial banks (OECD 2001). In 2000 UAH 175 million were allocated for interest rate compensation, UAH 818 million were lent to 4150 agro-industrial complex enterprises (with partial interest rate compensation of UAH 50 million due to delays in implementation of the scheme), 92% of them were agricultural enterprises, the rest were service and downstream enterprises. Agricultural enterprises also accounted for the major amount of credit (UAH 455 million, 56% of the total). All types of agricultural producers (small, medium and large) received subsidised loans. In particular individual private farms obtained 4% of the total amount of loans disbursed to agricultural producers. In 2000, 51 commercial banks participated in this preferential credit scheme. The major lenders were the Bank Ukraina (25%), Prominvestbank (16%), Ukrsotsbank (5%), Privatbank (5%), Nadra (3%) and Ukreximbank (3%). The lowest annual interest rate was 28%, and the highest 60%. The average repayment rate was 86%. The highest repayment rate of 92% was by agricultural services. These repayment levels increased banks' confidence in agricultural producers as borrowers (OECD 2001). In 2010 around 80 private banks took part in farmer lending programs.[80]

In 2001 a differentiated compensation rate was introduced. For agricultural producers and grain purchasing and processing enterprises a higher rate was applied (up to 70% of the NBU discount rate), while other beneficiaries were eligible only for 50% (OECD 2001). This differentiation favoured the large grain producing enterprises. This has delayed the reform and caused inefficiencies in the overall agricultural production system; since the subsidized credits, investments, tax breaks and debt write-offs were all contributing to the short-term objective of stimulating agricultural growth and did not encourage to improve agricultural efficiency in the long-run. Therefore, many inefficient large enterprises came into existence and started to dominate on the grain market, while some of the most efficient producers, individual farmers have hardly received any governmental support at all.

Before the accession to WTO the Ukrainian Government has taken some steps towards reforms and made investments in access to finance and risk management instruments (World Bank 2008a). In 2009, in order to increase credit support for agriculture, National Bank has issued a Decree № 650 to encourage banks to lend on security of future agricultural production (next year's harvest, cattle and calves, etc.). This made somewhat easier for the small farms to access the credit as for them the next harvest is the only possible collateral.[81]

3.4.3. Credit access by agricultural producers

Low profitability of agriculture, and the lack of appropriate property rights and credit legislation restricted the availability of credit for agriculture. Difficulty in accessing the finance resulted in low inputs use and insufficient capital investment, it is especially a main concern for small and medium-sized farmers, which limits their ability to invest in operational activities and fixed assets (OECD 2009). Therefore, low access to finance is also limiting the increase of land productivity.

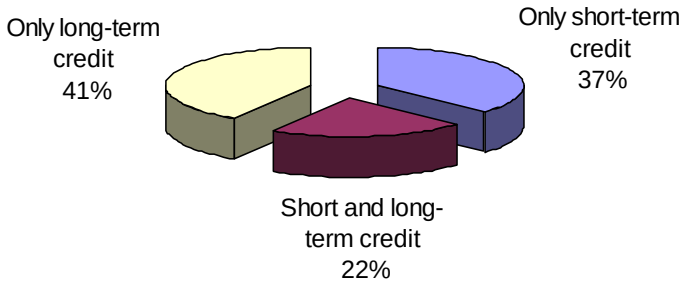
Based on the OECD survey (2011), among 85 farms 58% claimed that they did not have sufficient access to credit (Figure 39). The key problems mentioned were high interest rates (cited by 76% of

[80]Source: http://www.blackseagrain.net/agonews/ukraine.-the-cabinet-of-ministers-will-increase-ag-loan-payments Accessed on 12 July 2012

[81] Source: http://www.economy-ukraine.com.ua/?p=549Accessed on 12 July 2012,

surveyed farms) and the absence of appropriate collateral (cited by 32% of respondents). (OECD 2012)

Figure 39. Percentage of farmers having difficulty in obtaining credit



Source: OECD (2011), Country Capability Survey, internal working document, OECD, Paris[82]

Currently, commercial interest rates on agricultural loans range from 25 to 30 percent, 50% of which are compensated by the Government. Banks usually require 200% to 300% collateral, depending on the farm's credit history and risk level (OECD 2009), which is for most small farmers is difficult to provide. However, the future crop can be also served as collateral. As an example, the main challenges related to grain crop used as collateral are illustrated in Box 2. Furthermore, collateral can also be offered in form of livestock, farm machinery, or personal property of the farm owner. Though, these usually serve as collateral for receiving a short-term credit to cover the immediate input costs only and do not suit for long-term investments.

Box 2. Challenges faced by the current system of warehouse receipts for grain

The introduction in 2002 of a system of warehouse receipts for grain was in part aimed at improving access to private credit resources by allowing grain producers to use grain as collateral for loans, or to sell, trade or use the receipts for delivery against financial instruments such as futures contracts. However, the system still faces a number of challenges that continue to limit farmers' access to credit by undermining the trust of the financial institutions in the system, including:

- Lack of coherence in the legal framework: Different laws give contradicting rules with regard to the rights, liabilities and responsibilities of each party to the single and double warehouse receipts (producer, warehouse, bank etc).

- Inadequate monitoring system: Although private and independent mechanisms for verifying the quality and quantity of stored commodities exist, these mechanisms are costly for grain owners. In addition, verifying agents often have limited access to the state-owned storage facilities.

- No reliable performance guarantees: Holders of warehouse receipts do not receive adequate compensation if stored goods do not match in quantity or quality with what is specified on the receipt (due to either negligence or fraud).

- Ineffective futures exchange market: Agricultural market operators cannot hedge effectively against price fluctuations using futures contracts due to the absence of a well-developed futures exchange. Although the government established an Agricultural Exchange, the latter cannot be considered an exchange in the traditional sense of the word. Rather it constitutes a focal point for registering the Agrarian Fund's contracts. The Agricultural Exchange's activities are thus largely determined by the Agrarian Fund. Under these conditions the exchange fails to attract private investors by limiting the liquidity of exchange contracts.

[82] Source: OECD 2012. Ukraine 2011: Sector Competitiveness Strategy, OECD Publishing. Accessed on 20 July 2012 http://dx.doi.org/10.1787/9789264128798-en

As it has been mentioned before, under the current legislation, land still cannot be used as a collateral. After finalization of the reforms on land property rights farmers would be able to use land as collateral to obtain not only short-term, high-interest loans, but also to invest in long-term capital improvements, such as agricultural machinery or storage facilities. These long term investments would allow them to improve crop yields by investing in machinery and on-farm storage facilities to be able to sell their crops for better prices and not for the suppressed prices offered by the traders during the harvesting season. Currently, large farms avoid many of these problems, as they have better access to finance.

Despite the good foresight on land to be used as collateral, there are issues in both sides. On one hand many farmers do not really trust the Ukrainian banking system (which is still unstable) and are reluctant to risk losing their land in case of default. Furthermore, many agricultural enterprises are comprised of hundreds of shareholders, whose permission would need to be obtained before they could use the land as collateral. On the other hand, the land is also not willingly accepted by banks as collateral, since it is difficult to foreclose on land in case of default. Due to ineffective legislative framework, which does not necessarily protect creditors' interests, the financial institutions are even more cautious about lending and it has a detrimental effect on small and medium-sized farmers. The lack of collateral or credit history is a significant constraint on small farmers' access to credit from commercial financial institutions. (OECD 2009, OECD 2011)

Some farms chose to attract investors who can provide capital, market experience and collateral to secure loans. However, the risk of these arrangements is that farmers to some extent lose control of farm operations, since often the investment/holding company insists on maintaining control over every aspect of production and takes over the farm, equipment and land. This situation forces farmers to enter into extended leases of 5-10 or even more years since they depend heavily on cash from the holding company (World Data Centre 2004).

It has been observed that already-successful farms continue to expand as shareholders pull out their land from failing farms and lease their plots to the stronger ones (World Data Centre 2004). According to USDA many farms will not be able to survive the transition to market economy, and high-risk farms with few liquid assets, heavy debt, bad credit history and poor management will collapse[83]. Only the most efficient farms will survive, though the government still has a preference in supporting big agricultural enterprises, even with their low productivity, due to lobbying, which makes difficult for the more efficient small and medium farms to survive and grow.

As a summary we can say that even if credit would be available to most farmers the interest rates and collateral demands are still too high for the farmers to accept such credits. Difficulty in obtaining agricultural credit, especially large, long-term loans, remains a significant problem for many, especial for small and medium farms, and it is still a major constraint for the development of the primary agricultural sector.

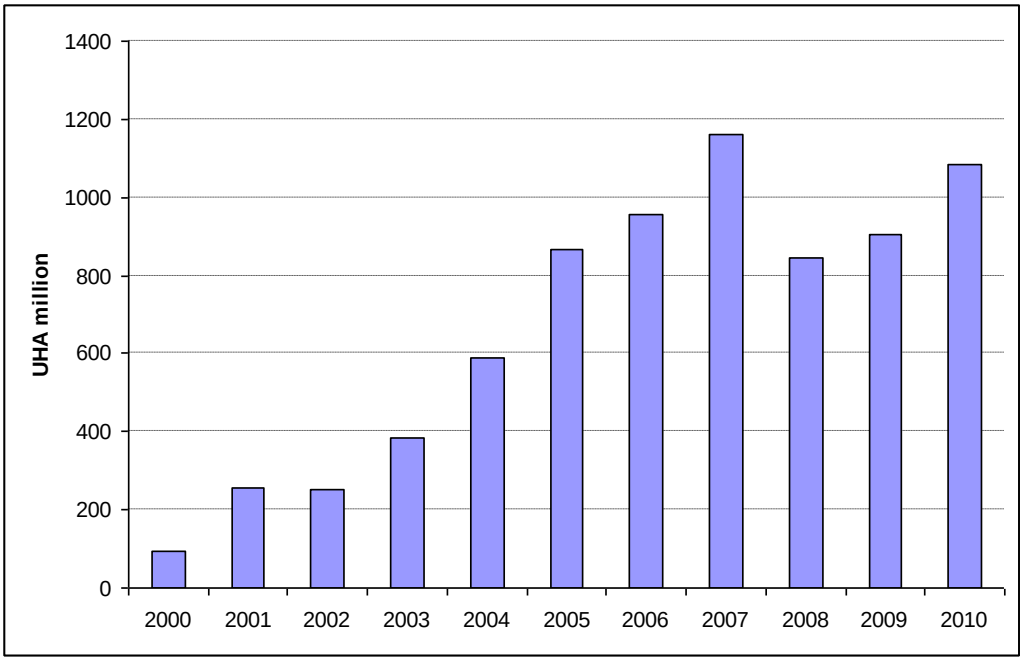
3.5. State support for infrastructure development

The development of market infrastructure (which incorporates transport/trade infrastructure) is one of the target areas of the Ukrainian agricultural policy (which is part of the State Targeted Program for Development of the Ukrainian Countryside up to 2015 introduced in 2007 (OECD 2011)), prepared to increase efficiency and international competitiveness of the agricultural sector as laid down in the 2005 Law on Basic Principles of the State Agrarian Policy up to 2015.

[83] USDA 2002: http://www.fas.usda.gov/pecad2/highlights/2002/06/ukr_report/index.htm Accessed 20 August 2012

Financial support for infrastructure in the last decade given by the State was continuously increasing (Figure 40). This partly helped to the development of the grain sector, however private investments have made much greater contribution during this period (FAO 2012). Deregulation of the markets is therefore extremely important to support private investment in the infrastructure.

Figure 40. State support provided for infrastructure in Ukraine (1990-2000)



Source: State Statistics Service of Ukraine

Besides improving investment in the infrastructure itself and deregulating the markets to attract private investment, Ukraine should improve its policy regulations related to customs, infrastructure and service quality. This will improve the performances indicators of the LPI index, which all score very low for Ukraine.

In order to improve the customs efficiency, Ukrainian Parliament has adopted the Law "On Amendments to the Customs Code of Ukraine and Other Legislative Acts of Ukraine", which came into force on 1 January 2012. It has been designed to, inter alia, harmonize the customs legislation of Ukraine with international conventions and World Customs Organization SAFE Framework Standards. These changes include speeding up (setting a maximum of 4 hours) and simplification of the customs clearance procedures, a more efficient customs audit, procedures for establishment of the customs value, introduction of the "Authorised Economic Operator" responsible for customs operations, establishing sanctions for unlawful decisions and actions. These changes shall allow for ensuring traceability of trans-border shipments of grain and make the grain export more efficient.

In the Transport Strategy of Ukraine for the period up to 2020[84] several improvements are planned to be made. In order to improve the public governance for transport sector the following steps are planned, e.g. reform of the public governance system for railways, public roads, and sea commercial ports; improving the staff potential and increasing the social security level for transport employees, implementing institutional reforms aimed at developing and improving market relations in the transport sector; establishing conditions for fast transfer of transit goods; improving the licensing

[84] Transport Strategy of Ukraine for the period of up to 2020 Accessed May 2013 http://www.transport-ukraine.eu/en/page/transport-strategy-ukraine-until-2020

system for certain types of activities in the transport sector. For improvement of the effectiveness of custom brokers, among others, setting up the multifunctional integrated system – Electronic Customs; creating, with the use of EU customs electronic databases, an inter-state information exchange system to ensure the efficient operation of border crossing points; introducing automated systems for rail rolling stock transfer from the wide-gauge track to the narrow-gauge one; improving the customs statistics system to monitor and forecast the goods transit. All these improvements will help to deliver better quality infrastructure service which would have positive impact on the service delivery performances concerning the time, costs and reliability of delivering the product to its destination (on time and safe).

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Annexes

Annex 1. Commodity balances of main products in Ukraine[85]

1. *Meat balance of main types*

(*thousands tons*)

	2009					2010				
	meat, total	*including*				*meat, total*	*including*			
		beef and veal	*pork*	*poultry*	*other kinds of meat*		*beef and veal*	*pork*	*poultry*	*other kinds of meat*
Production	1917	453	527	894	43	2059	428	631	954	46
Change of stocks at the end of year	16	2	9	6	-1	-3	-8	-4	8	1
Import	439	14	225	196	4	378	25	193	157	3
Total resources	**2340**	**465**	**743**	**1084**	**48**	**2440**	**461**	**828**	**1103**	**48**
Export	40	20	0	19	1	48	13	1	33	1

2. *Balance of milk and milk products*

(thousands tons)

	1995	2000	2005	2007	2008	2009	2010
Production	17274	12658	13714	12262	11761	11610	11249
Change of stocks end of year	-440	-394	27	-72	-78	230	-11
Import	58	50	112	199	234	455	273
Total resources	**17772**	**13102**	**13799**	**12533**	**12073**	**11835**	**11533**
Export	1420	1100	1901	939	1140	919	956

3. *Balance of eggs (including egg products)*

(*thousands tons*[1])

	1995	2000	2005	2007	2008	2009	2010

[85] Data according to State Statistical Committee of Ukraine "Agriculture in Ukraine - 2011"

Production	544	508	753	812	863	919	985
Change of stocks end of year	-11	2	13	10	20	12	9
Import	5	2	5	3	7	7	7
Total resources	**560**	**508**	**745**	**805**	**850**	**914**	**983**
Export	4	0	1	16	23	58	75

[1] *Average weight of egg – 57,75 g.*

4. ***Grain balance (including products of grain processing counted as grain)***
(*thousands tons*)

	1995	2000	2005	2007	2008	2009	2010
Production	33930	24459	38016	29295	53290	46028	39271
Change of stocks end of year	-757	1329	-314	948	9952	-6079	-2054
Import	200	1010	226	343	222	136	175
Total resources	**34887**	**24140**	**38556**	**28690**	**43560**	**52243**	**41500**
Export	814	1330	12650	4490	16668	26160	14239

5. ***Potatoes balance***
(*thousands tons*)

	1995	2000	2005	2007	2008	2009	2010
Production	14729	19838	19462	19102	19545	19666	18705
Change of stocks end of year	-1090	2951	-100	57	423	156	-410
Import	126	11	5	7	10	15	30
Total resources	**15945**	**16898**	**19567**	**19052**	**19132**	**19525**	**19145**
Export	16	1	6	3	3	5	8

6. ***Balance of vegetables, water-melons, melons and gourds (including canned and dried products counted as fresh)***

(*thousands tons*)

	1995	2000	2005	2007	2008	2009	2010

Production	6377	6195	7606	7317	8489	8976	8873
Change of stocks end of year	100	201	196	-85	689	534	-22
Import	41	29	100	158	356	232	311
Total resources	**6318**	**6023**	**7510**	**7560**	**8156**	**8674**	**9206**
Export	194	30	150	298	251	347	335

7. ***Balance of fruits, berries and grape (including canned and dried products counted as fresh)***
(thousands tons)

	1995	2000	2005	2007	2008	2009	2010
Production	2355	1966	2133	1829	1919	2087	2154
Change of stocks end of year	120	201	297	52	245	131	10
Import	309	179	860	1254	1235	1139	1130
Total resources	**2544**	**1944**	**2696**	**3031**	**2909**	**3095**	**3274**
Export	31	88	305	370	252	284	353

8. ***Balance of sugar (including the main sugar-containing products counted as sugar)***
(*thousands tons*)

	2005	2007	2008	2009	2010
Production	2139	1867	1571	1275	1805
Change of stocks end of year	247	-228	-477	-561	32
Import	177	25	91	92	90
Total resources	**2069**	**2120**	**2139**	**1928**	**1863**
Export	154	120	103	88	65

[1] *Excluding imported raw sugar used in sugar production*

9. ***Balance of oil (including the main oil-containing products counted as oil)***
(*thousands tons*)

	2005	2007	2008	2009	2010
Production	1437	2294	1966	2899	3101
	114	-150	117	-30	-151
Change of stocks end of year	264	410	480	316	319
Import	**1587**	**2854**	**2329**	**3245**	**3571**
Total resources	900	2140	1590	2483	2850
Export					

Annex 2. Agriculture group Commodities[86] – Import (thousand tons; eggs in millions of pieces)

Code	Denomination	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
	Group 2											
202	Beef, frozen:	1,6	1,4	0,4	0,3	3,6	30,9	19,3	9,1	18,7	8,9	3,6
203	Pork fresh, cooled or frozen:	1,1	1,8	1,3	9,6	49,2	46,4	47,2	62,3	178,8	140,8	108,6
206	Food subproducts of cattle, pigs, sheep, goats, horses, donkeys, mules, fresh, cooled or frozen:	1,0	1,5	3,6	1,7	6,5	7,6	4,3	4,9	24,4	39,5	39,8
207	Meat and food subproducts of poultry trade position 0105, fresh, cooled or frozen:	26,0	67,3	71,8	100,7	295,7	141,8	151,9	131,5	256,1	193,2	154,6
209	Pig & poultry fat, fresh, cooled frozen, salted, dried smoked:	0,1	2,9	1,4	2,1	3,1	20,9	7,1	0,0	34,1	47,3	42,0
	Group 3											
302	Fish, fresh or chilled (no fillets or other meat):	0,0	0,0	0,0	0,1	0,0	0,4	2,3	6,1	9,2	8,7	9,2
303	Fish, frozen (no fish fillets or other fish meat):	182,3	246,4	223,4	215,2	239,3	330,3	262,4	295,4	348,4	311,8	344,2
304	Fish fillets & other fish meat, fresh, chill or frozen:	2,2	3,2	4,6	9,5	14,0	32,1	50,3	78,9	123,6	71,4	53,2
305	Fish, dried, salted etc, smoked etc, ed fish meal:	10,8	25,2	21,6	18,5	4,9	3,7	6,4	4,3	3,9	2,7	2,2
306	Crustaceans, live, fresh etc, and cooked etc:	0,2	0,3	0,5	1,4	1,2	2,3	8,4	13,5	13,2	7,1	9,9
307	Mollusks & aquatic invertebrates nesoi, live etc:	1,3	0,7	0,7	0,3	0,3	1,8	2,8	7,5	9,3	2,1	4,4
	Group 4											
401	Milk and cream, non-condensed without sugar addition:	0,6	0,6	0,6	0,4	0,5	0,6	1,4	2,2	1,2	0,7	1,2
402	Milk and cream, condensed or with sugar addition:	0,9	0,3	0,4	1,3	0,0	0,0	0,3	0,5	0,3	10,2	4,9

[86] According to the Harmonization System Codes (HS Code) Commodity Classification

403	Buttermilk, yoghurt, kefir and others or acidified milk and cream:	4,8	12,4	17,1	20,1	19,5	25,4	29,5	33,1	23,7	7,0	7,3
404	Milk serum:	0,1	0,1	0,1	0,1	0,6	1,6	1,8	2,3	2,7	2,3	2,3
405	Butter and other fats made of milk:	0,8	1,5	1,0	0,3	0,0	0,0	0,0	0,8	2,8	16,3	6,1
406	Cheeses of all types and lactic cheese:	1,2	1,8	1,9	2,1	3,0	5,5	8,5	11,9	13,1	9,1	11,2
407	Eggs of poultry in shells:	0,9	1,5	2,7	3,1	3,3	4,2	3,8	2,2	5,2	5,6	4,6
	Group 8											
801	Coconuts, brazil nuts & cashew nuts, fresh or dry:	0,1	0,6	0,4	0,6	0,7	1,5	3,0	3,2	3,6	2,8	2,4
802	Nuts nesoi, fresh or dried:	2,6	4,0	3,5	3,9	4,7	6,4	8,2	11,0	14,0	4,1	4,9
803	Bananas and plantains, fresh or dried	59,5	55,5	79,1	87,0	67,6	249,4	272,0	297,1	278,3	227,3	214,8
804	Dates, figs, pineapples, avocados etc, frozen or dried:	0,4	0,8	0,9	1,1	1,8	7,7	10,8	13,1	13,7	9,3	12,4
805	Citrus fruit, fresh or dried:	79,2	102,4	123,7	136,4	141,4	256,4	329,0	364,7	344,4	342,1	363,4
806	Grapes, fresh or dried:	7,5	10,5	13,9	17,3	18,4	37,5	73,6	84,8	77,8	49,0	55,5
808	Apples, pears and quince, fresh	1,9	1,3	0,2	0,1	0,7	44,1	123,0	144,1	183,7	254,6	207,1
809	Apricots, cherries and sweet cherries, peaches, plums and dog rose, fresh:	0,0	0,0	0,0	0,3	0,0	13,2	21,8	9,9	47,1	39,7	43,0
810	Other fruits, fresh:	4,2	6,1	9,4	12,9	8,0	27,7	47,9	58,8	56,9	48,2	54,2
811	Fruits and nuts, raw or cooked, frozen:	0,3	0,7	1,4	1,2	1,0	1,9	2,1	3,7	4,6	3,5	5,5
813	Fruits dried:	0,5	3,3	2,7	2,5	2,8	5,6	7,4	9,4	10,8	7,1	6,3
	Group 10											
1001	Wheat and wheat mix with rye (meslin)	673,4	181,9	4,5	3076,2	593,7	9,5	1,9	1,8	1,7	0,9	1,3
1002	Rye	15,3	7,2	0,0	261,5	10,6	0,0	0,0	0,1	0,0	0,1	2,0
1003	Barley	22,9	27,7	18,1	32,9	23,7	0,5	20,2	9,2	1,3	0,3	10,5
1004	Oat	0,0	0,0	0,0	2,3	0,0	0,0	0,0	6,3	3,1	0,0	0,0

1005	Corn	92,0	3,3	4,6	21,5	14,0	12,9	15,7	23,9	33,3	17,9	30,5
1006	Rice	64,2	75,9	78,9	86,4	102,3	127,4	111,2	121,3	73,6	76,8	63,6
1007	Sorghum grain	0,1	0,0	0,0	0,1	0,3	0,1	0,2	0,5	1,4	0,2	0,0
1008	Buckwheat, millet and canary grass seeds; other grain crops	0,1	0,1	1,0	0,6	0,1	0,0	0,4	3,8	0,6	0,1	0,0
	Group 12											
1201	Soja beans, milled or not	0,0	0,3	13,0	0,7	0,2	0,1	1,5	0,4	0,5	0,6	0,9
1202	peanuts (ground-nuts), raw	15,5	19,9	27,4	29,9	33,6	41,1	32,7	35,7	36,1	22,0	28,8
1204	Flack seeds, milled or not	0,3	0,1	0,0	0,4	0,3	0,5	0,1	0,0	0,0	0,0	0,0
1205	Bitter cress or rape seeds	0,1	0,1	0,2	0,3	0,3	0,6	1,5	2,7	4,6	1,8	2,0
1206	Sunflower seeds, milled or not	0,6	1,0	0,9	1,3	4,6	3,1	4,4	6,7	7,8	5,5	6,8
1207	Other oil crops seeds and fruits	0,4	0,5	0,3	2,5	0,2	3,7	2,9	2,2	4,7	2,2	4,8
1208	Flour from oil crops seeds or fruits, except mustard flour	8,9	35,1	0,1	0,0	0,1	0,2	0,3	0,1	0,1	0,2	0,1
1209	Sow seeds, fruits and spores	2,3	1,7	1,5	1,4	1,6	1,4	1,9	2,2	2,9	2,2	2,8
1210	hop cones, fresh or dried, lupulin	0,1	0,3	0,3	0,2	0,2	0,6	0,6	0,6	0,7	0,5	0,4
1211	Plants, plant fractions, seeds and fruits used mainly in perfumery, medicine or as mosquito repellents, parasite killers etc. fresh or dried, in pieces or whole, fractioned or not, milled or not	1,0	1,2	0,8	1,5	1,0	1,5	1,7	2,2	3,1	1,8	2,3
1212	locust beans, seaweed, s beet & cane: fruit pits etc.	0,1	0,3	0,5	0,7	0,9	109,8	26,0	19,5	1,5	0,6	1,1
	Group 15											
1511	Palm oil & its fractions, not chemically modified:	24,7	89,2	113,9	94,2	130,3	203,8	185,5	341,6	413,3	265,4	279,9
1513	Coconut, palm kernel or babassu oil etc, not ch mod:	7,5	10,2	11,5	14,8	18,8	27,2	26,5	30,9	30,8	27,6	32,3
1516	Plants or animal fats and oil hydrogenyzed,	20,0	26,1	33,8	19,6	16,0	12,5	9,0	13,7	14,9	16,0	14,1

	interetherified, refined or not:											
1517	Margarine, edible mixtures etc an or veg fat & oil:	9,0	13,0	24,1	32,1	24,3	33,8	35,7	49,0	45,1	38,0	41,5
1520	Glycerol (glycerine), glycerol waters and lyes:	0,5	0,6	0,2	0,3	0,8	1,5	3,7	4,2	7,1	12,5	14,8
	Group 18											
1801	Cocoa beans, whole or broken, raw or roasted:	20,7	22,3	15,5	15,6	14,4	17,7	17,1	20,3	17,8	15,8	14,1
1803	Cocoa paste, defatted or not:	1,4	0,9	6,4	7,5	9,4	13,3	14,3	16,6	19,6	18,6	19,5
1804	Cocoa butter, fat and oil:	2,9	2,7	3,6	3,1	3,8	5,5	6,6	7,3	8,0	6,6	8,3
1805	Cocoa powder, not sweetened:	9,9	12,6	12,3	12,3	14,0	18,5	19,8	22,0	24,5	20,8	21,9
1806	Chocolate & other food products containing cocoa:	7,2	9,5	8,7	9,1	72,6	157,8	120,5	30,8	56,7	37,7	31,4
	Group 21											
2101	Extracts etc of coffee, tea or mate, roast chicory:	1,7	4,5	7,6	12,5	15,6	27,3	34,1	36,7	52,8	37,3	35,7
2102	Yeasts, dead sing-cell micro-org nesoi, baking powder:	3,3	7,5	7,9	5,6	12,5	13,9	7,1	4,4	3,0	1,9	1,9
2103	Sauces & prep, mixed condiments, mustard flour etc:	1,2	2,5	4,6	6,9	7,9	12,1	14,2	17,4	21,0	14,3	17,0
2104	Soups, broths & preps, homogenized comp food preps:	1,3	2,0	1,4	2,1	1,8	2,8	3,5	2,3	2,9	2,0	2,2
2106	Food preparations nesoi:	6,1	10,0	9,7	12,0	15,8	26,5	32,6	38,4	42,1	30,0	35,3
	Group 24											
2401-2403	Tobacco:	48,0	51,6	64,5	78,3	86,8	96,9	90,5	98,9	94,5	82,4	80,1

Source: State Statistics Service of Ukraine and State Customs Service of Ukraine

Annex 3. Agrofood group Commodities – Export (thousand tons)

Code	Denomination	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
	Group 2											
202	Beef, frozen:	136,4	90,2	130,7	146,0	77,4	56,1	12,1	34,4	16,8	18,9	13,2
203	Pork fresh, cooled or frozen:	10,2	1,5	1,1	12,3	7,8	6,6	0,5	0,0	0,0	0,0	0,6
206	Food subproducts of cattle, pigs, sheep, goats, horses, donkeys, mules, fresh, cooled or frozen:	2,8	1,6	2,9	4,3	1,3	1,1	0,2	0,1	0,1	0,0	0,0
207	Meat and food subproducts of poultry trade position 0105, fresh, cooled or frozen:	0,8	0,4	3,6	0,8	0,2	0,1	0,3	5,0	8,4	18,9	32,5
	Group 4											
401	Milk and cream, non-condensed without sugar addition	0,4	1,0	0,3	1,4	1,7	1,9	2,8	4,2	16,4	18,2	16,3
402	Milk and cream, condensed or with sugar addition	57,3	96,0	60,2	73,3	107,8	97,2	92,6	91,3	80,3	45,8	33,2
403	Buttermilk, yoghurt, kefir and others or acidified milk and cream	0,0	0,3	0,0	0,2	0,6	3,1	0,8	1,1	1,3	3,0	4,6
404	Milk serum	0,0	0,1	0,5	1,6	3,8	10,2	7,7	15,5	11,3	12,2	19,0
405	Butter and other fats made of milk	31,3	53,5	14,9	17,7	42,3	24,4	12,7	3,9	6,1	0,9	1,2
406	Cheeses of all types and lactic cheese	12,5	30,8	37,0	61,3	93,6	116,2	49,2	62,0	77,4	76,6	79,3
407	Eggs of poultry in shells	0,4	0,0	0,1	0,3	0,2	1,0	1,1	15,0	10,4	35,5	20,4
408	Eggs of poultry without shells	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,6	1,1	3,2
409	Natural honey	0,2	1,4	3,4	3,2	4,6	3,8	6,6	3,5	3,3	7,4	7,0
	Group 7											
701	Potatoes, fresh or cooled	0,1	0,6	0,3	0,3	1,1	0,1	0,6	2,8	2,0	3,5	7,2

702	Tomatos, fresh or cooled	3,4	1,0	1,0	3,4	3,0	3,8	12,3	19,9	32,4	69,4	59,1
703	Onion, shallot, garlic, leek and other onion vegetables, fresh	0,4	0,5	0,0	0,0	0,4	0,1	6,5	66,2	2,2	68,3	1,9
704	Cabbage, cauliflower, broccoli	0,0	0,0	0,4	0,1	0,2	0,4	0,4	0,5	2,1	2,6	9,9
706	Carrots, turnip, table beet, salsafy, radish, celery root	0,1	0,0	0,0	0,2	0,4	0,4	0,2	0,7	0,8	4,9	2,1
707	Cucumbers, cornichons fresh	1,2	1,1	0,4	0,6	0,5	1,1	3,8	4,5	6,2	15,4	14,5
708	Legumes skinned or not, fresh or cooled	0,2	0,3	9,8	2,1	9,0	13,9	9,0	1,3	6,1	29,6	5,7
709	Other vegetables, fresh or cooled	0,8	1,6	1,0	1,2	2,6	2,6	3,7	3,4	3,6	7,7	6,2
710	Vegetables, frozen:	1,0	1,2	0,7	0,4	0,7	3,6	7,9	6,5	6,4	11,9	11,4
713	Legumes dried	26,2	109,4	183,1	44,8	177,5	179,4	271,3	69,9	77,6	271,6	158,2
	Group 8											
802	Other nuts, fresh or dried, in shell or skinned	3,0	4,0	9,4	9,3	14,5	18,5	18,6	18,4	31,5	39,8	39,5
807	Melons, water melons and papaya, fresh	2,4	1,1	3,7	10,3	11,3	4,8	9,0	8,2	7,8	27,0	43,8
808	Apples, pears and quince, fresh	0,2	0,0	0,0	9,6	1,3	20,4	6,2	25,3	20,3	59,9	99,0
809	Apricots, cherries and sweet cherries, peaches, plums and dog rose, fresh	0,4	0,4	0,2	0,8	0,5	4,4	1,0	1,7	2,5	1,9	4,9
810	Other fruits, fresh	6,0	3,6	5,2	3,7	3,3	2,5	1,7	0,8	1,0	0,8	1,1
811	Fruits and nuts, raw or cooked, frozen	6,5	8,2	15,2	15,2	18,5	22,5	21,2	19,6	15,9	17,8	21,6
813	Fruits dried	0,1	0,2	0,1	0,2	0,2	0,4	0,9	0,9	2,3	3,2	2,7
	Group 10											
1001	Wheat and wheat mix with rye (meslin)	201,2	2852,6	8304,0	901,1	2553,9	6009,5	4671,3	1055,9	7511,3	12884	4859,6
1002	Rye	18,4	20,4	467,7	91,9	60,5	80,5	34,5	0,0	0,1	5,7	93,3
1003	Barley	864,7	2212,1	2836,2	1894,8	3710,4	3501,8	4569,5	2119,7	5740,5	5489,2	4785,2

1004	Oat	24,1	41,3	29,4	2,1	22,6	4,3	0,7	16,5	7,9	6,8	19,7
1005	Corn	163,2	362,3	496,7	943,1	1234,2	2795,6	1682,5	954,3	2811,7	7178,6	4052,4
1006	Rice	0,2	0,3	0,1	0,0	0,2	0,7	2,5	6,7	3,4	1,9	3,9
1007	Sorghum grain	0,0	1,8	0,0	0,0	9,9	34,9	45,8	24,8	37,7	129,6	38,4
1008	Buckwheat, millet and canary grass seeds; other grain crops	15,0	41,1	34,1	28,2	44,8	65,4	17,8	29,0	23,7	50,6	52,8
	Group 12											
1201	Soja beans, milled or not	7,8	1,2	3,4	42,4	38,4	174,6	270,7	319,5	201,3	263,1	449,4
1204	Flack seeds, milled or not	0,0	0,0	0,1	4,1	11,0	16,4	24,2	26,5	4,8	28,2	22,6
1205	Bitter cress or rape seeds	68,6	82,9	20,6	25,5	81,1	183,4	470,7	910,0	2387,1	1856,1	1508,8
1206	Sunflower seeds, milled or not	833,7	584,5	68,2	867,6	354,2	35,6	229,5	370,3	97,2	727,8	409,7
1207	Other oil crops seeds and fruits	3,0	2,9	8,3	40,7	73,0	69,7	31,2	13,7	19,3	43,5	54,5
1208	Flour from oil crops seeds or fruits, except mustard flour	370,3	244,7	0,6	3,0	0,3	0,2	0,2	0,6	0,2	0,2	8,7
1209	Sow seeds, fruits and spores	5,8	10,0	8,9	9,0	10,5	10,0	16,0	16,5	11,0	16,0	16,9
1211	Plants, plant fractions, seeds and fruits used mainly in perfumery, medicine or as mosquito repellents, parasite killers etc. fresh or dried, in pieces or whole, fractioned or not, milled or not	1,3	0,9	0,9	1,6	2,0	1,5	2,0	2,3	3,5	3,1	3,2
	Group 15											
1507	Soja oil	1,1	1,1	0,7	4,0	2,6	7,5	6,6	9,3	9,6	38,0	46,4
1512	Sunflower, safflower or flack oil	583,4	473,2	566,2	924,5	869,2	853,1	1628,8	1923,2	1339,6	2333,8	2701,5
1514	Bitter cress, rape or mustard oil	4,2	11,8	6,3	0,5	5,8	22,7	9,4	19,7	35,3	4,7	0,3
1515	Others non-volatile fats and plant oils	1,5	1,3	1,3	1,9	2,4	2,4	5,3	9,3	6,7	9,1	7,9
1516	Plants or animal fats and oil hydrogenyzed,	0,1	0,7	1,4	5,6	9,5	9,1	11,0	7,2	16,7	8,5	5,8

	interetherified, refined or not											
1517	Margarine; food mixtures and animal fats and plant oil products	0,4	1,2	1,8	2,3	4,7	15,4	28,2	25,4	32,3	45,0	69,5
	Group 23											
2302	Sifting, feed flour and other waste, granulated or not	161,4	200,1	182,5	132,4	323,4	344,9	217,0	271,6	378,4	346,7	307,0
2303	Starch production waste and similar waste, beet cake, cane sugar cake and other waste	15,7	31,2	11,7	23,4	67,9	104,6	147,8	167,2	116,2	104,6	116,2
2304	Cattle cake and other solid waste obtained during soja oil extraction	0,9	0,5	4,4	0,2	1,7	3,3	0,0	0,1	1,0	1,3	4,6
2306	Cattle cake and other solid waste obtained during plants oils and fats extraction	301,3	424,9	633,8	924,2	1061,5	980,9	1431,8	1588,7	1354,7	2490,2	2658,7
2308	Plant origine products and plants waste	0,1	0,3	0,1	0,0	0,0	1,8	1,3	3,1	0,9	2,6	2,0
2309	Products used for animal feeding	20,4	29,2	43,7	48,3	53,0	34,8	21,7	37,0	35,1	6,4	8,6

Source: State Statistics Service of Ukraine

Annex 4. Commodity structure of foreign trade in 2010 (agrofood nomenclature)

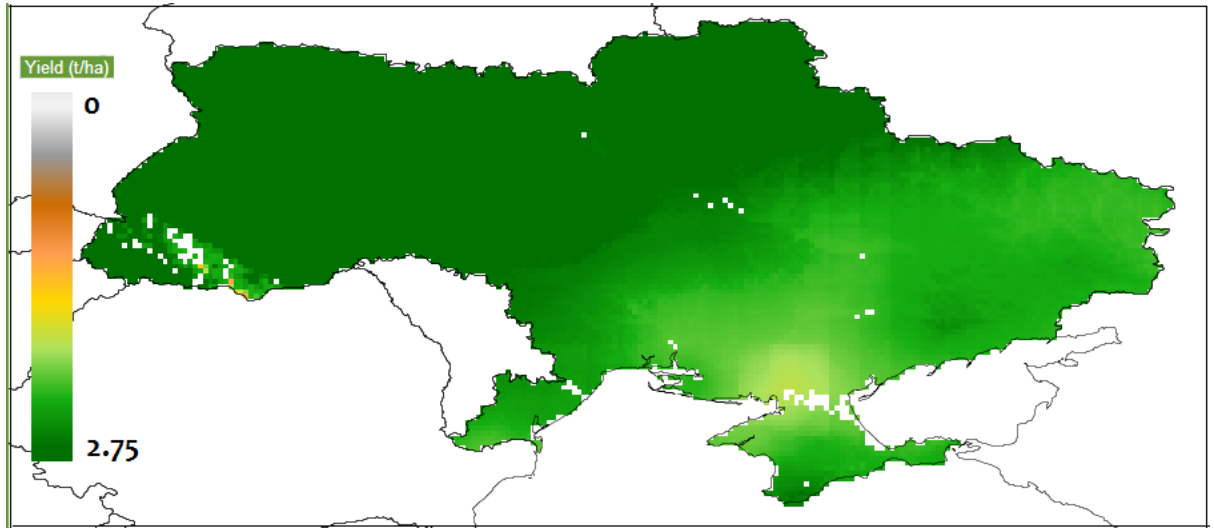
Commodity code	Title by Ukrainian Classification of Commodities in Foreign Trade	Export			Import		
		Thousands USD	Tons	Share, %	Thousands USD	Tons	Share,%
1	Live animals	3637	606	0,0	67519	7495	1,2
2	Meat and meat preparations	90181	46533	0,9	457987	348846	7,9
3	Fish and fish preparations	3930	943	0,0	568563	423168	9,9
4	Milk and milk products	648787	184309	6,5	135587	37908	2,4
5	Other animal products	7777	5018	0,1	12181	11792	0,2
6	Seedlings and other trees	1782	2318	0,0	73875	25789	1,3
7	Vegetables, root crops	119213	276520	1,2	129973	214292	2,3
8	Eatable fruits and nuts, citrus plants	208844	213577	2,1	733345	972334	12,7
9	Coffee, tea, spices	9870	6655	0,1	234123	58002	4,1
10	Cereals	2467064	13905363	24,9	145584	107875	2,5
11	Flour-grinding products	80948	227907	0,8	27542	52634	0,5
12	Oil seeds and fruits	1085659	2487842	10,9	178933	50359	3,1
13	Varnishes, resin (pitch)	1261	421	0,0	39636	3544	0,7
14	Plant materials	1687	6932	0,0	889	846	0,0
15	Animal or plant fats and oils	2617318	2933715	26,4	451609	407153	7,8
16	Preparations from meat, fish	48688	37630	0,5	100504	51870	1,7
17	Sugar and sugar confectory	206503	225794	2,1	231454	351892	4,0
18	Cocoa and cocoa preparations	591612	203444	6,0	407375	96872	7,1

19	Preparations from cereals	254291	163031	2,6	125926	51166	2,2
20	Products of fruits, vegetables processing	210389	195752	2,1	223454	152743	3,9
21	Other mixed food- stuffs	122922	74608	1,2	466911	92531	8,1
22	Alcoholic and non-alcoholic beverages	443705	800920	4,5	270558	189905	4,7
23	Remains and wastes	479068	3098066	4,8	208437	185487	3,6
24	Tobacco	213898	20574	2,2	471445	80064	8,2
	Total	9919034	25118478	100,0	5763410	3974567	100,0

Source: State Statistics Service of Ukraine

Annex 5: Agro-climatically attainable yield for grain crops[87]

Figure 41: Agro-climatically attainable yield for low input level[88] rain-fed wheat (2020s)

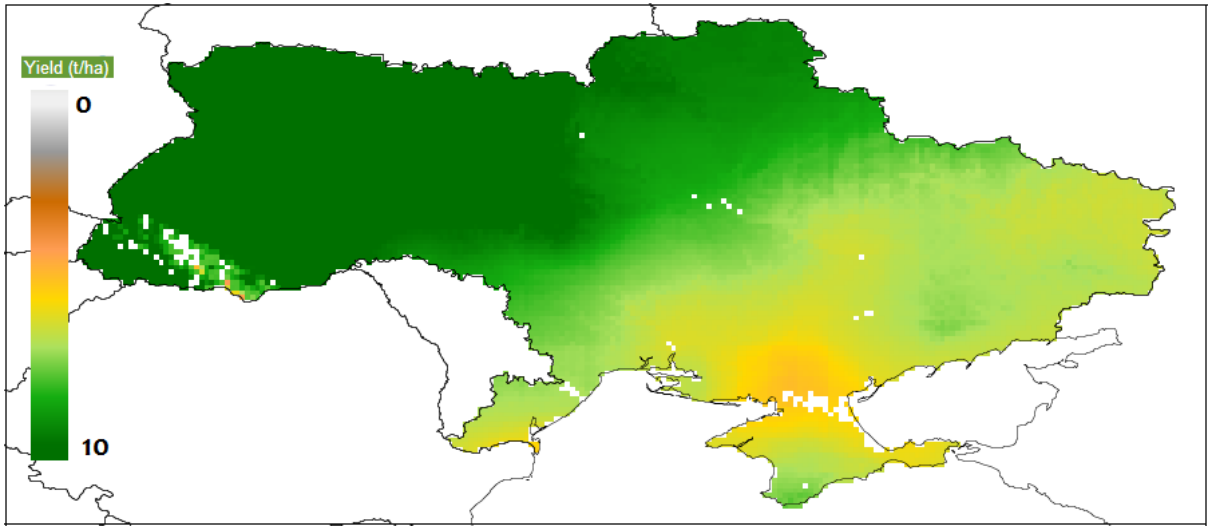


Source: GAEZ v3.0., IIASA & FAO 2010 http://www.gaez.iiasa.ac.at

[87] For GAEZ v3.0 projections climate scenario CCCma CGCM2 A2 was assumed

[88] Under the low input, traditional management assumption, the farming system is largely subsistence based and not necessarily market oriented. Production is based on the use of traditional cultivars (if improved cultivars are used, they are treated in the same way as local cultivars), labor intensive techniques, and no application of nutrients, no use of chemicals for pest and disease control and minimum conservation measures.

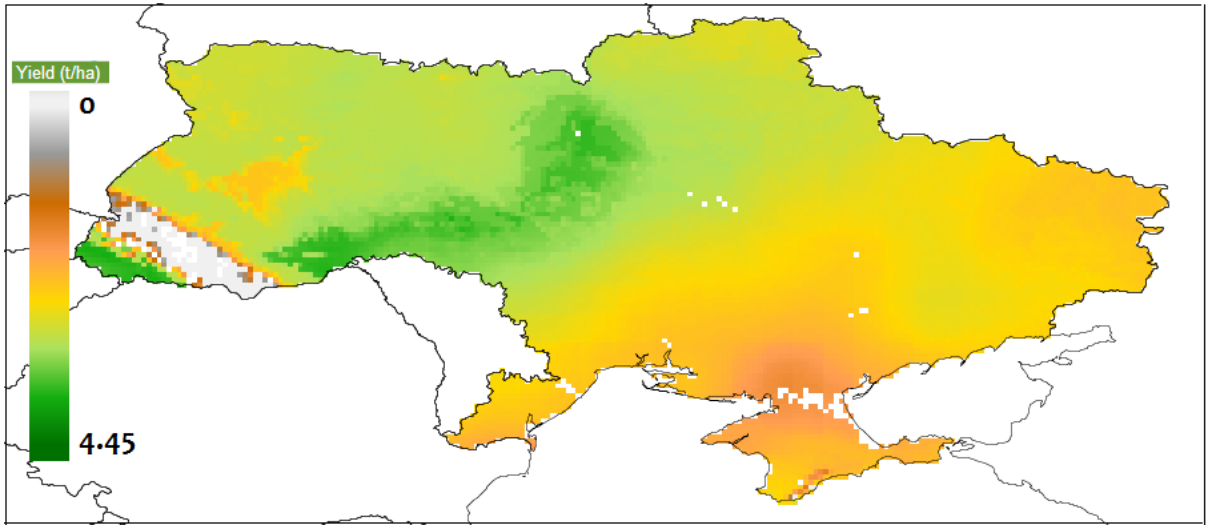
Figure 42: Agro-climatically attainable yield for high input level[89] rain-fed wheat (2020s)



Source: GAEZ v3.0., IIASA & FAO 2010 http://www.gaez.iiasa.ac.at

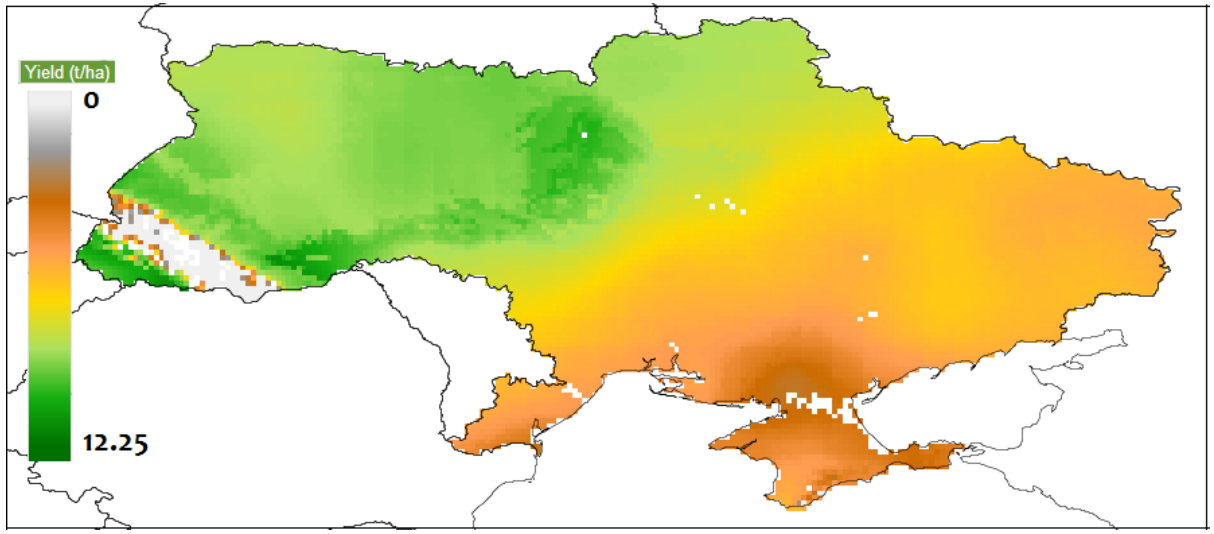
[89] Under the high input, advanced management assumption, the farming system is mainly market oriented. Commercial production is a management objective. Production is based on improved high yielding varieties, is fully mechanized with low labor intensity and uses optimum applications of nutrients and chemical pest, disease and weed control.

Figure 43: Agro-climatically attainable yield for low input level rain fed maize (2020s)



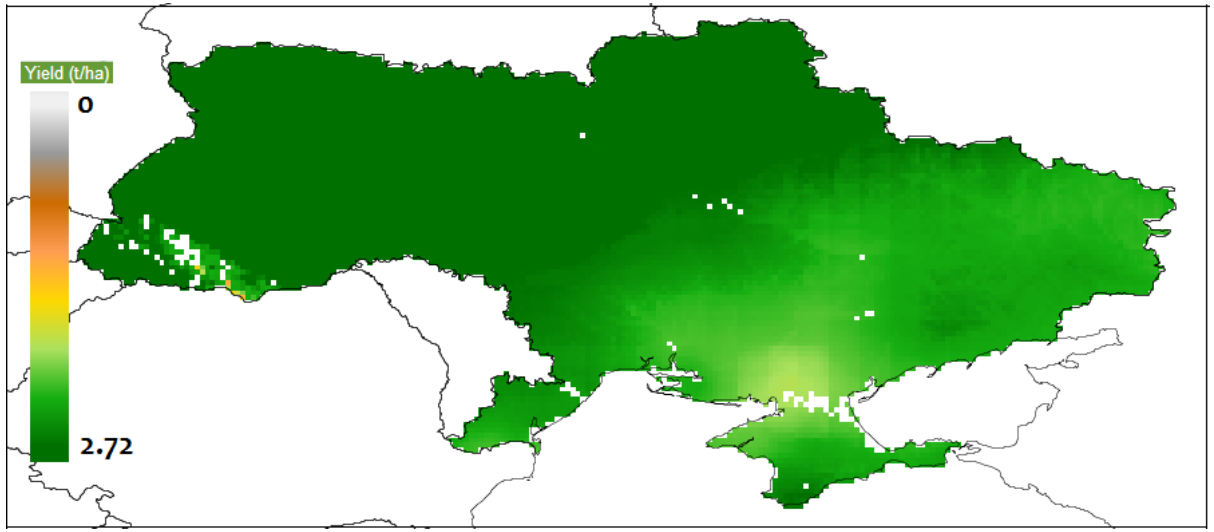
Source: GAEZ v3.0., IIASA & FAO 2010 http://www.gaez.iiasa.ac.at

Figure 44: Agro-climatically attainable yield for high input level rain-fed maize (2020s)



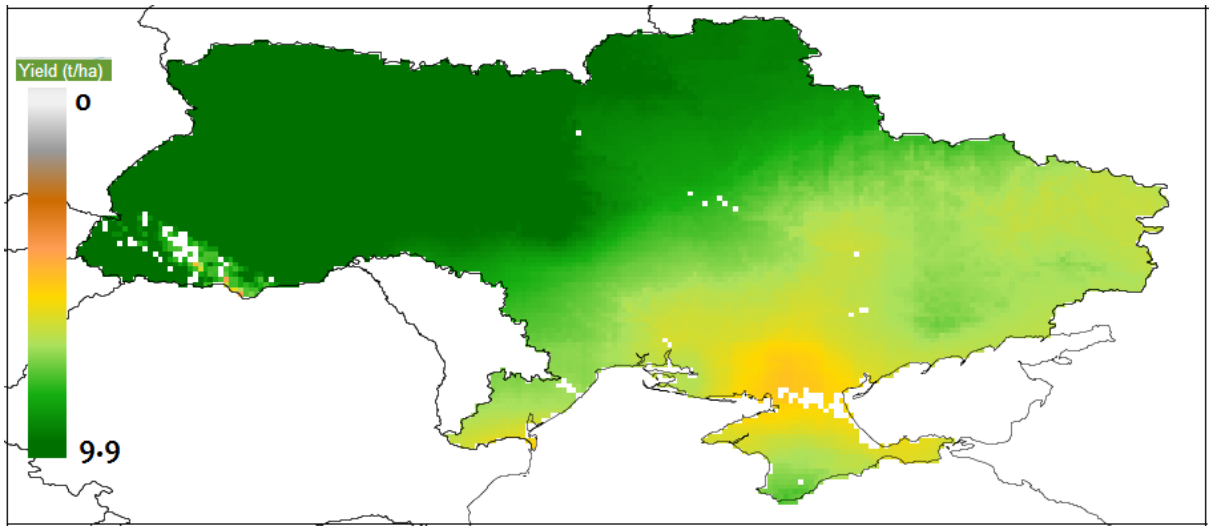
Source: GAEZ v3.0., IIASA & FAO 2010 http://www.gaez.iiasa.ac.at

Figure 45: Agro-climatically attainable yield for low input level rain fed barley (2020s)



Source: GAEZ v3.0., IIASA & FAO 2010 http://www.gaez.iiasa.ac.at

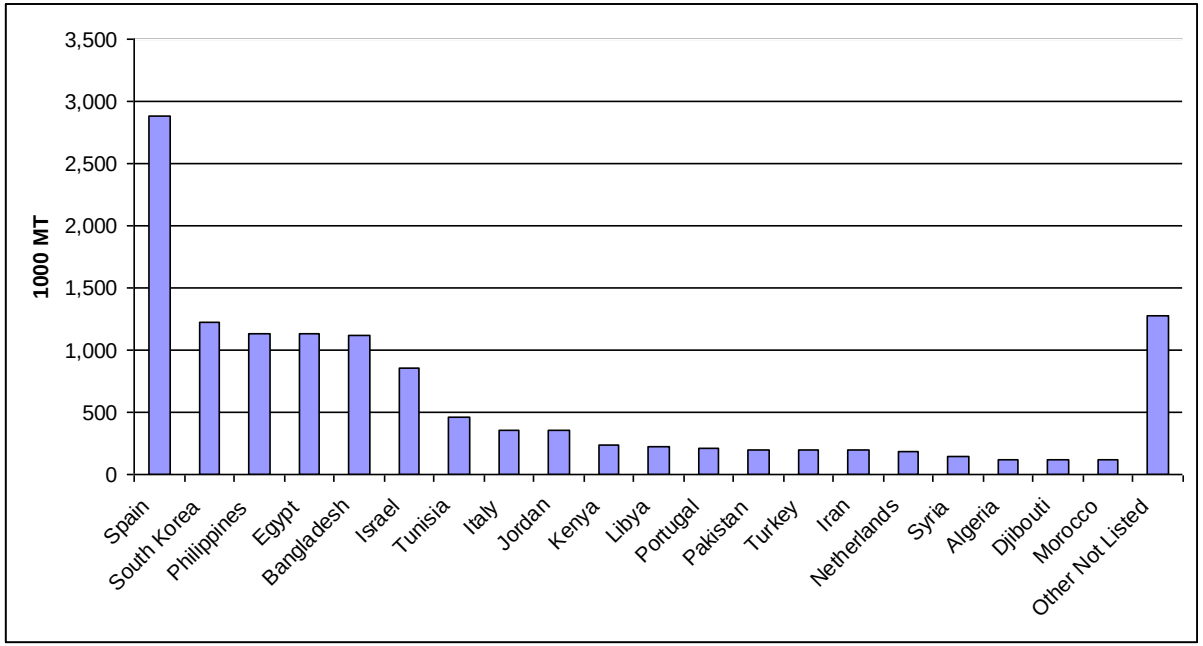
Figure 46: Agro-climatically attainable yield for high input level rain-fed barley (2020s)



Source: GAEZ v3.0., IIASA & FAO 2010 http://www.gaez.iiasa.ac.at

Annex 6. Main export destinations for grain

Figure: Wheat Exports by Destination in 2009



Source: State Statistics Committee of Ukraine

Annex 7: Grain ex work prices and rail transportation costs from the Western Region of Ukraine

Region	EXW Price EUR / t				Distance			Freight rate		
	3.class wheat	*corn*	*sunflower*	*rapseed*	*Batevo Gr.*	*Mostiska Gr.*	*Odessa port*	*Batevo Gr.*	*Mostiska Gr.*	*Odessa port*
Vinnitsa	213.75	185.25	403.75	408.50	-	-	-	-	-	-
Volyn	185.25	152.00	399.00	418.00	-	-	-	-	-	-
Zhitomir	198.55	166.25	394.25	-	640 km	465 km	503 km	17 EUR/t	14 EUR/t	15 EUR/t
L'vov	190.00	156.75	399.00	427.50	260 km	66 km	795 km	9 EUR/t	6 EUR/t	18 EUR/t
Rovno	193.80	171.00	389.50	422.75	210 km	97 km	828 km	13 EUR/t	10 EUR/t	17 EUR/t
Ternopol	194.75	159.60	389.50	418.00	344 km	197 km	668 km	12 EUR/t	8 EUR/t	16 EUR/t
Khmelnitskij	196.65	161.50	394.25	427.50	-	-	-	-	-	-

Source: Schenker International Forwarding and Logistics Co.Ltd. (calculated based on data collected by Ukrainian Agribusiness Club 2012)[90]

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European Commission

EUR 84652 – Joint Research Centre – Institute for Prospective Technological Studies

Title: Ukraine's agriculture: potential for expanding grain supply. Economic and institutional challenges.

Authors: Szvetlana Acs, Oleksandra Borodina, Sergio Gomez y Paloma, Andriy Kharchenko

Luxembourg: Publications Office of the European Union

2012 – 84 pp. – 21.0 x 29.7 cm

EUR – Scientific and Technical Research series – ISSN 1831-9424 (online)

ISBN 978-92-79-33205-0 (pdf)

doi:10.2791/22957

Abstract

Ukraine is one of the few countries in the world that is in a position to significantly increase grain net exports, due to its strategic location and agro-ecological potential of its soils. The grain production potential of Ukraine depends on the two main factors: land area cultivated and yield. This report analyses possibility of increasing both of these factors, highlighting the unstable character of land area under grain and defining the causes of such fluctuations including extreme weather conditions, absence of crop insurance system, lack of environmental measures and unsustainable mid- and long-term state policy in grain production and trade. The rapid emergency of large intensive agricultural enterprises and agro-holdings in the last decade is widely promoted by policy makers due to their effectiveness; however in terms of operational efficiency, environmental footprint and monetary productivity, peasant farms often have better results, as we have shown in this report. In terms of economic and institutional challenges, we have analysed issues with logistics and trade infrastructure, rule of law, transparency of grain markets and financial support to the farmers. As a result of the analysis, we can conclude that by liberalizing its markets, improving the rule of law and providing more state support for sustainable agricultural practices and infrastructure development, Ukraine shall be able to increase its grain production and exports, attract more investment into the sector and improve producer profitability.

LF-NA-26170-EN-N

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Publications Office

ISBN 978-92-79-33205-0

9 789279 332050