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A Path to the Future – Ukraine's Wheatland and the War

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Ukrainian Hutterites brought the first winter wheat strains to Central Kansas after 1873. The Tsar had eliminated the draft exemption that inspired their emigration to the New World. Their winter wheat – which was a winter instead of a summer crop -- was a while to catch on. But it became the core of the standard approach – winter dry fallow -- to growing wheat in the Northern Plains today. By 1919, in a USDA survey, crops based on material grown from Ukrainian stock accounted for 83% of the area sown. It was the most popular until 1944.

It appears that the cost of the invasion to the economy will be $349 billion dollars which exceeds the pre -invasion GDP of Ukraine. Not surprisingly the invasion created losses that represent substantial capital investment over many years. The losses to Ukrainian agriculture through July 2023 stood at $8.7 billion in direct losses to agriculture and $40.3 billion in total. For comparison US farm income was about $110 billion in 2024. Other measures of the impact on Ukraine can be found in Plokhy, 2023 [1].

Wheat used to be heart of what we understand as Ukraine's very special niche. But it's real market share is oil seeds. Besides that, it has also gained importance as a corn growing area in the country's center. But let's keep this simple and focus only on wheat, which is the item most grown in the East.

I would like to review a number different aspects of the overall impact of the changes in agriculture due to the war. Then I will focus on Donetsk, a good example for two reasons. First it is very large area of farmland. The second is that it is a divided province with a zone which has been seized by Russia. These are serious because Ukrainian agriculture supports 14% of the workers, compared to about 2% in the US.

Ukraine's Farm Economy

But first a few overall facts. Since 2013-14 according to the USDA reporting service, the wheat yields vary between 3.4 million tons and 4.6 million for 2023- 2024. Local crop analysts offer a better insight into production possibilities by surveying yield plans. With weather information, they are showing a much different view believing that it would disastrously reduce the wheat crop. We shall see because the because of the spring wheat harvest will not be done yet. The major news, though, is that wheat exports to the 23 member EU countries only 4% for 2020-2021, down from 45% for 2022/23; to Africa 36% in 2020-21 and only 13% for 22-23. This was also made up by large reductions in shipments to South Asia and southeast Asia [2].

Logistics cost has risen dramatically during the drought and when the Russians shut down an export procedure they had previously endorsed. The Ukrainians then instituted a new one out of Odessa and rates came down again. Of course, we don't know whether the new shipping line will work or not in the long run. A further difficulty is in supply of fertilizers which unfortunately is dominated by Belarus. Which of course will not sell them to Ukrainians. Any fertilizer to Ukraine was leaving illegally. This lack of fertilizer could turn out to be a serious problem for increasing yields.

This is related to another problem: lack of capital. The Ukrainians have been struggling getting large kolkhozes (collective farms) running again on a new basis. There's debate about whether this can also accommodate small farmers who don't have money to buy. Already, there are big farming operations in Ukraine – they are owned by a varied mix of people including the richest people in the country. Of 33 million hectares of agricultural land, they own 4.3 million.

A group called the Oakland Group estimates that they and others actually own 9 million acres.

The Impact of War: Case of Donetsk

The impact would be expected to be severe as the farm sector employs many of the people and Ukraine is an important exporter and a route for Russian production as well. The country has suffered a number of different impacts. Despite its huge past investment in wheat, Donetsk lies far from the port of Odessa. So, its economics for this product are challenged.

The largest impact is artillery fire over of a reach of 20 to 40 km each side of the trenches. The firing rates have fallen for both armies for the same reason; artillery shells are becoming more scarce. The most common is the 152 (Soviet) and 155 (NATO) rounds. Recent rates of Ukrainian fire have been estimated at 1/5 the Soviet rates. These have ranges of 40 to 70 km in their boosted and guided forms [3,4]. There is quite an additional array of weapons, including drones, ranging in sizes from large hand-held models, to full size mini airplanes. Unexploded Ordinance will be critical as up to 20% of legacy Soviet ammunition is duds, though most of that is expended at this writing.

Since the summer of 2023 they have been essentially in the same place. The result has been the conversion of the entire area to a military colony and wasteland. Cities as large as Backhmut and mere villages like Avdivka have too been turned into rubble. The central city of Donetsk has been a Soviet possession since 2014.

In the combat area wildfire has accompanied the destruction. And it has reached far in excess of the size of fires that occurred in previous times [5]. Mines are now laid by machines, artillery and rockets, and not by engineers with shovels. These have been fired into forest areas as well as fields. Lastly is the fire by tanks and armored vehicles; and finally intense use of weapons carried by infantrymen.

Impact on the Forest

The forest is decidedly a small share of the land -- below 4% by one estimate for Donetsk. Why then would it be a problem? Generally speaking, the woods are mostly linear (map) and widely used for fortifications by both sides, leading to their wide chewing up for the purpose and for the materials needed. Not surprisingly, the forest carries the burden of being the only provider of shelter from the wind. On the dry summer region along the lower Dnipro the consideration of moisture is critical.

Unfortunately, there have been various types of regional governance since the 19th century. After 1918 – 1923 brief moments of free Republics reigned, then the brief moments of collective farming. With the engineered famine of 1930s came the Holodomor, when Stalin decided to achieve two goals with one push. First, to help the proletariat who would need bread during the buildup of the defense to meet German armies in the coming war, and second to eliminate the more prosperous peasants. Not only was there fierce destruction. Stalin also moved large numbers of ethnic Russians into the region, and then moved large numbers of other nationalities out of it. Then came the Reconstruction after the Great Patriotic War, and finally the sturm und drang of the orange restoration. Then the Little Green Men came in 2014 and took away half the land. Donetsk Oblast lost 57% of its farmland.

Notice how many legal and policy changes this was. This matters because in the climate of Donetsk, several very different policies existed during the life and senescence of a windbreak. Speaking very generally, in the period of collective farms there was a good deal of central control. Yet at the same time, there was widespread corruption and mismanagement. The changes in farming since 1950, ending with climate change and war have been even more disruptive. The steppe region will have to adjust to uncertain policies. They will have to do it in a Province cut in two by ethnic strife, and where demining will go on for decades. The policy issues are extensive, as a review by Kovalenko (2021) asserts, done in ironic twist, just before the War [6].

The area of Emerald Forests has been created to denote important areas for biodiversity. An area in Luhansk, to the north, saw the area of forest fall by 25% after the invasions [7]. No reason to doubt similar conditions occur in Donetsk.

The same are some of problems as in the northern Plains. The issues are similar to the US wheat belt where for many years now there has been a debate over the water problem and the future role of shelterbelts. (USDA, 2018)

The Zone Rouge

In France, three broad designations have been given to the area most heavily affected by WW I trench warfare. The area consisted of three zones the most serious of which was indicated by red. More than a century later, they still cover 100 sq. km. which are blocked for habitation or human entry. The area still yields the evidence -- the Iron Harvest – more than a century later. A Zone Rouge could include area of Ukraine—will it last as long?

The Future

This is not the place to speculate on the future of Ukraine, but we can see a few things for Donetsk – after the peace [13].

The first step but must be demining which will have to be conducted with a view toward re-levelling the fields disrupted by mines, by vehicle tracks, and virtually ceaseless combat. This will take at least decades.

Second will need to reorganize the land base according to modern notions of agriculture.

And third, then and only then to undertake restoration of new shelterbelts.
Fourth, a modern Zone Rouge will be needed for the most severely damaged areas.

These will have to be accomplished at the same time as massive reconstruction of the cities. The conflict of priorities will be intense, and international assistance will be required.

Lloyd C. Irland, is a semi -retired consultant. He visited Ukraine twice before 1988. His wife visited more frequently as a utility consultant.

Area Producing Wheat in Ukraine
Source: USDA

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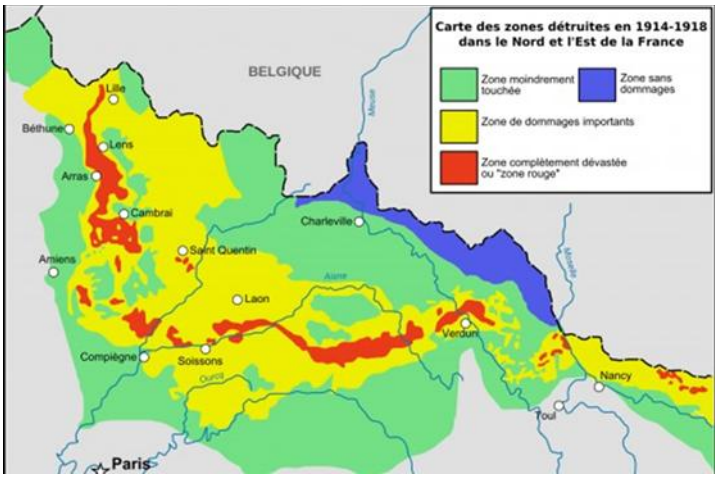
Territory around bhukva. Indicating the flat character of the ground
Source: Google Maps.

Russian Tank, With Demining Gear on Its Front.
Source: Telegram



French Red Zone, Whose Area Is Still 100 sq. km and Produces Hazardous Relics Today.
Source: Wikipedia