

SDG Investor Map

Ukraine



Overview of Findings

December 2021



SDG Investor Map Ukraine. Overview of Findings

December 2021

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United Nations Development Programme
Istanbul International Center for Private Sector in Development

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SDG Investor Map Ukraine

Overview of Findings

December 2021

| Developed by

United Nations Development Programme (UNDP)

UNDP Ukraine Country Office initiated the SDG Investor Map Ukraine with the Istanbul International Center for Private Sector in Development (IICPSD), as the technical service provider implementing the methodology developed by the SDG Impact.

UNDP Ukraine works to accelerate achievement of the sustainable development goals by tackling interconnected development, humanitarian and resilience challenges and seeks to reduce poverty, gender and geographic inequalities and exclusion. It fosters environmental sustainability and resilience through integrated strategies. It supports the most vulnerable and enhances national and subnational institutional capacities for inclusive growth, poverty reduction, prevention of violent extremism, and enhancement of social cohesion.

UNDP's Istanbul International Center for Private Sector in Development (IICPSD) was established in 2011 in partnership with the Government of Turkey. The Center's work to engage foundations and the private sector focuses on delivering policy advice and technical services in four thematic areas:

- Private sector engagement through South-South Cooperation for the SDGs
- Private sector engagement in skills development
- Impact investing
- Resilience and crisis response.

The Center has vast experience in providing research and advocacy to mobilize impact investing activities for the Sustainable Development agenda. In order to expand impact investing in countries with nascent ecosystems, IICPSD developed the "Impact Investing Ecosystem Mapping" methodology to take stock of current stakeholders, opportunities and challenges. Piloted in Turkey, the methodology is being implemented in Morocco, Ukraine, Djibouti and Tunisia. IICPSD also implements SDG Impact's "SDG Investor Maps" in countries, with the Map for Turkey published on the [UNDP SDG Investor Platform](#) along with ongoing Maps in Djibouti, Morocco, Tunisia, Eswatini and Mauritius, in addition to this Map for Ukraine.

SDG Impact is a UNDP flagship initiative designed to accelerate progress toward the SDGs with game changing tools and insights that unlock private capital and direct it to concrete SDG-enabling opportunities with a focus on developing countries. The initiative focuses on eliminating barriers and driving integrity for SDG-enabling investment at scale.

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Background – A Global Need for Impact Intelligence

Addressing global challenges, Sustainable Development Goals (SDGs) provide a blueprint to achieve a more equitable and sustainable future for all. Substantial financing is required to achieve the SDG Agenda by 2030 as US\$ 5–7 trillion is needed annually for global investments. Developing countries alone face a massive funding gap of US\$ 2.5 trillion annually in SDG investments.¹ On top the existing gap, developing countries are facing an additional shortfall of US\$ 1.7 trillion in the financing they would need in 2020 to keep them on track for the SDG agenda due to COVID-19 crisis, making the total financing gap US\$ 4.2 trillion.² To bridge this gap and alleviate the financing burden on the shoulders of governments, donor agencies and multilateral development banks, it is essential to partner with the private sector and expand SDG-related investments by unlocking private capital. Accounting for 60% of GDP, 80% of capital flows and 90% of jobs in an average developing country, private sector's engagement in development cooperation is more than vital. At US\$ 379 trillion, global financial assets are at their highest value since before the global financial crisis, yet 80% of these assets are held in advanced economies. In fact, reallocating just 1.1% of the total assets held by banks, institutional investors or asset managers – US\$ 4.2 trillion – would be sufficient to fill the gap in SDG financing for developing countries.³

Despite the potential private sector investments offer, many developing countries attract low levels of domestic and foreign investment due to reasons such as limited data and insights about investment opportunities and risks; limited capacities and networks; and high real or perceived policy and regulatory risks. In addition to these challenges, the COVID-19 pandemic has caused a sharp decrease in global FDI flows. Global FDI fell by 35% from US\$ 1.5 trillion in 2019 to US\$ 1 trillion in 2020. FDI in developing countries fell by 8% during this time period because of the decline in SDG-relevant greenfield investments in industry and infrastructure.⁴ Despite this situation, FDI flows rebounded in 2021. In the first two quarters of 2021, FDI flows have recovered more than 70% of the pandemic induced losses. However, the data reflects that this recovery remains skewed towards developed nations.⁵ To recover from the socioeconomic effects of the pandemic, it is more important than ever for greenfield investments in SDG-relevant sectors to bounce back. Thus, it is essential to mobilize the growing interest among investors to attribute capital into activities that deliver strong financial returns while reducing poverty and inequality, advancing health and education, and protecting the environment.

In order to ensure that investor interest translates into higher levels of SDG-investments, it is vital to address the current lack of intelligence and guidance around how asset owners can help generate significant SDG impact through their transactions. A major challenge constraining SDG-investments is the difficulty of identifying bankable projects for investors. The "Annual Impact Investor Survey 2020" by GIIN finds that the lack of high-quality investment options with track record remains as a significant barrier to the growth of SDG investments.⁶ With an aim to empower investors through impact intelligence products around bankable investment areas in countries with material SDG contribution, UNDP SDG Impact launched the "SDG Investor Maps".

\$2.5 trillion

funding gap faced by developing countries annually in SDG investments

To bridge this gap and alleviate the financing burden, it is essential to expand SDG-related investments by **unlocking private capital**

Global FDI flows are forecast to **decrease by 40%** in 2020 to below US\$1 trillion from their 2019 value of \$1.54 trillion because of COVID

There is a growing **interest among investors** in activities that deliver strong **financial returns** while generating **SDG impact**

Recognizing the pressing need posed by the lack of impact investment intelligence despite growing investor interest, the SDG Investor Map methodology has been developed to empower investors seeking investment opportunities to generate positive impact with required tools and insights. The SDG Investor Map is an impact intelligence product focused specifically on deriving SDG-aligned 'Investment Opportunity Areas' which are aligned with national policy priorities and development needs and around which private actors can perform actionable diligence and shape deals.

UNDP Istanbul International Center for Private Sector in Development (IICPSD)'s Engagement in Impact Investing and SDG-Anchored Investments

In light of the above challenges around advancing impact investments especially in least developed and developing countries, IICPSD's impact investing portfolio aims to bridge the gaps in impact intelligence, capacity and advocacy in contexts with pressing SDG needs. IICPSD offers a comprehensive service line to foster the impact and SDG investing ecosystems in countries, consisting of a set of methodologies developed to lay the ground for impact and SDG investing and identify opportunity areas to channel private investments into areas with national strategic development priorities.

IICPSD's impact and SDG investing services complement each other by identifying and promoting opportunity areas and facilitating especially private financing for these investment areas. (i) The "Impact Investing Ecosystem Study" identifies major stakeholders, opportunities and challenges in establishing a strong impact investing ecosystem in countries. (ii) SDG Investor Maps dive deeper into specific SDG investment areas which are aligned with country and development priorities to develop a detailed investment guide.

In 2019, IICPSD built the "Impact Investing Ecosystem Mapping" methodology to take stock of the current stakeholders as well as opportunities and challenges in establishing functioning impact investing ecosystems in nascent contexts. Built on a comprehensive desk research and in-depth interviews with major stakeholders, the Impact Investing Ecosystem Study aims to:

- Showcase opportunities in specific markets for international impact investors,
- Exhibit adjacent impact investing activities by institutional investors, money managers and foundations in countries and align them with the impact investing agenda,
- Enable impact enterprises to access the global pool of impact capital,
- Provide policy recommendations for public bodies to actively engage in the design of a robust impact investing framework.

The methodology has been successfully piloted in Turkey at the end of 2019 when "[The Impact Investing Ecosystem in Turkey](#)" study was published by IICPSD in collaboration with the Presidency of the Republic of Turkey Investment Office. The report identified five key areas where the highest impact may be generated in Turkey: **(i) refugee livelihoods, (ii) women's empowerment, (iii) renewable energy, (iv) health-tech and (v) financial inclusion.** The methodology has also been implemented in Ukraine. The final report will be released by the IICPSD and UNDP Ukraine Country Office. The report highlights the areas of **(i) Technology with a Focus on the IT Industry and Digital Economy (ii) Infrastructure (iii) Renewable Energy (iv) Education (v) Agriculture and (vi) Healthcare as the most viable areas for impact investing in Ukraine.** The ecosystem methodology is currently being implemented in Djibouti, Morocco and Tunisia.



The Impact Investing Ecosystem Mapping methodology takes a snapshot of the current impact investing landscape in countries, identifying major opportunity areas where countries possess significant profitability potential and need further SDG progress. Market challenges and opportunities in these areas are summarized with a set of policy recommendations to help unlock private investments. Building upon the foundation laid by the Impact Investing Ecosystem Mapping methodology, SDG Investor Maps dive deeper into specific "Investment Opportunity Areas" with a detailed investor guide on specific data points for each area, including categories such as market size, return profile, investment timeframe, regulatory environment and so on.

Building upon the findings of "The Impact Investing Ecosystem in Ukraine" study, IICPSD conducted the "SDG Investor Map for Ukraine" to advance the Center's efforts in mobilizing impact investors and a broader spectrum of investors towards marketable and SDG-aligned investment opportunities. Within the framework of the Map, IICPSD has identified 22 Investment Opportunity Areas under 5 priority sectors which are in line with national priorities and development needs.

IICPSD expands its efforts for showcasing the potential of SDG-anchored investments continuing with the implementation of the SDG Investor Map practice in Djibouti, Morocco, Tunisia, Eswatini and Mauritius.

| SDG Investor Maps

SDG Investor Maps are in-depth reports on SDG-enabling investment opportunities and conditions in target markets and sectors. The Maps target the gap between interest in investing in SDGs and the business models that could provide investable opportunities. Developing an SDG Investor Map requires filtering down from national priorities and development needs to derive "investment opportunity areas." The maps help delineate impact opportunity areas for each country to help tackle sub-sectoral and sub-regional development needs whilst capitalizing on policy and investment momentum, complemented by supporting information that can enable investors to perform diligence and eventually shape impactful deals.

SDG Investor Maps, which were piloted in Brazil, have been rolled out in many countries, with current implementations being in China, Jordan, Turkey, Armenia, India, South Africa, Nigeria, Kenya, Rwanda, Uganda, Ghana, and Djibouti. As part of the successful applications to the Joint SDG Fund call opened by UN at the end of 2019, twenty to twenty-five countries have secured resources to implement SDG Investor Maps in their countries.

From national economic and social development priorities...



...to investment opportunity areas

| SDG Investor Map Ukraine

Overview

Following SDG Impact's methodology, the "SDG Investor Map Ukraine" aims to identify "Investment Opportunity Areas" in the country which are aligned with national priorities and SDG needs while carrying considerable investment potential. The final product provides a guide for investors who are keen on generating positive impact alongside financial returns through the way they allocate their resources.

Initiated by IICPSD in May 2021 on behalf of UNDP Ukraine, the "SDG Investor Map Ukraine" has been developed as a guide that consists of detailed investment information on **22 investment opportunity areas identified across 5 priority sectors**. The following priority sectors have been identified for Ukraine: **(i) Food and Beverage, (ii) Infrastructure, (iii) Renewable Resources and Alternative Energy, (iv) Transportation and (v) Technology and Communications.**

Methodology

The Map followed a rigorous literature review of national policy documents and international development assessments as well as extensive stakeholder consultations. As the first step, relevant policy priorities were deduced from a careful analysis of documents such as the Ukraine's National Economic Strategy 2030, Medium-Term Government Priority Action Plan until 2020 and Ukraine Voluntary National Review 2020. Moreover, in determining development needs documents such as the Ukraine Systematic Country Diagnostics by the World Bank and the Human Development Report 2020: Ukraine by UNDP were consulted. The list of analyzed documents and interviewed stakeholders is provided in the Annex.

Based on this analysis, 5 sectors have been identified which showcase strong alignment between development needs and policy priorities: (i) Food and Beverage, (ii) Infrastructure, (iii) Renewable Resources and Alternative Energy, (iv) Transportation and (v) Technology and Communications. 22 investment opportunity areas have been further identified under these sectors.

Consumer goods  <ul style="list-style-type: none">• Apparel & textiles• Consumer discretionary• Consumer goods retail	Food & beverage  <ul style="list-style-type: none">• Food• Beverages• Food & beverage retail• Restaurants• Tobacco	Renewables & alternative energy  <ul style="list-style-type: none">• Alternative energy• Forestry & paper	Technology & communications  <ul style="list-style-type: none">• Technology• Internet media & services• Semiconductors• Telecommunications
Extractives & mineral processing  <ul style="list-style-type: none">• Coal• Construction materials• Metals & mining• Oil & gas	Health care  <ul style="list-style-type: none">• Biotechnology & pharmaceuticals• Health care retail• Health care providers• Medical technology	Resource transformation  <ul style="list-style-type: none">• Industrials• Chemicals	Transportation  <ul style="list-style-type: none">• Air transportation• Marine transportation• Automobiles & other land transportation
Financials  <ul style="list-style-type: none">• Capital markets• Corporate & retail banking• Insurance	Infrastructure  <ul style="list-style-type: none">• Utilities• Infrastructure• Real estate• Waste management	Services  <ul style="list-style-type: none">• Media• Hospitality & recreation• Consumer services	Education  <ul style="list-style-type: none">• Formal education• Education infrastructure• Education technology

The next section provides a list of 22 investment opportunity areas (IOAs) with proven or potential market profitability and material sustainable development contribution for Ukraine. The IOAs are identified based on the below four criteria:

- **Fundamentally marketable**, i.e. investments within which a private actor could invest independently of government co-investment, and where a private actor may be able to achieve a market- or above-market return,
- **Sufficiently specific** to the realm of an ‘opportunity area’, i.e. a field within which diverse kinds of deals/ transactions could take place, but broad enough for an investor to decide what kind of financial vehicle is best suited to deploy,
- **Sufficiently at-scale** for investments to be able to achieve depth and duration of potential impact,
- **Largely already proven in-market**, i.e. by a transaction having taken place, and return/impact begun to be calculated.

Outputs: Investment Opportunity Areas for Ukraine

Priority Sector	Subsector	Investment Opportunity Area
Food and Beverage 	Food and Agriculture	<ul style="list-style-type: none"> 1. Food processing facilities sourcing raw material from SMEs and smallholder farmers 2. Organic farming to produce semi-processed or finished organic goods with high added value 3. Irrigation modernization utilizing resource-efficient methods 4. Expanding Ukraine's food storage capacities to reduce food losses
Infrastructure 	Waste Management	<ul style="list-style-type: none"> 5. Waste management services to increase compliance with circular economy principles 6. Waste management equipment modernization 7. Bio-waste composting facilities
	Utilities	<ul style="list-style-type: none"> 8. Energy-efficient space heating investments 9. Residential thermal insulation to decrease energy intensity and the housing debt on utilities 10. Energy efficiency solutions in the industry
Renewables and Alternative Energy 	Alternative Energy	<ul style="list-style-type: none"> 11. Large and small scale biomass energy production utilizing agricultural waste 12. Solar energy for residential or commercial end-use 13. Expanding Ukraine's wind energy capacities
Transportation 	Land Transportation	<ul style="list-style-type: none"> 14. Railway locomotive production to replace obsolete railway assets 15. Railway agro-logistics assets 16. Road rehabilitation and modernization investments to increase road safety and overcome logistics bottlenecks
	Marine Transportation	<ul style="list-style-type: none"> 17. Revitalizing river and sea port infrastructure
Technology and Communications 	Technology	<ul style="list-style-type: none"> 18. Agri-tech to maximize productivity and mitigate climate risks in agriculture 19. Smart technologies to promote resource and energy efficiency 20. Digital health and telemedicine to improve access to healthcare in medically-underserved areas 21. Online learning platforms and education technologies to increase access to education
	Interned Media and Services	<ul style="list-style-type: none"> 22. E-commerce to build SME resilience

Sector Prioritization for SDG Investor Map Ukraine

5 priority sectors to advance SDG-anchored investments in Ukraine have been identified following a meticulous literature review of national policy documents and international development reports, as detailed below.

Priority Sector	Investment Opportunity Area
Food and Beverage 	<ul style="list-style-type: none"> Although agriculture constitutes approximately 10.1% of Ukraine's GDP, food security for all households is not yet achieved. The country is also lagging behind on some of its SDG 2 targets in indicators such as the consumption of dairy/milk and meat per capita, the percentage of agricultural raw material processing in exports, and the percentage of land under organic production.⁷ In addition, Ukraine ranks 58th out of 113 countries in the Global Food Security Index. The Index demonstrates that Ukraine performs below the regional average for Europe in areas such as the availability of policies to increase food security and access to markets for farmers, nutritional standards, dietary diversity, agricultural research and development, infrastructure quality and efficient land and water use. While this is the case, two thirds of Ukrainian lands are also made up of the extremely fertile chernozem, "black soil", which is regarded to be among the world's most fertile soils. Sustainable farming, land management and irrigation methods can further complement Ukraine's agricultural potential in a way that will not debilitate its resources.⁸ Several policy documents emphasize the potential of this sector to contribute to rural livelihoods whilst developing niche high-value added segments of the market. National policy documents such as the 2030 Doctrine of Sustainable Development, the Export Strategy of Ukraine, the Single and Comprehensive Strategy and Action Plan for Agriculture and Rural Development in Ukraine and the National Economic Strategy 2030 stress the potential of high-value added growth in this sector through investments in food processing, irrigation modernization, organic farming and improved agricultural storage and logistics networks.^{9,10,11,12} One significant policy initiative to boost such growth that is set to further complement rural livelihoods is the land reform adopted in July 2021.¹³ The newly-adopted land reform lifts the moratorium on the sale of agricultural lands between the citizens of Ukraine. This is projected to promote greater transparency in the land market and increase access to finance and agricultural productivity.
Infrastructure 	<ul style="list-style-type: none"> In the infrastructure sector, Ukraine suffers from several issues. The country lags behind its target for SDG 12.4, particularly the national recycling and incineration rates.¹⁴ Out of 10 million tons of waste that was generated in 2019 in Ukraine, only 4.1% was recycled and 2% was incinerated. The rest of the waste was disposed in formal and informal landfills.¹⁵ Another issue in this sector is the high-energy intensity of the economy exacerbated by an obsolete and aging infrastructure stock. Although SDG 7 indicators are positive for Ukraine overall, progress is slow on reducing the energy intensity of the GDP. The energy intensity of the Ukrainian economy is 3 times higher than in OECD countries and 3 to 4 times higher than in the European Union (EU) countries.

Priority Sector	Investment Opportunity Area
Infrastructure 	<ul style="list-style-type: none"> In this context, Ukraine is the most energy-intensive economy in the Eastern Partnership.¹⁶ Obsolete space heating infrastructure and the underutilization of efficient technologies in the residential and industrial spheres contribute to this problem. Infrastructure investments aligned with sustainability standards are also notable policy priorities for Ukraine. The impact of the European Green Deal on the Infrastructure sector in Ukraine is significant given its ambitious targets around circular economy principles and emissions reduction.^{17,18} As per the EU-Ukraine Association Agreement and the Energy Community Treaty, Ukraine must also comply with EU directives on the energy performance of buildings. National Strategies such as the National Waste Management Strategy and the National Action Plan for Energy Efficiency attempt to align the domestic performance of Ukraine on this front with such international standards.
Renewables and Alternative Energy 	<ul style="list-style-type: none"> Renewable energy generation is a priority for Ukraine on two pillars: domestic energy security and environmental sustainability. The Energy Strategy of Ukraine until 2035 sets the target for renewable resources in the total energy mix at 25% by 2035.¹⁹ The National Economic Strategy 2030 aims to decrease the energy import dependency of the country to 33% and attract \$10 billion worth of investments into the sector.²⁰ Yet, by the end of 2020, the share of renewable resources in energy production was only 12.4%.²¹ In this context, in terms of Ukraine's performance on SDG 7, challenges remain in indicators measuring the country's reliance on the import of fossil fuels, the share of renewables in the final energy consumption and the energy intensity of the economy. SDG 13 indicators also demonstrate that Ukraine is behind its emissions reduction target. While this is the case, the energy sector accounted for 66% of total GHG emissions in Ukraine in 2018.²² In 2021, the Government of Ukraine updated its Nationally Determined Contributions under the Paris Agreement to reduce GHG emissions by 65% from their 1990 levels until 2030.²³ Moreover, the development of the renewable energy sector is among Ukraine's priorities under its commitment to the EU Green Deal.²⁴
Transportation 	<ul style="list-style-type: none"> As an indicator of its transportation sector performance, Ukraine ranked 66th out of 160 countries in the 2018 Logistics Performance index published by the World Bank. The index demonstrates a low performance on almost all of the indicators, however the lowest scores are given for infrastructure quality and customs processes.²⁵ Ukraine's transportation infrastructure is aging and obsolete. Most of the road networks are severely deteriorated. In the railways, the depreciation rate of the locomotive fleet reportedly ranges from 70% to 98%.²⁶ Intermodal transportation systems are underdeveloped. For SDG 9, the Voluntary National Review of 2020 marks the loss of established intersectional and logistics ties in the region due to conflict, the underutilization of inland water transport, the inefficient use of port capacities and the insufficient level of interoperability of different modes of transport as development challenges blocking progress towards the achievement of this SDG in Ukraine.²⁷ Given the dire need for modernization in this sector, almost 40% of the priority investment projects published by the Government are in the field of transportation and infrastructure.²⁸ This sector is prioritized by the National Economic Strategy 2030, which lists relevant goals such as rehabilitating land transport infrastructure, increasing the efficiency of Ukrainian ports and revitalizing river transport.²⁹ These priorities are reinforced by the Transport Sector Strategy.³⁰ The Government also publishes regular concession projects and opportunities for public private partnerships to engage the private sector in transportation investments.

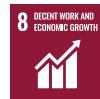
Priority Sector	Investment Opportunity Area
Technology and Communications	<ul style="list-style-type: none"> Ukraine has a dynamic IT sector. The IT industry constitutes 8.3% of Ukraine's exports and approximately 5% of the GDP. By 2024, it is estimated that 20,000 people will graduate as IT specialist in Ukraine annually.^{31,32} Yet significant challenges still remain for Ukraine's performance on SDG 9. Expenditures on R&D as a percentage of the GDP are falling according to recent trends. Significant challenges remain in indicators such as the percentage of mobile broadband subscriptions and the number of scientific and technical journal articles published domestically.³³ Ukraine also lags behind on Voluntary National Review targets 9.4 and 9.5: the accelerated development of high-and medium-technological sectors and manufacturing industries, and the creation of financial and institutional systems that will ensure the development of scientific research and technical development. In addition, the Voluntary National Review of 2020 identifies a deficiency with regards to the commercialization of new innovative products and digital technologies by SMEs and industrial producers in Ukraine.³⁴ Thus, although this sector is already a powerhouse for growth for the Ukrainian economy, it requires further investments. There are significant policy initiatives for the technology and communications sector. According to the National Economic Strategy 2030, Ukraine aims to improve its digital infrastructure, provide 95% of the population with access to high-speed Internet and increase digital literacy.³⁵ Ukraine has adopted <i>the Law "On Stimulating the Development of the Digital economy"</i> in July 2021. The Law introduces a custom legal regime for the IT industry. IT companies in Ukraine will be able to benefit from tax benefits, flexible employment regulations and better IP protection, among other incentives.^{36,37,38}

| IOA Close Ups



Food and Beverage

IOA 1. Food processing facilities sourcing raw material from SMEs and smallholder farmers



Although agriculture constitutes approximately 10.1% of Ukraine's GDP³⁹ and almost 47.7% of exported goods⁴⁰, this sector is mainly dominated by the production and export of raw material. Several policy papers such as the Single and Comprehensive Strategy and Action Plan for Agriculture and Rural Development prioritize the production of higher-value added processed goods in order to generate additional income, promote niche market segments and support complex agricultural supply chains in the country. In line with this diagnosis, the Voluntary National Review of 2020 marks that the "share of food industry and agricultural raw materials processing production in the exports of UCGFEA groups 1–24" is below Ukraine's near-term objectives. If this segment of the market is supported in line with international quality standards, Ukraine can both support domestic food security and become an export base for overseas markets.

User or Beneficiary



Food processing investments sourcing raw material from SME input suppliers and smallholder farmers will directly benefit farmers, food industry workers, agricultural retailers and processing companies. Indirect benefits can be accrued by distributors or logistics companies and consumers who will have access to higher quality food products.

Economic Factors



The market size for the food processing industry in Ukraine is **upwards of US\$ 1 billion**. In 2019 alone, capital investments made in food processing in Ukraine was approximately US\$ 1.2 billion.⁴¹

Investments in food processing in Ukraine are estimated to generate an **IRR of 20%**. However, stakeholders expect that returns could drop as low as **5 to 6%** depending on the size of the enterprise and the years of operation.⁴²

Medium Term: On average, food and beverage producers in Ukraine reportedly are able to build an uninterrupted supply chain and generate profits in approximately 10 years.⁴³

Enabling Factors



The Government of Ukraine has adopted a new **land reform law** effective as of July 2021. This law enables the sale of agricultural lands between the citizens of Ukraine, allowing for higher transparency and agricultural productivity.

In general, the Food and Beverage sector in Ukraine benefits from a **Fixed Agricultural Tax** set as a percentage of land use value for producers.^{44,45}

There are also other recent schemes to bolster agricultural SMEs' access to finance in Ukraine such as the planned **Partial Credit Guarantee Fund in Agriculture** to increase the availability of financing for smallholder producers.^{46,47} A similar initiative for smallholder farmers is the **Crop Receipts Programme** established by the International Finance Corporation.⁴⁸ Finally, the **Affordable Loans 5-7-9% Programme** provides low-interest credit to micro and small businesses.⁴⁹

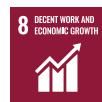
Risk Factors

Failure to adhere to phytosanitary and quality standard can produce negative effects on public health and damage exporting potential. Another potential risk factor is the failure to integrate SME farmers in food processing supply chains, which could lead to the further monopolization of the market by large firms.^{50,51,52}

Impact Management

IMP Classification C: Investments in food processing supply chains that engage SMEs or smallholder farmers contribute to food security, reduce undernourishment and promote high-value added niche agricultural markets with export potential.

IOA 2. Organic farming to produce semi-processed or finished organic goods



Compared to conventional agricultural practices, organic agriculture is more sustainable in the long-term and less exhaustive of soil and water resources.⁵³ Organic farming provides a venue for farmers to move towards the production of higher value-added goods with increased export and domestic consumption potential, with positive returns on human health. Organic farming can also support associated economic and educational activities in rural areas such as eco-tourism, educational farms and composting.⁵⁴ In 2019, the share of land under organic production out of the total area of agricultural land in Ukraine was 0.72%. This rate is far below Ukraine's 2020, 2025 and 2030 benchmarks according to Ukraine's Voluntary National Review.⁵⁵ Yet, ramping up organic agriculture is also a policy priority mentioned by multiple high-level policy documents.

User or Beneficiary

This IOA will support the health and wellbeing of consumers, provide a new stream of income for farmers and processing companies, agricultural retailers and other input providers. As organic agriculture is also relatively more sustainable than conventional agriculture practices, positive returns will also be generated for the environment.

Economic Factors

According to the Organic Federation of Ukraine, the compound annual growth rate of the domestic organic market for Ukraine between 2006 and 2015 was reportedly above **52%**.⁵⁶

The IRR for investments in organic agriculture is estimated at **18 to 20%** in hard currency for equity investments, **12%** for subordinated debt investments and **6 to 7%** for investments utilizing senior debt.

Medium-Term: Investments in organic agriculture are likely to generate returns in **5 to 10 years**.⁵⁷

Enabling Factors

High-level policy papers such as **Strategy for the Development and Export of Agricultural Commodities in the Food and Processing Industry of Ukraine until 2026** identify organic food production as a key area of growth for Ukraine given its ability to stimulate high-value-added agricultural production and exports and decrease resource intensity.

Law of Ukraine No. 2496-VIII is the Law "On Organic Food Production, Circulation and Labeling". It was passed in 2018 to ensure greater integration with European standards. According to this law, organic products have to be certified by accredited bodies.

Risk Factors**Impact Management**

There are various fiscal and financial incentives provided such as **Fixed Agricultural Tax, the Crop Receipts Programme and Affordable Loans 5–7–9%** as well as the plans to finance smallholder farmers through a **Partial Credit Guarantee Fund**.^{58,59,60,61} The Government of Ukraine has also recently announced **a new support scheme for the producers of organic agricultural products**.^{62,63,64}

EU organic importers enforce stringent quality requirements on organic products. Small-scale producers might find it harder to adhere to said-requirements and the handling criteria given the higher associated time and economic costs.⁶⁵ Other risks affecting the food and beverage sector in general are the risk of extreme weather events affecting the harvest, logistic or storage bottlenecks and restricted access to financing for SME farmers.⁶⁶

Impact Classification C: Organic agriculture is a method of sustainably contributing to food security which maintains soil quality and has positive returns on human and environmental well-being.

IOA 3. Modernization of irrigation systems utilizing resource-efficient irrigation technologies



Nineteen million hectares of agricultural land in Ukraine are in need of constant irrigation. The government of Ukraine suggests that if irrigation is improved on a mere 500–550,000 hectares of land, the harvest yield could improve by 8 to 10 million tons annually.⁶⁷ The Southern regions of the country are particularly prone to unfavorable weather conditions such as floods and droughts, restricting productivity despite the fertile soil structure. These areas also suffer from worn-out or obsolete irrigation infrastructure that is in need of rehabilitation. Older irrigation technologies are also less resource efficient and exhaustive of soil and water resources. Private sector investments in irrigation modernization can further increase Ukraine's agricultural productivity and improve resource efficiency.⁶⁸

User or Beneficiary

Investments in irrigation will directly facilitate agricultural productivity and yield due to improved access to water and eliminate resource inefficiency for rural populations, farmers and farmers associations. Decreasing the resource intensity of Ukrainian agriculture will also benefit the environment.

Economic Factors

The National Academy of Agrarian Sciences of Ukraine estimates that a CAPEX investment of approximately **US\$3.5 billion** is needed to rehabilitate Ukraine's worn-out irrigation infrastructure.⁶⁹ Similarly, according to the World Bank, the irrigation of **1 million hectares of land in Southern Ukraine** would require **US\$2 billion** of investment.⁷⁰

Although this would depend on where the investments will be made and consequently, its effects on the crop yield – an IRR of 20% on average is expected from investments in irrigation in the agribusiness sector.

Medium Term: Based on stakeholder interviews, investments in this area will take 7 to 8 years to generate returns with debt financing.⁷¹

Enabling Factors

Multiple policy papers and initiatives such as the **Irrigation and Drainage Strategy of Ukraine until 2030, the “Great Construction” Program** and the **Single and Comprehensive Strategy and Action Plan for Agriculture and Rural Development in Ukraine** prioritize irrigation modernization and the efficient use of irrigated and drained lands.^{72,73,74}

The regulatory framework in this area is governed by the **Land Code of Ukraine and the Law “On Land Reclamation”**.⁷⁵ Ukraine has also adopted a **Resolution No. 766** to establish environmentally safe standards of irrigation management in 2020.

The Irrigation and Drainage Strategy of Ukraine until 2030 plans to establish a program of **preferential loans** for the purpose of irrigation equipment modernization. Such loans will reportedly be set up between 2021–2030.⁷⁶ The Government also adopted **a draft resolution to provide funds** for the purchase of machinery for irrigated agriculture, installing irrigation systems including drip irrigation and constructing pumping stations; among other irrigation-related areas.⁷⁷

Risk Factors

The high initial capital expenditures might discourage investments in this area. As with other Food and Beverage sector models, climate change related risks might lead to fluctuations in agricultural productivity and yield, affecting the profitability of this business model.

Impact Management

IMP Classification C: Modernizing irrigation technologies improves resource efficiency in agriculture and increases yields. A large segment of the irrigation networks in Southern Ukraine is worn-out.

IOA 4. Expanding Ukraine’s food storage capacities to reduce food losses



Inefficiencies in the agricultural storage infrastructure alongside high transportation costs lead to food losses and food price volatility in Ukraine. The Voluntary National Review of 2020 indicates that there is considerable volatility in food prices that is affecting lower-income groups’ access to quality nutrition. Equipment modernization in this area has a high potential to increase productivity. According to the World Bank’s estimates it takes up to 10 days to load a full train consisting of 54 grain hoppers with older equipment while modern storage facilities and equipment can complete the same task within a single day. This is a significant reduction in the turnover time.⁷⁸ Moreover, 71% of the 32,000 enterprises in the grain market in Ukraine are SME manufacturers, but they produce only 17% of the gross production of cereals due to lower yields, poor technical equipment, and inefficient storage capacities among other factors.⁷⁹ A factor that may catalyze private sector investments in this area is the privatization program that has been launched to allow the privatization of state facilities, including grain exporting and storage companies such as the State Food and Grain Corporation of Ukraine alongside five other companies.

User or Beneficiary 	Expanding Ukraine's food storage capacities will contribute to the elimination of post-harvest losses and increase food security; benefitting the farming population, farmer associations, cooperatives and the population as a whole. It will also facilitate the work of storage technology or facility suppliers, agricultural retailers, agricultural credit institutions, processors and distributors.
Economic Factors 	<p>Ukraine's grain storage capacity was estimated at 78 million tons in 2019 while the certified storage capacity was 42 million tons.⁸⁰</p> <p>Large-scale investments in this area will dramatically reduce grain losses per annual yield and generate an IRR of approximately 25%.⁸¹</p> <p>Short Term: Investments in the storage of harvested grains through grain bins or other storage systems are estimated to generate returns in less than 5 years.^{82,83,84,85}</p>
Enabling Factors 	<p>Strategies and programmes such as the Export Strategy for Agricultural Commodities, Food and Processing Industry of Ukraine define attracting investments in grain storage as a priority action area for Ukraine and call for improvements in agricultural export logistics and investments in agricultural cold chains.^{86,87}</p> <p>The law that sets the standards along the food products and raw material supply chain is the Law No. 771/97-VR of 1997.⁸⁸ The regulatory framework in this area also involves Law No. 37-IV about the grain market in Ukraine and cabinet decrees such as Decree No. 787 on the criteria of grain storage safety and state scheduled inspections frequency.^{89,90}</p> <p>In addition, there are special trade regimes in this investment area such as the Deep and Comprehensive Free Trade Area between Ukraine and the EU, which establishes tariff rate quotas for duty-free imports of Ukraine's principal agro-food products such as grains. In this area, import duties are reduced.⁹¹ Other incentives include the Grain Warehouse Receipt Program.⁹²</p>
Risk Factors 	Market risks in this IOA involve access to finance for smallholder farmers in agricultural markets as well as the presence of multiple intermediaries between farmers and consumers, driving the prices of food commodities up. It is also reported that there are gaps in the legislation regarding the grain market in Ukraine, creating ambiguities that affect commercial activities in this subsector. ⁹³
Impact Management 	IMP Classification C: Increasing the efficiency of agricultural storage infrastructure reduces post-harvest food losses & works towards eliminating fluctuations in food prices



Infrastructure

IOA 5. Waste management services to increase compliance with circular economy principles



Ukraine annually generates about 13 million tons of municipal waste – over 95% of which is then stored in landfills instead of being recycled, creating numerous environmental issues.⁹⁴ Ukraine aims to form a green course of action on the basis of the **European Green Deal**. Among the policy priorities in this trajectory is the expansion and development of the waste management ecosystem. In the infrastructure sector the government mostly relies on PPP schemes to engage new investors. According to the International Finance Corporation, Ukraine needs around €14 billion investment into its waste management infrastructure.⁹⁵

The **National Waste Management Strategy** details the following targets until 2022: the coverage of household waste collection services should reach 85% and the overall recycling rate should reach 7%; 60% of packaging waste should be recycled.⁹⁶ The development of effective and sustainable measures to process generated waste, and the creation of relevant infrastructure will benefit previously underserved areas and enable the country to further implement circular economy principles.

User or Beneficiary



This investment opportunity area will benefit households and citizens due to the reduction of the disposal of waste into landfills, and thereby, the reduction of pollution and soil contamination. Waste processors, waste management supply chain workers and manufacturers utilizing recycled material will also benefit from the expansion of the waste management ecosystem.

Economic Factors



The nominal amount of capital and operational expenditures in the waste management sector in Ukraine in 2016 was approximately **UAH 8.93 billion** (approximately €315.58 million or \$349.529 million with 2016 rates).⁹⁷

Resolution No. 1010 of the Cabinet of Ministers indicates an **IRR of up to 12%** for municipal solid waste services given the waste management tariffs for the population. Interest rates in the area of recycling management provided by banks also range between **12% to 15%**.⁹⁸

Medium Term: Investments in this area are expected to take **7 to 8 years** with debt financing.

Enabling Factors



The main regulation in this domain is the **Law "On Waste"**, which regulates the production, collection, sorting, transportation, processing, removal and disposal processes of waste generated in Ukraine as well as the transportation and import processes.⁹⁹ There are other associated regulations such as the **Law "On Environmental Protection"** and the **Law of Ukraine "On Housing and Communal Services"**.¹⁰⁰ Large scale investments in waste management can benefit from the **Law No. 3760 "On State Support for Investment Projects with Significant Investments"**, which offers investment incentives such as special tax exemptions, import duty exemptions and leases. A significant framework in this area is the **EU Green Deal**.

Risk Factors**Impact Management**

The European Bank for Reconstruction and Development and the European Union offer a **credit line** to waste management businesses in Western Ukraine to adapt their production processes with EU standards and regulations.

The market risks in this area include the lack of transparency surrounding public sector engagement in the waste management sector, which increases the volatility in this market. The high rates of capital expenditures required for entering this investment domain also act as a discouraging factor for smaller-scale investors. Investments in waste management are also highly regulated by local authorities.

IMP Classification C: This IOA will increase the coverage of waste collection and management services for previously underserved or rural areas, preserve the environment, and contribute to resource efficiency and circular economy principles.

IOA 6. Waste management equipment modernization



Ukraine currently has 3,800 vehicles engaged in waste management. On average 63% of the waste management equipment is worn out.¹⁰¹ The level of aging is high even for urban areas such as Kyiv and Poltava where 43% of the waste management machinery is worn out. According to the International Finance Corporation, Ukraine needs around €14 billion investment into its waste management infrastructure, this includes equipment modernization.¹⁰² The National Waste Management Strategy of Ukraine also calls for investments of at least €3.5 billion in the waste management facilities and equipment in the country. The Strategy emphasizes the need to replace obsolete equipment and infrastructure.¹⁰³

User or Beneficiary

This investment opportunity area will increase the efficiency of the waste management ecosystem in Ukraine, decreasing overall pollution levels and benefiting the environment as well as the Ukrainian population in general. Actors along the waste management supply-chain and waste management technology suppliers will also benefit from increased income and employment generation opportunities.

Economic Factors

The nominal amount of capital and operational expenditures in the waste management sector in Ukraine in 2016 was approximately **UAH 8.93 billion** (approximately €315.58 million or \$349.529 million with 2016 rates).¹⁰⁴

Resolution No. 1010 of the Cabinet of Ministers indicates an **IRR of up to 12%** for municipal solid waste services. Interest rates in the area of recycling management provided by banks also range between 12% to 15%.¹⁰⁵

Medium Term: Based on stakeholder interviews investments in this area will take **7 to 8 years** with debt financing.¹⁰⁶

Enabling Factors

The National Waste Management Strategy of Ukraine calls for investments of at least €3.5 billion in the waste management facilities and equipment in the country.¹⁰⁷ Ukraine also aims to form a green course of action on the basis of the **European Green Deal**, which requires a significant reduction of the continent's GHG emissions and a restoration of environmental balance.¹⁰⁸

The main regulation in the domain of waste management is the **Law "On Waste"**, which regulates all the processes in this field.¹⁰⁹ There are other associated regulations such as the **Law "On Environmental Protection"** and the **Law of Ukraine "On Housing and Communal Services"**.^{110,111}

Large scale investments in waste management can benefit from **Law No. 3760 "On State Support for Investment Projects with Significant Investments"**, which offers investment incentives such as special tax exemptions, import duty exemptions and leases to eligible industries like waste management, provided that they meet certain criteria. The European Bank for Reconstruction and Development and the European Union offer a credit line to waste management businesses in Western Ukraine to adapt their production processes with EU standards and regulations.

Risk Factors

Lack of transparency surrounding public sector engagement in the waste management sector increases the volatility for investors in this market. Volatility may also be caused by frequent changes in the legal or tariff schemes surrounding waste management. This domain is also capital intensive, requiring a high amount of initial investments to cover the sunk costs of operations. Investments in waste management are also highly regulated by local authorities, restricting the extensive participation of the private sector.

Impact Management

Impact Classification A: This IOA will increase the efficiency of existing waste management systems and contribute to circular economy principles.

IOA 7. Bio-waste composting facilities

The per capita generation of waste per year in Ukraine is approximately 250–300 kgs, 60% of which is organic waste that could potentially be composted instead of buried. Rural communities use incineration as a waste management method for vegetable waste, a notably inefficient and hazardous method of waste disposal.¹¹² The National Waste Management Strategy aims to have the rate of home composting reach 12% for the rural population and 6% for the urban population, and to establish 500 bio-waste composting facilities until 2030.¹¹³ Switching from the incineration of agricultural waste to composting will reduce GHG emissions, improve soil quality and boost plant growth.

User or Beneficiary

Households, actors along the waste management supply chain and rural communities will benefit from investments in bio-waste composting. Bio-waste composting investments will also accrue positive returns on the environment.

Economic Factors

The nominal amount of capital and operational expenditures in the waste management sector in Ukraine in 2016 was approximately **UAH 8.93 billion** (approximately €315.58 million or \$349.529 million with 2016 rates).¹¹⁴

Resolution No. 1010 of the Cabinet of Ministers indicates **IRR of up to 12%** for MSW services. Interest rates in the area of recycling management provided by banks also range between 12 to 15%.¹¹⁵

Medium Term: Based on stakeholder interviews investments in this area will take **7 to 8 years** with debt-financing.¹¹⁶

Enabling Factors

The National Waste Management Strategy aims to have the rate of home composting reach 12% for the rural population and 6% for the urban population, and to establish 500 bio-waste composting facilities until 2030.¹¹⁷ Ukraine's policy framework in this area is also motivated by the **European Green Deal** and the aims of establishing a carbon neutral economy fully integrated with circular economy principles.

The main regulation in the domain of waste management is the **Law "On Waste"**, which regulates all the processes in this field.¹¹⁸ There are other associated regulations such as the **Law "On Environmental Protection"** and the **Law of Ukraine "On Housing and Communal Services"**.¹¹⁹

Large-scale investments in waste management can benefit from **Law No. 3760 "On State Support for Investment Projects with Significant Investments."** The European Bank for Reconstruction and Development and the European Union offer a **credit line** to waste management businesses in Western Ukraine to adapt their production processes with EU standards and regulations.

Risk Factors

There is a risk of high volatility for investors in waste management from factors such as the lack of transparency surrounding public sector engagement in this sector and the potential of changes imposed by central or local governments in the legal or tariff scheme surrounding waste management. Investments in waste management are highly regulated. This domain is also capital intensive, requiring high initial sunk costs.

Impact Management

IMP Classification C: Investing in the composting of organic waste will replace landfills, improve soil quality, reduce chemical contamination, and provide a new stream of income for rural populations.

IOA 8. Energy-efficient space heating investments



Ukraine is the most energy-intensive economy in the Eastern Partnership with the European Union.¹²⁰ The country's energy intensity is 3 times higher than in OECD countries and 3 to 4 times higher than in EU countries. Despite Ukraine's updated GHG emission reduction targets, in 2018 GHG emissions grew by 8.8%, or by 28,000 tones of CO₂ vis-a-vis 2015 levels¹²¹. Ukraine Energy Strategy up to 2035 stresses the need to increase the use of biomass in the generation of electricity and heat.¹²² Fluctuations in energy costs, growing by 15% to 40% during the winter, create issues of affordability for the rural, marginalized or low-income populations.¹²³

Investing in energy efficient biomass heating infrastructure will work towards increasing energy security in Ukraine, replacing fossil fuels and reducing GHG emissions.

User or Beneficiary



Households in Ukraine will benefit from this investment opportunity area given the reduced cost of utilities, and rural communities may benefit as the provision of agricultural waste provides a new stream of income from a farming by-product. This IOA will also incur positive returns on the environment by reducing fossil fuel related GHG emissions.

Economic Factors



District heating services reportedly account for approximately **UAH 45 billion per annum** (approximately \$1.689 billion at current rates).¹²⁴

Academic studies based on other country contexts predict an **IRR between 10% to 15%** for district heating modernization with biomass.^{125,126}

Medium Term: Based on stakeholder interviews investments in this area will take 7 to 8 years with debt-financing to generate returns.¹²⁷

Enabling Factors



Ukraine 2050 Green Energy Transition Concept recommends the installation of in-house boilers to implement a potential transition to biomass in municipal heat supply systems.¹²⁸ Ukraine's **Energy Strategy Up to 2035** stresses the need to increase the use of biomass in the generation of electricity and heat.¹²⁹

The main piece of legislation in this area is **Law No. 1391-VI**. The law details the defining criteria for biofuel energy and its different types.¹³⁰ **Law No. 1391-XIV "On Alternative Fuels"** sets the legal, social, economic, ecological and organizational principles of manufacturing alternative fuels – including biofuels.¹³¹ **Law No. 2404 "On Public-Private Partnership"** allows for public-private-partnership type investment modalities in the infrastructure sector.¹³²

In this investment opportunity area, the government implements the **Warm Loans Programme**, providing loans to citizens for energy efficiency measures including the installation of biomass boilers.¹³³ According to Bill No. 4334, investments in heat production from renewable energy will receive a statutory tariff at 90% of the tariff for heat production from gas.^{134,135}

Risk Factors



Investments in this area are capital intensive; they require high initial sunk costs. Another notable risk is market volatility, the potential of subsidy or tariff changes by the government affect this IOA.¹³⁶ Perception of high-risk and limited access to commercial bank financing by utility companies and municipalities require risk sharing.¹³⁷ In addition, there are external risks that may affect investments in this business model. The necessity to obtain additional investment in the electricity grid, technical risks and significant operation costs can stop the projects that have already been launched, leading to financial losses.¹³⁸

Impact Management



IMP Classification C: Investing in biomass heating infrastructure will increase energy security in Ukraine, reduce heating costs, replace fossil fuels use, and provide another stream of income for the farming population.

IOA 9. Residential thermal insulation to decrease energy intensity and the housing debt on utilities



In 2019, approximately 30% of rural residents and 17% of urban residents in Ukraine could not afford the heating bill for their homes.¹³⁹ The residential and public sectors constitute 60% of the total natural gas consumption in Ukraine.¹⁴⁰ A comprehensive solution to the problem of energy intensity in the residential sector is the thermal insulation of buildings. The need to improve insulation stems from the need to improve energy efficiency and reduce the cost of energy bills for the population. Ukraine Energy Strategy Up to 2035 aims to introduce stable mechanisms of state support for homeowners associations on the principles of co-financing for the thermal modernization of buildings.¹⁴¹

User or Beneficiary



Investments in this opportunity area will benefit households and homeowner associations by lowering the heating cost. Technology or utility service providers and local municipalities are also likely to benefit from increased efficiency, income or employment generation opportunities.

Economic Factors



Global market analysis estimates the **CAGR** for the building thermal insulation market at **approximately 5%** by 2027.¹⁴²

Interest rates on residential thermal modernization loans such as the Warm Loans Programme or IQ energy were between **24.5% to 30%**, indicating an IRR in this range.¹⁴³

Short Term: Academic estimates put the payback period of thermal insulation investments for residential building facades in under 5 years.^{144,145}

Enabling Factors



Ukraine Energy Strategy Up to 2035 aims to introduce stable mechanisms of state support for homeowner associations on the principles of co-financing for the thermal modernization of buildings.¹⁴⁶ **Law of Ukraine No. 2118-VIII "On Energy Efficiency of Buildings"** establishes the legal framework for activities in the field of energy efficiency of buildings and sets consumption standards.¹⁴⁷ The **State Program on Energy Efficiency** provides loans for the purchase of energy-saving equipment and materials in the residential sector.^{148,149} The **Energy Efficiency Fund** provides grants for the thermal modernization and energy efficiency projects of apartment buildings. Grants are provided without return and can cover up to 70% of the cost of energy efficiency projects for apartment buildings.¹⁵⁰

Risk Factors



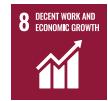
There is a risk of low demand for this business model by consumers due to low levels of ecological awareness. There are potential occupational safety risks for thermal insulation workers.¹⁵¹ Some of the insulation material can release substances like asbestos dust, dry polyester resin and other toxic chemicals.¹⁵² Finally, if the payment capacity and expectations of low-income households are not considered, stakeholder participation may be questioned.

Impact Management



IMP Classification C: This IOA will increase energy efficiency, reduce energy costs in the residential sector and work towards eliminating energy poverty among low-income groups while lowering the energy intensity of the Ukrainian economy.

IOA 10. Energy efficiency solutions in the industry



Ukraine has low levels of energy efficiency implementation in the industry, which accounts for 30% of energy consumption, leading to higher CO₂ emissions and energy losses.¹⁵³ UNIDO indicates that the absence of energy management systems and the high-energy intensity of the Ukrainian economy undermine the competitiveness of Ukrainian goods in the global market.¹⁵⁴ The National Standardization Body is to adopt ISO 50001 and two new standards of the ISO 5000 series in Ukraine to harmonize national standards with international practice.¹⁵⁵

User or Beneficiary



Investments in this opportunity area could help SMEs and other enterprises in the industry reduce energy costs. Positive returns will also be incurred on the environment due to reduced fossil fuel usage and GHG emissions.

Economic Factors



Global estimates about the ENMS market size predict a **CAGR around 16 to 17%** between 2021 and 2026.^{156,157}

UNIDO notes that ENMS investments are lucrative and can generate an IRR in the range of **50% to 170%.**^{158,159}

Short Term: According to UNIDO, returns in this IOA can be generated in a year.^{160,161}

Enabling Factors



The National Action Plan for Energy Efficiency includes the introduction of energy audit and energy management schemes in the industry, minimum standards for industrial equipment among other recommended measures.¹⁶² Ukraine is also adopting **energy sector reforms** to increase energy efficiency in the production and consumption chains, among other goals.¹⁶³

Law No. 4507 "On Energy Efficiency" establishes the legal, economic and organizational framework of activities in the field of energy efficiency, including for principles of energy auditing, energy management, energy service provision and energy efficiency measures among consumers.¹⁶⁴

Financial incentives in this investment opportunity area include the **US\$1.5 million Loan Guarantee Fund** launched by UNIDO and UkrGasBank for investments into industrial energy efficiency.¹⁶⁵

Risk Factors



Investments in this IOA require high capital expenditures due to upfront costs related to certification fees, human resources for implementation, mandatory compliance and rigorous verification processes.¹⁶⁶ There is the potential of operational or maintenance risk factors incurring additional or new costs on the industrial energy systems.¹⁶⁷ The IOA may be subject to a stakeholder participation risk if the expectations and payment capacities of SMEs in the industry are not taken into consideration.

Impact Management



IMP Classification C: Productivity gains from increased energy efficiency in the industry can return as higher wages, employment opportunities, and improved occupational health circumstances while lowering the energy intensity of the Ukrainian economy.



Renewable Resources and Alternative Energy

IOA 11. Large and small scale biomass energy production utilizing agricultural waste



Biomass energy production using agricultural waste could be a major step towards achieving sustainability and energy security in Ukraine. In 2020, CO₂ emissions from fossil fuels in the country reached **177 million tonnes**.^{168,169} Biofuels used for district heating can replace up to **10 to 18 billion cubic meters of natural gas**.¹⁷⁰ Biomass will reduce CO₂ emissions and the domestic dependence on fossil fuels, including natural gas. Biomass will also improve access to cheaper domestic sources of energy, contributing to circular economy principles through the utilization of agricultural waste.

User or Beneficiary



Biomass energy investments will benefit end consumers (residential, commercial or industrial) who are currently experiencing frequent fluctuations in energy costs, growing by as much as 15–40% during the winter months¹⁷¹, farmers and municipalities. Other beneficiaries include biomass boiler or equipment manufacturers, renewable energy supply chain workers and utility providers given the increased income and employment generation opportunities.

Economic Factors



Annually, Ukraine produces over **110 to 120 million tons of biomass feedstock** out of which only a small share has so far been used to produce energy.¹⁷² The installed capacity of biomass and biogas in Ukraine amounted to **6379 MW** in 2019.¹⁷³ The abundance of raw material used for biomass energy production already led to the domestic market for solid biofuels **growing at an annual rate of about 30%** in Ukraine.¹⁷⁴

Biomass energy investments in Ukraine are expected to generate an **IRR of 15 to 20% in hard currency**. However, without the amelioration of the circumstances of green tariff debts and the replacement of this system with an adequate mechanism, **IRR can reportedly drop to 8–10%**.¹⁷⁵

Long-Term: The return timeframe for biomass investments exceeds 10 years.

Enabling Factors



The production of renewable energy from agricultural waste is aligned with the policy objectives highlighted by multiple high-level policy documents such as the **Ukraine Energy Strategy until 2035** and the **Ukraine 2050 Low Emission Development Strategy**. Ukraine also aims to reduce its GHG emissions under its commitments to the **Paris Climate Agreement and the European Green Deal**.

The main legislation in this area is the **Law of Ukraine No. 810**, known as the **Law "On Alternative Fuels"**.^{176,177} Another governing legislation is **Law No. 1391-VI**, which defines biofuel energy and its different types.¹⁷⁸ In addition, **Heat Production from Resolution Incentives** (Bill No. 4334) states that heat producers from renewable sources will get 90% of the approved tariffs.¹⁷⁹

Incentive schemes designed to support this investment opportunity area include **changes to the Customs Code of Ukraine No. 4495-VI**, providing an exemption from import duty of machinery, equipment and facilities working on biomass or used for the production of biomass.¹⁸⁰

A **green tariff** is also provided for enterprises producing electricity from biomass and biogas. Biomass and biogas projects have to be commissioned before January 2023 to be eligible.¹⁸¹

Risk Factors



The ambiguity around the payments provided through the green tariff scheme, with the level of current debt reaching UAH 20 billion¹⁸² discouraged further private investments in this area. Another risk factor involves the risk of food scarcity and increased volatility in food prices if biomass production relies on cash crops or raw material instead of agricultural waste.

Impact Management



IMP Classification C: Using agricultural waste as a source of biomass energy will provide another stream of income for the farming population, increase energy security, contribute to circular economy principles and reduce GHG emissions.

IOA 12. Solar energy for residential or commercial end-use



Solar energy can help reduce Ukraine's dependence on fossil fuel imports and generate cost savings on electricity for individual households while also simultaneously lowering greenhouse gas emissions. Ukraine has high solar insolation rates in multiple regions. Investments in this IOA could also provide other tangible benefits for Ukraine since increasing the share of renewable energy to **21.8% until 2030** is projected to generate savings of nearly **US\$ 175 million** per year in 2030.¹⁸³ The Ukraine Energy Strategy until 2035 aims to reach **25% of renewable energy in final energy consumption by 2035**. Renewables made up **13.3% of Ukraine's total energy mix in 2020**.¹⁸⁴ Given Ukraine's ambitious renewable energy targets, there is a significant potential to mobilize investments towards solar energy business models.

User or Beneficiary



Investment in this IOA will benefit end consumers (residential, commercial or industrial) by improving access to domestic renewable energy sources that can potentially be cheaper than imported fossil fuels. Other beneficiaries include solar panel or equipment manufacturers, renewable energy financiers, renewable energy supply chain workers and utility providers because of the increased employment and income generation opportunities.

Economic Factors



According to various estimates, there is a **4GW** potential for the use of solar power in Ukraine. Overall, the irradiation rates range from 1,070kWh/m² in Northern regions to 1,400 kWh/m² in the South.¹⁸⁵ During the forecast period of 2019 to 2030, solar PV capacity is expected to grow at **13% CAGR** by relevant market reports.¹⁸⁶

Enabling Factors

Investments in solar energy are expected to generate 15–20% IRR. However, without the amelioration of the circumstances of green tariff debts and the replacement of this system with an adequate mechanism, **IRR can reportedly drop to 8–10% in hard currency.**¹⁸⁷

Long-Term: This investment opportunity area requires more than 10 years to generate financial returns.

Risk Factors

Investments in the renewable energy sector in Ukraine suffer from market volatility due to the issues with the payment of previous years' green tariff scheme and the ambiguity of the new scheme that will replace it. In this area, there is a potential of negative environmental effects of solar panel manufacturing or disposal due to the chemical content of the components.¹⁹³

Impact Management

IMP Classification C: Increasing the availability of locally sourced renewable resources will increase energy affordability for lower-income populations and provide off-grid solutions to the residents of remote areas. Investing in solar energy can work towards replacing fossil fuel use, increasing energy security and reducing GHG emissions.

IOA 13. Expanding Ukraine's wind energy capacities



Promoting the use of renewable energy sources can help improve Ukraine's energy independence as well as uphold the country's commitments to Paris Climate Agreement. Ukraine is also on a course to transform its energy portfolio under its commitments to the **European Green Deal**. To reduce GHG emissions and achieve such policy priorities, Ukraine aims to increase the renewable energy mix in its energy portfolio to **25% by 2035**.¹⁹⁴ Wind energy power plants already contributed to **2.2% of total annual electricity generation** of Ukraine in 2020, reducing CO₂ emissions by **2.6 million tonnes**.¹⁹⁵ Investments in this area have the potential of increasing access to affordable green energy, thereby reducing GHG emissions and increasing energy affordability.

User or Beneficiary

Investments in expanding Ukraine's wind energy capacities will benefit end consumers, potentially lowering the price of electricity and leading to increased affordability for lower income households. Positive returns will also be accrued for the environment given the reduction of fossil fuel related GHG emissions. Other beneficiaries include wind turbine or equipment manufacturers, renewable energy financiers, renewable energy supply chain workers and utility providers.

Economic Factors

The 2020 levels of annual electricity generation from wind energy accounted for **2.2 % of all energy produced overall**.¹⁹⁶ During the forecast period of 2019 to 2030, Ukraine's onshore wind energy capacity is expected to grow at **20% CAGR** by relevant market reports.¹⁹⁷

Investments in this opportunity area are expected to generate **15 to 16% IRR** in hard currency through equity with partial debt financing.¹⁹⁸ Without the amelioration of the circumstances of green tariff debts and the replacement of this system with an adequate mechanism, **IRR can reportedly drop to 8 to 10%**.¹⁹⁹

Long-Term: Exits are predicted to occur in more than 10 years.

Enabling Factors

Ukraine National Economic Strategy until 2035 aims to decrease Ukraine's energy import dependency to 33%, attract US\$ 10 billion into renewable energy and decrease GHG emissions.²⁰⁰ **The National Energy Strategy of Ukraine until 2035** includes the goal of increasing the share of renewables in the energy portfolio up to 25% by 2035. The legislative framework in this area includes the **Law "On Alternative Energy Sources"**, which establishes the legislative framework for the use of renewable energy in Ukraine including wind energy.²⁰¹

To support wind energy production in Ukraine, the Government implements several incentives such as the **exemption from VAT and import duties** on foreign equipment and materials to produce energy from renewable energy resources.²⁰² **Green tariffs** are also provided for wind energy until 2030. Feed-in tariffs for new wind projects commissioned in 2020 will be reduced by approximately 10% and further reductions for projects commissioned after 2025 are highly likely.²⁰³ **Law of Ukraine No. 810** amends the support scheme to produce renewable energy, the feed-in tariffs are adjusted.

Risk Factors

Electricity price regulations as well as reported issues with payments involving the green tariff producers have become the most prominent market risks for this IOA.²⁰⁴ Some outcome risks include the potential of variations in wind electricity producing additional costs or affecting supply reliability within the electricity system.²⁰⁵ Moreover, wind farms can have negative environmental effects for wild life and affect surrounding communities due to issues such as noise pollution.

Impact Management

IMP Classification C: Increasing the availability of locally sourced renewable resources will in turn lead to increased energy affordability for lower-income populations. Investing in wind energy can also work towards replacing fossil fuels, increasing energy security and reducing GHG emissions.



Transportation

IOA 14. Railway locomotive production to replace obsolete railway assets



Even though railway assets play a significant role in supporting the economy of Ukraine, the depreciation rate of the **locomotive and car fleet of the Ukrainian railways reportedly reached 70% to 98%**. Shippers experience an acute shortage of locomotives during peak periods.²⁰⁶ Investments in replacing the depreciated locomotive fleet in Ukraine will increase transport efficiency both for the general public and the commercial sector and become a driving factor for improving productivity for the sectors of the economy reliant on a well-functioning railway system.

User or Beneficiary



Economic Factors



Enabling Factors



Risk Factors



This investment will benefit the companies that are reliant on the railway system for their commercial operations, other freight end-users, the general public, railway supply chain workers and logistics companies as it will increase transport efficiency. This IOA will also increase the availability of transportation options for remote and rural populations.

Ukraine has a vast railway infrastructure with **21,600 km of railways**. The rolling stock of the country is comprised of **200,000 freight cars, 5,300 passenger cars and over 4,000 locomotives**. However, the **current wear rate of the locomotive fleet is over 80%**. The required level of investment is estimated at **US\$ 2 billion with at least 40,000 new railcars necessary** to bridge the existing gap.²⁰⁷

Investments into locomotive production are expected to generate an **IRR of 10 to 15%**.²⁰⁸ Around US\$ 185 million was lent by the European Investment Bank, the European Bank for Reconstruction and Development and the Korea Exim Bank to the Ukrainian State Railways, carrying an interest rate of slightly over 10% in hard currency.²⁰⁹

Long-Term: More than 10 years are required to generate returns in this IOA.²¹⁰ A majority of this timeframe is taken up by pre-feasibility studies. Stakeholders noted that there is a lack of mature ecosystem yet to accelerate this process.

The Transport Strategy of Ukraine until 2030 notes the obsolete state of the current railway locomotive fleet in Ukraine and reiterates the need to modernize this sector.²¹¹ To this end, Ukraine has launched a **"locomotive renewal program"** suggesting that as the main player on the market in the country, Ukrzaliznytsia should purchase a total of 315 new electric locomotives by 2033.²¹² **Ukraine National Economic Strategy 2030** also calls for investments aimed at modernizing Ukraine's obsolete railway infrastructure.²¹³ Legislative initiatives aimed at supporting the IOA include a new version of the **Draft Law "On Alternative Energy Sources"** that was registered in 2019 under 1196-1 to reflect market requirements for private locomotives.²¹⁴ Moreover, the **updated Statute of Ukrzaliznytsia** established by the Cabinet of Ministers outlines its main activities and regulates relations with prospective investors.²¹⁵

Historically railway infrastructure in Ukraine depends upon a single government-owned entity, which only just started the process of its privatization. Currently, the presence of monopolies in this sector is creating market risks for new entrants. High associated upfront costs also create certain risks.

Impact Management



IMP Classification C: This IOA will help replace obsolete railway assets, improve transport options for the population as a whole and reduce inefficiencies in the logistics sector thus increasing overall economic productivity in Ukraine.

IOA 15. Railway agro-logistics assets



The cost of logistics in Ukraine is higher by 30% to 40% compared to France, Germany and the USA. Inefficiencies in agrarian logistics in Ukraine cause harvest losses and negatively affect farmers' income.²¹⁶ The increased availability of agricultural logistics will have positive returns on Ukrainian agriculture, boosting the income of farmers. It will also positively affect the environment as new grain railcars can work towards reducing the volume of grain transported by trucks and lower annual CO₂ emissions.²¹⁷

User or Beneficiary



Main beneficiaries from investments into this IOA include farmers, agricultural companies, food processors, freight transport and logistics companies.²¹⁸

Economic Factors



In 2021, official figures detailed that Ukraine was in possession of **28,000 grain hopper railcars**. 65% of Ukraine's exported grains are moved via the railways to the ports.

Investments into railway agro-logistics assets are expected to generate an **IRR of 10% to 15%**. Around \$185 million lent by the European Investment Bank, the European Bank for Reconstruction and Development and the Korea Exim Bank to the Ukrainian State Railways carries an interest rate of slightly over 10% in hard currency.²¹⁹

Long-Term: Returns are expected to be generated in more than 10 years. Most of this timeframe is taken up by pre-feasibility studies.²²⁰

Enabling Factors



Ukraine National Economic Strategy 2030 states that agri-sector infrastructure development could grow sector exports by 20%,²²¹ the current capacity for grain logistics is at 2,000 grain hoppers per day.²²² **The Transport Strategy of Ukraine until 2030** states that with successful cooperation, by 2030, it is possible to entirely replace obsolete locomotives and upgrade the car fleet by 100%.²²³ The procurement of new railway freight cars and rolling stock is a priority investment area listed by the Ministry of Infrastructure.²²⁴

The main law governing this sector is the **Law of Railway Transport**.^{225,226} Other notable legislative initiatives include **Decree of the Cabinet of Ministers No. 591-p** on the development strategy of JSC Ukrzaliznytsia for 2019–2023 which aims to align company development with the development needs of Ukraine,²²⁷ and the **Statute of Ukrzaliznytsia**, which outlines the organization's main activities and regulates relations with prospective investors.²²⁸

The government has also allocated **UAH 4 billion** for the modernization of locomotives and rail cars.²²⁹

Risk Factors

The main risk for this IOA includes high associated upfront costs and possible bottlenecks due to existing monopolies in the market as it creates barriers for new entrants.



Impact Management

IMP Classification B: This IOA will help replace obsolete agricultural railway assets and reduce inefficiencies in agricultural logistics, replacing road transportation.



IOA 16. Road rehabilitation and modernization to increase road safety and overcome logistics bottlenecks



Approximately 97% of Ukraine's roads are in need of repair. Out of 137 countries ranked in terms of the quality of their road infrastructure by the World Economic Forum, **Ukraine ranks 130th**.²³⁰ This negatively affects economic growth and productivity and has implications in terms of road safety. Modernizing the road infrastructure will work towards increasing connectivity and reduce the time needed to cross the country by road by as much as **10 hours**.²³¹

User or Beneficiary



Investment in this IOA will result in boosting economic productivity, improving connectivity to global infrastructure and increasing traffic safety thus benefiting the population overall. The increased efficiency in the transportation system will directly benefit Ukrainian businesses, including logistics companies.

Economic Factors



Ukraine's transportation modernization plan maintains that a budget of **\$60 billion should be invested** in order to modernize the country's transport infrastructure.

Investments into road rehabilitation are expected to generate an **IRR of 5% to 10%**.²³² Road modernization projects financed by IFIs are estimated to have a nominal interest rate of 7% in hard currency under a baseline scenario.²³³

Long-Term: Returns are expected to be generated in more than 10 years. Most of this timeframe is taken up by pre-feasibility studies.²³⁴

Enabling Factors



The National Economic Strategy of 2030 aims to achieve the rehabilitation of 10,000 km of road infrastructure until 2030.²³⁵ The **Road PPP Program** aims to attract investments to finance PPP projects in this IOA. Six pilot projects have already been suggested with hopes to rehabilitate 21 road segments in total.²³⁶

The Law of Ukraine about Land Transportation is the main law governing road transportation in Ukraine.²³⁷ Legislative initiatives to ameliorate the situation with road construction and rehabilitation include the **Decree of the Cabinet of Ministers No. 521** on financing construction, renovation and rehabilitation of the roads.²³⁸

Decree of the Cabinet of Ministers of Ukraine No. 1214 provides an explanation regarding the choice of projects to be implemented under the Big Construction program.²³⁹ **Law of Ukraine “On Concessions”** regulates the concessions of state and community owned property.²⁴⁰

There are government initiatives such as the **Road PPP project** which allows for well-structured and transparent investments from the private sector into Ukraine’s road infrastructure. Investments are long-term and payments to contractors are spread over time.²⁴¹

Risk Factors



Inadequate enforcement mechanisms for compliance with road use requirements may hinder private partners from taking the responsibility of further road maintenance as Ukraine currently lacks effective mechanisms that would prevent vehicles that exceed the allowed weight from using the road infrastructure, thus leading to the destruction of repaired or built roads.²⁴² Excessive use of roads for industrial purposes (e.g. grain transport) can lead to road damage, pollution and decrease in traffic safety and flow.

Impact Management



IMP Classification B: Investing in replacing obsolete road infrastructure will increase the quality and availability of transport for the population and reduce logistics inefficiencies – boosting economic productivity.

IOA 17. Revitalizing river and seaport infrastructure



The underutilization of river and maritime options drives up logistics costs and affects productivity across the entire economy, especially for the agriculture sector.²⁴³ The **National Transport Strategy of Ukraine** underscores that Ukraine has 13 seaports in the Black Sea and the Sea of Azov equipped with a container transport system and access to 2,714 km of local navigable waterways that are threatened by underfinancing.²⁴⁴ River and maritime transport competitiveness are key for the vitality of the agri-food sector among the other sectors of the economy.

User or Beneficiary



Investments in this area will work towards reducing logistic inefficiencies, boosting economic productivity and eliminating post-harvest losses. As such, the direct beneficiaries include farmers, actors along the maritime supply chain, freight transport and logistics companies.

Economic Factors



Currently 38 state-owned enterprises alone in the Ukrainian maritime industry create an annual turnover of **UAH 10 billion** (approximately **US\$ 380 million**). The infrastructure includes 13 seaports with terminals that offer 313.3 million tons of available storage.²⁴⁵

Investments into seaport and river port infrastructure are expected to generate an **IRR of under 5%**. Internal rate of return reportedly reaches **4.5 – 5.5% with debt-financing**.

Medium-Term: A timeline of 7 to 8 years with debt financing is estimated by relevant stakeholders.²⁴⁶

Enabling Factors

Policy priorities in this area are listed by the **Strategy of Ukraine's Sea Port Development until 2038**, which states that seaports currently manage about 37% of all foreign trade. The document maintains that with growing agri-exports, the need for seaports with grain terminals is augmenting.

Law "On Sea Ports of Ukraine" defines the way ports function and interact with other branches of infrastructure.²⁴⁷ Other legislative initiatives include **Decree of the Cabinet of Ministers of Ukraine No. 1081-p**, which regulates the "Construction and rehabilitation of grain elevators and storage systems as well as the construction of grain terminals".²⁴⁸ **The Merchant Shipping Code of Ukraine** regulates the activities and relations related to merchant shipping (the carrying of cargo, goods, passengers, luggage, mail and so on) in the country.²⁴⁹ **Law No. 3760 "On State Support for Investment Projects with Significant Investments"** offers special investment incentives (such as tax, VAT, corporate profit tax, etc.) to eligible industries, including transportation, if they meet certain criteria.²⁵⁰

In order to tackle the issue of underfinancing Ukraine is undergoing a series of **concessions**. One example is the recent concession of seaport Olvia for 35 years to QTerminals, which includes building a grain terminal with a capacity of 2 million tons.²⁵¹

Risk Factors

This IOA may be unfeasible for smaller scale investors due to its capital intensive nature. Other conceivable risks include the risks of soil erosion, rising sea levels and extreme weather events affecting infrastructure or operations.²⁵² Rivers in Ukraine tend to freeze in the winter, prohibiting navigation.²⁵³

Impact Management

IMP Classification C: This IOA will help revitalize the Ukrainian agricultural sector by reducing inefficiencies and costs in the logistics system, and reduce GHG emissions vis-a-vis road transport.



Technology and Communications

IOA 18. Agri-tech to maximize productivity and mitigate climate risks in agriculture



Ukraine loses about **50,000 hectares of farmland every year** from soil erosion and land degradation, which equals an annual loss in revenue of **US\$ 10 billion**. Agri-tech can reportedly prevent a majority of this loss through sustainable farm management practices.²⁵⁴ Thus, the implementation of climate-smart fertilizers, no-till practices and agri-tech data tools can reportedly generate a revenue of **US\$ 11 billion** and a carbon reduction of approximately 11 million metric tons of carbon dioxide-equivalent.²⁵⁵

User or Beneficiary



Investments in this opportunity area will benefit farmers and actors along the food industry supply chain by increasing agricultural productivity and resource efficiency, combating land degradation, and cutting down on GHG emissions. Rural populations and technology providers are also expected to benefit from increased investments.

Economic Factors



Annual volume of total investments in Ukrainian agri-tech does not exceed **US\$4 million**.²⁵⁶ The market is expected to reach **US\$200 million** upon maturity.²⁵⁷

Estimates based on stakeholder testimonies indicate an **IRR of above 20%** for the IT sector in Ukraine.²⁵⁸

Medium Term: Due to the underdeveloped IPO market and the long interim funding period, the investment timeframe is estimated to range from 5 to 10 years.²⁵⁹

Enabling Factors



Concept of the State Target Program for the Development of the Agricultural Sector in the Period until 2022 highlights technological modernization as the main solution to various issues present in modern Ukrainian agriculture.²⁶⁰ The **Export Strategy of the Agriculture Sector until 2026** creates a plan of action to improve the use of climate-smart agriculture technologies in a bid to boost agri-sector output quantity and quality.²⁶¹

One of the main pieces of legislation in this area is the **Law No. 771/97-VR of 1997**, the law on the quality and safety of food products and food raw materials. Ukraine also recently established rules about the use of unmanned aircraft such as the drones used in precision agricultural technologies; **Rules on the Use of Airspace** were ratified in 2018.

In this area, the **“Diia City Law”** was adopted in July 2021. The Law introduces a special taxation regime for IT companies alongside other incentives.^{262,263} Another such incentive is the government initiated **Ukrainian Startup Fund (USF)**. The Fund provides \$25,000 pre-seed & \$50,000 seed grants for startups working in technology, including agri-technologies like drones used to remotely monitor and irrigate crops.²⁶⁴

Risk Factors



One of the overriding risks in this area is that there is a potential of limited demand for highly priced or advanced technological products in the domestic market. As such, such products or services may be inaccessible to smallholder farmers.

Impact Management



IMP Classification B: Investing in sustainable agricultural technologies will increase resource efficiency and the size of the yields in agriculture while cutting down on GHG emissions.

IOA 19. Smart technologies for the promotion of energy and resource efficiency



Ukraine consumes nearly 3 times more energy than the OECD average per unit of GDP.²⁶⁵ Obsolete space heating infrastructure and the underutilization of efficient technologies in the residential and industrial spheres exacerbate this problem as fluctuations in energy costs create issues of affordability for the rural, marginalized or low-income populations.²⁶⁶

User or Beneficiary



This investment opportunity area will benefit individual consumers and households given the increased access to more energy efficient technologies that will reduce the cost of utilities. Municipalities can also benefit from this model if applied in local infrastructure. There will also be positive returns on the environment because of the reduction of overall energy intensity.

Economic Factors



Global market analyses estimate a CAGR between **20% to 25%** for the green technology market between 2020 and 2027.²⁶⁷

Estimates based on stakeholder testimonies indicate an **IRR between 20% and 25%** for the IT sector in Ukraine.²⁶⁸

Medium Term: Due to the underdeveloped IPO market and the long interim funding process, the investment timeframe is estimated range **from 5 to 10 years.**²⁶⁹

Enabling Factors



High-level policy documents such as the **Ukraine 2050 Low Emission Development Strategy, the Ukraine 2030 Doctrine of Sustainable Development, Ukraine 2050 Green Energy Transition Concept and the National Action Plan for Energy Efficiency until 2020** highlight the importance of modernization and innovation in the area of energy efficiency to achieve lower emissions and generate energy savings.

Ukraine has adopted a series of **technical regulations** on eco-design, transposing European energy labeling directives.²⁷⁰ Other relevant laws in this area include the **Law "On Protection of Rights to Industrial Designs"**, which regulates the acquisition and use of property rights for industrial design in Ukraine,²⁷¹ and the **Law "On Protection of Rights to Trademarks for Goods and Services"**, which regulates the acquisition of trademarks in Ukraine.²⁷²

In the technology sector, the **"Diia City Law"**, which was adopted in 2021, introduces a special taxation regime for IT companies alongside other incentives such as flexible employment regulations and better IP rights protection.^{273,274} Moreover, businesses using green energy technologies and machinery in their operations (such as tractors running on alternative energy) have an opportunity to import said technologies without having to pay import taxes.²⁷⁵ Lastly, the Government initiated **Ukrainian Startup Fund** provides \$25,000 pre-seed and \$50,000 seed grants for startups working in the technology sector.²⁷⁶

Risk Factors



There is a risk of limited consumer demand for highly priced advanced technological products due to limited awareness or unaffordability. Items such as smart meters are also vulnerable to cyber security risks.

Impact Management



IMP Classification C: Investing in smart technologies for energy efficiency will help improve resource efficiency in the economy, increase productivity and generate a sustainable source of income. Increasing energy efficiency will also reduce energy poverty in the population and decrease the cost of utilities.

IOA 20. Digital health and telemedicine to improve access to healthcare in medically underserved areas



Although healthcare accounts for **7% of the total budget** of Ukraine, it is estimated that **25% of Ukrainians don't go to the doctor** because of the high cost of medical services, pharmaceuticals and transportation. At the same time, 13% avoid going to the doctor due to long queues.²⁷⁷ In Ukraine, the share of rural households experiencing hardships due to the lack of a medical facility near their home increased to **29.6% in 2019 in comparison to 27.8% in 2017.**²⁷⁸ Investments in digital health will make healthcare services more available for the population as a whole regardless of location, contributing to health and well-being.

User or Beneficiary



The general public, rural or remote communities, healthcare workers and technology service providers will be the main beneficiaries of this investment opportunity area. In particular, this investment opportunity area addresses the needs of rural or remote communities who will greatly benefit from increased access to medical professionals and reduce urban-rural disparities.

Economic Factors



With the outbreak of the COVID-19 pandemic, global projections around digital health services estimate a **CAGR of 25 + %** between 2021 and 2025.^{279,280,281} Estimates based on stakeholder testimonies indicate an **IRR of above 20%** for the IT sector in Ukraine given Ukraine's competitive advantages in this sector such as the presence of a skilled competitive workforce.²⁸²

Medium Term: Due to the underdeveloped IPO market and the long interim funding process, the investment timeframe in this investment opportunity area is estimated to be around **5 to 10 years.**²⁸³

Enabling Factors



Ukraine's Healthcare Reform supports the digitalization of the healthcare sector with increased eHealth efforts.²⁸⁴ **Ukraine's E-Health Development Action Plan** develops a step-by-step agenda for achieving further digitalization in healthcare including medical IT, innovations and electronic medical information systems.²⁸⁵ In this context, 58 leading IT companies have partnered with the government and signed a Memorandum of Cooperation to develop e-health services and telemedicine in Ukraine.²⁸⁶ The main regulations in this area include the **Law of Ukraine "On Healthcare"**, which regulates all aspects of the healthcare system in Ukraine,²⁸⁷ and the **Law of Ukraine "On increasing the availability and quality of health services in rural areas"**. In the technology sector, the "**Diia City Law**" paves the way for fiscal incentives. The law was adopted in July 2021 and established a special taxation regime for IT companies alongside other incentives.^{288,289} In addition, the Ukrainian Startup Fund provides **US\$ 25,000 pre-seed and US\$ 50,000 seed grants** for startups working in the technology sector.²⁹⁰ Finally, projects worth at least UAH 10 million can receive funding from the **State Regional Development Fund**.

Risk Factors



Regulatory uncertainties about the circumstances in which a doctor can utilize telemedicine persist.²⁹¹ Another risk involves the limited demand for highly-priced advanced technological products in the domestic market and limited consumer appetite.²⁹² The risk of resistance by patients to consult doctors online and prefer in-person consultations exist.

Impact Management



IMP Classification B: This IOA will increase access to high-quality healthcare services for rural or remote populations.

IOA 21. Online learning platforms and education technology to increase access to education



53% of Ukrainians have below-average digital skills, which constitutes a serious issue in an increasingly digitalized market and highlights a gap in education that exists between the education provided and the skills required for the workforce.²⁹³ While education in Ukraine is free and should be accessible to anyone, the rural and disadvantaged segments of the population have issues accessing the educational materials available for the urban population. Moreover, the quality of education in the rural areas tends to be notably lower with less access to technology and less stress of the importance of digital skills.²⁹⁴ The COVID-19 Pandemic has demonstrated the importance of increasing the availability of digital pedagogical tools and the Internet infrastructure required to utilize them.

User or Beneficiary



Investment in this IOA will benefit students, teachers, the general public and software developers. Online learning platforms will improve digital literacy skills and enhance human capital in Ukraine.

Economic Factors



The self-paced e-learning market size in Eastern Europe was estimated at **US\$ 1 billion**.²⁹⁵ Investments in online learning in Ukraine are expected to generate an **IRR of 20-25% in hard currency**, given the competitive advantages of the Ukrainian IT sector.

Medium Term: Due to the underdeveloped IPO market and the long interim funding process, the investment timeframe in this investment opportunity area is estimated to range from **5 to 10 years**.²⁹⁶

Enabling Factors



The **National Education Sector Strategy until 2021** and **National Strategy for Inclusive Education Development for 2021–2030** highlight the importance of digital learning and engaging technology in education.²⁹⁷ Ukraine is also currently undergoing an **educational reform drive**, under the **New Ukrainian School Initiative**, which includes several measures aimed at supporting e-learning and digital education services. The **Modern Professional/Vocational Education Concept until 2027** equally calls for the development of the digital skills of Ukraine's vocational workforce.²⁹⁸

Law No. 4303, the "**“Diia City Law”**", establishes a special legal regime for IT companies in Ukraine in order to create favorable conditions for innovation.²⁹⁹ The "Diia City Law" introduces a special taxation regime for the residents of Diia City such as favorable corporate income tax conditions and personal income tax reductions.³⁰⁰

Risk Factors



There is a high level of competition with existing e-learning service providers domestically and internationally. There is also a stakeholder participation risk if products or services are too expensive. Rural-urban disparities in internet access may present further stakeholder participation risks.

Impact Management



IMP Classification B: This IOA will provide increased access to high quality education services for the population in Ukraine, especially during episodes of crisis such as the pandemic.

IOA 22. E-commerce to build SME resilience



The Strategy of Ukrainian Financial Sector Development until 2025 and the Strategy of the Development of a Digital Society in Ukraine mark the importance of developing e-commerce in Ukraine in order to improve the business climate of the country.^{301,302} Investments in e-commerce will improve economic competitiveness, enhance digital skills and help SMEs build resilience in their supply chains against disruptions such as the COVID-19 pandemic. E-commerce provides an opportunity for SMEs to market their products to a wider consumer base.

User or Beneficiary



Investments in this IOA will benefit SMEs, end-users or consumers and logistics companies by building resilience against disruptions such as the COVID-19 pandemic.

Economic Factors



The **CAGR** for e-commerce in Ukraine is estimated between **5% to 10%**, and is projected to reach **9.16%** between 2021 and 2025.³⁰³ According to stakeholder testimonies, investments in IT in Ukraine are lucrative due to the presence of a skilled competitive workforce, the potential of IT outsourcing & the revenue scheme being based in hard currency. However, e-commerce investments have higher capital requirements. As such, an IRR between **15% to 20%** is estimated based on stakeholder consultations.

Medium Term: Due to the underdeveloped IPO market and the long interim funding process, the investment timeframe in this investment opportunity area is estimated to be **5–10 years.**³⁰⁴

Enabling Factors



As part of the **Digital Transformation Strategy of Ukraine** Ukrainian government established online platform Diia. A component of this platform – Diia Business – is helping develop e-commerce.³⁰⁵

In order to create a favorable regulatory environment in the IT sector Ukraine has adopted measures such as the **Law No. 4303 "On the Stimulation of Digital Economy Development in Ukraine"**, which aims to regulate the development of a digital economy in Ukraine and provide clarity regarding economic activities on the digital market.³⁰⁶ In 2015, the Ukrainian Parliament adopted the **Law of Ukraine "On Electronic Commerce"** (the "E-Commerce Law"). The Law regulates online transactions and applies consumer protection regulations.³⁰⁷

Fiscal incentives in this area include a special taxation regime for the residents of Diia City; residents can choose one of two favorable corporate income tax conditions. Personal income tax is reduced, and more flexible employment regulations are introduced. Separate tax incentives for investors in Diia City have been established to achieve better investor engagement with this IOA.³⁰⁸

Risk Factors



The wider availability of e-commerce can encourage excessive consumption and create consumption and production related waste. SMEs may be unable to exploit this business model due to factors such as low levels of digital literacy and poor internet connectivity.

Impact Management



IMP Classification C: This IOA will help smallholder producers find appropriate platforms to digitalize and market their goods. This IOA will also support the digitalization efforts in the Ukrainian economy and work towards securing commercial supply chains against the impact of crises like COVID-19.

Annex

A1. Main Documents Reviewed to Identify National Policy Priorities and Development Needs

- | Documents to Identify Policy Priorities | |
|--|---|
| 1. Ukraine Invest Guide (Investment Office of Ukraine) | 10. The forecast of economic and social development of Ukraine for 2020-2022 (MDETA) |
| 2. Export Strategy of Ukraine: Roadmap of Strategic Development of Trade for the Period of 2017-2021 (Ministry for the Development of Economy, Trade and Agriculture (MDETA)) | 11. Ukraine State Strategy for Regional Development for 2021-2027 (Cabinet of Ministers) |
| 3. Strategy for Small and Medium-sized Enterprise Development in Ukraine until 2020 (Cabinet of Ministers) | 12. Medium-Term Government Priority Action Plan until 2020 (Cabinet of Ministers) |
| 4. Ukraine Poverty Reduction Strategy until 2020 (Cabinet of Ministers) | 13. Ukraine Intended Nationally-Determined Contribution (INDC) of to a New Global Climate Agreement (Cabinet of Ministers) |
| 5. "Single and Comprehensive Strategy and Action Plan for Agriculture and Rural Development in Ukraine between 2015-2020" (Ministry of Agrarian Policy and Food of Ukraine) | 14. National Waste Management Strategy until 2030 (Cabinet of Ministers) |
| 6. Ukraine 2050 Low Emission Development Strategy (Cabinet of Ministers) | 15. A look at Transit Transport in Ukraine (Ministry of Infrastructure) |
| 7. Invest in Ukraine Now Brochure (Investment Office of Ukraine) | 16. KPMG M&A Radar Ukraine (KPMG) |
| 8. National Economic Strategy 2030 (Cabinet of Ministers) | 17. Investment Climate in Ukraine as Seen by Private Investors (The World Bank) |
| 9. Materials for Discussion to Overcome the Consequences of COVID-19 – Economic Stimulus Program to overcome the consequences of COVID-19 pandemic: "Economic Revitalization" (Cabinet of Ministers) | 18. Ukraine 2050 Green Energy Transition Concept (Ministry of Ecology and Natural Resources) |
| | 19. Strategy of Ukrainian Financial Sector Development Until 2025 (Ministry of Finance & National Bank of Ukraine) |
| | 20. Country Report on Infrastructure and Finance Ukraine (Traceca) |
| | 21. Ukraine Export Strategy for the Food and Beverages Sector (MDETA) |
| | 22. Strategy of development of export of agricultural commodities, food and processing industry of Ukraine for the period until 2026 (Cabinet of Ministers) |
| | 23. Concept of the State Target Program for the Development of the Agricultural Sector for the Period until 2022 (Cabinet of Ministers) |
| | 24. National Action Plan for Energy Efficiency until 2020 (State Agency for Energy Efficiency and Energy Saving of Ukraine) |
| | 25. Ukraine Energy Strategy Up to 2035 (Cabinet of Ministers) |
| | 26. Strategy of high-tech industries development until 2025 (Cabinet of Ministers) |
| | 27. Transport Strategy of Ukraine until 2030 (Ministry of Infrastructure) |
| | 28. National Strategy of Education Development until 2021 (Cabinet of Ministers) |
| | 29. National Strategy to Increase Foreign Direct Investment in Ukraine (National Investment Council of Ukraine) |
| | 30. Export strategy for the IT sector of Ukraine 2019-2023 (MDETA) |

Documents to Identify SDG Needs

1. Ukraine Voluntary National Review 2020 (MDETA)
2. Ukraine 2030 Doctrine of Sustainable Development (ADEF)
3. Ukraine Monitoring Report on SDG 8 (MDETA & State Statistics Services)
4. The World Bank in Ukraine: Country Snapshot (The World Bank)
5. Ukraine Country Profile (FAO)
6. Human Development Report 2020: Ukraine (UNDP)
7. Ukraine in 2020-2021: Aftermath of the Pandemic. Consensus Forecast (MDETA & UNICEF)
8. Ukraine Systematic Country Diagnostics (The World Bank)
9. Accelerating Private Investments to Agriculture Program (The World Bank)
10. Ukraine Common Country Analysis (UNDP Ukraine)
11. Trends in Ukraine's Sustainable Infrastructure Investments (OECD)
12. Country Insight Report Ukraine (Dun & Bradstreet)
13. Agricultural and Rural Development Support Project 2020 Report (USAID)
14. Agricultural Investment Policies in Ukraine (OECD)
15. Decentralization in Ukraine Transport Sector: A Case Study (OECD)
16. Attracting Investments to Renewable Energy in Ukraine (OECD)
17. Remap 2030: Renewable Energy Prospects for Ukraine (IRENA)

18. Waste Management Opportunities in Ukraine (Netherlands Enterprise Agency)

19. Attracting Investments to Renewable Energy in Ukraine (OECD)

20. Remap 2030: Renewable Energy Prospects for Ukraine (IRENA)

21. Irrigation and Drainage Strategy of Ukraine (The World Bank)

22. Food Losses and Waste in Ukraine: Country Report (FAO)

23. "Egypt, Turkey and Ukraine Sustainable bioenergy options from crop and livestock residues" (FAO & European Bank for Reconstruction and Development)

24. Assessment of the Agriculture and Rural Development Sectors in the Eastern Partnership countries: Ukraine (The European Union's Neighbourhood Programme)

25. Accelerating Private Investment in Agriculture Program (The World Bank)

26. Agricultural and Rural Development Support Project Report (USAID Ukraine)

27. Organic Agriculture in Ukraine: An Opportunity to Green the Economy (OECD, UNEP, UNIDO, UN Economic Commission on Europe)

28. Economic Impact of Food Loss and Waste (Journal)

29. Organic 2021 Guide Book (USAID, Organic Ukraine, FIBL, SAFOSO, Export Promotion Office of Ukraine)

30. Shifting into High Gear: Recommendations for Improved Grain Logistics in Ukraine (The World Bank)

Documents Analyzed to Identify Regional Needs and Priorities

1. Ukraine's State Strategy for Regional Development for 2021-2027 (Ministry of Community and Territorial Development)
2. Tracking Progress on Sustainable Development for the Regions of Ukraine: Choosing Indicators and Setting Baselines (UNDP Ukraine)
3. UkraineInvest Regional Overviews (for each oblast) (UkraineInvest)
4. Strategy of Development of the Nikolaev Region for the Period until 2027 (Ministry of Communities and Territories Development of Ukraine)
5. Strategy of Development of the Ternopil Region for the Period until 2027 (Ministry of Communities and Territories Development of Ukraine)
6. Strategy of Development of the Sumy Region for the Period until 2027 (Ministry of Communities and Territories Development of Ukraine)
7. Strategy of Development of the Dnipropetrovsk Region for the Period until 2027 (Ministry of Communities and Territories Development of Ukraine)
8. Strategy of Development of the Kirovohrad Region for the Period until 2027 (Ministry of Communities and Territories Development of Ukraine)
9. Strategy of Development of the Cherkasy Region for the Period until 2027 (Ministry of Communities and Territories Development of Ukraine)
10. Strategy of Development of the Zhytomyr Region for the Period until 2027 (Ministry of Communities and Territories Development of Ukraine)

11. Strategy of Development of the Kyiv Region for the Period until 2027 (Ministry of Communities and Territories Development of Ukraine)
12. Strategy of Development of the Lviv Region for the Period until 2027 (Ministry of Communities and Territories Development of Ukraine)
13. Strategy of Development of the Odessa Region for the Period until 2027 (Ministry of Communities and Territories Development of Ukraine)
14. Strategy of Development of the Poltava Region for the Period until 2027 (Ministry of Communities and Territories Development of Ukraine)
15. Strategy of Development of the Rivne Region for the Period until 2027 (Ministry of Communities and Territories Development of Ukraine)
16. Strategy of Development of the Kharkiv Region for the Period until 2027 (Ministry of Communities and Territories Development of Ukraine)
17. Strategy of Development of the Chernivtsi Region for the Period until 2027 (Ministry of Communities and Territories Development of Ukraine)
18. Kyiv City Development Strategy until 2025 (Ministry of Communities and Territories Development of Ukraine)
19. Strategy of Development of the Chernihiv Region for the Period until 2027 (Ministry of Communities and Territories Development of Ukraine)
20. Strategy of Development of the Khmelnytsky Region for the Period until 2027 (Ministry of Communities and Territories Development of Ukraine)
21. Strategy of Development of the Kherson Region for the Period until 2027 (Ministry of Communities and Territories Development of Ukraine)
22. Strategy of Development of the Luhansk Region for the Period until 2027 (Ministry of Communities and Territories Development of Ukraine)
23. Strategy of Development of the Ivano-Frankivsk Region for the Period until 2027 (Ministry of Communities and Territories Development of Ukraine)
24. Strategy of Development of the Zaporizhia Region for the Period until 2027 (Ministry of Communities and Territories Development of Ukraine)
25. Strategy of Development of the Zakarpattia Region for the Period until 2027 (Ministry of Communities and Territories Development of Ukraine)
26. Strategy of Development of the Donetsk Region for the Period until 2027 (Ministry of Communities and Territories Development of Ukraine)
27. Strategy of Development of the Volyn Region for the Period until 2027 (Ministry of Communities and Territories Development of Ukraine)
28. Strategy of Development of the Vinnytsia Region for the Period until 2027 (Ministry of Communities and Territories Development of Ukraine)
29. Waste Generation by Region, 2019 statistics (UKRSTAT)
30. Heating in housing and utilities sector: Status and Prospects, 2016 (Ministry of Regional Development)
31. Investment Passports for all of the oblasts (Regional Councils)

A2. Interviewed Stakeholders

*In alphabetical order

1. AgriAnalytica
2. AVentures
3. Danida Sustainable Infrastructure Finance (DSIF)
4. Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ)
5. Delegation of the European Union to Ukraine
6. Delegation of the European Union to Ukraine / Infrastructure and Transportation Team
7. Delegation of the European Union to Ukraine/ Agriculture Sector Group
8. European Association of Software Engineering
9. European Bank for Reconstruction and Development (EBRD)
10. European Business Association
11. European Investment Bank (EIB)
12. Investment Fund for Developing Countries (IFU)
13. Japan International Cooperation Agency (JICA)
14. National Investment Council of Ukraine
15. Swedish International Development Cooperation Agency (SIDA)
16. Swiss Agency for Development and Cooperation (SDC)
17. Swiss Investment Fund for Emerging Markets (SIFEM) / Obviam
18. The Nordic Environment Finance Corporation (NEFCO)
19. Türk Ukrayna İş adamları Derneği (TUID)
20. Ukraine Invest, Investment Promotion Office
21. Ukrainian Venture Capital and Private Equity Association (UVCA)
22. Ukrgasbank

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