

Unique Grain Export Potential of Ukraine

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Food security is poised to remain the most urgent issue on the policy agenda of many governments in the future. Indeed, the table below reveals the extent of food shortages that may emerge as the world population reaches close to 9 billion in 30 years.

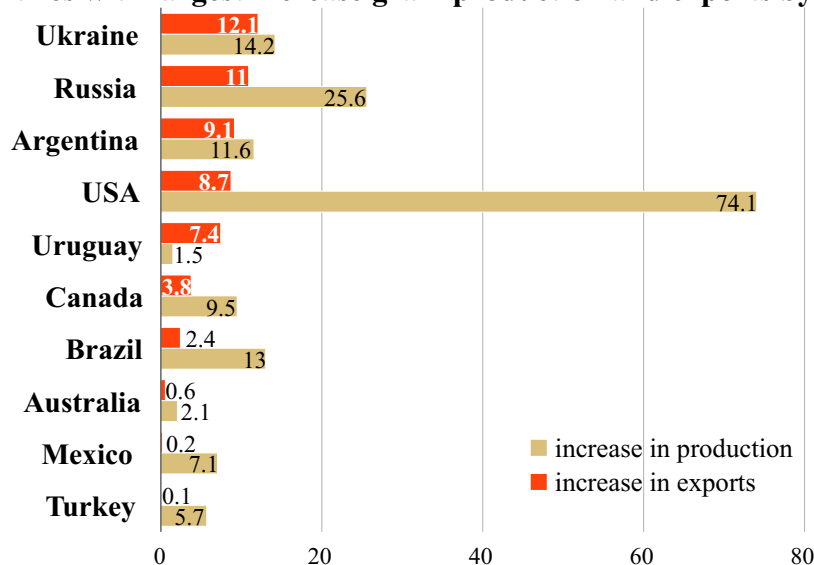
		2011	2021	2041
OECD-FAO Projections	World Population, bln	6.97	7.73	8.92
	World Production of Grains, mln t	1 864.5	2 123.5	2 557.6
	World Consumption of Grains, mln t	1 865.1	2 114.2	2 544.4
TBF Projections		1 865.1	2 387.5	3 056.2

In particular, OECD-FAO forecasts that future expansion of global grain production will be limited by the scarcity of arable land and technological constraints. Thus, world grain output is projected to grow to 2123 million tons by 2021, or by about 1.3% pa, compared to about 2.0%-2.5% pa achieved over the past 10 to 50 years. On the grain consumption side, OECD-FAO projections simply assume that the world will consume whatever is produced. However, this assumption may conceal potentially big food scarcities in the future, a situation recognized by OECD-FAO. Alternatively, the projections prepared by The Bleyzer Foundation for world grain consumption are based on continued rapid income and population growth in the emerging world as well as a large-scale migration of rural population to urban areas. Thus, it is reasonable to expect that global grains consumption during the next decade will increase at least at the same rate as in the past 10 years, or about 2.5% pa, reaching 2387 million tons by 2021. This means that by 2021, there will be a deficit of 264 million tons of grains. Similar projections have been made by other agencies, such as EBRD.

Countries with Large Potential to Increase Grain Exports

Our country-by-country analysis agrees with the OECD-FAO projections that Ukraine is the country with the highest potential in the world to significantly increase exports of wheat and coarse grains (as shown below) and meet the growing global requirements for food in the future.

Countries with largest increase grain production and exports by 2021



Source: OECD-FAO Agricultural Outlook 2012-2021, 2012

Based on current conditions and trends, FAO estimates that Ukraine could expand exports by 12 million tons over the next decade (to about 31 million tons by 2021). Yet, other studies have shown that with new investments and

better technology, in ten years Ukrainian grain exports have the “potential” to be four times this number, or about 125 million tons per year.

Indeed, most studies conclude that Ukraine has a potential to emerge as the biggest grains exporter in the world. In particular, OECD-FAO forecast that developed countries (mainly the US, Canada, the EU, and Australia) would increase their grain exports by only 7 million tons during the period (from 149 million tons to 156 million tons), which is less than the minimum amount obtainable by Ukraine. Although these developed countries would expand grain production by 1.3% pa in the next decade, exports will be limited by their higher domestic use. Actually, exports from the EU are expected to decline by 5 million tons by 2021.

Meanwhile, according to OECD-FAO, most other emerging countries will also face constraints to expansion of grain exports due to arable land limitations, growing populations and poor infrastructure or technologies already in use in farming. As a result, OECD-FAO projections imply that during the next decade, the largest increases in grain exports among these countries would primarily take place in Russia (11 million tons), Argentina (9 million tons), Kazakhstan (5 million tons), and Brazil (2 million tons). All other countries will have negative balances.

Thus, according to OECD-FAO, Ukraine would supply at a minimum about 26% of the world's increase in grain exports during the next decade. After all, as shown in the OECD-FAO table above, unlike Ukraine, other emerging countries with the greatest potential to increase grains output will use this expansion of local production almost exclusively to meet growing domestic consumption, with no surplus available for export. In fact, some of them will remain net grain importers.

In particular, Brazil will continue to be a large grain producer and net exporter, but it will also use the bulk of its production increases for domestic consumption, with relatively negligible increases in exports. Kazakhstan will use half of its grain production increases for domestic consumption. In the recent past, Kazakhstan was able to increase production due to higher yields (from a very low base) and area expansion into marginal lands. However, according to FAO, this trend is not expected to continue at a significant pace, due to a number of limiting factors, including dry climate and risks of drought, geographic location with high transportation costs, poor infrastructure and lack of ports, saturation of Central Asian grain markets, and inadequate management capabilities.

FAO projections for Ukraine are rather conservative since they are based on the status quo assumptions of continued moderate improvement of yields and a gradual expansion of harvested area under grains. Yet, Ukraine could export about 125 million in about 10 years (as noted below), if adequate investments are made in agriculture, modern farming technologies are widely adopted, farm consolidation continues, and more arable land is used to grow crops for which Ukraine has a substantial comparative advantage, such as wheat and coarse grains.

Our projections are based on the assumption that many grain producing countries face constraints on their ability to boost yields further, while where production growth is possible, most of the gains in grain output will be absorbed by the growing domestic demand. For instance, Egypt's potential to increase grain production and exports is limited by the fact that it is already using intensive agriculture, with yields comparable to the EU, thanks to its fertile land along the Nile. Yields for other African other countries are low, but yield increases are likely to be limited by the quality of land. Brazil's agriculture is more advanced than in Ukraine, with yields of 3.33 tons/ha; but also as noted earlier, any further production increase to match Europe's yields (4.86 tons/ha) will be principally consumed internally by a growing population that is approaching 200 million people.

Ukraine, on the other hand, should be able to increase yields to levels comparable to EU levels, due to the quality of its “chernozem” black soil, which is rich in agricultural nutrients and has a superior capacity to hold water.

Thus, over the longer term, Ukraine can export four times more grain than the amount forecast by FAO (up to about 125 million tons of grains/year), with suitable investments in agriculture. In fact, Ukraine is using only about 30% of the capital per hectare in agriculture that is used by the EU, as noted below:

Capital per hectare in agriculture, \$ USD (2005 prices)

	2000	2001	2002	2003	2004	2005	2006	2007
Ukraine	1 448	1 491	1 467	1 445	1 429	1 416	1 410	1 405
European Union + (Total)	4 245	4 324	4 360	4 409	4 352	4 397	4 393	4 427

Source: FAOSTAT

The fact that capital stock per hectare in agriculture in Ukraine is about \$3,000 lower than in the EU allows us to estimate investment requirement of the Ukrainian farming which will help boost yields to European levels. We assume that in order to close the gap between the yields in Ukraine and EU by 50%-75% in 10 years, Ukraine will need to raise its capital stock in agriculture by about the same proportion or by \$1,500-\$2,500 per hectare. Thus, considering that Ukraine has over 30 million hectares in arable land, the agro industry may need about \$50-\$80 billion within the next decade.

Thus, assuming that (i) *Ukraine can potentially reach grain yields that are similar to an average in the Western Europe* (which means that Ukrainian yields will double), and (ii) *arable land use is shifted toward crops with the highest competitive advantage* (more specifically, we base our projections of the future land use in Ukraine on the current land distribution of Harmelia, which means that production of some other crops will go down), **Ukraine can produce of 150 million tons of grains including 125 million tons for exports:**

Potential for grains production and exports in Ukraine, baseline scenario

	Prod.	Con.	Sown Area, ml. Ha		Yields. t/Ha				Projections, million Ha		
	2012 million tons		2012	Based on Harmelia pattern	2012	Harmelia, 2011	75% of genetic potential	Western Europe average	Prod.	Con.	Exports
Grains and Legumes	46.2	23.3	15.4	24.3					150	25	125
Wheat	15.7	12.6	5.6	10.5	2.9	4.7	7.8	5.5	58	13	45
Corn	20.9	5.3	4.4	6.2	4.8	7.8	9.6	9.6	60	6	54
Barley	6.9	4.4	3.3	5.5	2.1	3.3	7.5	4.5	24	5	19
Legumes	2.7	1	2.1	2.1	2	2	4	4	8	1	7
Sugar Beets	18.4		0.5	0.2					7		
Sunflower and Oil Seeds	8.4		5.2	2					3		
Potato	23.3		1.5	1.5					23		
Vegetables	10.1		0.5	0.5					10		
Fodder Crops (fruits and berries)	2		2.5	1.5					2		
Idle land			4.4								
Total Agriculture	108.4		30	30					195		

If Ukraine were to use even better farming techniques, it is feasible to achieve yields of about 75% of the grain's genetic potential. These yields would be on average about 25% over the yields we used in our baseline projections and would be close to the yields currently achieved by the best countries in the Western Europe. Thus, based on these assumptions, Ukraine will be able to produce about 190 million tons of grains and export 165 million tons of grains, which may be feasible over the long-term and thanks to a widespread adoption of the best farming methods.

Yet, even under our baseline scenario, Ukraine will be the world's biggest exporter of wheat with 45 million tons, compared to other wheat exporters in the 2021 FAO-OECD projections, namely Russia, (26 million tons), United States (24 million tons), Canada (20 million tons), EU-27 (17 million tons), Australia (17 million tons) or Argentina (9 million tons). Ukraine will also be the largest exporter of coarse grains (mainly corn and barley) with 73 million tons versus other coarse grain exporting countries United States (62 million tons), Argentina (25 million tons), Brazil (11 million tons), Canada (6 million tons), Australia (6 million tons), and EU-27 (5 million tons).

Lastly, most net exporting countries such as Kazakhstan, Turkey and Brazil, have the potential to increase output and will also require large investments in farming on par with Ukraine. Yet their production and export surpluses will be significantly less than in Ukraine. Furthermore, in such big countries as Turkey and Brazil, the bulk of the grain harvest is likely to be used domestically. **Only Ukraine has a large potential to increase grain exports and to meet the requirements of enhancing global food security and contribute significantly to securing food supplies for countries with the fastest growing demand for foods, principally in the GCC region, Africa and Asia.**