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Impact of the Ukraine-Russia conflict on global food security and related matters under the mandate of the Food and Agriculture Organization of the United Nations (FAO)

Executive summary

The war that began on 24 February 2022 has caused extensive damage and loss of life in major cities in Ukraine, spread across rural areas and sparked massive population displacement. More than 3.6 million people had been forced to abandon their homes and flee across borders to safety. Millions more are internally displaced. It is clear that the war has resulted in a massive, and more deteriorating, food insecurity situation, disrupted livelihoods during the agricultural growing season in Ukraine, and has also affected global food security.

Already prior to the war in Ukraine, international food commodity prices had reached an all-time high. This was mostly due to market conditions, but also high prices of energy, fertilizers and all other agricultural services. The conflict has aggravated the situation. In March 2022, the FAO Food Price Index reached a new historical record high, up 12.6 percent from February and 33.6 percent from its level a year earlier, and 15.8 percent higher than the peak reached in February 2011.

The Russian Federation and Ukraine are prominent players in global trade of food and agricultural products. In 2021, wheat exports by the Russian Federation and Ukraine accounted for about 30 percent of the global market. Russia's global maize export market share is comparatively limited, standing at 3 percent between 2016/17 and 2020/21. Ukraine's maize export share over the same period was more significant, averaging 16 percent and conferring it the spot of the world's 4th largest maize exporter. Combined, sunflower oil exports from both countries represented 78 percent of global supply. The Russian Federation is also a key exporter of fertilizers. In 2021, it ranked as the top exporter of nitrogen fertilizers, the second leading supplier of potassium, and the third largest exporter of phosphorous fertilizer in the world.

Nearly 50 countries depend on the Russian Federation and Ukraine for at least 30 percent of their wheat import needs. Of these, 26 countries source over 50 percent of their wheat imports from these two countries. In that context, this war will have multiple implications for global markets and food supplies, representing a challenge for food security for many countries, and especially for low-income food import dependent countries and vulnerable population groups.

Documents can be consulted at www.fao.org

Joint, coordinated actions and policy responses as well as financial assistance are needed to address the current challenges faced by the countries and people most in need and to mitigate the impact on food security at global level.

Suggested action by the Council

The Council is invited to note the information and to provide guidance as deemed appropriate.

Queries on the substantive content of this document may be addressed to:

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I. Background

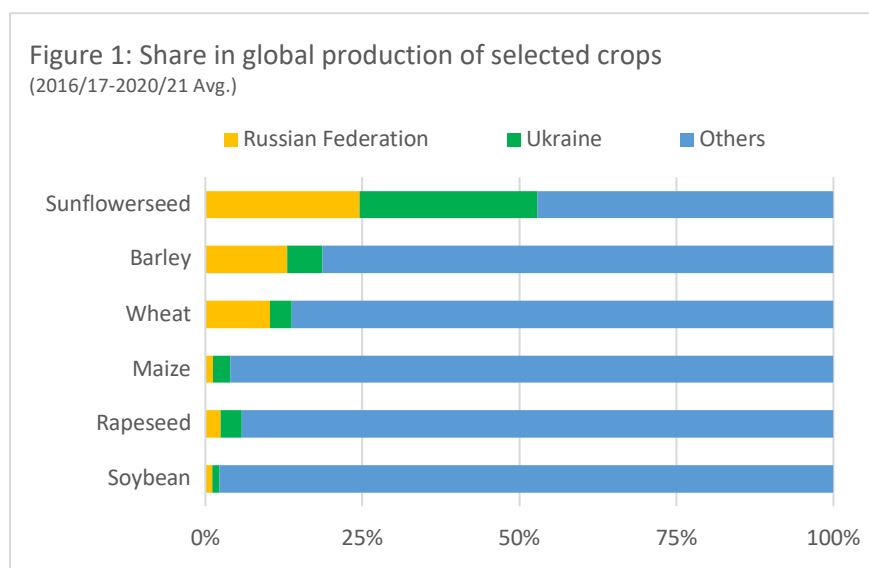
1. The war in Ukraine has already caused extensive damage and loss of life in key population centres, spread across rural areas, and sparked massive displacement. It is clear that the war has resulted in a massive, and deteriorating food security situation in Ukraine, disrupting livelihoods during the agricultural growing season, creating constraints for physical access to inputs, and damage to homes, productive assets, agricultural and forest land, roads and other civilian infrastructure, as well as to the environment. The war has led to port closures, the suspension of oilseed crushing operations and the introduction of export licensing restrictions and bans for some crops and food products. Key cities are being encircled and continue to experience heavy bombardment, leaving people isolated and facing severe shortages of food, water and energy supplies.

2. The Russian Federation and Ukraine are among the most important producers of agricultural commodities in the world (Figure 1). Both countries are net exporters of agricultural products, and they both play leading supply roles in global markets of foodstuffs and fertilizers, where exportable supplies are often concentrated in a handful of countries. This concentration could expose these markets to increased vulnerability to shocks and volatility.

3. Combined, the two countries, on average, accounted for 19, 14 and 4 percent, respectively, of global output of barley, wheat and maize between 2016/17 and 2020/21. In the oilseed complex, their contribution to global production was particularly important for sunflower oil, with just over half of world output originating, on average, in the two countries during this period.

4. In 2021, either the Russian Federation or Ukraine (or both) ranked amongst the top three global exporters of wheat, maize, rapeseed, sunflower seeds and sunflower oil, while the Russian Federation also stood as the world's top exporter of nitrogen fertilizers, the second leading supplier of potassium fertilizers and the third largest exporter of phosphorous fertilizers.

5. As a result, this war has sent shockwaves through global markets, when food markets are already struggling with soaring prices and the challenges that the world has been facing as a result of the COVID-19 pandemic.



Source: FAO XCBS system

6. Many countries that are highly dependent on imported foodstuffs and fertilizers, including numerous that belong to the Least Developed Country (LDC) and Low-Income Food-Deficit Country (LIFDC) groups, rely on Ukrainian and Russian food supplies to meet their consumption needs. Many

of these countries had already been grappling with the negative effects of high international food and fertilizer prices prior to the war, as well as the impacts of the COVID-19 pandemic.

II. Food security challenges in Ukraine

7. The war in Ukraine has already caused extensive damage and loss of life in key population centres, spread across rural areas, and sparked massive population displacement. Populations in active war zones are facing severe shortages of food, water and energy supplies. As insecurity persists and both local and national supply chains are disrupted, people are likely to fall deeper into hunger and malnutrition.

8. Key immediate areas of concern include:

- disruption to winter harvesting and spring planting;
- agricultural labor availability, impacted by displacement;
- access to and availability of agricultural inputs, particularly fuel, seeds, fertilizers and pesticides;
- disruption of logistics and all elements of the food supply chains;
- abandonment of and reduced access to agricultural land;
- damage to crops due to military activity, especially during vegetative stages in spring; and
- destruction of agrifood system assets and infrastructure.

9. FAO has already set up a monitoring system within Ukraine and started conducting needs assessments, working with the Ministry of Agriculture, local authorities and other partners, to access critical real time data on markets, input prices and availability, and on the impacts of the war on agriculture and food security within Ukraine. Initial results indicate an already worsening trend in food insecurity:

- Some 27 percent of responding oblasts with ongoing active military operations and those with the highest numbers of Internally Displaced persons (IDP) face immediate food insecurity issues.
- Within the oblasts hosting significant numbers of IDPs, 20 percent of host households lack cash to meet their basic food needs and on average 80 percent resort to various coping mechanisms. Destocking of small farm animals is reported in half of the oblasts and of large ruminants in 25 percent of responding oblasts.
- Ukraine had a good harvest in 2021, and as a result some rural households are likely to have above-average levels of food stocks and/or financial resources, which will probably provide some buffer as livelihoods and incomes are disrupted by the conflict. However, if the conflict spreads and continues, there will be increased stress on food security until food from the next harvest becomes available in the summer, assuming planting can take place. For rural households without stocks or other resources, or with smaller landholdings or without a primary income-earner, including many of the disabled, widowed and elderly, the food security situation will be much more precarious.

FAO's ongoing humanitarian response in Ukraine

10. FAO already had a significant presence in the country (81 employees), focusing mainly on development issues but with staff also in eastern Ukraine supporting recovery coordination.

11. Since the war began, FAO's programme has pivoted towards humanitarian programming and, with staff now in relatively safer areas, an additional 12 humanitarian specialist staff have been surged to support the scale-up.

12. FAO's response programme in Ukraine focuses on four main activities (Figure 2):
(i) immediate support to spring vegetable planting (together with multipurpose cash) for the most

vulnerable; (ii) cluster coordination; (iii) planning for broader support to small and medium scale farmers to secure cereal and livestock production and bolster supply chains; and (iv) regular reporting on the food security and agriculture situation within Ukraine.

13. Within the United Nations Flash Appeal, launched on 1 March 2022, FAO developed a rapid response plan requiring USD 50 million to assist about 100 000 vulnerable household family farms (or 240 000 people) for the upcoming spring season.

14. On 19 April 2022, within the UN's overall Flash Appeal revision, FAO updated its Rapid Response Plan for Ukraine, seeking USD 115.4 million to assist 979 320 rural people affected. About 9 percent of funds needed (USD 10.7 million) has been received to-date, enabling assistance for around 71 000 people.

15. Within this revision, FAO is focusing on three outcomes: (i) critical production systems are maintained through the provision of inputs and cash to support vegetable, potato, cereal (wheat and oilseed) and livestock production – including Cash+ interventions to vulnerable smallholder households; (ii) agrifood supply chains, value chains and markets are supported through collaboration with the Ministry of Agrarian Policy and Food and engagement with agribusiness, private farm and associations; and (iii) accurate analysis of the evolving food security situation and needs are ensured through coordination of the Food Security and Livelihoods Cluster (FSLC) and regular food security, market and value chain assessments.

16. FAO's interventions build on the Organization's recent experience in cash transfers in Ukraine, as well as best practices from other contexts, especially those where FAO already has significant cash plus interventions. Planning regarding FAO response activities beyond the Flash Appeal, and looking at potential recovery needs in the agrifood system has been initiated, building on discussions with the Ministry of Agrarian Policy and Food.

Figure 2: Timeline of Ukraine response against crop calendar



Source: FAO. 2015. Agricultural crop calendar for Donetsk and Luhanska oblasts of Ukraine. [shorturl.at/ijmE7](https://www.fao.org/3/cb9171en/cb9171en.pdf) (as per p. 8 of <https://www.fao.org/3/cb9171en/cb9171en.pdf>), GIEWS. 2022. Ukraine Country Brief. <https://www.fao.org/giews/countrybrief/country.jsp?code=UKR&lang=en>.

17. Globally, through the Director-General's participation, FAO plays an active role in the Inter-Agency Standing Committee (IASC) Principals' coordination meetings on Ukraine. This is supported by constant engagement in the IASC Emergency Directors' Group and other related fora. Inside Ukraine, UN and partner efforts are coordinated through the Humanitarian Country Team. FAO co-leads the FSLC, and currently has key staff in place to support these efforts, including a senior cluster coordinator and information manager. FAO will continue to coordinate the Cluster, especially through continued assessments of food security, markets and value chains. The FSLC had

37 partners on 24 February, and this number has now risen to 88 partners, although FAO remains the only organization involved in responding to emergency livelihood needs. FAO is supporting partners from the Cluster to coordinate inter-agency efforts in the food and agriculture sector to contribute to the Ukrainian Agrarian Policy and Food Ministry's support to producers to meet seasonal planting and harvesting deadlines throughout 2022, and prepare for increased food production in 2023.

18. FAO will continue monitoring the situation closely, together with the Ministry of Agrarian Policy and Food and FSLC partners.

Supporting host communities and refugees in Moldova

19. Following the request from the Government of Moldova, FAO has approved an emergency Technical Cooperation Programme project in support of the Government in responding to shortages of fertilizers, fuel and seeds, and the impacts of the refugee influx from Ukraine.

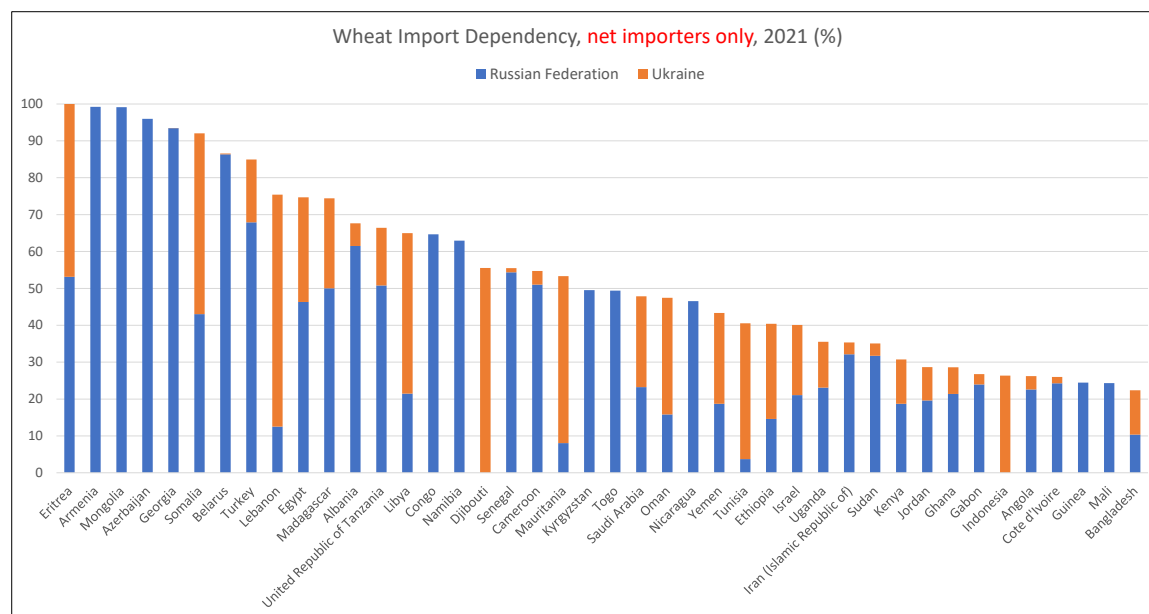
III. Global agricultural market and global food security

20. The critical role that the Russian Federation and Ukraine play in global agriculture is all the more evident from an international trade perspective. Both countries are net exporters of agricultural products, and they both play leading roles in supplying global markets in foodstuffs, for which exportable supplies are often concentrated in a handful of countries, exposing these markets to increased vulnerability to shocks and volatility. The Russian Federation stands out as the top global wheat exporter, shipping in 2021 a total of 32.9 million tonnes of wheat and meslin (in product weight), or the equivalent of 18 percent of global shipments. Ukraine stood as the sixth largest wheat exporter in 2021, exporting 20 million tonnes of wheat and meslin, representing a 10 percent global market share.

21. The prominence of the two countries in the world trade arena is similarly noteworthy in global markets of maize, barley and rapeseed, and even more so in the sunflower oil sector, where their substantial production bases endowed them with a combined world export market share of close to 80 percent over the past three marketing years (2018/19-2020/21).

22. The high export concentration that characterises food commodity markets is also mirrored by the fertilizer sector, where the Russian Federation plays a leading supplier role. In 2021, the Russian Federation ranked as the top exporter of nitrogen (N) fertilizers, the second leading supplier of potassium (K) fertilizers and the third largest exporter of phosphorous (P) fertilizers.

Figure 3: Some countries are heavily reliant on wheat imports from Ukraine and the Russian Federation



Source: FAO calculations, based on TDM data

23. The Russian Federation and Ukraine are key suppliers to many countries that are highly dependent on imported foodstuffs and fertilizers. Numerous of these countries fall into the Least Developed Country (LDC) group, while many others belong to the group of Low-Income Food-Deficit Countries (LIFDCs). As exhibited in Figure 3, for instance, Eritrea sourced the entirety of its wheat imports in 2021 from both the Russian Federation (53 percent) and Ukraine (47 percent). The figure also illustrates that wheat imports of many countries situated in North Africa and Western and Central Asia are highly concentrated towards supplies from the Russian Federation and Ukraine. Overall, more than 30 net importers of wheat are dependent on both countries for over 30 percent of their wheat import needs.

24. The upshot is that countries that are highly dependent on the Russian Federation and Ukraine for essential food and fertiliser supplies will need to prepare contingency plans, including to source imports from other countries, in the expectation that these countries can exact a rapid supply response.

25. As a result of the significant role played by both Ukraine and the Russian Federation in food exports to the world, FAO has identified a series of risks grouped in three groups: (i) risks associated to the food and agriculture markets; (ii) macroeconomic risks; and (iii) humanitarian risks. The document has already looked at the humanitarian risks, and in the following sections, the key risks to agricultural markets and the macroeconomic risks will be assessed.

Trade associated risks

26. War-induced disruptions to food exports by the Russian Federation and Ukraine expose global food markets to heightened risks of tighter availabilities, unmet import demand and higher international food prices.

27. Based on FAO's forecasts for the ongoing 2021/22 season (July-June), issued before the war, and on the pace of exports registered until February, Ukraine was expected to export approximately 6 million tonnes of wheat between March and June 2022, while the Russian Federation was anticipated to ship another 8 million tonnes during this period. However, port closures and disruptions to supply chains in Ukraine and anticipated sales difficulties in the Russian Federation because of

financial sanctions call into question whether these exports would actually be realized. In early March, Ukraine also announced that it would implement license requirements for exports of various commodities, including wheat and maize, although the effect of this measure is likely to be overshadowed by other export limiting factors, such as port closures.

28. Although a sudden and steep reduction in shipments by the two countries could increase exports by alternate origins, such as the European Union and India, the potential for other exporters to fully make-up for lower shipments by Ukraine and the Russian Federation is anticipated to be limited. Indeed, wheat inventories are already especially tight in Canada and the United States of America following reduced harvests in 2021/22.

29. Among other suppliers, Argentina's exports during the ongoing season will also likely remain limited by Government efforts to control domestic inflation, while Australia has reached its maximum shipment capacity logistically. In such a setting of significantly reduced global export availabilities and tight world markets, other countries could enforce measures (formal or informal) to slow or restrict exports in order to protect domestic supplies and/or address domestic price inflation, as several countries have already announced so since the start of the war.

30. The resulting supply gaps for importers may be especially important for buyers in the Near East and North Africa and, given the importance of wheat as a food staple, they could result in some countries increasing imports now in order to secure supplies out of fear that wheat markets will become tighter and that prices will rise further. This would put additional pressure on global markets.

31. Of the top global wheat importers, Egypt, Turkey, Bangladesh and the Islamic Republic of Iran source, on average (2016/17 – 2020/21), 60 percent or more of their wheat imports from Ukraine and the Russian Federation. Based on 2021/22 import forecasts and actual imports in the first half of the marketing year, Egypt, Turkey, Bangladesh and the Islamic Republic of Iran have outstanding imports of approximately 6.6, 4.0, 3.7, and 1.7 million tonnes, respectively, for the second half of 2021/22 marketing season. Lebanon, Tunisia, Yemen, Libya, and Pakistan also rely heavily on wheat originating in Ukraine and the Russian Federation, sourcing on average (2016/17-2020/21) around half of their wheat purchases from these origins.

32. As for maize, based on FAO's forecasts drawn before the war and on available export data until February, for the remainder of the 2021/22 season, Ukraine and the Russian Federation were expected to export approximately 14 million tonnes and 2.5 million tonnes of maize, respectively. As in the case of wheat flows, it is unlikely that these exports, or at least the large majority, will be realized. While maize exports from the Russian Federation do not make up a significant portion of global maize trade, Ukraine's maize exports in 2021/22 were forecast to make up 18 percent of the 2021/22 global trade in the grain, which would have made the country the world's third largest maize exporter.

33. Maize supply gaps for importers could be especially relevant for China and the European Union (Ukraine's primary maize export destinations so far this season), but also for Egypt and Turkey, which on average (2016/17 – 2020/21) source approximately one third of their maize imports from Ukraine. FAO estimates that China, the European Union, Egypt and Turkey have approximately 11.5, 3.7, 4.6, and 1.6 million tonnes, respectively, of outstanding imports for the second half of 2021/22.

34. In early April 2022, FAO lowered its forecast for world trade in cereals in 2021/22 by 14.6 million tonnes since the previous month to 469 million tonnes, indicating a 2.0 percent contraction from the 2020/21 level. The downward revision is largely attributed to lower wheat and maize export forecasts for Ukraine and the Russian Federation and lower imports for several countries. Wheat export estimates for 2021/22 are lowered by 5.0 million tonnes for Ukraine and 3.5 million tonnes for the Russian Federation based on port closures in the former and financial and freight challenges in the latter. The resulting shift in demand is seen increasing wheat shipments from the European Union and India. Similarly, the forecast for global trade in coarse grains in 2021/22 has

been cut by 10.4 million tonnes this month on account of downward revisions of 12.5 million tonnes and 2.0 million tonnes to maize exports by Ukraine and the Russian Federation, respectively. As a result of shifting demand, greater shipments are expected for Argentina, India and the USA. However, for both wheat and maize, the additional exports are expected to only partially compensate for the loss in shipments from the Black Sea region.

35. In the area of fisheries and aquaculture, the Russian Federation is the third largest exporter of fish and fish products by value in the world. The Russian fisheries sector is highly export oriented, with more than half of the production destined for international markets. Snow crab, king crab, Alaska pollock and cod are the most valuable exports. Ukraine is primarily an import market for processing and domestic consumption, in particular of salmon and pelagic species.

36. For forest products, the European Union introduced an import ban on all wood and articles of wood from Belarus (2 March 2022) as well as import bans on wood products from the Russian Federation (5 April 2022). Additionally, on 9 March 2022, the Russian Government introduced an export ban on industrial roundwood, wood chips and veneer sheets destined to the United States of America, Canada, the European Union, Japan and other countries. Furthermore, sanctions against trading with the Russian Federation and difficulty with financial transactions will likely interrupt and re-direct shipments of forest products throughout the world, impacting long-established international trade flows of forest products.

Price associated risks

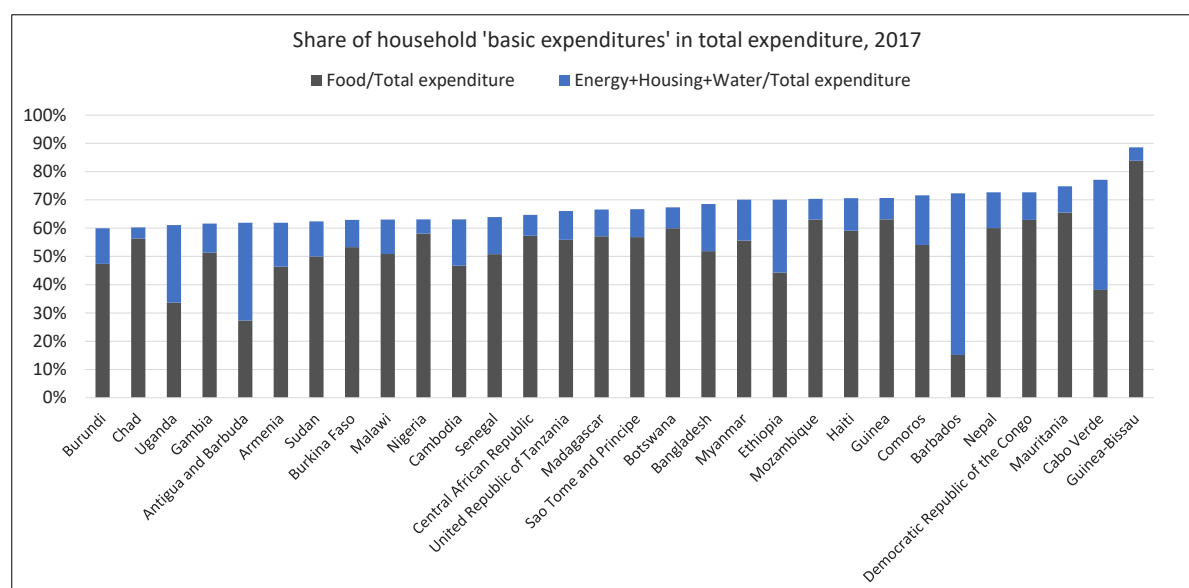
37. As measured by the FAO Food Price Index (FFPI), international export quotations of basic foodstuffs have seen near-uninterrupted increases since the second half of 2020 and, in March 2022, they reached an all-time high in both nominal and real terms¹, up 33.6 percent from a year earlier. Although prices of all the commodity groups encompassed by the FFPI² have registered gains since the latter part of 2020, the global cereal and vegetable oil markets, in which both Ukraine and the Russian Federation play significant roles, have been amongst those most affected by the price increases. Over the course of 2021, international prices of wheat and barley rose 31 percent over their corresponding levels in 2020, buoyed by strong global demand and tight exportable availabilities resulting from weather-induced production contractions in various major wheat and barley exporting countries. In the case of wheat, additional support stemmed from uncertainty regarding export measures put in place by selected suppliers in a bid to contain domestic inflationary pressure. In the rapeseed oil and sunflower seed oil sectors, annual price increases registered in 2021 were in the order of 65 and 63 percent, respectively. These increases were spurred by protracted global supply tightness and robust demand, with the latter coming also from the biodiesel sector in the case of rapeseed oil.

38. International benchmark prices of fertilizers rose similarly throughout 2021, with many quotations reaching all-time highs. The most notable increases were registered for nitrogen fertilizer. Prices of urea, a key N fertilizer, have risen by nearly three times over the past 12 months, with prices of phosphorous fertilizer rising in tandem over the same period, while those of potash (K-fertilizer) remained less affected. Similar to other commodity prices, these fertilizer price dynamics were determined by the interplay of supply and demand. On the demand side, the higher output (crop) prices registered in 2021 boosted affordability of fertilizers, thereby influencing fertilizer prices upwards. On the supply side, high and volatile energy prices were also observed, especially for natural gas, which plays a pivotal role in the production of N-fertilizer and the prices of which underwent a sharp increase in 2021 due to a host of reasons, including weather-induced disruptions to renewable energy and coal production. Additional upward pressure on fertilizer prices stemmed from supply disruptions and high transportation costs following the imposition of export restrictions and due to sharp increases in bulk and container freight rates caused by the COVID-19 pandemic.

¹ Prices in real terms refer to prices deflated by the Manufactures Unit Value (MUV)

² The commodity groups covered by the FFPI are cereals, vegetable oils, meat, dairy products and sugar

Figure 4: High food/energy prices are regressive on poor countries/households



Source: The World Bank, based on ICP data, available at: <https://www.worldbank.org/en/programs/icp#5> and <https://databank.worldbank.org/source/icp-2017>

39. The second week of March 2022 saw a notable relaxation in the European gas market, with key quotations for natural gas declining by more than 50 percent from their tops in just 10 days. This allowed prices for urea to stabilize, and is likely to re-establish positive upgrading margins for fertilizer producers going forward. That said, should the prices of gas, the main source of fuel for N-fertilizer production, remain at levels around four times their long-term average, this could render once-unprofitable investment in energy production commercially viable, such as fracking installations in the United States of America. This would eventually ease international fertiliser prices.

Logistical risks

40. In Ukraine, there are also concerns that the conflict may result in damages to inland transport infrastructure and seaports, as well as storage and processing infrastructure. This is all the more so given the limited capacity of alternatives, such as rail transport for seaports or smaller processing facilities for modern oilseeds crushing facilities, to compensate for their lack of operation. Moreover, all the fisheries landing points and ports located alongside the Black and Azov seas of the Russian Federation are closed, and therefore marine catches can be considered halted.

41. More generally, apprehensions also exist regarding increasing insurance premiums for vessels destined to berth in the Black Sea region, as these could exacerbate the already elevated costs of maritime transportation, compounding further the effects on the final costs of internationally sourced food paid by importers.

Production risks

42. Although early production prospects for 2022/23 winter crops in both countries were favourable, the escalation of war casts uncertainty over the winter-cereal harvest in Ukraine. In particular, the war triggered population displacements, caused damage to civil infrastructure and restricts the movements of people and goods, preventing farmers from attending to their fields, harvesting and marketing their crops. This is further to disruptions to essential public services such as provision of water, energy, transport, markets, and banking³.

³ <https://www.care-international.org/news/press-releases/care-statement-war-escalation-in-ukraine>

43. Broad mobilization of military reserves could also decrease the number of agricultural labourers and workers along the supply chains, although steps have been taken in the country to ensure agricultural operations are sufficiently staffed. To these effects, as of early March 2022, the Government of Ukraine introduced policies granting a deferment from conscription during mobilization based on submission of a list of critical employees in order to enable them to carry out spring and summer fieldwork in a timely manner.
44. Despite high fertilizer prices, it is likely that large and industrial farmers secured fertilizer supplies necessary for the upcoming months ahead of time. However, a lack of access to fields and lack of fuel could still prevent producers from using the fertilizers. Nitrogenous fertilizers (such as urea and ammonium nitrate) can also be directed to other uses, such as explosives. Even if farmers could have similarly stocked up on pesticides, crop protection materials and other inputs, market disruptions could have prevented them from purchasing an adequate amount of supplies or could do so in the future.
45. In Ukraine, Vinnytsya, Donetsk, Zaporizhzhya, Kirovohrad, Mykolaiv, Kherson and Khrakiv regions accounted for half of total wheat production in 2020. Vinnytsya, Zhytomyr, Kyiv, Poltava, Sumy, Khmelnytskyi, Cherkasy and Chernihiv regions produced 70 percent of the total maize volume harvested, while 60 percent of sunflower seeds were produced by Chernihiv, Kharkiv, Sumy, Poltava, Mykolaiv, Luhansk, Kirovohrad, Zaporizhzhya, Dnipro and Vinnytsya regions⁴.
46. Overlapping the most productive agricultural areas of Ukraine with possible scenarios of the territorial spread of the war, in early March, FAO anticipated that 20 percent of winter planted areas may not be harvested as a result of direct destruction, constrained access or lack of economic resources. Yet, more recent assessments issued by local sources put these area losses at 28 percent, anticipating that out of 7.6 million hectares planted with winter wheat, rye and barley, only 5.5 million hectares could be available for harvesting⁵.
47. FAO's expectations regarding yield outcomes for winter-cereals are also negative, pointing to national yields falling 10 percent below average levels due to delayed or missed application of fertilizers and an inability to control pests and diseases. The lower yields would be in addition to potential harvest delays and greater postharvest losses that could occur due to labour force shortages or from a lack of storage infrastructure.
48. As for upcoming agricultural activities, sunflower and spring cereals, including maize, will be planted from April onwards, while the 2022/23 rapeseed sowing season will not open until September 2022.
49. Available information on input availability for these crops in Ukraine paints a mixed picture. According to estimates issued by the Ministry of Agriculture of Ukraine, 80 percent of Ukrainian farms would have sufficient fertilizer stocks for the spring planting campaign, considering expected decreases in planted areas. As for seeds, although volumes available (comprising both local and imported seeds) would be sufficient to plant 70 percent of the anticipated spring area, their safe delivery to farmers was perceived as a major challenge⁶.
50. While livestock and poultry rearing as well as production of high value crops, such as fruits and vegetables, could also be constrained in Ukraine, for both maize and sunflower seed, early March forecasts issued by FAO indicated that, compared to 2021, 30 percent less area could be planted in spring 2022, with yields likely declining 20 percent below average levels. Expected cuts in sunflower seed plantings were also linked to infrastructural factors. Instead of producing crops to be exported as oil and given the risk of deteriorating export infrastructure and crushing plants, farmers – particularly those cultivating smaller extensions – could choose to plant crops that are more directly relevant to

⁴ ukrstat.gov.ua

⁵ <https://www.apk-inform.com/en/news/1525721>

⁶ <https://www.csis.org/events/agriculture-and-food-security-casualties-war-ukraine>

local food security, such as potatoes or spring wheat. Nevertheless, much like winter wheat expectations, local sources in Ukraine forecast even greater area cuts for these crops, putting them at nearly 40 percent for spring grains and at 35 percent for sunflower seed⁷⁸. Meanwhile, forecasts by the Ministry of Agrarian Policy and Food of Ukraine indicate that Ukrainian farmers will plant 50 percent of the planned spring area with certainty, whereas planting of about 20 percent of the planned area remains questionable, and the balance would be highly unlikely to be planted⁹.

51. In fisheries, the Russian Federation is part of a number of international and regional fisheries management bodies aiming to cooperate in assessing the status of, and defining quotas on, fish stocks. The war and associated sanctions can adversely affect this scientific cooperation, which has historically presented positive sustainability results and technical development spillovers.

Ecological risks

52. The Russian Federation and Ukraine account for more than 20 percent of the global forest area and about 16 percent of the total certified forest area. Since the Russian forces took control of the Chernobyl exclusion zone, there have been 31 large fires, covering an area of 10 287 ha, according to the Ukrainian Ministry of Ecology and Natural Resources. As forests and fallow lands in the exclusion zone accumulated a significant amount of radionuclides in the period after the 1986 catastrophe, fires in this area carry substantial risk of increasing radioactive air pollution.

53. Ukraine hosts 35 percent of European biodiversity. The crisis has already impacted high-conservation value forests, such as the construction of a wall in the Białowieża Forest World Heritage Site in the Polish-Belarus border due to the influx of asylum seekers.

54. The Russian Federation is considering anti-crisis legislation to allow construction without environmental impact statements in natural parks and protected areas such as Lake Baikal, the oldest (25 million years) and deepest (1,700 m) lake in the world, inscribed by UNESCO as the most outstanding example of a freshwater ecosystem, and including the Selenga Delta (Ramsar site 682).

55. The native forests and older plantations of Scots pine (*Pinus sylvestris*) in Belarus and Ukraine have been suffering from dieback and associated outbreaks of bark beetles. Due to the war, pest monitoring and control activities have been restricted, increasing the risk of a severe bark beetle outbreak that could damage approximately 80 000 ha of pine forests in Ukraine and across borders.

Energy risks

56. The Russian Federation is a key player in the global energy market. As a highly energy-intensive industry, especially in developed regions, agriculture will inevitably be affected by the sharp increase in energy prices that has accompanied the conflict.

57. Agriculture absorbs high amounts of energy directly, through the use of fuel, gas and electricity, and indirectly, through the use of agri-chemicals such as fertilisers, pesticides and lubricants.

58. With prices of fertilizers and other energy-intensive products rising as a consequence of the conflict, overall input prices are expected to experience a considerable boost. The higher prices of these inputs will first translate into higher production costs and eventually into higher food prices. They could also lead to lower input use levels, depressing yields and harvests in the 2022/23 season, thus giving further upside risk to the state of global food security in the coming years.

⁷ <https://www.apk-inform.com/en/news/1525721>

⁸ <https://www.apk-inform.com/en/news/1525713>

⁹ <https://www.apk-inform.com/en/news/1525769>

59. Higher energy prices also make agricultural feedstock (especially maize, sugar and oilseeds/vegetable oils) competitive for the production of bioenergy and, given the large size of the energy market relative to the food market, this could pull food prices up to their energy parity equivalents.

Exchange rate, debt, and growth risks

60. The Ukrainian hryvnia reached a record low against the United States dollar (USD) in early March 2022, with likely repercussions for Ukrainian agriculture, including a boost to its export competitiveness and curbs on its ability to import.

61. Although their extent remains unclear at this stage, conflict-induced damages to Ukraine's productive capacity and infrastructure are expected to entail very high recovery and reconstruction costs.

62. The economic sanctions imposed on the Russian Federation have also led to a significant depreciation of the Russian rouble. Although this should make Russian exports of agricultural commodities more affordable, a lasting rouble depreciation would negatively affect investment and productivity growth prospects in the country.

63. Weakening economic activity and a depreciated rouble are also expected to have serious effects on countries in Central Asia through the reduction of remittance flows, as for many of these countries remittances constitute a significant part of gross domestic product (GDP).

64. The current conflict may also have global spillovers. While its full impact on the global economy remains uncertain at this stage and will depend on several factors, the most vulnerable countries and populations are expected to be hit hard by slower economic growth and increased inflation, at a time when the world is still attempting to recover from the recession triggered by the COVID-19 pandemic.

65. Agriculture is the backbone of the economies of many developing countries, the majority of which rely on the United States dollar for their borrowing needs. As such, a lasting appreciation of the USD vis-à-vis other currencies, especially in the context of rising interest rates in the United States of America, may have significant negative economic consequences for these countries, including for their agrifood sectors.

66. On 19 April 2022, the International Monetary Fund (IMF) released its World Economic Outlook, with global growth projected to slow down from an estimated 6.1 percent in 2021 to 3.6 percent in 2022 and 2023 because of the war. This represents 0.8 and 0.2 percentage points lower for 2022 and 2023, respectively, than projected in January. The IMF expects a severe double-digit drop in gross domestic product (GDP) for Ukraine and a large contraction in the Russian Federation, along with worldwide spillovers through commodity markets, trade and financial channels. The reduction of GDP growth in several parts of the world will affect global demand for agrifood products, with negative consequences for global food security and nutrition. Lower GDP growth will also likely reduce the availability of funds for development, especially if global military expenses increase.

IV. Policy recommendations

67. The conflict in Ukraine is raising significant concerns over its potential negative impact on food security, both domestically and internationally. Domestically, the escalation could directly constrain the countries' agricultural production, which, coupled with limited economic activity and increasing prices, could undercut the purchasing power of local populations. Globally, were it to result in a sudden and prolonged reduction in food exports by either country, the war could exert additional upward pressure on international food commodity prices to the detriment of low-income food-deficit countries (LIFDCs), in particular. In order to avert this set of circumstances from materializing, it would be advisable to:

- a. **Keep trade in food and fertilizers open** by preventing the war from negatively affecting productive and marketing activities in both countries in order to enable them to meet domestic production and consumption needs, while also satisfying global demands. In order to ensure that supply chains continue to function properly or are in a position to resume operations swiftly, such efforts should include steps to protect productive assets, including standing crops, livestock, inputs and machinery, from damage or any war-induced disruption. This must also extend to food processing infrastructure, such as grain mills and oilseed crushing facilities, as well as ancillary storage, transportation and distribution systems.
- b. **Find new and more diverse food supplies.** Countries that directly rely on food imports from Ukraine and the Russian Federation will have to absorb the shocks and remain resilient. This can be attained by relying on other international trade sources, since countries that import foods from many different trade partners are less vulnerable to place-specific shocks. It can also be achieved by relying on existing food stocks and by enhancing the diversity of domestic production to ensure the supply of food necessary for healthy diets.
- c. **Support vulnerable groups, including internally displaced people.** In line with the FAO Ukraine Rapid Response Plan, March-May 2022¹⁰, such efforts should include:
 - i. *Support for internally displaced people, refugees and those directly affected by the war.* Until the start of the war, Ukraine's social protection system was reaching 30 percent of the population and 77 percent of the poorest quintile.¹¹ The government of Ukraine has stated that despite the disruptions caused by the ongoing hostilities, it will continue to provide social protection support (cash benefits and subsidies) to its population, in accordance with information contained in the Unified Social Information System. Payments will be made electronically to beneficiaries' bank accounts¹². In addition, the Federation of Trade Unions of Ukraine (FPSU) and the Confederation of Free Trade Unions of Ukraine (KVPU) have joined in efforts to provide for people's basic needs by providing food and shelter. The population in need of social protection support is larger than that reached by the national system and reaching them is difficult due to security risks and mobility – within and beyond national borders. The social protection response can come through the national system and, for those that have crossed international borders, through the social protection systems of host countries.
 - ii. *Support for vulnerable groups.* More specifically, steps should be taken to: Monitoring prices and food security outcomes of groups that were already vulnerable before the war escalation, as well as groups pushed into hunger and poverty by deteriorating economic conditions resulting from the war and the respective increase in prices, in both urban and rural areas. Providing timely and well-targeted social protection interventions to alleviate the hardship caused by the war on affected local populations and to foster a recovery from it. In doing so, due consideration should be given to the fact that high prices of food and energy are regressive on poor consumers (since a larger share of their disposable income is spent on these necessities), as they may entail a reduction in quantities and/or qualities of food consumed, thereby leading to more hunger and malnutrition, or less money for other necessities such as health and education. Curtailing such important expenditures could send communities into a vicious cycle of deepening and entrenching food insecurity and poverty, with potentially irreversible effects.

¹⁰ <https://www.fao.org/3/cb8935en/cb8935en.pdf>

¹¹ ASPIRE: The Atlas of Social Protection Indicators of Resilience and Equity. The World Bank. Accessed on 9 March 2022. Available at <https://www.worldbank.org/en/data/datatopics/aspire>

¹² <https://www.msp.gov.ua/news/21511.html>

- d. **Avoid ad hoc policy reactions.** Measures put in place in countries affected by potential disruptions ensuing from the war must be carefully weighed against their potentially detrimental effect on international markets in the short-term and over the longer term. For instance, while the use of import subsidies and/or the use of export restrictions could help improve availability in domestic markets in the short term, they would inevitably add to the upward price pressure on international markets and exacerbate the situation globally. Ad hoc policy measures must always be avoided.
- e. **Contain the spread of African swine fever (ASF)** by: (i) improving biosecurity and good husbandry practices; (ii) ensuring measures are taken to facilitate early detection, timely reporting and rapid containment of the disease, as delays can lead to a rapid spread of the diseases; (iii) implementing surveillance schemes that support detection of ASF in both pigs and wild boars; and (iv) implementing targeted sampling of animals rendering a higher likelihood of detecting the virus.
- f. **Keep fisheries scientific cooperation mechanisms active and inclusive of all necessary parties.** The importance of the scientific existing cooperation mechanisms for assessing fish stocks and the sustainability of fisheries in the region, particularly involving shared stocks and neighbouring countries, is instrumental in avoiding detrimental effects on fish stocks with adverse consequences on food security and income generation. Ad hoc policy measures suspending participation in scientific discussions within those mechanisms must also be avoided.
- g. **Strengthen market transparency and dialogue.** Global market transparency plays a key role when agricultural commodity markets are under uncertainty and need to adjust to shocks affecting supply and demand. Initiatives like the G-20's Agricultural Market Information System (AMIS) strive to increase such transparency through the provision of objective, timely and up-to-date market assessments that enable informed policy decisions. Through its Rapid Response Forum, AMIS also provides a unique platform for policy dialogue and coordination among members (which include the Russian Federation and Ukraine). Policy dialogue and coordination are necessary to minimize disruptions and ensure that international markets continue to function properly and that trade flows efficiently in order to meet global demand and safeguard food security.

V. FAO's policy proposals

68. In addition to the Rapid Response Plan for Ukraine, FAO has developed six concrete policy proposals to address the global food security situation and the risks associated with the conflict.

- a. **Establishing a Food Import Financing Facility (FIFF).** FAO has developed a proposal¹³ for a financing facility to help poor net food importing countries access international food markets. The facility would be limited to net food importers in the low-income and lower-middle income group of the World Bank classification, providing them with credit to purchase food on global markets. Beneficiary countries would commit to investing in sustainable agricultural productivity, thereby reducing their future food import needs (an automatic stabilizer). The facility has already been stress-tested. The endogenous – or distortionary – world market price effects would not exceed a maximum of 15-20 percent, even at its maximum use level of USD 25.3 billion. However, the FIFF would guarantee the food security for up to 15 million

¹³ For further materials re the FIFF, see e.g., a short note for decision makers, available at: <https://www.fao.org/3/cb9444en/cb9444en.pdf>, and technical background paper, available at: <https://www.fao.org/3/cb9445en/cb9445en.pdf>

people¹⁴, thus negating any need for households to curtail expenditures on other essential goods and services, such as health and education.

- b. **Strengthening social protection for food security and nutrition.** The Ukraine crisis that began on 24 February has not only created an unprecedented humanitarian crisis but a looming increase in food insecurity, in countries both close and far from the war. Humanitarian and social protection responses will be needed to cushion the negative impact of these developments on the food security and nutritional status of Ukrainians affected by the war as well as of nutritionally vulnerable groups in food-importing countries, particularly in North, East and West Africa as well as in West and Central Asia. Given the multiple ramifications of the conflict, FAO has identified three main ways in which social protection can help address the current crisis and its aftermath. All of these interventions should be gender responsive and ensure older people and people living with disabilities have access to appropriate assistance. They consist of: i) Enhancing the capacity of Ukraine's social protection system to respond to the crisis and help rebuild rural/agricultural livelihoods after the war; ii) Strengthening social protection systems to support the socio-economic integration of refugees and vulnerable host communities in host countries, in coordination with agricultural sector actors; and iii) Responding to increases in food and fertilizer prices in net food-importing countries and reduction of remittances in Central Asia.
- c. **Assessing investment needs in Ukraine's agricultural reconstruction and recovery.** While the war in Ukraine is ongoing and its outcome is not yet clear, the damage to the country's agrifood sector is already of an unprecedented scale. Reconstruction and rehabilitation plans for Ukrainian agriculture are urgently needed in order to mitigate the impact of the war domestically and internationally. Damage caused by war to a country with an agricultural output and exports as significant as that of Ukraine is unparalleled since the Second World War. The total value of capital stock in Ukrainian agriculture (including down- and upstream sectors) is estimated at USD 29 billion. The potential direct damage to agriculture assets can initially be estimated at USD 6.4 billion (this includes destroyed irrigation infrastructure, storage, machinery and other agricultural equipment, in-port infrastructure, greenhouses, field crops, livestock and processing units). The additional expected economic losses from the war in 2022 are estimated at about USD 22 billion. Reconstruction and investment plans for agriculture would be critically important to mitigate the scale of war effects at local and global levels. FAO will work closely with its investment and financial partners, such as the World Bank and the European Bank for Reconstruction and Development that have already pledged USD 3 and 2 billion, respectively, for the recovery of Ukraine. However, it is clear that actual recovery and investment needs will be much higher than these initial commitments in agriculture and the agrifood industry alone. While it is early to consider developing investment plans, considering the extent of the war and its impact on a complex food system such as the one in Ukraine, a post-war recovery plan for Ukrainian agriculture will likely include the following main components: support to rural household, incomes and food security; supporting liquidity of farmers and access to finance; de-mining; support to supply of critical inputs, national seed production and livestock breeding; compensation for lost assets; and support to export market access.
- d. **Addressing animal health.** The war has caused disruptions to the normal animal health services, surveillance and control, resulting in delayed recognition of, and response to, important animal diseases. Large numbers of abandoned animals might contribute to transmission and spread of the disease. The most significant disease risks pertain to African swine fever (ASF), highly pathogenic avian influenza (HPAI), rabies and leptospirosis as well as food borne zoonotic diseases (i.e. brucellosis, salmonellosis). The initiative aims to address the risk of disease spread in Ukraine and neighbouring countries, which needs to be

¹⁴ This estimate is derived from the initial estimates of price and undernourishment effects caused by a supply shock to the tune of USD 25 billion.

re-evaluated to apply coordinated and targeted, risk-based control measures. Recommended actions include the establishment of a multi-disciplinary panel of experts to work on risk evaluation and monitoring of the situation jointly with the Government of Ukraine, setting up a system of collection information on the problems and issues related to animal production and health, enhancing disease reporting and detection through appropriate surveillance methods, evaluating the risk of transmission and spread of diseases into neighbouring countries, activating early warning systems applying the One health approach, provision of vaccine against rabies and related equipment, and a risk communication campaign to all stakeholders and the general public on risk of emergence and spread of transboundary diseases including zoonosis.

- e. **Assessing food insecurity in 2022/23 at national and sub-national levels in 50 countries vulnerable to the effect of the Ukraine-Russia crisis.** While it has become clear that the consequences of the ongoing conflict are potentially far-reaching, there is an urgent need for evidence to assess the potential impacts on food security. Detailed information about the situation in different geographic areas and populations groups at the sub-national level is key to guiding countries to take effective action. To fill this information gap and guide interventions, FAO proposes a programme of work that will contribute to assessing the impact of the Ukraine-Russia crisis on the access to food of people living in the countries that are particularly vulnerable to the likely consequences of the war. The objective would be to assess food insecurity in 2022/23 at national and sub-national levels through the Food Insecurity Experience Scale (FIES) measurement system in 50 countries vulnerable to the crisis. The overall goal of the programme is producing and strengthening food security statistics to inform monitoring frameworks, classification systems, and monitoring and evaluation (M&E) assessments to guide policies and interventions. In terms of activities, the work would focus on the following aspects: i) data collection; ii) data analysis and technical support; and iii) dissemination and communication of results to guide actions.
- f. **Using soil maps to promote efficient use of fertilizers.** This proposal is in response to the expected decline in fertilizer use particularly in poorer countries due to price hikes of fertilizers, especially in view of the export restrictions imposed by the Russian Federation, which is the top exporter of nitrogen (N), the second leading supplier of phosphorus (P) and the third largest exporter of potassium (K) fertilizers in the world. Farmers can use fertilizers more efficiently to deal with the rapid increases in prices. Ethiopian producers have successfully used soil maps to identify the best blending of N, P and K fertilizers for their plots, cutting the use of fertilizers while optimizing yields. This approach should be adopted by all countries. Detailed information on the soil profile and its spatial distribution is essential for promoting sustainable agriculture, with precise inputs in quantity, space and time. In particular, accurate and updated soil attributes allow for better and more efficient fertility management, benefiting crop productivity and sustainability and at the same time reduce the quantity of fertilizers being used. The proposed initiative looks to establish a self-sustaining, government-managed national soil database to become a public good to be used by public policies, private sector and farmers. The goal is to publish the country's total land mass for which soil information is available. It also aimed to provide accurate soil management information system and advice to smallholder farmers to enhance efficiency and crop productivity and yields.