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AGRICULTURE AND RURAL DEVELOPMENT SUPPORT PROJECT

FINAL PERFORMANCE REPORT

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Cover photo: Workers harvest apples at Sady Donbasu, an ARDS champion firm, after the company relocated following military action in Eastern Ukraine. With ARDS support, the company reestablished itself as a leading apple producer and now helps other producers thrive with agricultural services. (Credit: Vladyslav Sodel)

DISCLAIMER

The authors' views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States government.

CONTENTS

Acronyms	ii
ARDS by the Numbers	1
Executive Summary	2
About ARDS	6
ARDS Activities and Legacy	8
Land Market Reformed	8
Institutional Capacity	10
Capacity of Consolidated Communities.....	12
State Agri-Food Controls	14
Enhancing Value Chains and Supporting Functions	16
Fruit and Vegetable Value Chains	16
Dairy Value Chain.....	23
Meat Value Chain.....	26
Supporting Functions	30
Lessons Learned	37
Communication and Learning.....	37
Communicating Behavior Change.....	37
Enhancing Communication Skills.....	38
CC Capacity Development	38
Enhancing Value Chains and Supporting Functions.....	39
Annex A. Environmental Mitigation and Monitoring	41
Annex B. Progress Against Targets	44
Annex C. Indicator Tables	46
Annex D. Financial Information	70

Attachment: ARDS Interactive Final Report

ACRONYMS

AMP	Association of Milk Producers
ARDS	Agriculture and Rural Development Support project
AUPB	Association of Ukrainian Pig Breeders
CC	Consolidated Community
CE	communal enterprise
CLA	collaborating, learning, and adapting
CVS	center for veterinary services
DL	draft law
DSTU	State Standard of Ukraine
EU	European Union
FAO	United Nations Food and Agriculture Organization
FFU	Future Farmers of Ukraine
FWB	Foundation of Women-Beekeepers
FY	fiscal year
GDP	gross domestic product
GIS	geographic information system
GRASP	GLOBALG.A.P. Risk Assessment on Social Practice
HACCP	Hazard Analysis and Critical Control Points
IMF	International Monetary Fund
LSD	local systems development
M-Kit	mastitis kit
MAPF	Ministry of Agrarian Policy and Food of Ukraine
MEDTA	Ministry of Economic Development, Trade, and Agriculture
MEL	monitoring, evaluation, and learning
MP	member of parliament
MSME	micro-, small-, and medium-sized enterprise
NGCA	non-government-controlled area
NTWG	National Technical Working Group
PLT	Prime Lab Technology

RST	Reform Support Team
SGC	StateGeoCadastre
SME	Small- and Medium-sized Enterprise
SRO	Self-Regulatory Organization
USAID	United States Agency for International Development
USBA	Ukrainian Stock Breeders Association
VR	Verkhovna Rada (Parliament of Ukraine)

ARDS BY THE NUMBERS

- 9,438 people engaged in ARDS activities
- 17 associations and self-regulatory organizations strengthened capacities
- 24-percent increase — 15 percent to 39 percent — in support for land reform
- 72 legislative pieces revised and drafted
- 13 laws adopted
- 79 communities supported implementing land-management methodology
- 24 infrastructure projects
- 1 million indirect beneficiaries
- \$89 million incremental sales for small- and medium-sized enterprises
- \$22 million exported agricultural products
- 520 farmers implemented new technologies
- 50,000 farmers and private households engaged with ARDS
- \$13 million of new private sector investment in the agricultural sector
- \$16 million in loans for farmers

EXECUTIVE SUMMARY

A remarkable Ukrainian chapter opened in 2013 to 2014 when a “Euromaidan” citizen uprising brought tens of thousands of citizens into the streets to protest the then-government’s rejection of an EU agreement in favor of developing closer ties with Russia. By March 2014, the pro-Russia regime was ousted and replaced by an EU-aligned government. Undeterred by Russia’s response — the illegal annexation of Crimea followed by military occupation of 7 percent of Ukrainian territory, where fighting continues to this day — Ukraine’s determination to open economic opportunities as a European country and attract more foreign and domestic investment only increased. The conflict, which severed ties to markets in Russia and non-government-controlled areas (NGCAs) and attacked Ukraine’s independence, reignited the country’s national pride and fueled action in the public and private sectors as Ukraine continued bold strides toward a more stable and financially sound future.

In April 2014, decentralization reforms started to transfer political, administrative, and financial rules and responsibilities from the central government to the local level. Ongoing goals include forming effective local government to create and support a sustainable rural living environment by voluntarily merging local villages into Consolidated Communities (CCs), providing high quality and accessible public services, and reducing corruption in various economic sectors — especially its agricultural industries — in the country known as “the breadbasket of Europe.” In February 2015, the country enacted unprecedented and wide-ranging deregulatory changes aimed at strengthening the economy, adhering to EU democratic and trade principles, and protecting against further Russian encroachment.

In September 2016, in the midst of Ukraine’s pivot toward the European Union and the opportunities of its open marketplace, USAID launched the Agricultural and Rural Development Support (ARDS) project, a \$22 million, four-year initiative. Building on successes and lessons learned from previous agricultural projects and functioning on both national and local levels, with a special focus on rural development in southern and eastern Ukraine, ARDS embraced the U.S. Global Food Security Act of 2016’s¹ commitment to the “productivity, incomes, and livelihoods of small-scale producers, particularly women, by working across agricultural value chains and expanding farmers’ access to local and international markets.”

Closely linking its activities to Ukraine’s decentralization process, and working with a range of entities (government, the private sector, civil society, and donor partners), the project bolstered inclusive, competitive, and sustainable economic growth of Ukraine’s

¹ <https://www.usaid.gov/feed-the-future/vision/global-food-security-act#:~:text=The%20Global%20Food%20Security%20Act,in%20development%20and%20national%20security>.

agricultural sector and mainstreamed gender integration. ARDS achieved its results by focusing on two goals:

1. Improving rules and regulations governing land-market reform
 - Build institutional capacity to both design and implement reforms
 - Build the capacity of CCs to design and implement reforms on the local level
 - Reform and improve state agri-food controls
2. Enhancing agricultural value chains (meat, dairy, fruit, and vegetable value chains) and their supporting functions.

ARDS based all activities on the holistic Market Systems approach — changing the way markets work so poor people benefit from growth and economic development. ARDS targeted: 1) actors directly involved in the core functions of the four focused agricultural value chains: fruit, vegetables, dairy, and meat; 2) the functions that support the market system and its value chains; and 3) the rules and regulations that affect how the system works.

Understanding that deep knowledge of a system is required to change the system, first steps included a complete examination of every aspect of the meat, dairy, fruit, and vegetable value chains and an analysis of the functions of private market actors, individuals, the government, and self-regulatory organizations, as well as their relationships and social and cultural norms. The project also studied economic, conflict-related, and natural shocks, seeking to facilitate viable market linkages to replace lost markets in Russia and the NGCA in Donetsk and Luhansk oblasts. In addition, the project assessed select input materials and services surrounding each value chain and diagnosed and addressed all constraints.

At the same time, ARDS examined the rules and regulations supporting Ukraine's market system at the time and how the country's legal environment would need to adapt to decentralization and Ukraine's entry into EU and international marketplaces. How could bureaucratic burdens be lifted and procedures simplified? What laws were needed to support opening new opportunities in its agriculture sector? How could small- and medium-sized farmers access finance? What services could help increase production and meet international safety and quality standards?

The following represent a sampling of improvements made and project successes:

- ARDS improved access to financial services.
- ARDS co-investment partnerships improved processing, freezing, and logistics services in the fruit and vegetable value chains.
- A regional laboratory examining raw milk quality was developed, along with a milk-collection platform, milk processing centers, and guidance on international safety and quality standards for local producers.
- Two fully equipped, state-of-the-art regional Veterinary Service Centers and two model centers for raising calves were opened.

- An independent modern laboratory was established for detecting pesticide residues in food products, seeking to prevent or minimize the negative effects of pesticides by monitoring toxic residues in the environment: soil, groundwater and water sources, plants, feed, fruits, vegetables, and other food products.
- Safety and quality standards such as hazard analysis and critical control point (HACCP) and GLOBALG.A.P. became widespread among Ukrainian agricultural producers and processors.
- The Future Farmers of Ukraine (FFU) organization modeled after the 92-year old Future Farmers of America was developed to inspire middle and high school students to opt for science, business, and agri-technology. ARDS sponsored a 10-day tour to the University of Missouri, where delegation members attended the state's annual Future Farmers of America convention. After the convention, Ukrainian Agrarian Lyceum high schoolers shared their FFU startup experiences with an audience of 8,000 fellow students.

This “bottom to top” approach included three pilot programs in select CCs. Focused on strategic local economic development, the project provided tools and training events that enabled community leaders, economists, land surveyors and agribusinesses to successfully address challenging land-management issues, building their capacity to design and implement national reforms on the local level. Based on pilot results, ARDS created a CC-based Local Systems Development program and, working with 74 CCs in six *oblasts*, promoted its market system development approach to fight corruption in land management. One huge technological innovation saw ARDS develop modern geographic information systems (GIS) technology that allowed for public access to land information, transparent public management of assets, and contributed to battling corruption. After training CC land surveyors and economists how to combine modern GIS with economic analysis to achieve sustainable development, ARDS launched the GIS-based Land Use Planning and Management portal, the first of its kind in Ukraine. This achievement paved the way for 74 new publicly accessible geoportals.

Together, these supportive, capacity-building activities increased regional awareness, strengthened CC capacities, and gave CCs the courage to defend their land rights and push members of Parliament (MPs) to advance promised reforms. Garnering local support is one of its greatest achievements and critical to the long-term sustainability of Ukraine's agricultural sector. With it, ARDS successfully helped develop crucial agricultural legislation fundamental to land-market reforms. The project's regional-level efforts — though they proved to be the most challenging — changed the national perception of rural community development and recast the national legislative land reform agenda to include the needs of local, rural communities. This “bottom-to-top” model was a first in Ukraine, which, prior to ARDS intervention, adopted legislation “top-to-bottom” without considering the needs of local communities.

ARDS' chief land-market legislative success was the adoption of the Law on Agricultural Land Turnover (#2178-10), which will take effect on July 1, 2021. The law will lift Ukraine's restrictive 19-year land sale moratorium on 96 percent of Ukraine's agricultural land and bring the country one step closer a \$5.5 billion International

Monetary Fund (IMF) loan program aid package. Thanks to ARDS' support, seven draft laws, including laws on national geospatial data infrastructure and land use planning, have been adopted by Ukraine's parliamentary body, the Verkhovna Rada. Among them, ARDS successfully reformed and improved state agri-controls and quality standards, which are critical for meeting EU standards and increasing exports.

New legal provisions ensure adherence to modern phyto-testing (pesticides, soil, and insects) and certification procedures, permit private labs to conduct phytosanitary tests and issue certificates (breaking the state monopoly on testing), and contain detailed regulations and procedures both state and private labs must follow. As a result, and because of ARDS' support, one of Ukraine's first private food-control laboratories, PrimeLabTech (PLT), became the first to obtain partial accreditation and at project's end was on its way to full accreditation.

These are just some of the seeds ARDS has planted — more detailed information follows. These innovations and successes have attracted private agricultural investment via co-investment and loans, boosted agricultural exports, and reduced corruption. Together, they herald Ukraine's 21st century transformation into an equal and competitive international agricultural market partner.

SECTION NO. I

ABOUT ARDS

USAID ARDS is a technical assistance project implemented by Chemonics International Inc. through a four-year, cost-plus-fixed-fee, completion-type task order funded by USAID. ARDS built on USAID's previous projects in Ukraine and lessons learned by USAID/Ukraine, Ukrainian partners, and other donors.

ARDS launched in September 2016 to support broad-based, resilient economic growth through a more inclusive, competitive, and better-governed agriculture sector that provides attractive livelihoods in rural areas. ARDS worked with stakeholders to implement an array of solutions to market-system failures that span the enabling environment, including land markets, policies, governance, and rights, as well as direct engagement and synchronization of both the core and supporting functions of agricultural value chains, namely, the meat, dairy, fruit, and vegetable value chains. The project worked at the national and local levels, with a special focus on rural development in southern and eastern Ukraine.

ARDS embraced approaches defined in the U.S. Global Food Security Act of 2016 that emphasize market-led development for agricultural transformation to generate sustainable growth opportunities for small farmers, small- and medium-sized enterprises (SMEs), and poor rural households. Within the unique context of Ukraine's agriculture sector, ARDS applied the strategy's guidance on policy, market systems, and value chain facilitation, introduced by USAID in 2017, to sustain Ukraine's gains and capitalize on sector opportunities. ARDS integrated the Collaborating, Learning, and Adapting (CLA) Framework promoted by USAID. Across all efforts, ARDS worked with a range of government, private sector, civil society, and donor partners to plan, implement, map outcomes, and scale what worked, adapting as needed by redesigning or abandoning suboptimal strategies and tactics. ARDS applied a gender integration and mainstreaming strategy throughout implementation. Most rural landowners are women and a significant asset to family farms, and, therefore, to sector growth. However, women's voices remain underrepresented in national and local decision-making, and their entrepreneurial and economic potential has yet to be fully realized.

THEORY OF CHANGE

IF agricultural SMEs can increase their productivity within a more transparent and better governed agriculture sector ...

THEN the agriculture sector will be able to provide attractive livelihoods in rural areas, serving as a foundation for broad-based, resilient economic growth.

BECAUSE Ukraine has enormous potential for further increasing output and productivity in the agricultural sector. Farm yields for most crops are half or one-third of yields in productive areas of Europe and the U.S., and given Ukraine's advantages in soil quality, climate, and natural resources, the country could easily exceed average global productivity levels.

ARDS applied a holistic market systems approach to implementation. Market systems are where the private and public sector participate, collaborate, and compete for production, distribution, and consumption of goods and services at local, regional, and international levels. This approach recognizes the limitations of addressing value chain constraints in isolation without considering the larger system — the formal and informal rules, supporting functions, and interplay between market system actors. ARDS targeted not only actors directly engaged in value chain core functions, but also participants from supporting functions and rules and regulations governing the system.

To take a market systems approach, ARDS:

- Worked to understand incentives and disincentives that drive system behavior and devised tactics and solutions with stakeholders to advance competitiveness, scale technology, adopt new processes, whether in supply chains or government agencies, and avoid destructive competition. It was important to understand participants' mindsets and relationships to align incentives to change behavior and processes in a supply or value chain, supporting functions such as a finance and inputs provider, or an enabling-environment entity. An important issue across the project's initiatives was corruption and recognizing incentives and disincentives that influence stakeholders and identifying levers that reduce opportunities for corruption. ARDS worked to integrate behavior-change communications and evaluation into its work to assess if behaviors changed to allow for a cascade of improvements in the sector, within government, targeted value chains, and specific supply chains.
- Recognized that value chain performance depends on dynamics beyond individual value chains, supporting functions, and their enabling environment. This required understanding economic, conflict-related, or natural shocks. For example, this meant facilitating viable market linkages for farmers in eastern Ukraine who lost access to markets and processors in the NGCA of Donetsk and Luhansk *oblasts*, as well as in Russia.
- Focused on facilitating solutions that affect interconnected value chains. For example, this meant tackling the need for an agricultural land market, creating systems for self-regulating agri-food inspection, and improving value chain logistics.

ARDS ACTIVITIES AND LEGACY

IMPROVING RULES AND REGULATIONS

LAND MARKET REFORMED

Land reform was one of the most important of the 62 reforms in the *Ukraine 2020* strategy for sustainable development, which was approved in 2015. However, full land reform was far from complete when ARDS launched in 2016. The IMF described land reform as one of Ukraine's top three priorities, and by 2019, passage of land reform had been linked to unlocking further IMF support. According to the Ministry of Agrarian Policy and Food (MAPF), from 2004-2017, Ukraine had lost around \$43 billion because it lacked a true land market. However, reforming the land market has been a sensitive topic due to political and electoral factors, despite its potential to transform the agricultural sector and Ukraine's rural economic landscape. A key constraint was the moratorium on the sale of roughly 96 percent of all agricultural land (and almost 75 percent of agricultural land was privately owned), affecting the sector's ability to serve as an engine of growth. The absence of a transparent and operational land market was a systemic problem that hampered rural development, resulting in a range of market inefficiencies and distortions that affected all value chains and hindered poverty reduction.

ARDS initially undertook a role to deepen stakeholder understanding and identify incentives for stakeholders that changed their mindsets and behaviors, fostering ownership and action. Making meaningful progress required focusing on three areas in parallel. First, further progress on land reform called for helping the government and other stakeholders develop legislation to introduce an agricultural land market model supported by landowners, agribusinesses, the government, and society. Second, advancing reforms required improving land governance through simplification of land administration procedures, regulation of land management, improving the maintenance of the land cadastre (StateGeoCadastre) and registry of rights, and strengthening the protection of land rights. Finally, there was a need to decentralize agricultural land management and assist newly created CCs to develop capacity to manage land resources. The intention was to build trust and public support for land reform, help citizens understand and feel its benefits, and provide local systems and structures to eventually open the agricultural land market.

In fiscal year (FY) 2017, ARDS strove to partner with the Verkhovna Rada (VR) and a range of stakeholders to help Ukraine make meaningful progress on land reform, improve land governance, and pave the way to an equitable and transparent land market. Initially, ARDS efforts focused on:

- Supporting stakeholders on public communications to increase citizen understanding of land reform and land rights
- Partnering with the government to improve the land-governance system at the national and local levels
- Promoting a land market legal framework with the World Bank and providing guidance on the benefits of lifting the moratorium on agricultural land sales

Little progress was made at the national level towards meaningful land reform, and no national-level initiatives were launched in FY 2017 or FY 2018. USAID, the government of Ukraine, and ARDS agreed that any discussion on a national-level public awareness campaign supported by ARDS would not be undertaken until national-level initiatives were launched. Thus, ARDS refocused its efforts on the regional level.

ARDS and the World Bank brought together CCs and partners for regional roundtables on land reform, which increased citizen awareness of land-management rights and obligations at the community level. ARDS learning showed that land-use management reforms at the local level were necessary to foster a competitive agricultural sector and a well-functioning market system. Priorities and practices to bring about new behaviors and system transformation were based on ARDS experience with CCs and their community partners. Learning from 2018 activities, ARDS increased regional activities to promote land reform and build understanding of land-reform benefits among landowners (CCs).

ARDS closely collaborated with the VR Committee on Agrarian Policy and Land Relations, leading agriculture sector associations, and MPs to further promote initiatives to improve the legal environment for land administration to enable transparent land-management procedures. ARDS focused on two systemic issues related to corruption: creating a transparent environment for land reform and preventing illegal takeovers of land from farmers. In the policy area of creating a transparent environment, ARDS succeeded in promoting an important law to optimize agricultural land arrays.²

In FY 2019, ARDS used the window of opportunity for opening the land market that emerged from changes in the executive and legislative powers in Ukraine. ARDS enhanced cooperation with the World Bank to jointly develop and advocate for a comprehensive land-reform agenda that included a land reform legislative package. ARDS ran a series of consultations with associations, MPs, and donor organizations to help the VR Committee on Agrarian Policy and Land Relations draft a consensus draft law (DL), *On Agricultural Land Turnover* (#2178-10), which was adopted on the first reading in November 2019.

ARDS also advocated for DLs *On Deregulation in Land Relations* (#2194) and *Electronic Auctions* (#2195), which were adopted in November 2019, but two technical aspects associated with monitoring land relations and creating an agrarian register needed to be upgraded. ARDS collaborated with the World Bank to draft Ukrainian government

² Land array: a contiguous grouping of land plots under different ownership structures

resolutions with two pilot projects: 1) *On Implementation of Electronic Land Relations Monitoring in Ukraine*; and 2) *On Implementation of Electronic Accounts of Agricultural Producers of the State Agrarian Register*. ARDS expects the DLs and the resolutions to be adopted in 2020.

In December 2019, the VR adopted DL #0858, *On Counteraction to Illegal Takeovers*, drafted by ARDS experts. The law, which came into force in January 2020, introduced automated data exchange between the State Registry of Rights and the State Land Cadastre, delegated the StateGeoCadastre to input land data into the State Land Cadastre, and obliged registrars and notaries to verify property rights and the current status of property with all registries.

In Spring 2020, the VR adopted two more DLs from the land reform legislative package. Developed with ARDS assistance, DL #2370 *On National Geospatial Data Infrastructure* will provide wide access to geospatial data and support the development of modern geoinformation products and geoinformation services, as recommended by Directive 2007/2/EC of the European Parliament and the Council of 14 March 2007 on the introduction of geospatial information infrastructure in the EU (INSPIRE). DL #2280 *Land Use Planning*, adopted in June 2020, was drafted by ARDS experts and based on lessons learned from the Mykolaivska CC pilot (which was designed based on land management experience gained during the implementation of the Kipti and Palanka pilot projects and the Local System Development program). The complex spatial community development plan of Mykolaivska CC will be used as a platform to validate the methodology for normative monetary valuation of land.

The Ukrainian government designated the StateGeoCadastre to be the main campaign voice to speak about the changes proposed in the land reform legislative package to a wide audience. Capitalizing on the government's reform agenda, ARDS developed a communication campaign to raise key stakeholders' awareness about their land rights, services provided by the state, and the laws adopted from the legislative package. ARDS actively and intensely promoted opening the land market in Ukraine by collaborating with the government's executive and legislative branches to advance land reform at the national and local levels. ARDS and the World Bank added new initiatives to the land market legislative agenda, including development of an Agrarian Registry, resolving errors in the State Land Cadastre's database, and legislative acts on state support to farmers.

In January 2020, the VR began to prepare for the second reading of DL #2178-10 *On Agricultural Land Turnover*, with more than 4,000 proposed amendments. After spending two months reviewing the proposed amendments, the law was adopted on the second reading on March 31, 2020 — a landmark and long-awaited decision.

INSTITUTIONAL CAPACITY

ARDS set out to support the MAPF and its priorities, as outlined in the *Agriculture and Rural Development Strategy for 2015-2020*. In the first two years, ARDS assisted the

MAPF and its Reform Support Teams (RSTs) in strategic areas of land relations reform, rural development, agricultural markets development, organic production and niche crops, and irrigation system rehabilitation and development. ARDS designed training events and a professional development program for MAPF based on a comprehensive needs assessment and provided (seconded) staff to the RSTs. This support led to the development and approval of a strategy for development of private farming and cooperatives, tangible progress in drafting a national irrigation strategy, and drafting numerous laws and bylaws.

MAPF restructuring was already in process when ARDS launched. Initially, ARDS was optimistic that progress could be made, set targets for MEL plan Indicator 5, “Number of officials applying new skills to develop agricultural policies or partnerships,” and began training MAPF staff. However, by mid-FY 2018, very little progress had been made on official MAPF restructuring. Adapting to the situation, ARDS canceled planned training events and professional development for MAPF, recommended eliminating targets for MEL plan Indicator 5, and made relevant recommendations in the Year 3 Work Plan.

The ARDS mode of support to the MAPF and RSTs transformed into a targeted program of assistance and capacity building. ARDS provided support in the three priority areas of rural development, organic, and irrigation by hiring short-term consultants with specific results-oriented scopes of work. ARDS facilitated the Cabinet of Ministers’ adoption of the *Irrigation and Drainage Strategy in Ukraine until 2030*. In FY 2019, the RST organic and irrigation working groups completed their respective work, and ARDS assistance to RSTs was phased out.

ARDS again refocused, working now on two priorities to strengthen institutional capacity: 1) building anti-raiding institutional capacity and 2) enhancing the StateGeoCadastre’s capacity. Per a Ukrainian government request and with USAID approval, ARDS supported the establishment of the Anti-Raiding Office of the Ministry of Justice. ARDS consultants analyzed the existing anti-raiding legislation and procedures for complaint investigation in the state registration domain. Based on the analysis, ARDS developed a roadmap for improving Ukrainian legislation to prevent raiding in agriculture and simplify the procedures for complaint investigation, along with a second roadmap to implement the suggested changes.

The StateGeoCadastre (SGC) underwent significant restructuring in December 2019, including the dismissal of all department and *oblast* heads, and began the transition from a bureaucratic entity to a service-oriented institution by reviewing its hierarchical functions and duties. ARDS once again responded to new opportunities and focused on building the institutional capacity of the SGC — the core institution implementing land reform provisions. ARDS conducted seminars for SGC representatives in 24 oblasts to communicate changes in the SGC’s operations to employees and explain the SGC’s new role to local communities. Facilitating discussions during the seminars, ARDS identified gaps in the persuasive communication skills among SGC regional employees, whose “bureaucratic” communication style only exacerbated communities’ negative attitude and local businesses’ aggressive behavior. To break this vicious circle, ARDS developed

and provided a training course for regional SGC employees to build better communication patterns with communities and local businesses.

The government of Ukraine designated the SGC to be the main campaign voice to speak about the changes proposed in the land reform legislative package to a wide audience. Capitalizing on the government's reform agenda, ARDS developed a communication campaign with the SGC to disseminate the information broadly.

At the SGC's request, ARDS contracted specialists in spatial planning of settlements, economics of urban land use, regional economics, land survey, and land cadastre to develop a methodology for the normative monetary valuation of land. The methodology will make the land valuation process more transparent and reduce the number of regulatory documents needed in the land valuation process. The methodology was validated using the platform of the Mykolaivka CC complex spatial community development plan. ARDS drafted a resolution for the Cabinet of Ministers, which the SGC published on its [website](#)³ for public discussion. Recommendations from experts were incorporated into the finalized draft resolution on the normative monetary valuation of land, which was approved by the Cabinet of Ministers.

CAPACITY OF CONSOLIDATED COMMUNITIES

ARDS efforts built CC leadership and business acumen to help leaders prepare and implement effective strategies, plans, and investment projects, with an emphasis on CC-business partnerships. For a baseline, ARDS researched rural development models proven effective in Ukraine, as well as how to integrate international best practices in rural development, particularly from the United States, Canada, and the European Union. The research informed development of capacity building materials for pilot CCs to apply rural development methodologies. ARDS worked with pilot CCs to develop strategies for local economic development and identify investment opportunities, some of which ARDS co-funded in partnership with local authorities after a competitive process.

In cooperation with CCs, ARDS employed the market-system development approach to combat corruption related to CC capacity to:

1. transparently manage local land resources with communities and local businesses
2. play a leadership role in attracting investment in partnership with the private sector for rural development, as part of ARDS' goal to improve rules and regulations

Through pilots in three CCs, ARDS tested land-management tools and approaches. ARDS captured lessons from the pilots in a land-management toolkit to help other communities build effective systems. Based on the success of the pilots, ARDS developed a CC-based local systems development (LSD) program to disseminate land

³ <https://land.gov.ua/info/proekt-postanovy-kabinetu-ministriv-ukrainy-pro-zatverdzhennia-metodyky-normatyvnoi-hroshovoi-otsinky-zemel/>

management practice. The LSD program helped to increase the wellbeing of rural families by unlocking the investment potential of their territories, gaining access to information on local resources and funding sources. By establishing close cooperation with 79 CCs in Kharkiv, Luhansk, Dnipropetrovsk, Kherson, Zaporizhzhia, and Donetsk *oblasts* with the LSD program, ARDS promoted its market system development approach to combat corruption in land administration and management.

Based on criteria emphasizing commitment and potential impact, ARDS selected ten CCs to serve as Centers of Excellence, preparing local economic profiles and developing at least 20 investment projects based on information from their GIS-based land-management systems and elsewhere, with some funding and technical assistance from ARDS. Additional CCs could access the toolkit and linkages with one of the 10 model CCs. ARDS prepared a pool of regional coordinators and technical specialists (members of the All-Ukrainian Union of Certified Engineers of Land Surveyors) to work directly in LSD program regions. Regional coordinators used the program to enhance their technical knowledge of ArcGIS and customer relationship management systems.

In late 2020, ARDS conducted a series of business training events for communities and their communal enterprises to build CC capacity to realize investment opportunities. The first training confirmed the efficiency of peer-to-peer learning cases on community entrepreneurship development and applying a business approach in communal enterprises management, which ARDS continued to enhance during training events in additional regions of Ukraine. Community heads, deputy heads, and communal enterprise directors learned about building strategies for community business development, gaining practical knowledge on how to attract investors, develop community infrastructure projects, build business plans, and establish CC public-private consortiums.

ARDS trained land surveyors from 79 partner CCs on how modern technology, namely GIS, combined with economy analysis, could boost sustainable community land resources management, spatial planning, and participatory decision-making to achieve a community's sustainable development objectives. ARDS designed a comprehensive knowledge database to support the capacity-building initiative with its hub-and-spoke approach. This approach was transformed into a comprehensive lecture series and courses for land surveyors and managers at Kherson State Agrarian University, ensuring that lessons learned would persist and inform practices of future Ukrainian professionals.

In October 2019, ARDS presented the results of the LSD program in 10 model CCs to more than 300 participants at the *Sustainable Land Management Community Forum*. The forum established dialogue between the government, associations, and CCs in Ukraine, and became an instrumental tool for promoting ARDS advanced land-management mechanisms nationally. ARDS then helped establish sustainable working groups on land resources management to enable communities to collect and manage data independently. ARDS collaborated with the working groups to collect, analyze, process, prepare, and publish data regarding CC land to their public geo-portals. The data allow

the CCs to develop stronger proposals for development projects and attract private sector investment and funding.

In November 2019, ARDS reached an important milestone in its rural development efforts with the launch of Ukraine's first GIS-based Land Use Planning and Management portals for 13 CCs in six *oblasts*. The geoportals share information on administrative boundaries, land use plans, and other spatial data, allowing users to search for information using the cadastral map number, location, or land use. After the successful launch of the first geoportals, ARDS worked with additional communities and continued enhancing the initial geoportals, ultimately supporting geoportals for 74 communities in Kharkiv, Dnipropetrovsk, Donetsk, Luhansk, Zaporizhzhia, and Kherson *oblasts*. Specialists trained on changes in the land management legislative package went on to collect information on administrative boundaries, land use plans, and other spatial data to publish in the communities' geoportals. The improved geoportals will decrease the time needed to find important spatial information, increase public engagement in the land planning process, and build a transparent process for attracting investors.

ARDS held the culminating GeoDigital 2020 conference in June 2020, focused on the newly adopted Law on National Geospatial Data Infrastructure and practical tools for land resources management for CCs. This final event summarized all ARDS results on land-management pilots, disseminated lessons to other communities about the recently opened geoportals for 74 communities, and distributed the land-management toolkit developed by ARDS in 2018.

STATE AGRI-FOOD CONTROLS

In September 2014, the European Parliament and Verkhovna Rada ratified the Deep and Comprehensive Free Trade Area agreement, which offered opportunities and challenges for the agriculture sector. For Ukraine's agricultural enterprises to be competitive in the EU and other world markets, Ukraine needed to implement European sanitary and phytosanitary standards and bring regulations into compliance with EU technical regulations and procedures. For example, Ukraine's outdated system of agri-food product controls required that agricultural producers and exporters undergo inspection by both Ukrainian and European authorities, duplicating effort and wasting time and money, especially critical given perishability factors.

ARDS conducted a) an assessment of the internal regulatory environment for the meat, dairy, fruit, and vegetable sectors, and in the field of veterinary and phytosanitary controls; b) an analysis of international experience and best practices in official agri-food control; and c) discussions between stakeholders and market actors to share findings and identify applicable approaches in reforming the state agri-food control system and streamlining the regulatory environment.

ARDS identified systemic issues and regulatory constraints that reflected the burdensome system of state controls over agri-food safety and quality and that were not responsive to market needs, and approaches and solutions that could reform the state

agri-food control system and streamline the regulatory environment for the meat, dairy, fruit, and vegetable value chains. Correspondingly, ARDS efforts focused on:

- Developing and supporting the adoption of legal acts to ensure private sector involvement in official phytosanitary and veterinary control, which would decrease the level of corruption and increase the transparency and efficiency of the agri-food control system
- Assisting agriculture sector associations to introduce and perform functions for their members on the principles of self-regulation (such as voluntary certification, confirmation of compliance, accreditation and attestation, internal monitoring and surveillance, development of codes of practices and internal standards) to demonstrate to the government that the private sector is capable of performing specific state functions
- Developing and supporting the adoption of legal acts to streamline the regulatory environment for meat, dairy, fruit, and vegetable value chains by improving the permit and administrative services system

ARDS promoted an approach to develop new institutional arrangements with agricultural business associations that would serve as self-regulatory organizations (SROs) to their members for effective food product controls. It was vital to build understanding and change government mindsets for businesses to be recognized as associations that are institutionally capable and incentivized, demonstrate real and broad membership, and can efficiently perform self-regulatory functions. Associations needed institutional capacity, codes of practice, monitoring systems, and authority from the government to serve as SROs.

ARDS worked with the MAPF and its State Service for Food Safety and Consumer Protection to streamline processes, make the agency more efficient and transparent, and transfer certain functions to potential SROs. ARDS also worked with business associations that had potential as SROs.

Progress proved slow, especially after the 2019 elections, dissolution of the MAPF, and introduction of the new Ministry of Economic Development, Trade, and Agriculture (MEDTA). In February 2020, finally all needed legislation for operating private laboratories with official phytosanitary control was in place. ARDS provided support in drafting and advocating for adoption the necessary legislative acts for the practical implementation of the EU approach of delegating specific functions of official phytosanitary control to private laboratories, one step to harmonize Ukrainian legislation with EU principles. ARDS assisted the government to develop bylaws and regulations on practical implementation of this modern approach.

ARDS also worked to support capable agricultural associations to perform self-regulation and self-control functions for their members. The Phytosanitary Association, the Union of Honey Producers, the Association of Pest Control of Ukraine, and the Association of Food Safety of Ukraine developed internal procedures for executing self-regulation and self-control (charters, membership rules) with ARDS assistance.

ARDS facilitated discussions between the Ukrainian government, the Association of Ukrainian Pig Breeders (AUPB), and the Association of Milk Producers (AMP) to set up principles on farm animal-welfare initiatives in Ukraine based on international experience. ARDS partner associations developed draft codes of practice in their dedicated areas: AUPB for pig welfare and AMP for calf welfare. Unfortunately, the MAPF postponed implementation of animal-welfare rules until 2021 because of limited capacity. Thus, animal welfare implementation moved beyond the ARDS project timeframe.

ENHANCING VALUE CHAINS AND SUPPORTING FUNCTIONS

For decades, Ukraine’s fruit, vegetable, dairy, and meat household-level farmers and agri-SMEs faced difficulties meeting quality standards, conducting proper post-harvest handling, and accessing proper storage, transportation, and aggregation services linking them to supply chains. This hindered their ability to make a profit, keeping them in poverty. ARDS worked along the value chains to help household farms and agri-SMEs to obtain fair prices for their produce and access local and global markets. However, to support Ukraine’s value chains as an engine for rural economic growth, more was needed than just intervening with core value chain actors and the enabling environment in which they work. In a market system, supporting functions are also required to sustain core value chain functions. They include information, infrastructure, skills and technology, and a range of services for value chain actors (e.g., financial services, inputs, and post-harvest services). ARDS targeted four key value chains to improve the agricultural market system and opportunities for rural households, and worked to integrate Ukraine’s rural farm households, farm SMEs, and rural non-farm enterprises into these value chains for improved rural livelihoods and economic development. Embracing the U.S. Global Food Security Strategy’s Guidance Market Systems and Value Chain Programming, ARDS adopted an inclusive market systems approach that uses value chain principles in the meat, dairy, fruit, and vegetable value chains, while aligning value chain supporting functions and the enabling environment.

Having tested system solutions at champion firms (grantees) in the first two years, ARDS then placed less emphasis on grants and more on the diffusion of approaches and their resulting benefits. By supporting dedicated champion firms in spreading piloted system solutions to their peers and suppliers, ARDS took a “light touch” to facilitate positive changes and amplify the sectors’ own efforts.

FRUIT AND VEGETABLE VALUE CHAINS

Ukraine produced roughly 9.8 million tons of vegetables and 2.8 million tons of fruit in 2014. Both sectors showed considerable potential for growth when ARDS launched. Global demand for fruit and vegetables was on the rise due to growing consumption of fresh and prepared fruit and vegetables worldwide, spurred in part by rising consumer awareness of healthy lifestyles and the nutritional benefits of fruits and vegetables. In the domestic market, deflation of the Ukrainian hryvnia pushed national retailers and food processors to reduce fruit and vegetable imports and source fresh and processed fruits

and vegetables in Ukraine. Thus, the domestic market opened opportunities for producers and processors.

ARDS initial assessments estimated that 20 to 30 percent of fruit production and 50 to 60 percent of vegetable crops in Ukraine were wasted due to a lack of proper storage and processing facilities in the post-harvest period. The fruits and vegetables that did make it to market lacked traceability and tended to have low marketing appeal, which limited their potential. To build sustainable linkages with domestic and international markets, producers and processors needed to systematically put into place good agricultural production practices and efficient post-harvest practices and technology to ensure consistent quantities and high-quality products for a competitive Ukrainian fruit and vegetable sector.

ARDS set out to help family farms and fruit and vegetable farm SMEs obtain fair prices for their produce and integrate into supply chains that reach local and global markets by:

- Increasing harvest control and productivity to decrease harvest losses
- Expanding post-harvest and marketing support services
- Supporting entrepreneurship and market linkages for farm SMEs to increase, improve the quality of, and aggregate production

Increasing Harvest Control/Productivity

ARDS supported two pilot projects implementing climate-smart technology and a harvest-control and traceability system to improve pest control and product quality. Three berry-producing companies, AgroVesna, Triada and Nikdaria (“I-Berry” brand name), piloted two smart solutions to contribute to the safe and effective use of pesticides, better traceability of product safety from farm to table, improved pre-sale processing quality and competitiveness, and better access for SMEs to retail chains and other organized markets, including export markets. The companies self-financed software purchases and procured equipment with ARDS co-investment.

Climate-smart technology included meteorological stations that define the most suitable weather conditions to maximize impact and mitigate risks and trap counts that target insects in near–real time, allowing farms to better monitor crops and strengthen pest control by applying pesticides when needed. Both tools were developed by DTN, a U.S.-based firm and the largest provider of commercial meteorological services in the world. AgroVesna and Nikdaria established demonstration sites to test the tools in Ukraine’s climate conditions. DataAgro used the demonstration sites and pilot results to promote the system among Ukrainian farmers.

A harvest control and traceability system was piloted at AgroVesna, Triada, and Nikdaria sites. The system enabled companies to track the full production cycle and monitor conditions at each stage of production: collection on the field, transfer to storage, recordkeeping of temperature, monitoring delivery time and freezing time, and analyzing each employee’s productivity. After the pilot, the partners expanded the system at cooperative partners’ fields to build an optimized business process among

cooperative members: a system that allows cooperative members to consolidate their efforts in creating a large batch of products with a holistic traceability system.

Pilot results were disseminated to increase the use of SMART IT solutions on Ukrainian farms. At an event in early 2020 during which the three champion firms implementing the pilots shared their lessons learned from the pilots, a productive discussion led to agreement on how to adjust and improve the system. After farmers modified the climate-smart IT tool to connect automated irrigation systems with available meteorological services at their sites, ARDS and the Association of Berries at the Horticulture Competencies Center verified the automated irrigation systems at additional test sites. The champion firms developed a unified harvest control and traceability system for members of the Association of Berries.

ARDS promoted the smart technologies in the fruit and vegetable value chain by developing a business model for agronomic services that included three types of services for farms depending on farm maturity, land size, and expected profitability. Smart technology services comprised harvest monitoring activities, pesticides application schedule, pest control activities, and impact of irrigation on the harvest.

Fertilizer use and pesticide controls required significant improvements. In particular, family farms and farm SMEs needed to control fertilizer usage based on new production innovations and technologies and to ensure proper pesticide controls. ARDS was one of the first projects to deal with the issue of pesticides and became the recognized leader in promoting standards among Ukrainian agri-SMEs. ARDS worked with PLT Laboratory to establish an independent laboratory for detecting pesticide residues in food products. The co-investment targeted the prevention or minimization of the negative effects of pesticides by monitoring toxic pesticide residues in the environment: soil, groundwater and water sources, plants, feed, fruits, vegetables, and other food products.

In the first 19 months, PLT provided tests on pesticide residues to only 57 SMEs out of a planned 100. The client recruitment rate, albeit slow, required joint efforts from co-investment partners to look for different ways to promote the laboratory's services. PLT Laboratory started to recruit new clients through cooperation with trading networks rather than directly seeking out farmers, and PLT began working with Modern Trade networks (Good Wine and Billa). The first positive results from providing tests on pesticide and nitrate residues in fruits and vegetables for these chains, coupled with keen interest from other traders, showed PLT there was an opportunity to promote its laboratory services.

Building on the successful pilot of PLT Laboratory's work with Modern Trade, ARDS facilitated discussions with other major supermarket chains for PLT to conduct tests on pesticide residues in fruits and vegetables purchased from Ukrainian suppliers. PLT expanded its network and now works with leading national traders to provide services for their SME suppliers. This serves as a stimulus for local farmers to produce fruits and vegetables in accordance with international quality and safety standards. In one three-month period, PLT provided services to 56 SMEs through newly-opened service

channels — as many SMEs as in the first 19 months. PLT developed a branded sticker for use on tested products in Good Wine and other networks to certify pesticide-free products for consumers.

ARDS champion firm Agrico also had a positive cooperation experience with PLT, which conducted soil testing of the firm's land in Semypolky (Kyiv Oblast) that provided Agrico with an understanding of the soil's chemical structures. This enabled the firm to apply only the required dose of fertilizers based on soil tests results, which helped Agrico save 25 percent on fertilizer costs. Based on this experience, Agrico, with ARDS consultations, developed a fertilizing dose system for potatoes and disseminated it among almost 100 Agrico partners.

ARDS partnered with sector associations (UkrSadProm, UkrSadVynProm, and the Ukrainian Association of Potato Producers) to develop guiding documents for implementing international food-safety standards for the fruit and vegetable value chains:

- Methodological Guidelines for Implementation of GLOBALG.A.P. Standard Requirements in Berries and Horticulture, UkrSadProm Association
- Methodological Guidelines for Implementation of GLOBALG.A.P. Standard Requirements in Potatoes, Ukrainian Association of Potato Producers
- Methodological Guidelines for Implementation of GLOBALG.A.P. Standard Requirements in Vegetable Growing

After testing the guidelines with SMEs, ARDS adjusted and disseminated the guidelines through the associations, the Agrarian Club by Syngenta, ARDS champion firms, and other interested entities, and made the guidance available online.

In November 2019, ARDS identified an opportunity to support collaboration between beekeepers and fruit and vegetable value chain actors to increase productivity. Heavy use of pesticides in agriculture was harming bees and leading to decreased fruit and vegetable harvests. ARDS supported the development of methodological guidelines on efficient bee use in agriculture and piloted decreasing pesticide use and targeting placement of beehives to improve yields at champion firms AgroVesna and Triada. The farms tested interactive maps of optimal beehive placement for effective pollination of berry fields and fruit orchards. Analyzing the maps, ARDS engaged farmers and beekeepers to discuss additional opportunities to deploy pollination services in Ukraine, resulting in an idea to develop a mobile application to connect farmers with beekeepers. ARDS and the Foundation of Women-Beekeepers (FWB) supported development of the IT Platform for Pollination Services based on the existing platform www.grand.expert.

These interventions and collaborations proved very effective, and ARDS looked to expand activities. In spring 2020, ARDS, the FWB, and the National University of Biodiversity and Natural Resources of Ukraine developed and conducted an online training program on beekeeping as a service, with international experts from the U.S.

and Slovakia. A conference was planned on the importance of beekeeping in gardening and berry production, but, unfortunately, was canceled due to the COVID-19 pandemic.

Post-harvest Improvements

As noted above, Ukrainian fruits and vegetables lacked traceability and tended to have low marketing appeal, which limited their potential. One such problem was the consumer-unfriendly 20-kilogram bags used by potato processor Agrico Ukraine. ARDS and the Association of Potato Producers of Ukraine developed a cluster concept linked to Agrico, an effort that provided packing services to seven other smaller agribusinesses in the region. ARDS co-invested in new weighing and packaging equipment that allowed the firm and other agri-SMEs to produce smaller packages of potatoes for retail markets. Furthermore, ARDS helped embed international quality and safety standards for potato production at supplier farms, GlobalG.A.P. for production and HACCP for pre-sale handling, and an awareness campaign on cultivation techniques, varieties, pre-sale handling, and sales. The seven smaller potato farms enterprises benefitted from a 30-percent increase in potato sales to retail chains and a 35-percent increase in prices for small packages.

Agrico began exploring new sales channels with its innovative potato packages. The firm collaborated with two potato farmers to deliver the first 50-ton batch of packed potatoes to the Novus supermarket network. The trial results were positive, but Novus returned three tons of spoiled produce during the pilot. Agrico used this as a learning opportunity for future agri-seasons, and more precisely monitored the technological processes of potato planting, harvesting, and storing.

Agrico expanded its partner network for packing and supplying potatoes to supermarkets, which gave small potato producers access to trade networks with a new united brand. With ARDS support, the champion firm developed the PAPAS trademark and visual identity as an umbrella brand for potatoes grown by farmers in Kyiv, Chernihiv, Zhytomyr, Kharkiv, and Volyn *oblasts*. The elite Kyiv supermarket Good Wine started selling PAPAS 2.5-kilogram potato packages. Agrico strengthened its competitive advantage in negotiations with Good Wine by introducing tests for pesticide residue on potatoes, a service provided by PLT laboratory, also with ARDS co-investment.

ARDS co-invested with the Vinnytsya Food and Gustatory Factory (Vinnytsya Oblast) to re-equip its bottling and packaging line for sauces and spices, which resulted in increasing its processing line capacity from 1,200 to 1,600 tons per year, extending its product range from two to twelve, and developing a new brand for organic products with Organic Standard certificates. The factory expanded the area of raw material procurement and added nearly 1,400 input suppliers in its value chain. The factory also raised the purchase price for horseradish root by 43 percent and increased raw-material supply by 30 percent, which resulted, on average, in 753 hryvnias (\$30) in additional income for each supplier in 2018, compared to 2017.

Market Solution: Post-harvest Fruit Processing Centers

Ukraine had potential to compete in the global fruit industry with a wide variety of products, but an estimated 20 to 30 percent of fruit was wasted in the post-harvest period due to a lack of proper storage and processing facilities and there was little creativity in the range of products that had great potential for market appeal. ARDS identified four target segments for Ukrainian fruit producers and processing enterprises:

- Fresh fruit for immediate consumption and/or preparation
- Fresh-cut fruit products that are “ready-to-eat” or “ready-to-cook”
- Semi-processed intermediate products (e.g., juice concentrates)
- Processed fruit for direct or later consumption

ARDS identified post-harvest fruit processing centers as a new business model to help fruit SMEs (buyers and processors) improve their supply chains and create added value so that farming SMEs met market requirements and earned higher prices. This in turn would help develop “tighter” relationships among value chain actors, expand markets, and ensure consistent high-quality production and higher revenues along the entire fruit value chain.

A lesson from 2018 found that distrust was the main problem in the sector. Processors had little contact with their suppliers, and they did not trust each other. ARDS set a new goal to support dialogue and build trust between producers and processors, providing expert assistance and consultations. Value chain actors needed to engage with family farms and fruit farm SMEs, investing in win-win relationships to build trust and sustainable market linkages.

ARDS piloted post-harvest processing centers by co-investing with enterprises, all of which saw quick and positive results. Fruktona (Vinnytsia Oblast) enhanced fruit and berry product processing with new equipment, which doubled processing volume due to increased production capacity and a prolonged processing period. Fruktona attracted in its value chain 21 SME input suppliers and increased its product range from four to 30 lines. Malyn Factory (Zhytomyr Oblast) re-equipped a berry presale handling line, which helped it become a regional center for berry and fruit post-harvest processing and provide a range of services to Ukrainian producers. The enterprise increased its freezing capacity from 360 to 483 tons and expanded its processed products with six new items, including high-value mushroom varieties (porcini and chanterelles). The factory also expanded its input supplier base from five to 13 SMEs.

After increasing processing capacity with co-investment projects, champion firms were even more motivated to obtain raw materials that meet market quality and quantity requirements. They reached down their value chains to increase the capacity of other market actors (collectors, input suppliers, and producers) by introducing international safety standards, smart agriculture, innovations, and new technologies. Their efforts directly benefitted 29,000 agri-SMEs and private households by providing a guaranteed

market for their crops, introducing new technologies and international safety requirements, and providing a stimulus to increase their production volumes.

Based on the successful pilots, ARDS co-invested with Sady Donbasu (Donetsk Oblast) to improve post-harvest processing and fruit storage. The enterprise improved pre-sale preparation (sorting and packing apples), introduced product safety in accordance with international HACCP standards, and expanded markets, including exports. Sady Donbasu developed a new brand, Fruit Ball, to promote its products throughout Ukraine and abroad.

Expanding Markets

Rising global demand for fruit and vegetables offered Ukraine significant opportunities to develop exports. But producers and processors needed to systematically implement good agricultural production practices and efficient post-harvest practices and technology to ensure consistent quantities and high-quality products for a competitive Ukrainian fruit and vegetable sector. They also needed better branding and marketing to appeal to international markets.

In 2017, ARDS supported the first-ever Ukrainian delegation of agricultural enterprises to network and collect information on market requirements at Asia Fruit Logistica, the biggest annual international trade fair in Asia for fresh and processed fruits and vegetables. Negotiations at the trade fair not only generated significant interest in products from several countries, but also provided the Ukrainian fruit producers and the director of the Ukrainian Fruit Growers Association (UkrSadProm) with valuable information and insights about market demand, standards, prices, shipment times, and packaging. They also learned that the key factor in concluding agreements was the existence of phytosanitary agreements between countries and a firm's ability to meet them.

ARDS went on to support Ukrainian trading company USPA FRUIT delegations at Asia Fruit Logistica (2018), Fruit Logistica in Berlin (2018 and 2019), and Fruit Attraction (2019), which resulted in shipping 2,063 tons of Ukrainian apples to 18 countries (Bahrain, Egypt, Hong Kong, India, Indonesia, Kuwait, Malaysia, the Netherlands, Oman, Philippines, Qatar, Saudi Arabia, Singapore, Spain, Sweden, UAE, the United Kingdom, and Vietnam). To meet market requirements, producers and exporters worked to improve cooperation, quality standards, packaging, aggregation, and logistics. ARDS and champion private sector partners scaled up the solutions to market constraints to increase sales and improve the lives of rural Ukrainians.

Sady Donbasu jumpstarted the apple industry in eastern Ukraine. After its facilities were destroyed in 2014, the company moved from the NGCA to Dachne village (Donetsk Oblast). With ARDS co-investment, Sady Donbasu improved pre-sales preparation (sorting and packing apples); introduced international HACCP safety standards and a traceability system; expanded sales markets, including exports; and developed the new brand Fruit Ball to promote its product throughout Ukraine and abroad. Sady Donbasu

entered the export market for the first time in 2018, shipping 122 tons of apples to Belarus, the first fruit exports from Donetsk Oblast since 2014 — an inspiring example for other SMEs in Donetsk and Luhansk oblasts. In March 2020, Sady Donbasu made its first shipment of 20 metric tons of apples to Qatar, the first export of apples from war-affected territories to a Middle East country. Today, Sady Donbasu employs 40 full-time and 60 seasonal workers, most of whom are internally displaced people from the conflict zone.

Another exciting export result was achieved by Kolosok. In 2017, ARDS co-invested with Kolosok in equipment for clarifying (filtering) apple juice concentrate. This enabled Kolosok to produce filtered apple juice concentrate, export the final product, expand its markets, increase production volumes, and increase the purchase of apples from local suppliers. More than 4,500 local households and farms now have access to an additional apple sales market for primarily nonstandard apples, and a higher competitive price for their product. With its new apple producing equipment, Kolosok exported clear apple juice to Germany for 4.7 million hryvnia (\$180,000).

DAIRY VALUE CHAIN

In 2007 to 2017, milk production in Ukraine decreased by 15 percent due to a declining cattle population. Cow milk productivity was also relatively low compared to milk producers in other parts of Europe due to a failure to ensure dairy cattle welfare and feed ration regimes. Ukraine had not yet adopted a feed quality-control system, which further contributed to low dairy cow productivity and unprofitable milk production.

In 2017, 88 percent of milk produced by small dairy farms and private rural households, which accounted for 70 percent of all milk produced in Ukraine, was second grade, primarily due to poor sanitary conditions during milking and storage. Second-grade milk could only be sold at low prices, and sales revenue often did not cover operating expenses for most small producers. Small family dairy farms and private rural households were not investing in (or could not afford) new technology, thus producing low quality milk, resulting in low revenues and no finances to invest in improvements — a vicious cycle. After new national milk standards were set to come into force in January 2019, as a follow-up to Ukraine's commitments under the EU Association Agreement, second-grade milk would be allowed for fodder and casein production only, and only extra-grade milk would meet the new standards.

In addition, the market structure for milk production was fragmented: 75 percent of milk was produced by private rural households in relatively small amounts. The dairy value chain was missing a middle market player that could link rural households to larger processors by providing milk collection and pre-processing services.

Sector deregulation and business incentives to introduce and follow market-oriented standards and requirements gave ARDS an opportunity to address outdated standards, meaningless requirements, and non-transparent procedures that constrained dairy sector development. ARDS also saw an opportunity to introduce dairy value chain

innovations, including sector self-regulatory mechanisms and a milk collection and pre-processing intermediary business model.

Based on assessments, stakeholder discussions, and dairy value chain actors, ARDS identified focus areas:

- Developing a raw milk testing approach for private households, small farmers, and other dairy value chain enterprises to realize higher quality milk production and prices
- Establishing the new role in the value chain of milk collector/pre-processor, serving as an aggregator of milk from small farmers to link with large processor buyers

Market Solution: Quality Systems for Raw Milk

AMP set the goal of helping its members to produce only extra grade milk by 2022. ARDS co-invested with the AMP in a contemporary, independent national milk testing laboratory in Uman (Cherkasy Oblast). Uman Laboratories combines milk quality and livestock productivity testing, allowing milk producers to meet international standards for raw milk quality and safety, improve the welfare and health of their cows, and adjust feed mix ratios based on milk testing results. The laboratory is unique to Ukraine because it can test not only milk quality, but also identify cow diseases that affect milk quality. Systematic control of raw milk quality by an independent laboratory enables domestic milk producers to comply with international standards for raw milk quality and safety.

Uman Laboratories exceeded the originally expected results by developing M-Kit, an innovative mastitis kit with a set of tests for rapid identification of mastitis and sensitivity to antibiotics; and M-Lab, a portable innovative lab for diagnostics of dangerous bacteria and its resistance to antibiotics at the farm level. The laboratory provides real-time data processing for a herd or a single cow, and control of treatment effectiveness with sanitary hygiene measures that include detergents and disinfectants. Uman Laboratories applied to patent the innovative M-Kit and presented it at the international exhibition of stockbreeding EuroTier-2018 in Hanover, Germany. The laboratory continually works on improving the kit and constantly strives to raise awareness on how to improve milk quality by using simple techniques for cow breeding, feeding, and milking.

Uman Labs has become a sustainable provider of services on a commercial basis to both AMP members and non-member farms. More than 4,000 rural family farms and 150 small and medium entrepreneurs in 20 regions benefit from the information and services provided by the AMP and Uman Labs. In the first six months of the lab's operations, the quantity of extra grade milk supplied to processing enterprises increased by 36 percent, and there was an overall increase in milk production of all grades. The laboratory also plays an important role in the operations of the centers for veterinary services (CVS), providing a set of tests to measure the quality of milk and fodder. Uman Labs enables CVS specialists to provide farms with feed conversion analyses, optimized feeding

rations, and raising animal productivity and milk quality. More details on CVS are provided in the Subsection “Supporting Functions.”

AMP and ARDS developed and tested guidelines on compliance with food safety legislation at raw milk processing facilities. This effort also supports AMP's development as a dairy sector SRO. The guidelines detail GLOBALG.A.P. norms to be implemented and the list of documents, forms, and records that must be maintained depending on the certification that an enterprise chooses. Given their importance for improving the dairy sector and the new national milk standards that came into effect in January 2019, and in light of the government's protracted review/approval process, ARDS and AMP decided to move forward with introducing the guidelines into the daily routine of milk farms and conducted training events for AMP members on good practices in milk production and preparing for the new legislative requirements.

Market Solution: Milk Collector/Pre-Processor

ARDS worked with AMP and its larger-sized dairy processor members to design and pilot a milk collection enterprise model that included both the milk collector role and a milk processing center.

ARDS and AMP supported Bilovodskiy Butter Factory in training milk collectors based in Luhansk Oblast on how to get the highest quality milk from more than 3,000 private household-suppliers in six *rayons*. The collectors work with the suppliers, teaching simple practices developed by AMP that help the households produce first-grade or extra-grade milk. By teaching households these simple practices, Bilovodskiy Butter Factory planned for 100 percent of its supply to be extra-grade and first-grade milk by the end of 2019. This change served as an example for other enterprises on compliance with international standards and the new law prohibiting the use of second-grade milk.

ARDS selected First Milk Cooperative, established by AMP members in 2016, to pilot the milk collector role and to create a milk processing center. The cooperative launched a milk logistics platform with a 75-ton-per-day processing capacity in Uman (Cherkasy Oblast). With ARDS support, the platform fully employed HACCP standards as it received, chilled, stored, and transported milk. By working with Uman Labs, the platform helped farmers improve milk quality and safety in accordance with new legislative requirements, decrease antibiotic usage, and increase productivity. Through the platform, 20-25 small dairy farmers, with daily yields below six tons, were able to form larger lots of milk and earn better prices. They also improved cooperation with processing plants such as Molokia, a medium-sized milk processor that launched the platform with First Milk Cooperative. The small dairy farmers received up to 10 percent more from processors when they sold their raw milk through the platform, which potentially yielded each of them \$64,000 per year in additional income.

It became clear during the pilot that it would be beneficial to have a training center at the collection center to provide training for future farmers and dairy industry specialists on milk processing. After the pilot phase, First Milk Cooperative changed its approach

from establishing a center only for pre-sale processing to an educational center for milk processing. The pre-sales processing center was delayed and will not be completed by the end of ARDS.

First Milk Cooperative members plan to double the platform's capacity to 150 tons, and train other dairy farmers and provide practical experience for students from the Agriculture Lyceum.

MEAT VALUE CHAIN

When ARDS launched, the meat sector was extremely challenging because of swine flu and cattle modular dermatitis, as well as the environmental risks posed by how meat was being processed. Strict standards for handling slaughterhouse process waste existed, but most meat-processing SMEs did not yet follow the new regulations.

Beef production had declined by 12 percent from 2010 to 2016.⁴ The existing fiscal policy and national subsidy system had contributed to the dissolution of a transparent beef market. The Ukrainian beef industry lacked safety controls for cattle breeding; slaughterhouses and beef pre-sale preparation infrastructure; and port infrastructure for shipping live cattle, except in Mykolaiv, resulting in a monopoly and subsequent opportunities for corruption. The industry was further hampered by complex permit documentation for animal exports and ineffective regulations, fiscal policy, and tax liabilities that inadvertently encouraged a shadow market and the slaughter of up to 1 million young calves each year.

ARDS set out to bring positive change to the meat value chain by increasing beef production through creation of appropriate infrastructure, advocacy support, and incentivizing farmers to keep and raise calves; and implementing quality and safety standards for both pork and beef production and processing.

ARDS began cooperating with meat producer sector associations, lead processing companies, traders, retail chains, and the MAPF to work toward:

- Implementing international safety control and traceability systems for animal feeding and slaughter
- Eliminating the shadow cattle market (slaughter and sale of calves without registration)
- Increasing incomes of rural private households and small cattle enterprises as key suppliers of young cattle
- Expanding local markets and exports

Market Solution: Calf-Raising Centers

Approximately 1 million newborn calves in Ukraine are killed annually, a systemic problem in the meat value chain. However, raising these calves to the conditions

⁴ FAO meatbalance.org.ua

necessary to produce beef could significantly increase farmers' incomes. ARDS identified breeding centers as a viable alternative for producers to killing newborn cattle and thus mitigate threats to the meat production value chain from the decreasing number of cattle. Breeding centers could serve as a new value chain actor to provide a link between private households and farm enterprises producing beef cattle and SME meat processors that buy meat.

The United Nations Food and Agriculture Organization (FAO) had developed a business plan for large farms that were able to invest \$6 million in the creation of a calf-raising center, whereas ARDS looked to a business model that would exploit sustainable business opportunities for both small farms and private households. Ensuring that small farms and private households have access to a sustainable business model is vital, as about 70 percent of cows in Ukraine belong to small households and family farms.

Based on U.S. experience, ARDS developed a sustainable business model to create calf-raising centers using the potential of dairy bull-calves from individual households, family farms, and small farms. The model was supported with detailed financial-impact calculations for two farm types (600 and 2,000 head of cattle), which considered profit, operations, and investment costs.

The model was reviewed with experienced market actors in the meat value chain (farm operators) to verify feasibility and potential sustainability. ARDS hosted a public discussion with experts, representatives of cooperatives, industry organizations, cattle exporters, and other market participants, and then presented the final model at the XI International Dairy Congress.

Following initial discussions with government officials, the MAPF expressed significant interest in this topic and indicated readiness to provide state financial support for the initiative. ARDS prepared to develop a detailed plan with MAPF on piloting the calf-raising center. However, in March 2018, the MAPF prioritized its financial support exclusively for private households. ARDS pivoted to undertake a pilot without MAPF financial support.

ARDS competitively selected implementers for two demonstration sites to test the model's financial sustainability and pilot two approaches for cooperation with private households. Cooperative Byky Cherkashchyny (Cherkasy Oblast) was selected to pilot providing breeding services, and Lebid Agro (Rivne Oblast) was selected to pilot raising calves purchased from private households.

ARDS co-invested with Byky Cherkashchyny to reconstruct one of two production facilities for keeping calves and purchased equipment to ensure effective operations. ARDS and Byky Cherkashchyny also developed a Farmers Diary brochure and a poster for farmers and households with recommendations for raising calves up to three months of age. The publications and breeding service help farmers and households raise healthy calves with strong immune systems and improved genetics to achieve marked improvements. ARDS also supported Byky Cherkashchyny to develop a simplified

contract for calf fattening, insemination, and veterinary services for private households, and to create a management monitoring system at the calf-breeding center. Byky Cherkashchyny ran an information campaign among private households in Cherkasy and Vinnytsia oblasts to explain their services and signed more than 500 pre-agreements for fattening calves in 2020 (when the calves would be born).

ARDS worked closely with Lebid Agro to purchase equipment and create a site reconstruction plan. The pilot experienced a significant implementation delay due to insufficient financial resources from the beneficiary. In October 2019, Lebid Agro finally opened a facility for the industrial rearing of calves collected from farms and households. The facility initially collected 30 calves and has the potential to hold up to 4,000 calves. ARDS co-investment in new equipment (calf hutches, feeder mixer, feeders, and a milk taxi for calves) and consultations helped Lebid Agro introduce modern technologies for rearing calves of different age groups and develop specialized feed diets. ARDS trained Lebid Agro staff and calf-supplying farmers on the project's additional initiatives, such as using sexed sperm to improve the genetic pool for high-performance calves, and on the benefits of producer cooperation within the region. The facility is becoming a demonstration site of best international practices in rearing calves and producing quality beef.

ARDS expected that up to 4,000 households and 30 farms in Rivne, Khmelnytskyi, and Cherkasy *oblasts* would be involved in the pilot projects. Ultimately, farms and households in Vinnytsia Oblast also benefited. The community-based calf-raising center and the breeding of calves for further profitable sale have great potential to be a sustainable solution to the systemic issues in the meat value chain. Establishing this new business model across Ukraine will help revive the beef industry and increase rural household incomes.

Quality Improvement: Pig Breeding Standards

In 2017, Ukraine lacked standards and guidelines for pig breeding and processing. Adopting international standards and guidelines would raise the competitiveness of the national pig industry, improve ecological conditions for rural citizens living near pig farms, and increase the quality of pork on the domestic market.

ARDS supported the AUPB to develop and pilot Guidelines on Compliance with Food Safety Legislation at Facilities for Growing, Keeping, Slaughtering Pigs, and Cutting Meat. ARDS, AUPB, and five meat SMEs piloted the guidelines on compliance with food-safety legislation at facilities for growing, keeping, and slaughtering pigs and butchering meat. Based on the pilot results, the guidelines were amended and prepared for approval by the Ministry of Health and MAPF.

ARDS and AUPB conducted seminars for pig producers on the practical implementation of the guidelines, such as measures and conditions necessary to manage hazardous factors and ensure suitability of food products for human consumption. The requirements can be applied fully or partially without violating the law.

ARDS supported the AUPB to develop a pilot project, in consultation with stakeholders, on national standards and guidelines for an environmental impact assessment and hygienic requirements at pig-breeding enterprises. After consulting with businesses and experts, technological instructions for the storage, disinfection, and disposal of pig manure were finalized, including a manual on treatment and decontamination of manure with a reagent method. The manual was submitted for approval to the State Service of Ukraine for Food Safety and Consumer Protection and the MAPF.

ARDS supported the AUPB as a member of the Working Group on the Development of National Standards for Environmental Impact Assessment for the Pig Industry under the National Technical Committee for Standardization to finalize national standards “DSTU Standard. Environmental Impact Assessment. Pig Complexes. Evaluation Criteria and Documents” and “DSTU-N Standard. Environmental Impact Assessment. Guidelines for Preparing a Report on Environmental Impact Assessment.” Both documents were sent for approval to the Ukrainian scientific research and training center.

ARDS began partnering with the Ukrainian Stock Breeders Association (USBA), the AUPB, and ARDS champion firms to pilot pig breeding services. ARDS conducted events and webinars for target audiences to present a wide uptake of system solutions, including training events for 24 regional Feedlance production consultants on improving pig breeding with modern knowledge and practices, and roundtables on effective reproduction in pig breeding.

While AUPB and ARDS work with small- and medium-sized farms (with a few hundred or a few thousand pigs), USBA has two divisions: one engaging large farms and one targeting small producer households with up to 100 pigs. Small producers struggle to afford veterinary services. Therefore, ARDS webinars supported participants to create a Viber messenger group to work together and share experiences and information. This communication network is a great example of an unexpected outcome from organized webinars: The group continues to provide feedback on ARDS-organized webinars, asks questions, and serves as a contact-exchange platform for farmers.

USBA and ARDS evaluated the implementation of best practices disseminated at their joint events, surveying participants on behavior changes related to the solutions suggested during the events. Right away, farmers found positive results and took up solutions. For example, Private Enterprise Yul'ana (Cherkasy Oblast) had significant problems with sows suffering from frequent miscarriages, reproductive illnesses, low productivity, and piglets with dysentery. Based on USBA consultants' advice, the enterprise took a series of disinfection and sanitation measures; made changes to sow fodder; and included plant extracts in the sows' diet as an alternative to traditional antibiotics. This improved the overall epizootic situation at the farm, increased sow lactation, and increased the live weight of piglets to about 200 grams when taken from the sow.

Other reported behavior changes and improvements include:

- Switched to better-balanced feed (34 percent of surveyed participants)

- Increased piglet gains, improved piglet survival, or increased sow lactation (22 percent)
- Improved safety and welfare standards, such as setting specialized drinkers and lamps for heating piglets, self-feeders, fans, use of artificial insemination, adhering to a temperature regime, and regular repair and disinfection of pig pens (42 percent)
- Implemented measures to improve herd genetics, such as buying purebred sows, starting using artificial insemination in sow breeding, or starting use of professional veterinary services (47 percent)

ARDS supported AUPB to build networking and further disseminate best practices with the 2019 Pig Farm Day in Hlevaha (Kyiv Oblast), which was attended by more than 270 people. Pig farm owners, managers, specialists, technologists, and veterinarians exchanged experiences in a business-to-business (B2B) format on best production practices and discussed industry challenges. Important topics included best practices for animal quarantine and vaccination, manure disposal and maturing, feeding optimization methods, and sow insemination. ARDS supported an expert presentation on how to restart a farm after overcoming an African swine fever outbreak and avoiding reinfection.

SUPPORTING FUNCTIONS

When ARDS launched, supporting functions in the targeted value chains were weak or nonexistent. Firms needed to invest in and/or partner with others to upgrade supply chains, invest resources, and provide the supporting functions. ARDS recognized that supporting meat, dairy, fruit, and vegetable value chains as an engine for rural economic growth needed to go beyond the support provided to the core value chain actors. Using a sophisticated market system approach, ARDS supported functions that sustain core value chains, including information, infrastructure, skills, technology, and a range of services for value chain actors such as finances, inputs, and post-harvest processing.

Centers for Veterinary Services

Successful livestock farms are usually a key employer in rural areas and a guarantee of social wellbeing in villages. One of the challenges for dairy and meat producers was the severe lack of access to quality veterinary services and reliable supplies of veterinary medications.

Partnering with AMP, ARDS supported the establishment of two fully equipped centers for veterinary services in Svatove (Luhansk Oblast) and Novoselydivka (Donetsk Oblast) to provide veterinary services to the maximum number of dairy farms in the region. The centers are outfitted with state-of-the-art mobile equipment and tools for timely diagnosis, prevention, and treatment of bovine diseases, as well as trained specialists and vehicles. The CVS focus on providing quality consulting services to dairy farms and improving veterinary medicine supply. New services significantly increased the productivity of local dairy herds and raised the confidence of livestock owners. With increased profitability, dairy farms will be able to increase their savings, attract

investments for the modernization and expansion of farms, increase herds, and improve hygienic standards in milk production to meet international quality and safety requirements. The CVS will stimulate a 30 percent increase in employment on dairy farms due to increased farm productivity and better investment attractiveness. The CVS work to increase the number of clients by constantly promoting their results to dairy farms. The need for similar service centers in Ukraine will continue to increase as the dairy market demands higher safety and quality standards for dairy and meat products and improved livestock well-being.

Market Infrastructure

In light of the conflict in eastern Ukraine, ARDS put special attention on Donetsk and Luhansk *oblasts* given the loss of their traditional markets and processor-buyers in the region; loss of sector assets; and increased fuel, transport, input, and household-products costs. Agriculture was seen as key to moving from humanitarian aid to productive economic activities. ARDS worked with national and local governments to design *oblast*-level programs for agricultural infrastructure investment to help renew value chain activities. ARDS co-invested with Sady Donbasu, which relocated from the NGCA and jumpstarted the apple industry (see Fruit and Vegetable Value Chain).

ARDS supported cheese production cooperative Ivankovetsky Svitanok to introduce new dairy processing technology and to access new local buyers. Ivankovetsky Svitanok brought several new products to the market and sells its products to four schools, seven kindergartens, three hospitals, and other institutions. However, big local retailers demonstrated less interest in the products than expected, as the shelf-life of the new cheeses was shorter than those made with preservatives. To compensate for low retailer interest, the cooperative pursued direct sales to customers who appreciate their high quality.

ARDS provided training and consultations to agricultural cooperatives on topics such as institutional development, marketing, access to new local markets, new technologies, and increasing productivity in the fruit, vegetable, and dairy sectors. ARDS training helped cooperative members enhance collaboration, improve service quality, increase the number of services, introduce international safety monitoring systems, and, consequently, expand sales markets.

Technology Infrastructure

Based on early learning, ARDS focused on improving the management of irrigation systems. Communities were extremely interested in developing irrigation systems, as they have direct economic effects and solve self-employment issues. However, reconstruction and modernization of water-supply systems would require significant financial resources, which proved an overwhelming burden for small agricultural producers and community budgets.

ARDS competitively selected 15 irrigation systems in Odesa, Kherson, Zaporizhzhia, and Donetsk *oblasts* to pilot innovative approaches to irrigation management. ARDS conducted assessments to identify development baselines, developed a list of recommendations for each of the piloted systems, and consulted users about the improvement process. ARDS learned significant and valuable lessons from this initiative: Improving irrigation systems requires much time and effort — for example, the process of drafting and getting state approval for design documentation takes five to six months. Also, the system lacked competent design organizations able to produce and reconcile documentation in a timely manner. In one six-month period, the price for design and survey work increased significantly as licensing of this type of activity was introduced. Despite deregulation of these services, conciliation procedures became much more complicated. Nonetheless, ARDS completed all 15 projects in FY 2019.

Specialized Services

Enhancing agricultural services. ARDS developed the PROD mobile application, a marketplace platform for connecting SMEs, specifically buyers and sellers of vegetables and fruits for farmers. Despite positive feedback from users and a range of activities to promote the application, PROD experienced significant difficulties in attracting new users and placing sales announcements. By the end of FY 2018, PROD had attracted more than 620 farmer-users who placed 75 announcements on fruit and vegetable product purchases and sales, lower than the anticipated 1,000 users and 1,500 ads. Having analyzed the situation, ARDS learned:

1. The market response to the mobile application was overestimated. Since no similar products existed on the market, developers had no objective and measurable data to assess the market for this service
2. Despite projections for 3G and 4G internet connectivity in the countryside, users still experienced access issues
3. When promoting the application, ARDS drew market attention to the need and demand for this type of service, which led to the creation of at least three similar products, resulting in users choosing between different information resources

A desktop version of the mobile application was developed (<https://prod.ua>), which increased the number of users and made the application more convenient. As of summer 2020, the application had 2,823 users.

ARDS co-invested with PLT (Kyiv Oblast) in modern laboratory equipment to detect pesticide residues in the environment, including in soil, groundwater and other water sources, plants, animal feed, fruits, vegetables, and other food products. The new laboratory mitigates the risks of production, supply to retail networks, and recycling of chemically contaminated products. The new services allowed producers and buyers to substantially reduce time and expense for international standard product certification; certify organic produce; efficiently control the quality of crop-protection agents; and assist SMEs in litigation with suppliers of crop-protection agents.

ARDS involved PLT representatives in a study tour to Germany and the Netherlands, where they learned about the role and place of private phytosanitary laboratories in the fruit and vegetable safety control system, as well as the principles and procedures for interacting with governmental inspection bodies. The knowledge gained during the visit will help PLT become an efficient part of the state control system as a private laboratory. PLT applied for the laboratory accreditation ISO 17025 that authorizes the laboratory to provide tests that are currently carried out only by state laboratories.

In September 2018, PLT signed its first contract with the Good Wine trading network to carry out pesticide residue detection in products from 28 fruit and vegetable producer SMEs that supply to Good Wine. Starting in October 2019, PLT and Good Wine launched the pilot project “Pesticides are Under Control,” with ARDS support, to increase Ukrainians’ awareness of food-safety issues and to promote pesticide-control services. PLT ran ongoing biweekly monitoring of pesticides and heavy metals in fresh vegetables and fruits. The lab carried out random sampling from store shelves. All tested products were labeled with a special “Pesticides are Under Control” sticker that provided consumers with detailed information on the types of laboratory tests conducted and their results. The pilot was an overwhelming success, and PLT increased to weekly monitoring and expanded to also test flour and cereals.

Good Wine strives to assure its customers that all fruit and vegetable products on its shelves are safe for consumers and decided to expand the pilot to inspect each batch, committing to eliminate noncompliant products from the supermarket. Prior to launching the pilot, ARDS and Good Wine trained the supermarket’s staff how to provide the necessary information on pesticides to consumers, pesticide use at farms, their influence on human health, and the laboratory’s testing methods.

PLT signed contracts with four trading networks to provide pesticide residue and nitrate tests in vegetables and fruits: Billa, Fozzy (Silpo, Fora, and Le Silpo supermarkets), ATB, and Auchan. The new marketing tool improves fruit and vegetable sales and generates demand for products grown with proper pesticide control.

Throughout the project, PLT provided services to identify pesticide residues and test soil quality for 132 fruit and vegetable producers. SMEs gained improved access to retail chains and other organized markets.

Improving access to finance. Understanding the agricultural sector’s low credit attractiveness for banks, ARDS provided consultancies to agri-SMEs on the advantages and best use of different financial tools for attracting investments into business development. ARDS also developed a brochure describing the biggest credit institutions that operate in the agricultural sector. However, only three SMEs applied for credit during FY 2017, for total loan amount of 16.3 million hryvnia.

After unsuccessful efforts to involve bank and credit institutions in financing agricultural SMEs, ARDS began cooperation with the MAPF’s State Farmers Support Fund of Ukraine to help agri-SMEs access low-cost credit. The fund is a government institution

that provides interest-free loans and compensation for interest paid on bank loans to farmers incorporated as “Farming Enterprises.” The poor quality of applications and unpersuasive financing applications the fund received every year were, in part, the result of many farmers’ poor business-planning skills. ARDS worked to increase farmers’ financial awareness and improve their financial modeling to give them a competitive edge for financing. Training sessions focused on preparing detailed and realistic business plans, which significantly improved the quality of applications for funding.

Feedback from training participants showed a high demand for this kind of training to help prepare business plans for funding competitions. Moreover, the business plans the SMEs developed with ARDS consultations help them secure loans from banks, in addition to governmental support. Participants also requested additional consultations to help them prepare better business plans, applications, and other supporting documents. This feedback informed the development of the next round of training on financial literacy for agri-SMEs, and ARDS designed a new training program adapted to bank loan requirements. During training sessions, ARDS introduced the [AgriAnalytica online tool](#)⁵, which helps agrarian enterprises and farms develop business and accounting plans. Simultaneously, ARDS supported the State Farmers Fund to move from paper records to an online system of receiving, monitoring, and assessing loan applications.

Participating farmers evaluated the trainings and AgriAnalytica services positively and decided to create their own National Center for AgroFinance, hoping to increase farmers’ access to financing by developing a new advisory services business model at the *rayon* level. AgriAnalytica supported the initiative by providing expertise on finance and business-plan development. All members pay annual fees (5,500 hryvnia, or \$200 per year), which enables the center to hire staff, purchase furniture and office equipment, and pay AgriAnalytica’s annual fee. The center’s first regional branches opened in Lviv, Kherson, Kharkiv, and Dnipro. Additional branches later opened in Sumy, Poltava, Vinnytsia, and Ternopil. Due to the COVID-19 pandemic quarantine, the opening of branch offices in Kharkiv and Sumy was postponed.

In October 2019, the AgriAnalytica online platform was featured at the IFC’s Global SME Forum in Amsterdam. It generated great interest among the more than 650 forum participants from more than 280 institutions in 75 countries. The forum operates a global membership network that brings together financial institutions, technology companies, and development finance institutions to share knowledge, spur innovation, and promote SME growth. After the forum, AgriAnalytica developed a plan to make the platform available for other countries and developed more tools to attract micro agribusinesses and households to help farmers prepare loan applications.

ARDS supported continuing improvements to the AgriAnalytica online platform. Additional IT modules were developed to enable the effective remote communication of consultants and farmers through the Consultant’s Cabinet and the Farmer’s Cabinet. These tools allow farmers to prepare and submit loan applications and track online application

⁵ <https://agrianalytica.com/uk/>

status at banks and other financial institutions. A module was also developed on the state support program “Accessible Loans 5-7-9%” that allows agricultural producers to access all available information regarding the state program (preconditions for an investment loan or refinancing a loan), and submit online applications to the program’s partner banks. The module will allow farmers to effectively attract financial resources to expand their businesses and unleash new opportunities for development. AgriAnalytica’s online platform was recognized and endorsed by the MEDTA on its [SME portal](#).⁶

Efforts by ARDS and partners to introduce agrarian receipts (agri-receipts) also yielded results. For example, in May 2018, Synenko issued a financial receipt of 10 million hryvnia, with a pledge of 2,500 tons of potatoes from the future harvest. PLT also offered agri-receipts to its clients, and issued the first financial receipt to Organik D. In August 2018, the IFC began individually consulting ARDS investment partners about the nuances of using agri-receipts. Vinnytsia Food and Gustatory Factory found agri-receipts to be an effective way to address its continuous struggle with a lack of horseradish inputs — it offered free seedlings to farmers with a secured price for the harvest. In March 2020, AgriAnalytica added new partners to its online platform, OKKO National Network of Fuel Stations and the State Agrarian Fund, to offer farmers new opportunities to attract financial resources. Now farmers can apply online for support in purchasing fuel and fertilizers using agri-receipts.

Introducing international safety and quality standards. The Ukrainian agricultural sector lagged in international safety and quality standards. Compliance with GLOBALG.A.P. is a critical prerequisite for producers to access organized formal domestic and international markets. Hazard analysis and critical control point, or HACCP, is a food production, storage, and distribution monitoring system for identification and control of associated health hazards. These and other certifications were essential for improving market readiness and expanding into export markets.

ARDS supported new cluster model aggregators to begin embedding food safety standards in their work with farmers, and not just market standards such as size and color. For example, Agrico Ukraine’s new potato packaging center built in an awareness campaign on GLOBALG.A.P. production standards. Rozdolne’s modernized fruit and vegetable processing facility integrated International Featured Standards (IFS), European food quality and safety standards, and production certification with farm enterprises, aggregator entrepreneurs, and the tens of thousands of households the aggregators and farm enterprises reach.

Associations also played a critical in introducing and integrating food safety standards. ARDS partnered with the AMP, AUPB, UAPP, UkrSadProm, and UkrSadVynProm to develop guiding documents for implementing international food safety standards in their value chains. After testing guidelines at enterprises specializing in the respective value chains, ARDS adjusted and disseminated the guidelines through the associations, the Agrarian Club by Syngenta, and ARDS champion firms.

⁶ <http://sme.gov.ua/covid19/avtomatyzovani-platfomy-dostupu-do-finansiv-rynkiv-ta-biznes-konsultantiv/>

ARDS finalized the methodological guidelines on introducing HACCP safety standards at wholesale and retail markets. The guidelines complement food laws, describing specific industry requirements and providing market operators with practical tools to better implement these standards. After ARDS piloted the guidelines at three local markets in Mykolayiv and Odesa *oblasts*, UkrCoopSpilka recommended implementing the guidelines to its member markets. ARDS and UkrCoopSpilka also shared the guidance with the MAPF for further dissemination.

ARDS provided technical support to its investment partners assisting SMEs with the implementation of guidelines and standards. ARDS conducted preliminary audits and provided recommendations on compliance with the GLOBALG.A.P. requirements to numerous partners and their supplying partners. The partners themselves trained key personnel to apply the GLOBALG.A.P. standards at their enterprises, critical points analysis, and safety monitoring systems. ARDS also supported implementation of the HACCP safety system by several actors in the fruit and vegetable supply chains.

In July 2019, ARDS and Syngenta co-organized Ukraine's first GLOBALG.A.P. Tour. Participants, including GLOBALG.A.P. CEO and President Mr. Kristian Moeller, discussed implementation of safety best practices for agricultural products in Ukrainian enterprises. One of the tour's immediate results was the creation of a National Technical Working Group (NTWG) to help Ukraine adopt GLOBALG.A.P. standards locally. GLOBALG.A.P. members set up NTWGs in different countries to help adopt GLOBALG.A.P. standards on a local scale. The NTWG is an important step in bringing global safety and quality standards to Ukrainian growers by translating official GLOBALG.A.P. documents into Ukrainian, developing National Interpretation Guidelines, and supporting the GLOBALG.A.P. Secretariat with proposals from local interested parties. The NTWG is a platform to help harmonize certification activities within the region and is the first contact point for the GLOBALG.A.P. Secretariat. ARDS provided technical assistance for the launch of the Ukrainian NTWG and developed a draft version of the national GLOBALG.A.P. Risk Assessment on Social Practice (GRASP) Instruction, a new addition to the GLOBALG.A.P. standards. Developing a national GRASP instruction significantly simplifies implementation of social-responsibility measures for farmers and, thereby, simplifies compliance and certification.

The NTWG officially launched in October 2019 and includes more than 20 representatives of farms, retailers, traders, labs, consultants, certification bodies, academia, and other stakeholders experienced in food safety, ecology, and human and animal well-being. The NTWG decided to initially focus on fruit and vegetable production and livestock breeding, as GLOBALG.A.P. standards are implemented in Ukraine mostly in these value chains, with possible hosting of additional value chains. The NTWG started translating and adapting GLOBALG.A.P. documents, with final versions to be posted on the [GLOBALG.A.P. website](https://www.globalgap.org/uk_en/)⁷ and the NTWG [host organization's website](https://www.qdc.com.ua/).⁸ In February 2020, the NTWG certified the first cohort of 10 GLOBALG.A.P. consultants.

⁷ https://www.globalgap.org/uk_en/

⁸ <https://www.qdc.com.ua/>

SECTION NO. III

LESSONS LEARNED

ARDS implemented the CLA system in its everyday work. After-action reviews were completed by following the critical reflection methodology and collecting lessons learned from events. In late FY 2018, ARDS conducted a full CLA review, resulting in the decision to hold off on any new activities and grants and to focus on finalizing current activities, analyzing pilot results, and learning and disseminating best practices. Thus, no big new pilots for business models launched in FY 2019 and FY 2020, to focus on the behavior change campaign and sharing good practices.

COMMUNICATION AND LEARNING

Social media posts and direct messages informed ARDS that the most interesting topics for followers, besides traditional interest in the grants program, were governmental support, agricultural cooperatives, agricultural receipts, business cases, rural development success stories, and practical manuals.

The COVID-19 pandemic presented new opportunities for ARDS outreach activities in the second half of FY 2020. Initially, ARDS learning activities were conducted in person to allow for closer interaction with targeted audiences and to accommodate the limited availability and location of rural populations. Due to the COVID-19 quarantine, SMEs and CCs had to adapt to primarily working online, which brought more opportunities for ARDS communication and learning activities. Remote work proved very productive: More than 2,000 people participated in ARDS trainings and online events in FY 2020 Q3, more than double any other quarterly activities over the previous four years, demonstrating a core lesson that the target audience voluntarily shifted to online activities. This shift in communication channel highlights important additional opportunities, especially in training.

COMMUNICATING BEHAVIOR CHANGE

A Communication Strategy was developed in FY 2017 and revised in FY 2019 to address the next phase of implementing behavior-change solutions. The communication strategy adhered to the overall ARDS market systems development approach and the planned uptake of behavior change solutions. ARDS identified behavior change solutions to address the identified market system challenges in its value chains and defined the measurement system for each behavior change solution that contained indicators at two levels, output and outcome, following the outcome mapping methodology. Based on the targeted audience and behavior change impact, ARDS chose a primary message for each intervention using the communication messages matrix developed as part of its communication strategy. ARDS measured the effectiveness of implemented solutions with investment partners to define the initiatives that demonstrated potential to change

the behavior of system actors. Summarizing behavior-change solution results in each value chain, ARDS created summaries to highlight outcomes, contributing factors, sources of evidence, and challenges. This approach to the communication strategy proved effective and ensured consistency in delivering the right messages to target audiences to achieve behavior changes.

ENHANCING COMMUNICATION SKILLS

To assist the SGC in its transition to a service-oriented institution, ARDS recommended that the SGC conduct seminars to communicate changes in the SGC's operations to employees and explain the new role of the SGC in communicating these changes to local communities. During seminars for SGC representatives in 24 *oblasts*, ARDS identified gaps in the persuasive communication skills of SGC regional employees, whose “bureaucratic” communication style only exacerbated communities’ negative attitude and local businesses’ aggressive behavior. This insight prompted ARDS to develop and provide a training course for regional SGC employees to build the right communication patterns with communities and local businesses.

CC CAPACITY DEVELOPMENT

As part of its LSD program, ARDS introduced a series of trainings for targeted CCs in FY 2018. ARDS first developed an extensive step-by-step study program to cover each practical stage separately. However, during site visits, ARDS realized the value of a comprehensive approach by combining the introduction of transparent and efficient land administration and management with the development and implementation of possible investment projects in targeted CCs. This significantly added to the development of sustainable investment projects and CC resource management.

In FY 2019, ARDS continued implementing the LSD Program with local initiatives and investment projects in CCs, reflecting lessons learned. When reviewing applications from both model CCs and other target CCs, ARDS realized the potential of pre-grant consultations and expert facilitation to improve the quality of investment projects by engaging with business, CC residents, and authorities. Additionally, ARDS learned that typical investment project ideas should be shared with CCs, which significantly increased the grant application pool.

Through implementation of co-investment projects with 10 local communities, ARDS identified a knowledge gap in managing communal enterprises (CEs) that had two features: CE management lacked training support and, for years, CEs were perceived in communities as subsidized organizations, which minimized business engagement in CEs. Only one out of nine CE co-investment projects demonstrated profit gains, with the rest reporting losses or marginal profit. ARDS put this lesson into a pilot training for CE management to build their business-development skills and help each CE to identify opportunities for communal business development. CEs used this knowledge to plan activities and practically apply the knowledge gained. Feedback surveys indicated that some CEs already planned to revise the need, role, and number of CEs operating in a

CC, as each village had its own CE. Other CEs learned to focus on collaborating and aligning CE business development initiatives with CC management. ARDS saw that the most valuable impact of the pilot was increasing CE understanding of market demand and commitment to run client-oriented businesses. ARDS expanded the training for CEs in CCs in six *oblasts* where ARDS implemented the LSD program.

ENHANCING VALUE CHAINS AND SUPPORTING FUNCTIONS

ARDS learned important lessons from initial grantee accomplishments: Targeted financial injections helped SMEs build stronger processing capacity to develop new value-added agricultural products, and investments helped engage more actors into the supply chain and accelerate growth in the agricultural sector. For example, targeted financial injections helped AMP establish a professional level of services for its members to improve milk quality and turn the dairy sector back toward growth.

The investment project with Byky Cherkashchyny was put at risk when the business failed to invest in its share of the project's costs. ARDS met with the partner and helped it to identify alternative sources of co-financing through the USBA, negotiated revised deadlines, insisted on changing the project manager, and modified the grant agreement to reflect the changes. The lessons learned were to keep communication channels open and respond to a partner's challenges with flexibility. ARDS' willingness and ability to revise Byky Cherkashchyny's grant salvaged an important pilot project providing calf breeding services, which has great potential as a sustainable solution to systemic issues in the meat value chain.

Significant lessons resulted from the ARDS grant to create and maintain the PROD mobile application. The project did not reach the target of 1,000 mobile app users, but it reached 788 farmers, and the project achieved its target number of ads published. ARDS and the IT developers believe the project fell short because 80 percent of agri-producers are working in the shadow economy and were not ready to publicly reveal price statements. For example, in the FAO Telegram channel created with the same goal, 90 percent of ads were from Crimea and CIS countries, not from government-controlled areas of Ukraine. One lesson was that the application would have worked better if it focused on analytics and technical solutions rather than e-commerce. An additional lesson was that it would have been better to support an existing start-up rather than launch a new project, as the application was developed by IT specialists who were not familiar enough with the agricultural sector and marketing, and their IT programming skills were not enough to sell the product to the end user.

ARDS and PLT Laboratory learned valuable lessons in their collaboration to establish an independent laboratory for detecting pesticide residues in food products (see "Fruits and Vegetable Value Chain"). In the first 19 months, PLT provided tests on pesticide residues to only 57 SMEs out of a planned 100. The client recruitment rate, albeit slow, required joint efforts from co-investment partners to look for different ways to promote the laboratory's services. PLT Laboratory started to recruit new clients by cooperating with trading networks rather than looking directly for farmers. The first

positive results from providing tests on pesticide and nitrate residues in fruits and vegetables for these chains, coupled with keen interest from other traders, showed PLT opportunities to promote its laboratory services. ARDS then facilitated discussions with other major supermarket chains for PLT to conduct tests on pesticide residues in fruits and vegetables purchased from Ukrainian suppliers. By “thinking outside the box” and pivoting to a new client base, PLT expanded its network and now works with leading national traders to provide services for their SME suppliers. In one three-month period, PLT provided services to 56 SMEs through the newly opened service channels — as many SMEs as in the first 19 months.

In FY 2019, ARDS conducted focus groups to assess the perceptions and impact of ARDS support to farmers in accessing finance in FY 2018 and FY 2019. Farmers gave feedback on proposed solutions, shared their experience attracting financial resources, talked about the loan’s impact on their businesses, and provided insights on farmers’ current needs to inform future planning. All farmers were satisfied with the results achieved due to the additional resources attracted, and everyone remarked that the results achieved were either as planned in the business plan or higher. More than half of the farmers who had obtained loans have already applied for another credit mechanism. This is a good sign of a successful experience and proof of the perceived positive impact on agribusiness among respondents. The focus groups showed that farmers had limited usage and knowledge of other credit mechanisms and that farmers are cautious about new tools proposed by banks. ARDS developed a detailed [Focus Groups Report](#)⁹ to provide more insights into farmers’ needs that can be addressed by future USAID activities.

⁹ <https://drive.google.com/open?id=1RJsVtwsgHlgMRyBBE5XDHgID7KT9x4cI>

ANNEX A. ENVIRONMENTAL MITIGATION AND MONITORING

ARDS monitored the following approved Environmental Mitigation and Monitoring Plans (EMMPs). The table below presents issues encountered during monitoring as well as mitigation measures.

EXHIBIT A1. ENVIRONMENTAL MONITORING

ACTIVITY	MEASURES MONITORED IN REPORTING PERIOD	ISSUES ENCOUNTERED	MEASURES TAKEN TO ADDRESS SPECIFIC ISSUES
ARDS-G2-03 Association of Milk Producers	Final environmental monitoring done with grant close, December 14, 2018	All environmental measures were taken per plan	
ARDS-G2-04 Agrico Ltd	Final environmental monitoring done with grant close, October 18, 2018	All environmental measures were taken per plan	
ARDS-G2-21 Sady Donbasu	Final environmental monitoring done with grant close, January 17, 2019	All environmental measures were taken per plan	
ARDS-G2-22 Vinnytsia Food and Gustatory factory	Final environmental monitoring done with grant close, November 21, 2018	All environmental measures were taken per plan	
ARDS-G2-27 Bilovodskyyi Butter Factory	Final environmental monitoring done with grant close, February 26, 2019	All environmental measures were taken per plan	
ARDS-G2-29 Prime Lab Tech, LLC	Final environmental monitoring done with grant close, August 8, 2019	All environmental measures were taken per plan	
ARDS-G2-31 Malyn Factory (Si Milk)	Intermediary environmental monitoring conducted December 12, 2018	Environmental plan measures are being taken together with repair and assembly works	While carrying out repair and assembly works, heed environmental requirements
ARDS-G2-31 Malyn Factory	Final environmental monitoring done with grant close, June 26, 2019	All environmental measures were taken per plan	
ARDS-G2-32 Khladkontakt	Interim environmental monitoring done, June 20, 2019	Illumination at the production facility is low	Increase number of lamps or replace existing lamps with higher-lumen lamps

ACTIVITY	MEASURES MONITORED IN REPORTING PERIOD	ISSUES ENCOUNTERED	MEASURES TAKEN TO ADDRESS SPECIFIC ISSUES
ARDS-G2-32 Khladkontakt	Final environmental monitoring done with grant close, November 27, 2019	Most environmental measures were taken per plan. Still pending re-signing utilities contracts	After purchasing previously leased facilities, grantee needs to re-sign all utilities contracts per EMMP: contract for electricity supply, contract on cooling equipment maintenance, and declaration of fire safety
ARDS-G2-33 Fruktona	Final environmental monitoring done with grant close, May 20, 2019	All environmental measures were taken per plan	
ARDS-G2-34 Pryvillia	Final environmental monitoring done with grant close, April 24, 2019	All environmental measures were taken per plan	
ARDS-G2-35 Miasne Remeslo	Final environmental monitoring done with grant close, May 29, 2019	All environmental measures were taken per plan	
ARDS-G2-40 Arus CE	Final environmental monitoring done with grant close, November 22, 2019	All environmental measures were taken per plan	
ARDS-G2-41 Chaika	Final environmental monitoring done with grant close, March 2, 2020	All environmental measures were taken per plan	
ARDS-G2-42 Merry Berry	Mid-term environmental monitoring done, March 3, 2020	Environmental measures were taken per plan	New project design documentation was developed for construction of cooling chamber (which is co-financed by ARDS), honey packaging line, and candle production line in Vesele CC
ARDS-G2-46 Vidnova CE	Final environmental monitoring done with grant close, December 20, 2019	All environmental measures were taken per plan	
ARDS-G2-47 Farming Enterprise Agroinvest XXI Stolittia	Final Environmental monitoring done with grant close, December 18, 2019	All environmental measures were taken per plan, excluding permit on air pollution	Seek air pollution permit from <i>oblast</i> ecology department
ARDS-G2-49 Velykokopanivske	Final environmental monitoring done with grant close, March 25, 2020	All environmental measures were taken per plan, excluding permit on air pollution	

ACTIVITY	MEASURES MONITORED IN REPORTING PERIOD	ISSUES ENCOUNTERED	MEASURES TAKEN TO ADDRESS SPECIFIC ISSUES
ARDS-G2-50 Kostiantynivska Consolidated Community	Final environmental monitoring done with grant close April 30, 2020	All environmental measures were taken per plan	
ARDS-G2-51 Meatholding-Mayak, LLC	Final environmental monitoring done with grant close, April 1, 2020	Environmental measures were taken per plan	Made amendments to HACCP docs and received permission for the site operations
ARDS-G2-52 Nyzhnioduvanskyi Blahoustrii, CE	Final environmental monitoring done with grant close, November 21, 2019	All environmental measures were taken per plan	
ARDS-G2-53 Servicecomunenergo, CE	Final environmental monitoring done with grant close, November 20, 2019	All environmental measures were taken per plan	

ANNEX B. PROGRESS AGAINST TARGETS

Per the approved MEL plan, ARDS is reporting on the progress of 23 indicators in this final report.

The annual indicator of generating incremental *value of SMEs sales* (Indicator 1) is underachieved by 29 percent and represents a 2.342-billion hryvnia increase.

ARDS monitored two contextual indicators. *Agricultural SME gross domestic product (GDP) as a percentage of agriculture sector GDP* (Indicator 2) increased by one point from 26 percent in FY 2017 to 27 percent in FY 2018. *Agriculture GDP as a percentage of overall GDP* (Indicator 3) remained the same as FY 2017 at 10.2 percent.

On both indicators, the *number of agricultural enabling environment policies analyzed, consulted on, drafted or revised, approved, and implemented with U.S. government assistance* (Indicator 4) and the *number of specific pieces of land tenure and property rights legislation or implementing regulations proposed, adopted, and/or implemented positively affecting property rights of the urban and/or rural poor as a result of U.S. government assistance* (Indicator 6) ARDS overachieved the life-of-project targets by 21 percent and 9 percent, respectively.

The results for the *percentage change in time associated with completing land administration procedures* (Indicator 7) and *percentage change in cost* (Indicator 8) are 2.6 percent and 10.3 percent, respectively.

The result for the *share of rural landowners and small farmers who understand the benefits of and support the establishment of an agricultural land market in Ukraine* (Indicator 9) is 38 percent, which is 95 percent of the life-of-project target. The result for *percent of agricultural businesses reporting about corruption in the sector* (Indicator 10) is 63 percent.

ARDS achieved the life-of-project goal for Indicator 11 by supporting five associations to create SROs with legislative authority to function.

The annual indicator of *productivity increase* (Indicator 13) is slightly underachieved: 23 percent vs. a planned 25-percent increase in productivity. The results are different across various value chains. For example, a significant downturn in the fruit value chain was driven by a low apple harvest in eastern Ukraine due to the extremely hot summer in 2018.

ARDS achieved 90 percent of the targeted 387 million hryvnia for the *value of new private sector investment in the agriculture sector or food chain leveraged by U.S. government assistance (million hryvnia)* (Indicator 14). Due to the COVID-19 national quarantine, the situation did not improve much during FY 2020.

The result for the *number of farmers and others who have applied improved technologies or management practices with U.S. government assistance* (Indicator 15) is 520, which is 93 percent of the life-of-project target achievement.

The results for the *number of micro-, small-, and medium-sized enterprise (MSME) clients receiving improved extension services* (Indicator 16) and the *value of products exported* (Indicator 17) are overachieved by 5 percent and 31 percent, respectively.

ARDS overachieved the life-of-project target for the *number of MSMEs receiving agricultural-related credit as a result of U.S. government assistance* (Indicator 18) and the *value of agricultural and rural loans as a result of U.S. government assistance* (million hryvnia) (Indicator 19) by 211 percent and 26 percent, respectively.

ARDS fully achieved the life-of-project target for the performance indicators for *local markets certification* (Indicator 20) and the *number of agriculture service cooperatives/producer groups providing access to modern technology and new markets for their agricultural MSME members* (Indicator 22).

The targets for the *number of new rural infrastructure projects developed with U.S. government assistance* (Indicator 23) and *number of ARDS-supported public information campaigns with practical information on rural development* (Indicator 24) are fully achieved.

The results for the *percentage of female participants in U.S. government-assisted programs* (Indicator 25) are seven percent below the target. ARDS reached 47 percent of female participants in its activities.

THE LINKED report¹⁰ OUTLINES PROGRESS TOWARD THE ACHIEVEMENT OF GOALS FOR PERFORMANCE INDICATORS IN THE ARDS MEL pLAN.

¹⁰ USAID ARDS FY17-FY20 Performance Data Report
<https://drive.google.com/file/d/1fcaZRG77SiZi4FdiqjYOxzO6RJuArqNV/view?usp=sharing>

ANNEX C. INDICATOR TABLES

EXHIBIT CI. INDICATOR TABLE

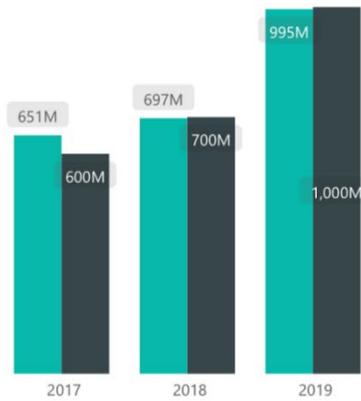
#	PERFORMANCE INDICATOR	TARGET LIFE OF PROJECT	ACTUAL LIFE OF PROJECT
1	Value of incremental sales from U.S. government-assisted agricultural MSMEs	UAH 3,300,000,000	UAH 2,342,448,928
2	Agricultural SME GDP as a percentage of agriculture sector GDP		27%
3	Agriculture GDP as a percentage of overall GDP		10%
4	Number of agricultural enabling environment policies analyzed, consulted on, drafted, revised, approved, or implemented with U.S. government assistance	140	169
6	Number of specific pieces of land tenure and property rights legislation or implementing regulations proposed, adopted, and/or implemented positively affecting property rights of the urban and/or rural poor as a result of U.S. government assistance	57	62
7	Percentage change in time associated with completing land administration procedures	-6%	2,6%
8	Percentage change in cost associated with completing land administration procedures	-6%	10,3%
9	Share of rural landowners and small farmers who understand the benefits of and support establishment of an agricultural land market in Ukraine	40%	38%
10	Percent of agricultural businesses reporting about corruption in the sector	59%	63%
11	Number of fully competent SRO(s) created with legislative authority to function	5	5
13	Percentage of productivity change among agricultural MSMEs as a result of U.S. government assistance	25%	23%
14	Value of new private sector investment in the agriculture sector or food chain leveraged by U.S. government assistance	UAH 387,000,000	UAH 345,946,566
15	Number of farmers and others who have applied improved technologies or management practices with U.S. government assistance	560	520
16	Number of SME clients receiving improved extension services	700	736
17	Value of targeted agricultural commodities exported with U.S. government assistance	UAH 440,000,000	UAH 574,834,248
18	Number of MSMEs, including farmers, receiving agricultural-related credit as a result of U.S. government assistance	100	311
19	Value of agricultural and rural loans as a result of U.S. government assistance	UAH 331,000,000	UAH 416,213,516
20	Number of certified local markets	6	6
21	Number of improved irrigation systems	15	15
22	Number of agriculture service cooperatives/producer groups providing access to modern technology and new markets for their agricultural MSME members	54	54

#	PERFORMANCE INDICATOR	TARGET LIFE OF PROJECT	ACTUAL LIFE OF PROJECT
23	Number of new rural infrastructure projects developed with U.S. government assistance	24	24
24	Number of ARDS-supported public information campaigns with practical information on rural development	16	16
25	Percentage of female participants in U.S. government-assisted programs designed to increase access to productive economic resources (assets, credit, income, or employment)	50%	47%

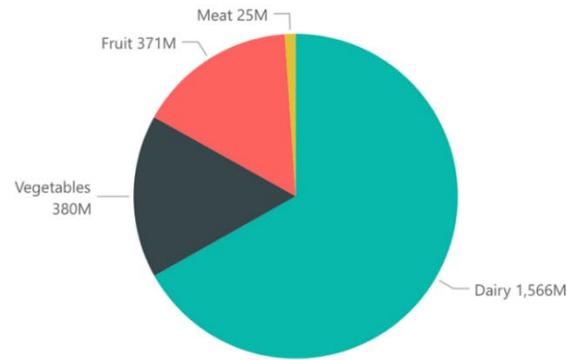
Indicator #1: Value of incremental sales from U.S. government-assisted agricultural MSMEs (UAH)

Value of incremental sales, mln UAH

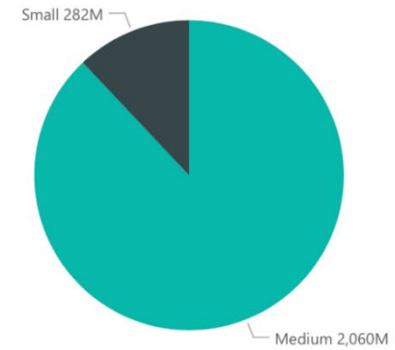
● Actual ● Plan



Value of incremental sales by Value chain, mln UAH

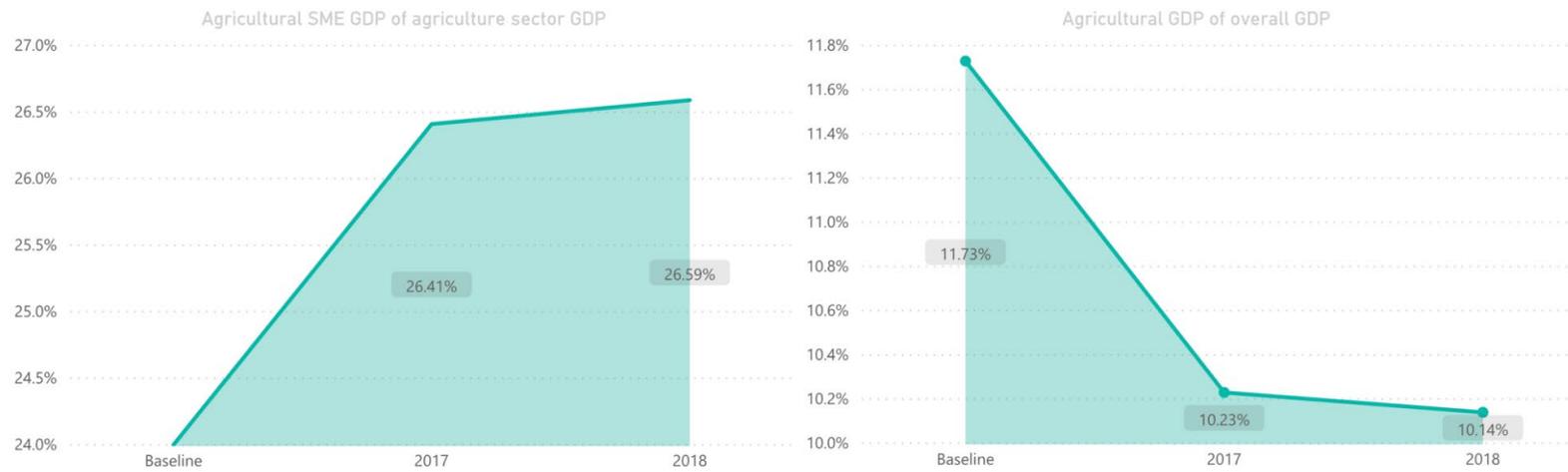


Value of incremental sales by Business size, mln UAH

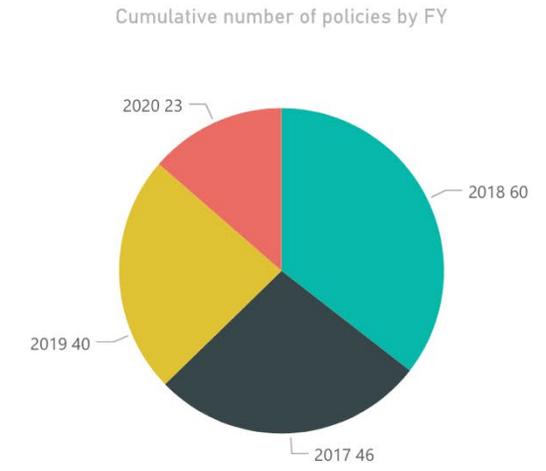
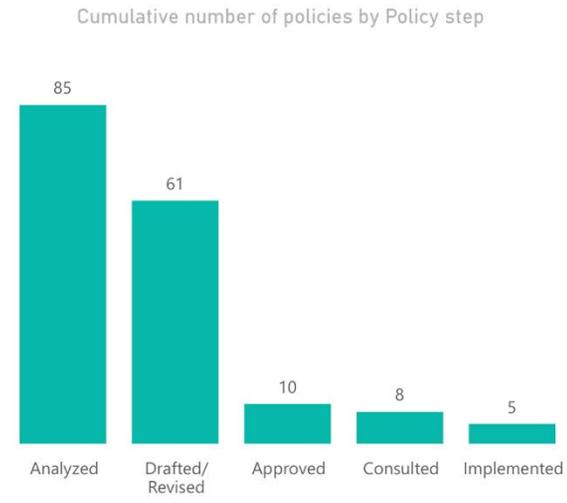
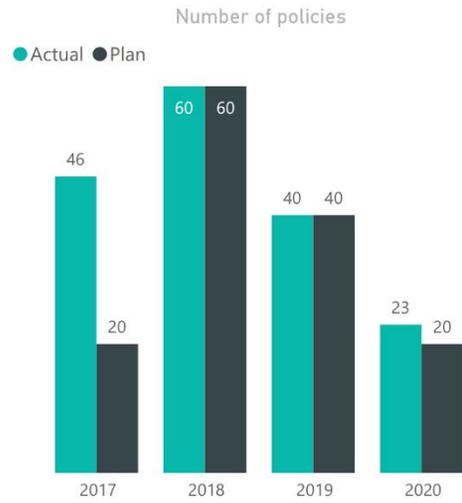


Indicator #2: Agricultural SME GDP as a percentage of agriculture sector GDP

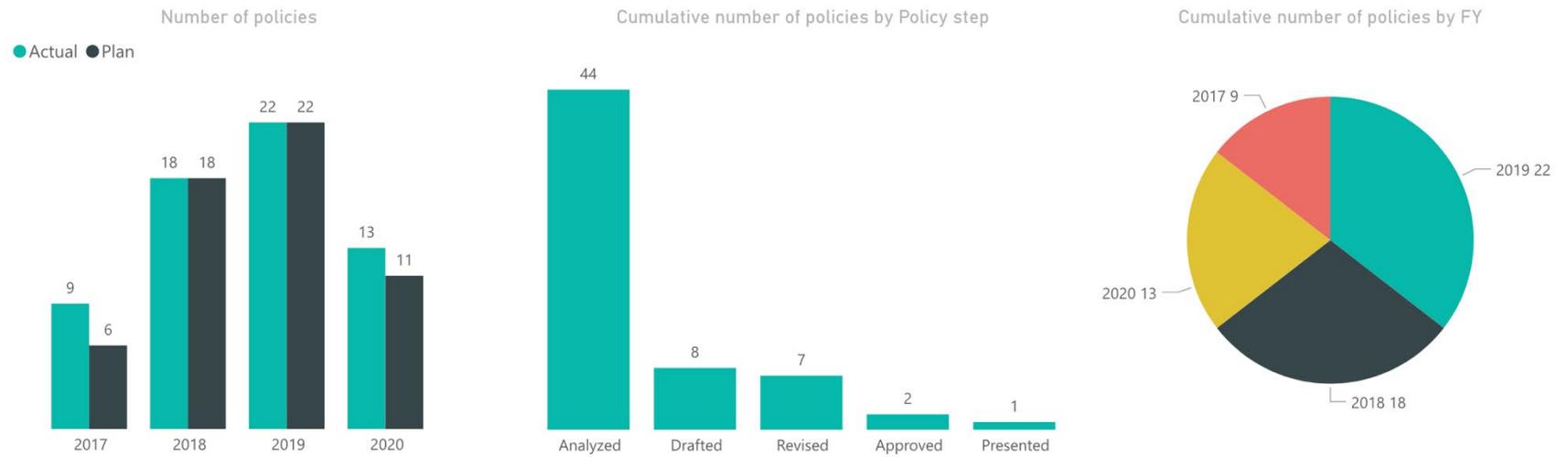
Indicator #3: Agriculture GDP as a percentage of overall GDP



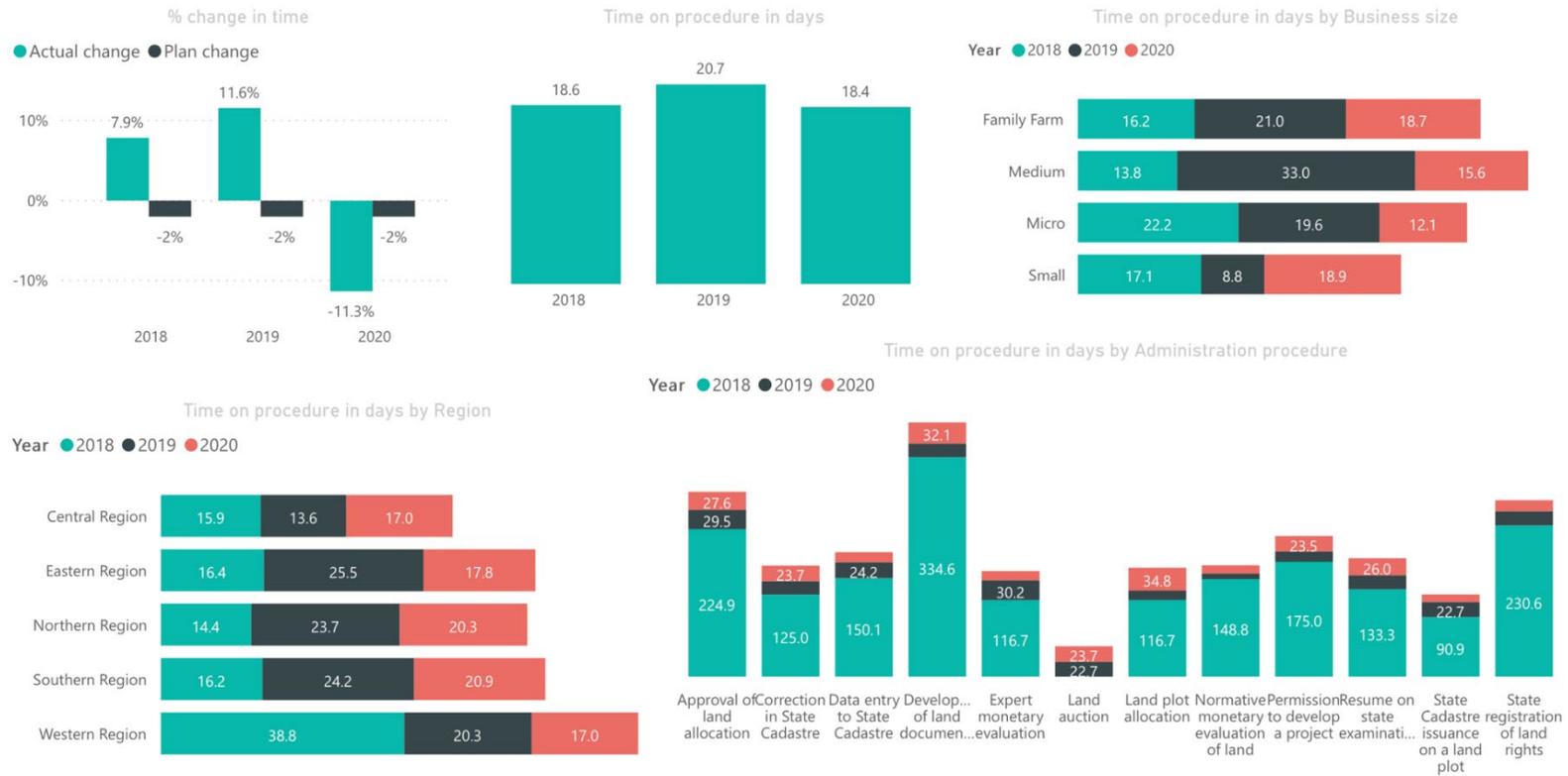
Indicator #4: Number of agricultural enabling environment policies analysed, consulted on, drafted or revised, approved, and implemented with USG assistance



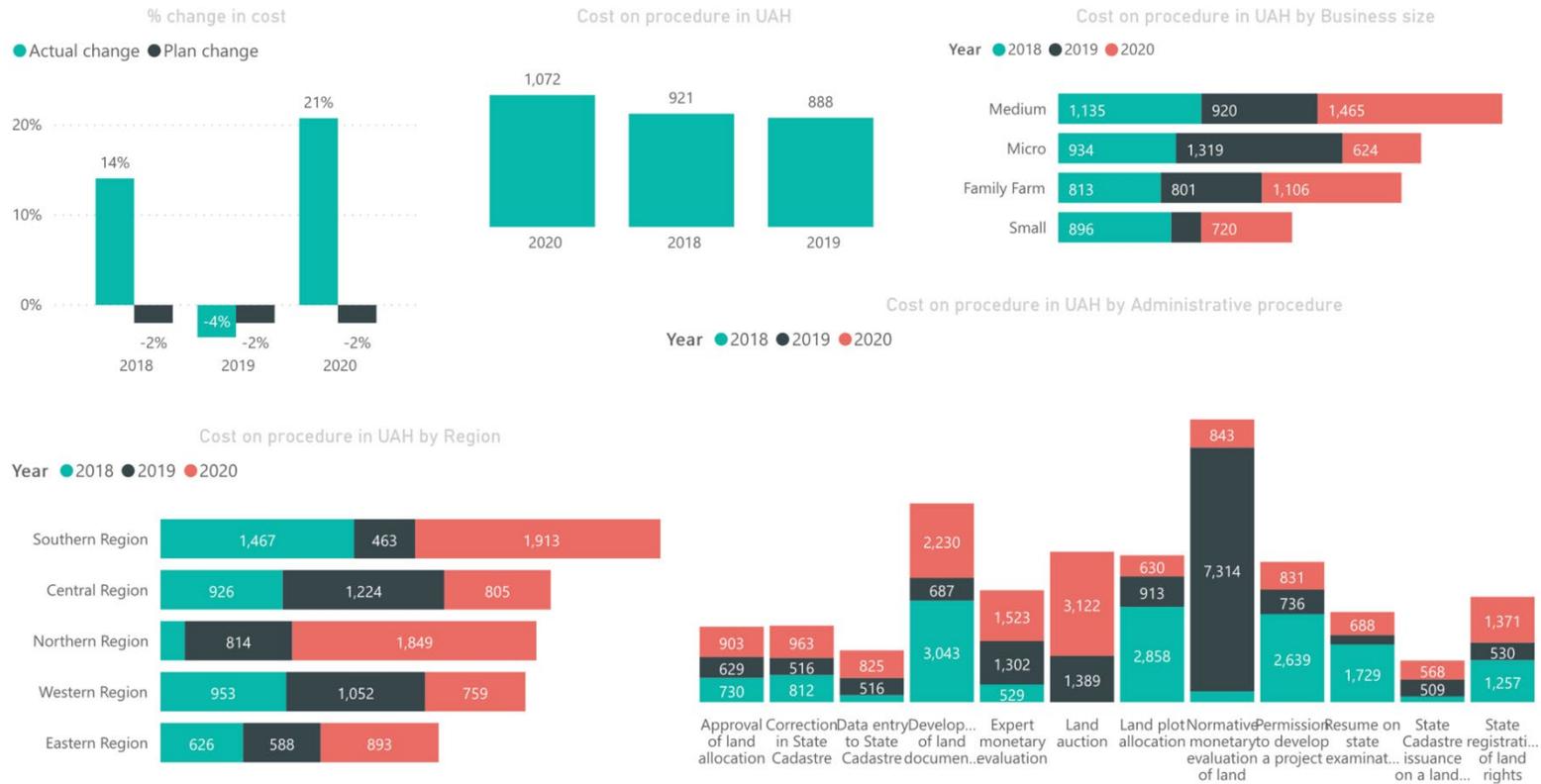
Indicator #6: Number of specific pieces of legislating regulations proposed, adopted, and/or implemented affecting property rights of the urban and rural poor as a result of USG assistance



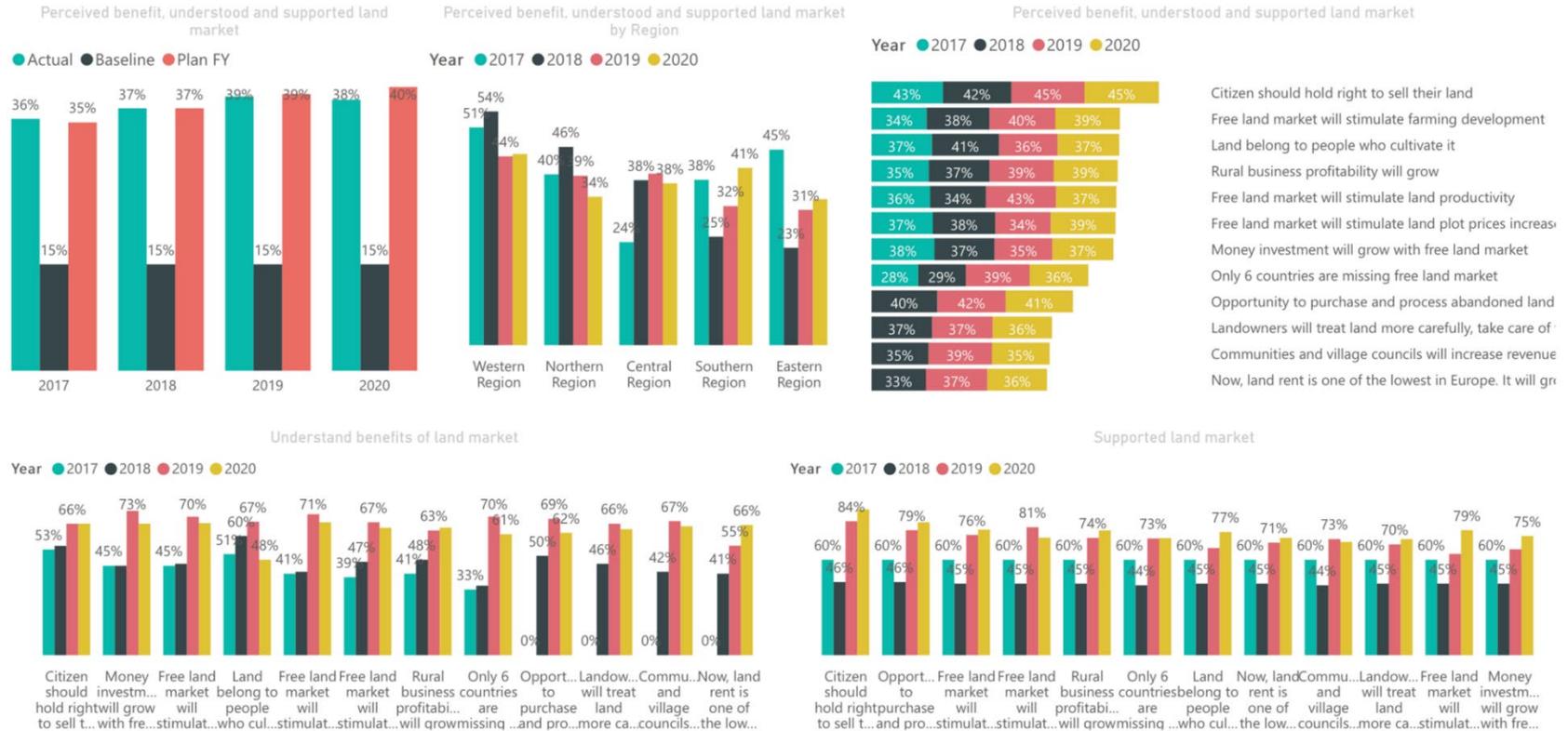
Indicator #7: % change in time associated with completing land administration procedures



Indicator #8: % change in cost associated with completing land administration procedures

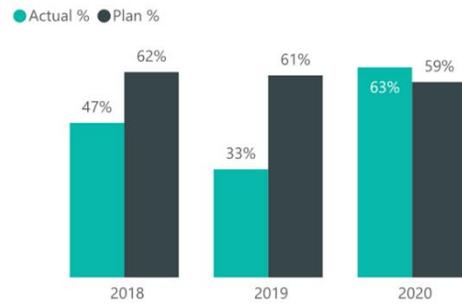


Indicator #9: Share of rural land owners and small farmers who understand the benefits of and support establishment of an agricultural land market in Ukraine

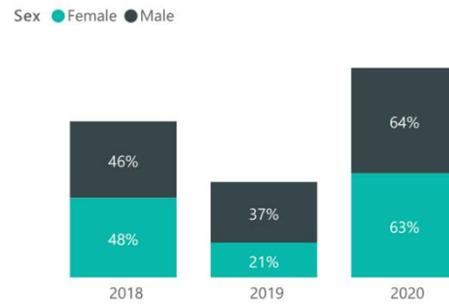


Indicator #10: % of agricultural businesses reporting about corruption in the sector

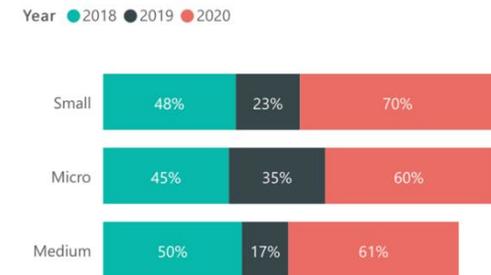
% of agri-SMEs reporting corruption



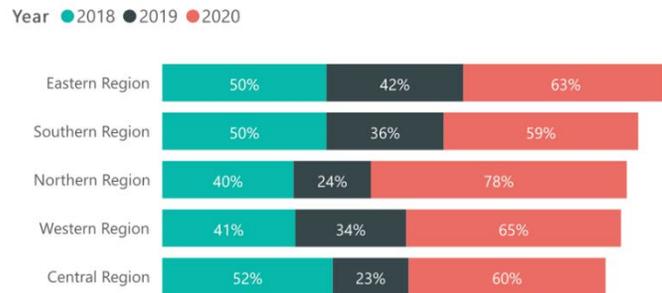
% of agri-SMEs reporting corruption by Sex



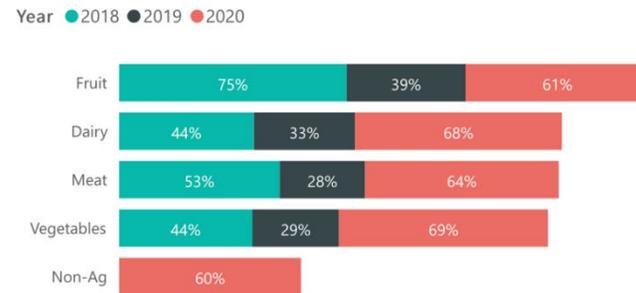
% of agri-SMEs reporting corruption by Business size



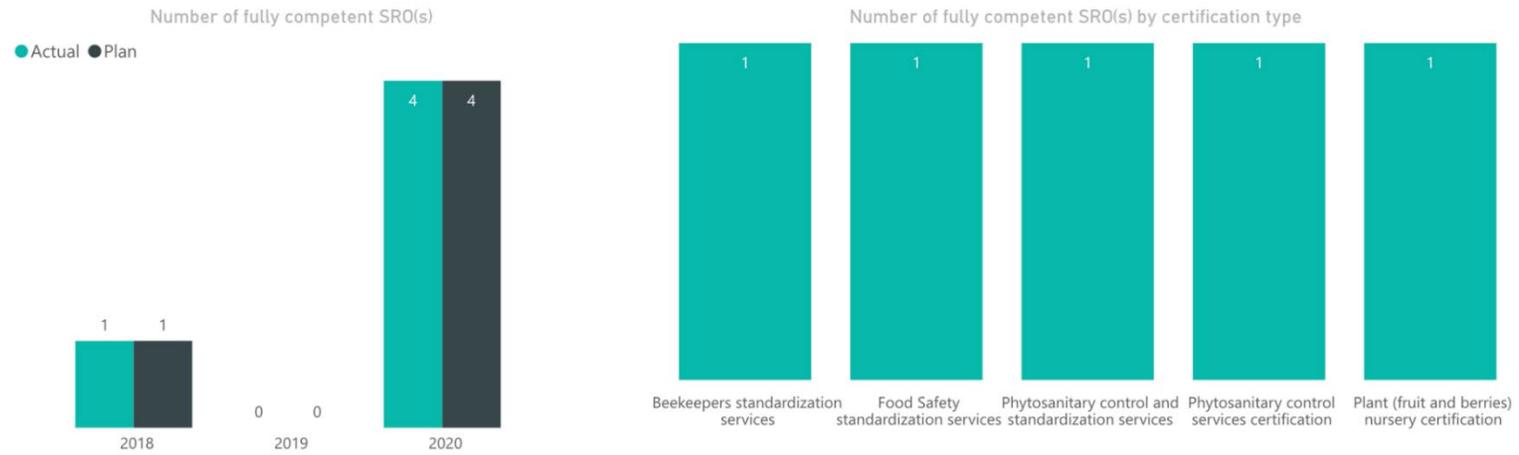
% of agri-SMEs reporting corruption by Region



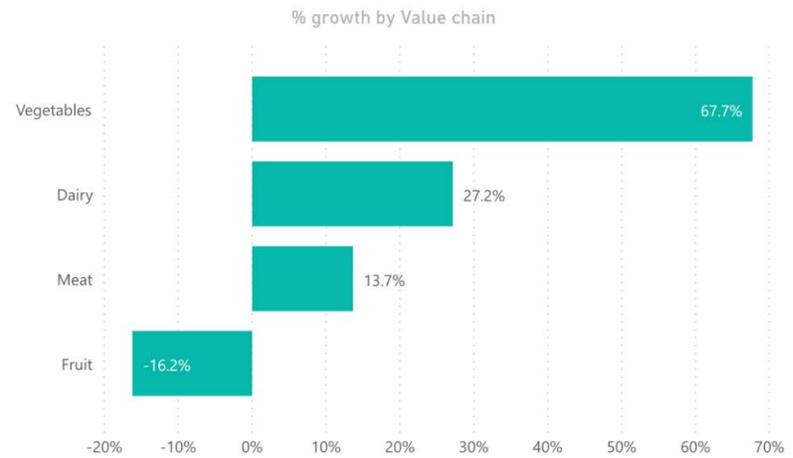
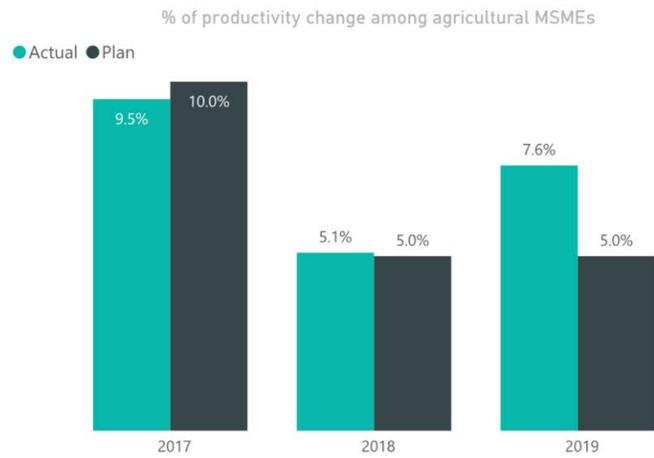
% of agri-SMEs reporting corruption by Value chain



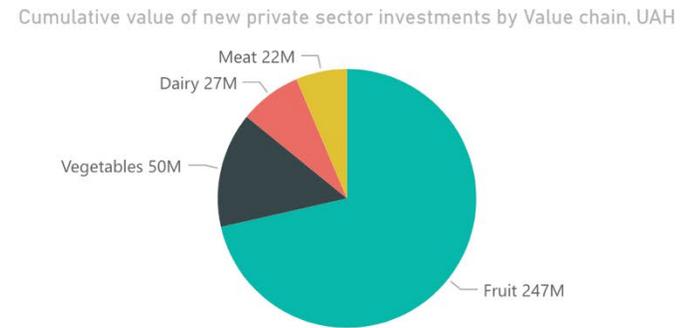
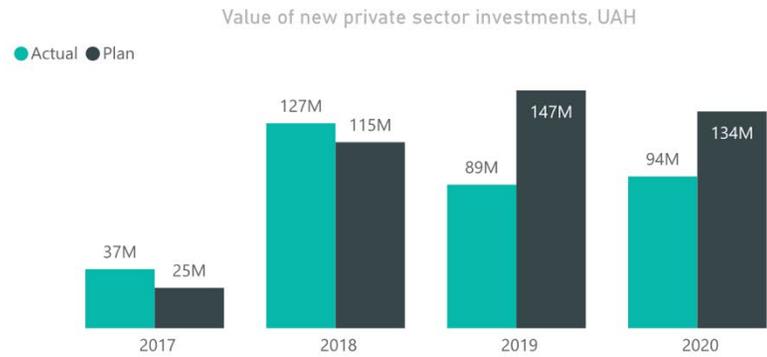
Indicator #11: Number of fully competent SRO(s) created with legislative authority to function



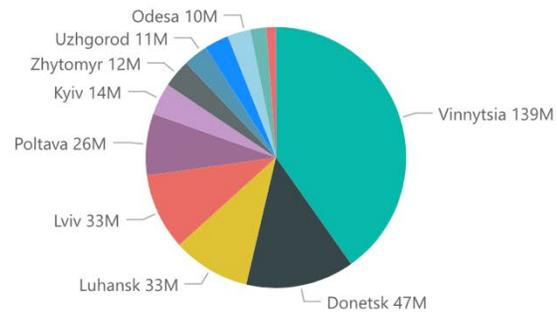
Indicator #13: % of productivity change among agricultural MSMEs as a result of U.S. government assistance



Indicator #14: Value of new private sector investment in the agriculture sector or food chain leveraged by U.S. government assistance



Cumulative value of new private sector investments by Region, UAH

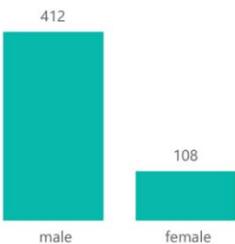


Indicator #15: Number of farmers and others who have applied improved technologies or management practices with USG assistance

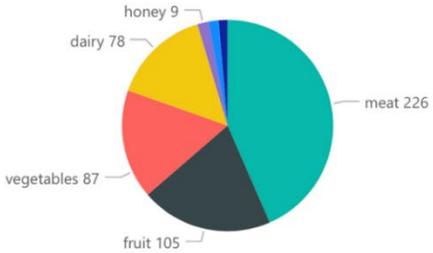
Number of farmers who have applied new or improved technologies



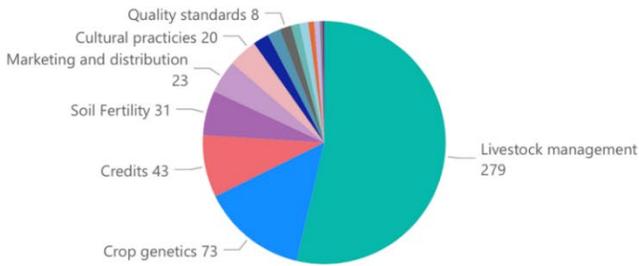
Number of farmers by Sex



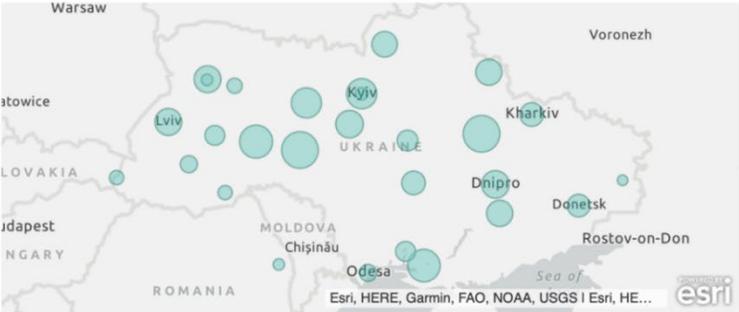
Number of farmers by Value chain



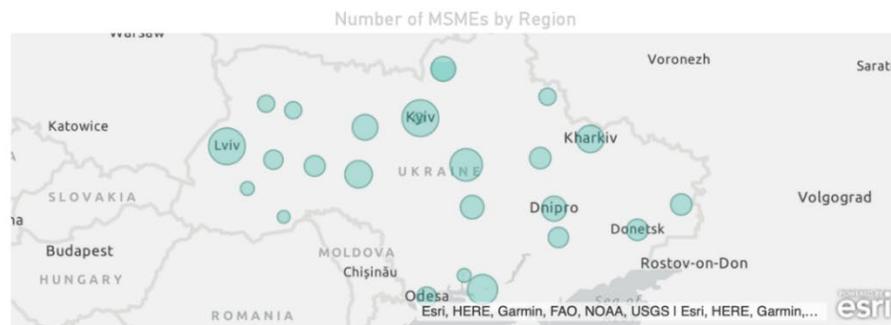
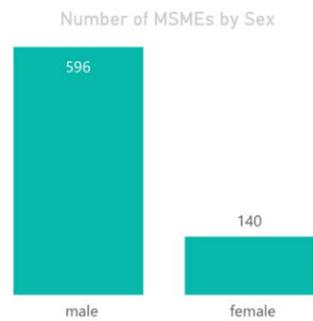
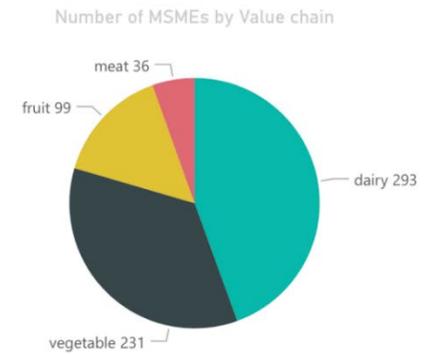
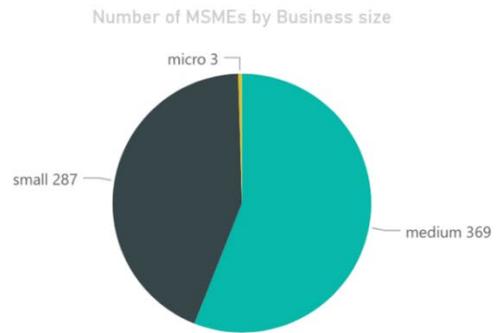
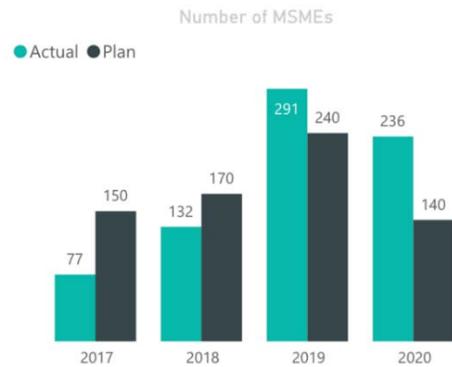
Number of farmers by Technology type



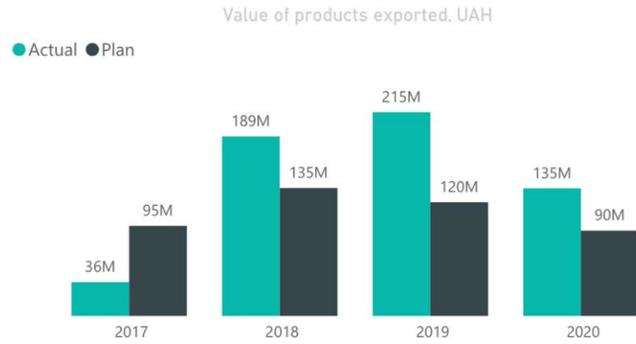
Number of farmers by Region



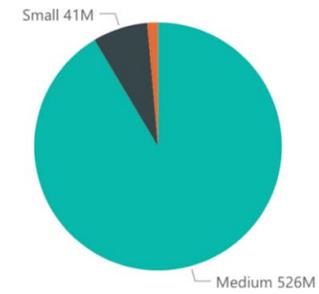
Indicator #16: Number of MSME clients receiving improved extension services



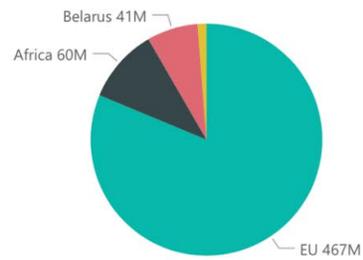
Indicator #17: Value of products exported as a result of USG assistance (UAH)



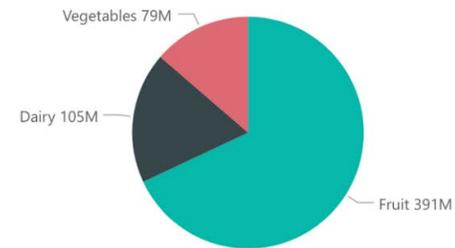
Cumulative value of products exported by Business size, UAH



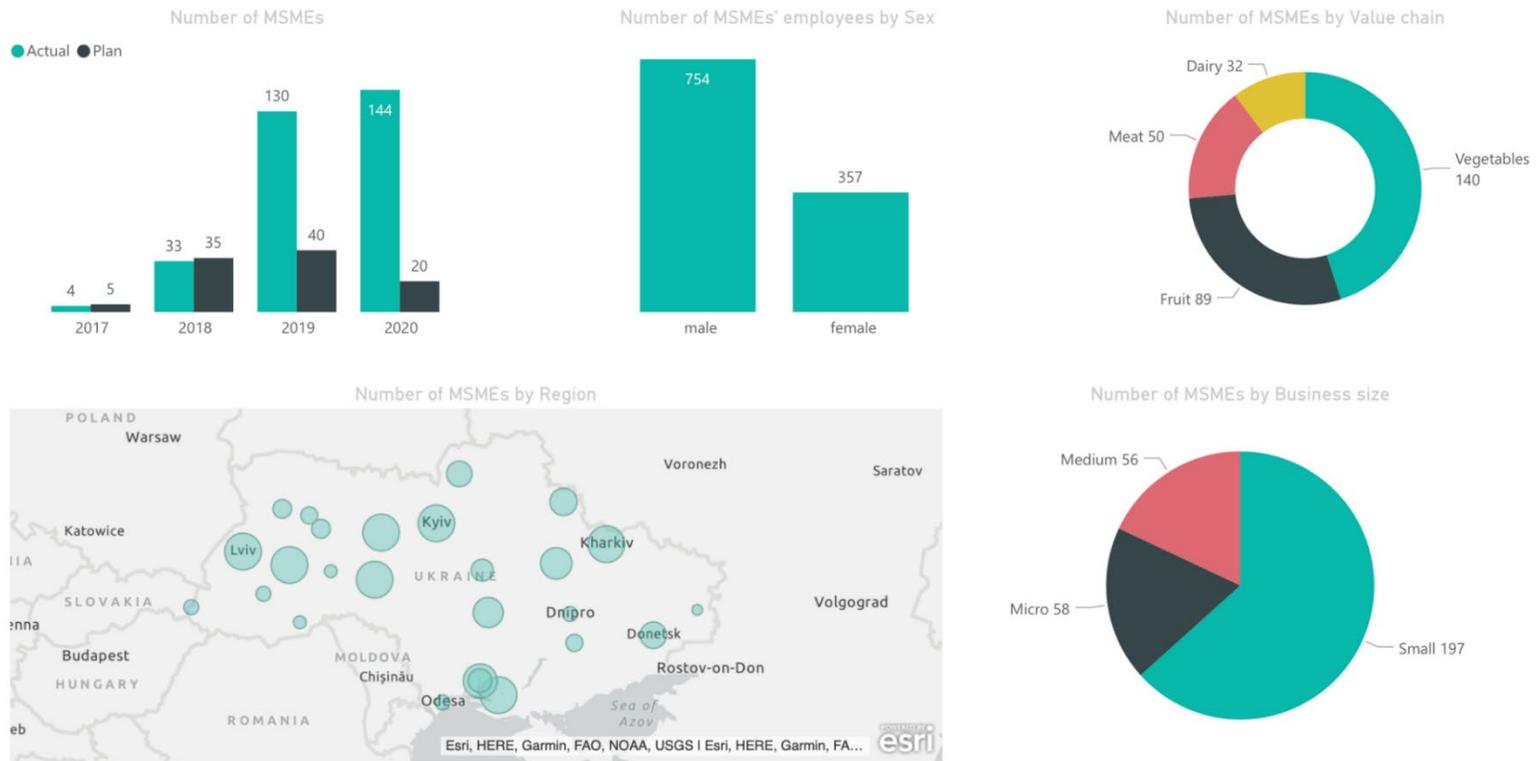
Cumulative value of products exported by Exporting country, UAH



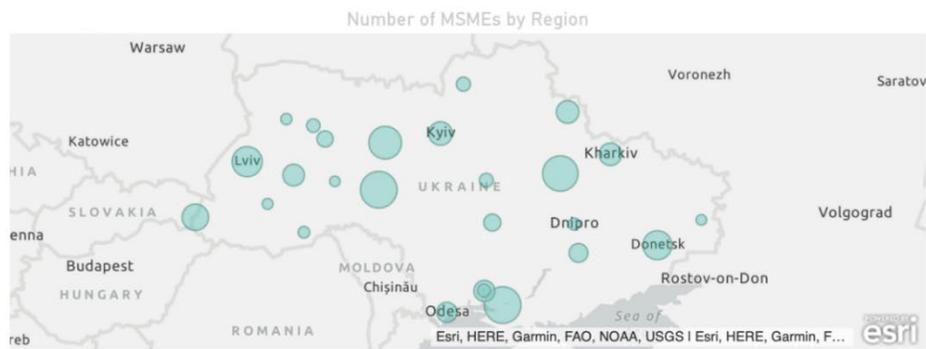
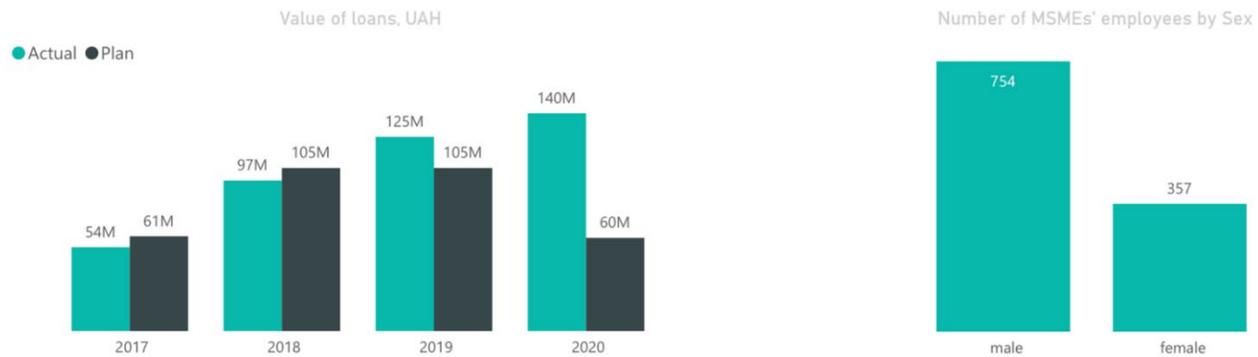
Cumulative value of products exported by Value chain, UAH



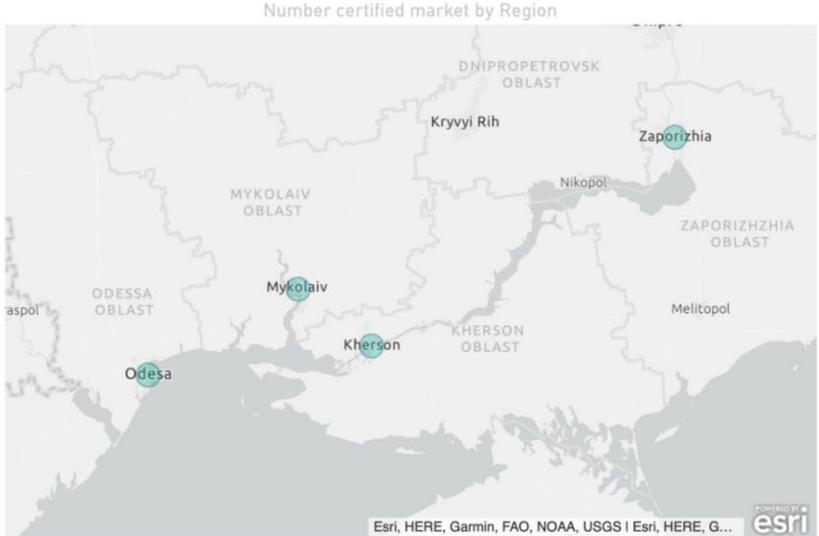
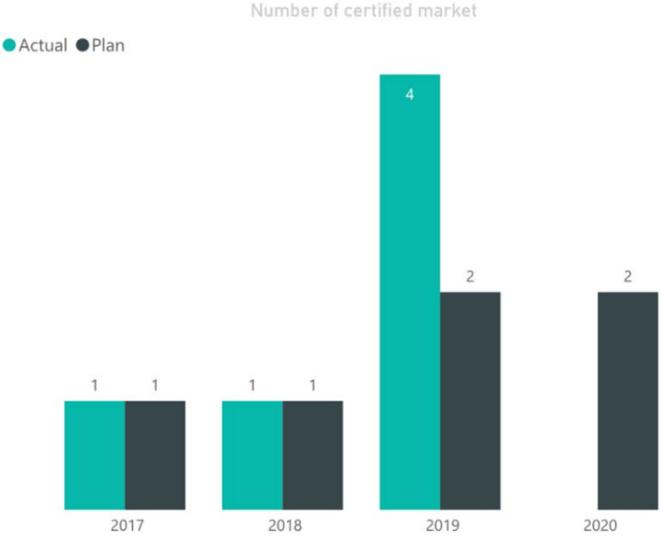
Indicator #18: Number of micro, small and medium enterprises (MSMEs), including farmers, receiving agricultural-related credits as a result of USG assistance



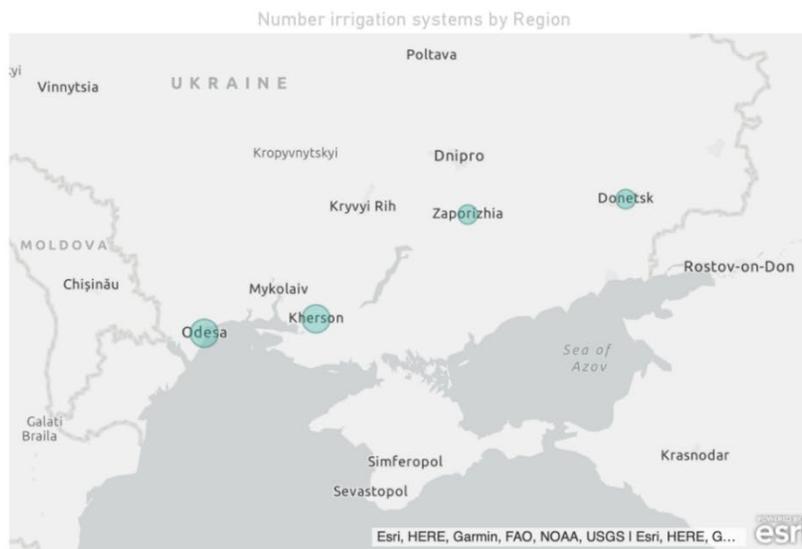
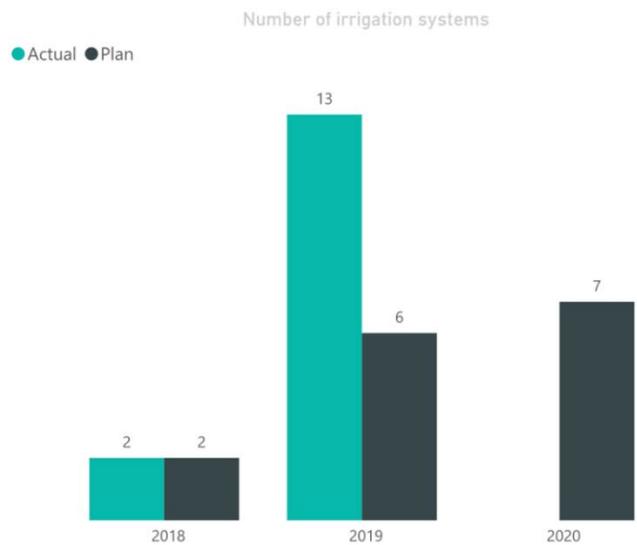
Indicator #19: Value of agricultural and rural loans as a result of USG assistance



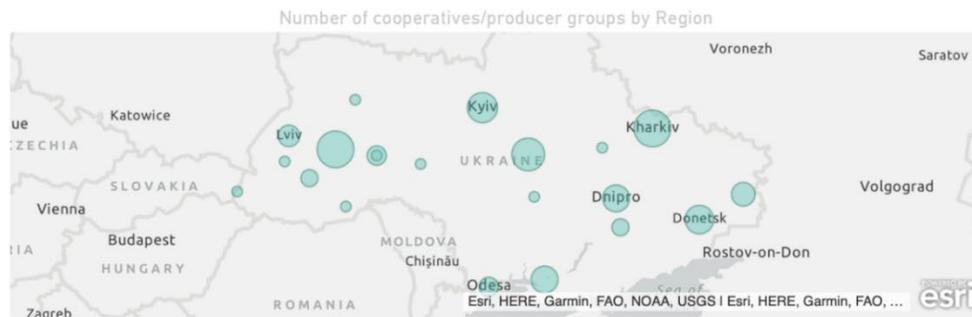
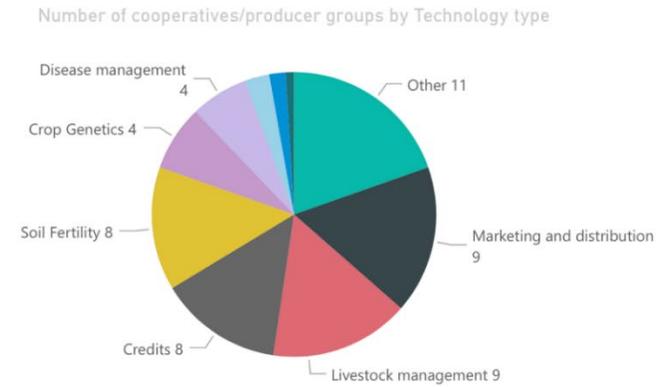
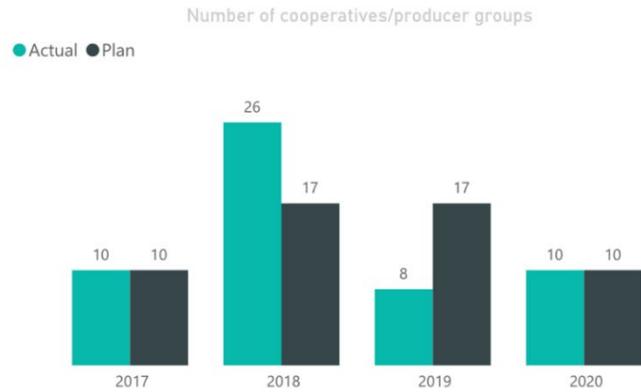
Indicator #20: Number of certified local markets



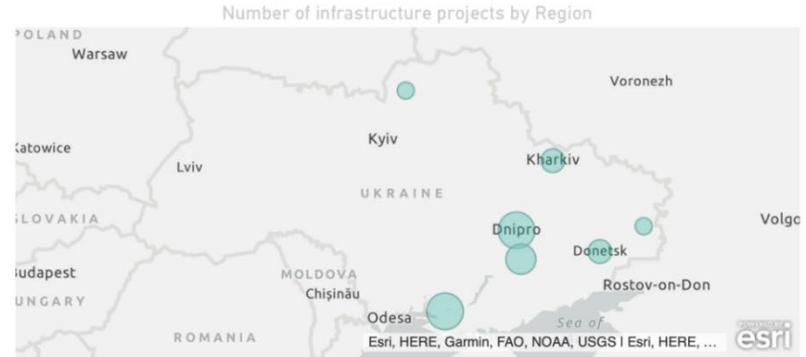
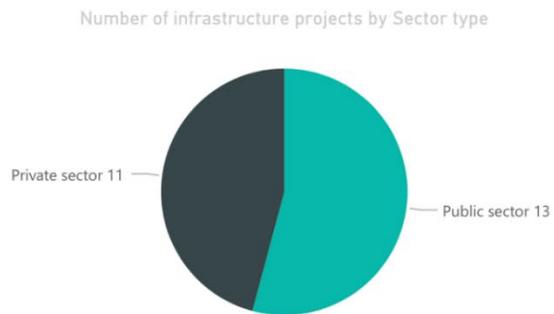
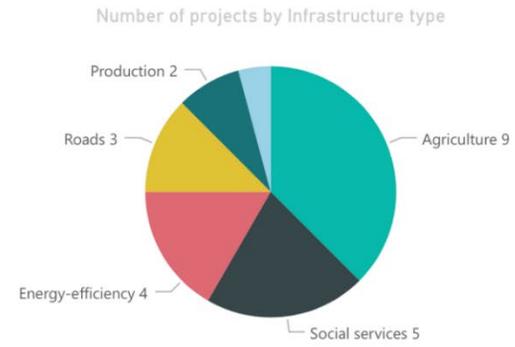
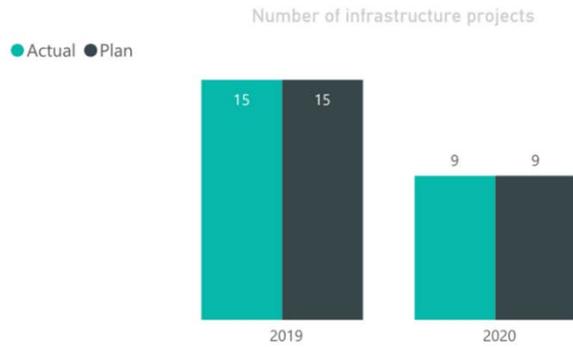
Indicator #21: Number of improved irrigation systems



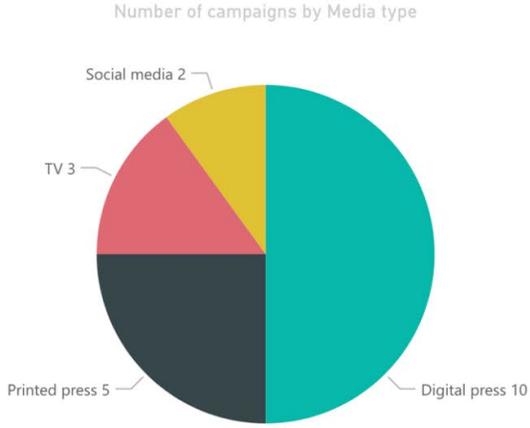
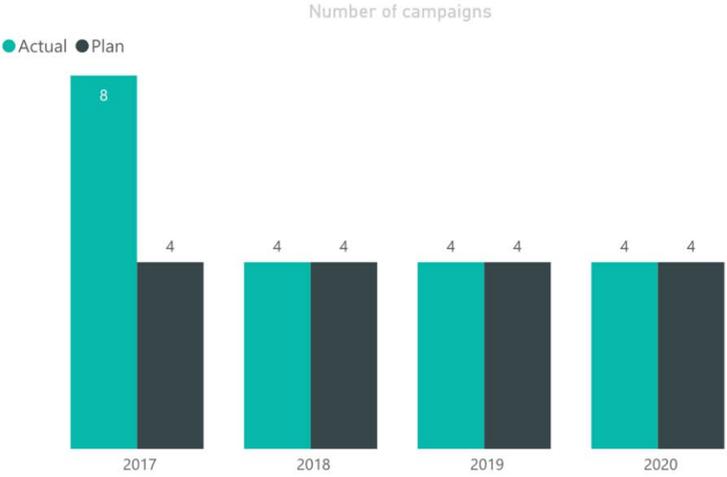
Indicator #22: Number of agriculture service cooperatives/producer groups providing access to modern technology and new markets for their agricultural MSME members



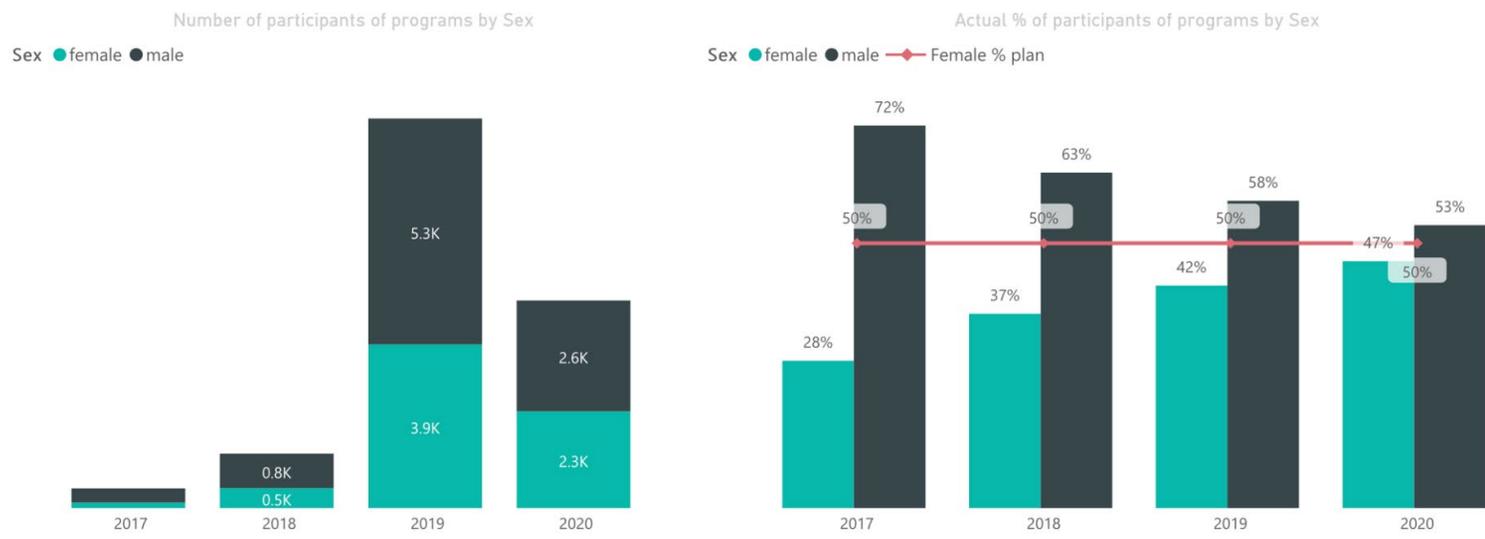
Indicator #23: Number of new rural infrastructure projects financed



Indicator #24: Number of ARDS-supported public campaigns with practical information of rural development



Indicator #25: Percentage of female participants in USG-assisted programs designed to increase access to productive economic resources (access, credit, income or employment)



ANNEX D. FINANCIAL INFORMATION

EXHIBIT D1. FINANCIAL INFORMATION

LINE ITEM	SEPT. 7, 2016 – JUNE 30, 2020	JULY 1, 2020 – JULY 31, 2020 FY20 Q4	TOTAL
Total Salaries	\$5,485,511.49	\$116,011.52	\$5,601,523.01
Total Direct Fringe	\$568,007.92	\$10,242.89	\$578,250.81
Total Indirect Fringe	\$572,308.63	\$12,297.01	\$584,605.64
Total Overhead	\$3,518,342.39	\$70,638.64	\$3,588,981.03
Travel and Transportation	\$222,981.52	\$49.06	\$223,030.58
Allowances	\$615,166.85	\$1,751.65	\$616,918.50
Other Direct Costs	\$1,281,603.43	\$49,938.69	\$1,331,542.12
Equipment, Vehicles, and Freight	\$158,105.42	\$112,227.00	\$270,332.42
Training	\$443,250.27	\$56.18	\$443,306.45
Subcontracts and Consultants	\$2,176,815.84	\$14,249.18	\$2,191,065.02
General and Administrative	\$1,001,823.97	\$20,532.49	\$1,022,356.46
Subtotal	\$16,043,917.73	\$407,994.31	\$16,451,912.04
Fixed Fee	\$1,221,619.00	\$21,101.00	\$1,242,720.00
Grants (LOC)	\$4,038,540.00	\$11,460.00	\$4,050,000.00
TOTAL	\$21,304,076.73	\$440,555.31	\$21,744,632.04

EXHIBIT D2. CONTRACT CEILINGS

LINE ITEM	TOTAL	CONTRACT CEILING
Subtotal	\$16,451,912.04	\$16,504,550.00
Fixed Fee	\$1,242,720.00	\$1,242,720.00
Grants	\$4,050,000.00	\$4,050,000.00
TOTAL	\$21,744,632.04	\$21,797,270.00



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UKRAINE

AGRICULTURE AND RURAL DEVELOPMENT SUPPORT (ARDS)

INTERACTIVE
FINAL REPORT

AUGUST 2020



AGRICULTURAL AND RURAL DEVELOPMENT SUPPORT PROJECT

USAID Contract AID-121-TO-16-00002

INTERACTIVE FINAL REPORT

AUGUST 2020

This publication, produced for review by the United States Agency for International Development (USAID), was prepared by Chemonics International Inc.

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Cover photo: ARDS project

CONTENTS

ARDS STORY BY NUMBERS.....	1
OVERVIEW.....	2
RULES AND REGULATIONS.....	10
Land Market Reform.....	11
Institutional Capacity.....	15
Capacity of Consolidated Communities.....	16
State Agri-food Controls.....	20
ENHANCING VALUE CHAINS AND SUPPORTING FUNCTIONS.....	23
Fruit and Vegetable Value Chains.....	24
Dairy Value Chain.....	33
Meat Value Chain.....	37
Supporting Functions.....	41
CONCLUSION.....	47

ACRONYMS

AMP	Association of Milk Producers
ARDS	USAID Agricultural and Rural Development project
AUPB	Association of Ukrainian Pig Breeders
CC	Consolidated Community
CVS	Center of Veterinary Services
DCFTA	Deep and Comprehensive Free Trade Area
EU	European Union
FAO	United Nations Food and Agriculture Organization
FFA	Future Farmers of America
FFU	Future Farmers of Ukraine
FMC	First Milk Cooperative
GIS	Geographic Information Systems
GoU	Government of Ukraine
HACCP	Hazard Analysis and Critical Control Point
IMF	International Monetary Fund
LSD	Local System Development program
MAPF	Ministry of Agrarian Policy and Food
MEDTA	Ministry of Economic Development, Trade, and Agriculture
MP	Member of Parliament
NGCA	Non-Government Controlled Area (of Donetsk and Luhansk oblasts)
NTWG	National Technical Working Group
PLT	Prime Lab Tech
RST	Reform Support Team
SGC	StateGeoCadastre
SME	Small and Medium Enterprise
SRO	Self-Regulatory Organization
UAE	United Arab Emirates
UAPP	Ukrainian Association of Potato Producers
UkrSadProm	Ukrainian Fruit Growers Association
USAID	United States Agency for International Development
USBA	Ukrainian Stock Breeders Association
USD	United States Dollar

ARDS Story by Numbers



9,438
people engaged in ARDS activities



1 mil
indirect beneficiaries



17
associations and self-regulatory organizations strengthened capacities



24
infrastructure projects



39%
land reform supporters, up from 15%



89 mil
SMEs incremental sales in USD



72
revised and drafted legislative pieces



22 mil
value of exported goods in USD



13
adopted laws



~50,000
farmers and private households engaged



79
communities supported implementing land management methodology



13 mil
value of new private sector investment in the agri-sector



16 mil
farmers' loans in USD



520
farmers implemented new technologies

CHAPTER ONE

OVERVIEW

“Today Ukraine is undergoing a period of transformation, which by its scale and complexity, is unprecedented. We are not merely implementing a number of reforms in different spheres, we are essentially building a new Ukrainian modern state. And we do this facing Russia’s ongoing hybrid aggression. Despite these challenges, we’ve started systemic and institutional reforms never seen before in our history of independence.”

Volodymyr Groysman, Prime Minister of Ukraine (Apr 2016-Aug 2019)

Reforms in Ukraine: Progress and Priorities
[Ukraine Reform Conference, June 2018](#)

A remarkable Ukrainian chapter opened in 2013-14 when a “Euromaidan” citizen uprising saw tens of thousands of citizens swarm the streets protesting its then-government’s rejection of a European Union (EU) agreement in favor of developing closer ties with Russia. By March 2014, the pro-Russian regime was ousted and replaced by an EU-aligned government. Undeterred by Russia’s response — illegal annexation of Crimea followed by a military occupation of seven percent of Ukrainian territory where fighting continues to this day — Ukraine’s determination to open economic opportunities as a European country and attract more foreign and domestic investment only increased. The conflict — with its damaging loss of markets in both Russia and in non-government-controlled areas and insult to Ukraine’s independence — re-ignited once again, the country’s renowned national pride into taking action on both public and private levels, as it continued its bold strides toward a more stable and financially sound future.

In April 2014, the start of decentralization reforms set the stage for the transfer of political, administrative, and financial rules and responsibilities from the central government to the local level. Ongoing goals include forming effective local government to create and support a sustainable rural living environment by merging local villages (voluntarily) into Consolidated Communities (CCs), providing high quality and accessible public services, and reducing corruption in various economic sectors — chief among them in the country famously known as “the breadbasket of Europe”, its agricultural industries. In February 2015, the country embarked on unprecedented and wide-ranging deregulatory, legislative changes aimed at strengthening its economy, adhering to EU democratic and trade principles, and protecting against further Russian encroachment.

In September 2016, in the midst of Ukraine’s determined pivot towards the EU and its lucrative open marketplace, the United



States Agency for International Development (USAID) launched the Agricultural and Rural Development Support (ARDS) project, a \$22 million, four-year initiative. Building on successes and lessons learned from previous agri-projects and functioning on both national and local levels, with a special focus on rural development in southern and eastern Ukraine, ARDS embraced the [U.S. Global Food Security Act of 2016's](#) commitment to the *“productivity, incomes, and livelihoods of small scale producers, particularly women, by working across agricultural values chains and expanding farmers’ access to local and international markets.”*

Closely linking its activities to Ukraine’s decentralization process, and working with a range of entities (government, private, civil society, and donor partners), the project applied a gender integration and mainstreaming strategy. Bolstering inclusive, competitive, and sustainable economic growth of Ukraine’s agricultural sector, ARDS achieved its results by focusing on two goals.

1. Improving rules and regulations governing land market reform

- Build institutional capacity to both design and implement these reforms
- Build the capacity of CCs to design and implement these reforms on the local level
- Reform and improve State agri-food controls

2. Enhancing agricultural value chains — meat, dairy, fruit, and vegetable— and their supporting functions

Basing all of its activities on the holistic Market Systems approach—public and private participation, collaboration, and competition in the production, distribution, and consumption of goods and services at local, regional, and international levels—ARDS targeted: 1) actors directly involved in the core functions of Ukraine’s four agri-value chains; 2) the rules and regulations governing the country’s market

system, and 3) the functions that support the market system and its value chains.

Understanding that to change the system is to deeply know the system, first steps included a complete examination of every aspect of Ukraine’s agricultural meat, dairy, fruit, and vegetable value chains and their respective “field to table” supply chains, including production, processing, buying, selling, and the environment where each value chain exists. Economic, conflict-related, or natural shocks were also studied, such as how to facilitate viable market linkages to replace lost markets in non-government controlled areas (NGCA) in Donetsk and Luhansk oblasts and Russia. In addition, select input materials and services surrounding each respective value chain were assessed and improved.

At the same time, ARDS examined the rules and regulations supporting Ukraine’s then-current market system and how the country’s legal environment would need to adapt to support the newer one required by decentralization and Ukraine’s entry into the EU and international marketplace. How could bureaucratic burdens be lifted and procedures simplified? What laws were needed to support opening new opportunities in its agri-sector? Regarding

supporting functions: How to enable small and medium agri-growers to access to finance? What services can be provided to them to help them increase production and meet EU standards?

The following represent just a sampling of improvements made and project successes. ARDS improved accessibility to financial services. Feasibility studies on introducing modern irrigation technologies were conducted in 12 select areas. ARDS’ co-investment partnerships improved processing, freezing, and logistics services in the fruit and vegetable value chains. A regional laboratory examining raw milk quality was developed, along with a milk collection platform, milk processing centers, and international safety and quality standards. Two fully-equipped, state-of-the-art regional Veterinary Service Centers were opened. Seeking to inspire middle and high school students to opt for science, business, and agri-technology, ARDS partnered in the development of a Future Farmers of Ukraine (FFU) organization modeled after the 92-year old Future Farmers of America (FFA). ARDS also sponsored a 10-day tour to the University of Missouri, where delegation members attended the state’s annual FFA convention, at which Ukrainian Agrarian Lyceum students shared their FFU start-up experience with an audience of over 8,000 fellow students.



Photo: ARDS project

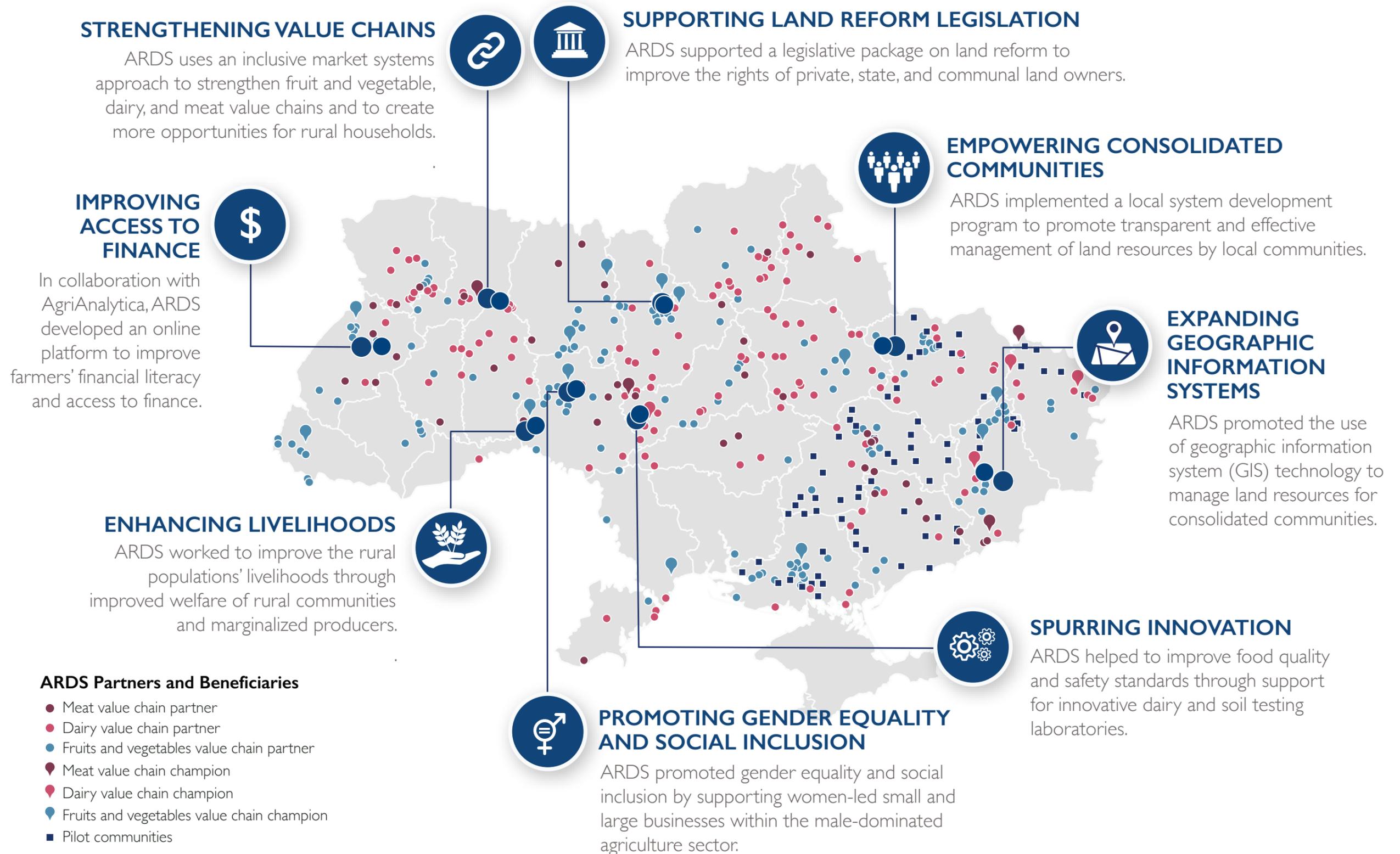


Improved Quality Helps Farmers Access Global Markets

The video explains ARDS Market System Approach in cooperation with project’s grantees Agrico Ukraine, Fruktona, Ukrainian Berry, Vinnytsya Food and Gustatory Factory, and Prime Lab Tech.



ARDS Partners, Beneficiaries, and Thematic Working Areas



ARDS milestones 2017-2019

2017		Piloted riverways watermelon supply chain to reduce shipping costs and improve perishability and packaging standards.
		Supported 27 fruit and berry producers to participate in Asia's largest international trade show, Asia Fruit Logistica in Hong Kong.
		Supported the GoU in designing and popularizing the Land Reform campaign to raise awareness on the benefits of lifting moratorium on agricultural land sale.
		Developed four guidelines for implementing international food safety standards for dairy, meat, vegetable, and fruit value chains.
		Supported the Ministry of Agriculture and Trade in promoting essential reforms by providing experts to develop and implement strategic documents.
		Introduced new technologies oriented to new and expanding markets protection.
2018		Co-invested six projects with champion firms that introduce system solutions in fruit and vegetable and dairy value chains.
		Enhanced capacity of eight industry associations to articulate and advocate their needs and influence agrarian policy.
		Expanded transparent and efficient land management and administration methodology to the Palanka Consolidated Community.
		Supported drafting and advocating for adoption of the Law on Streamlining of Some Phytosanitary Measures.
		Established legislation for operating private laboratories within official phytosanitary control; the Law on Streamlining of Some Phytosanitary Measures is fully enforced.
		Law on optimizing use of arrays of agri-land and law on requirement for organic products were adopted, both developed with ARDS expertise.
2019		Provided recommendations on irrigation system management, revising payment models with system users, and creating water distribution models.
		Developed a sustainable business model to create calf-raising centers operated by households, family farms, and small farms.
		Organized G7 ambassadors visit to Kipti Consolidated Community to learn methodology for public land management and administration piloted by ARDS.
		Cooperated with the State Farmers Support Fund of Ukraine to help agricultural SMEs access low-cost credit and increase financial awareness.
		Supported the launch of a Fruit and Vegetable Market Partners Club to promote behavior in value chain actors that is consistent with a market systems approach.
		Launched a pilot business model for post-harvest fruit processing centers to help fruit SMEs in central Ukraine improve their supply chain.
		Co-invested another nine projects with champion firms that introduced system solutions in fruit and vegetable, dairy, and meat value chains.
		Implemented the Local Systems Development program in 79 communities and launched Ukraine's first GIS-based Land Use Planning and Management portal.
		Supported and implemented investment projects in nine consolidated communities focusing on rural development and improving people's lives.
		Developed and proposed to the GoU comprehensive land reform agenda supported by the international donor community, including the World Bank.
		Started implementation of a behavior change strategy to motivate secondary beneficiaries to uptake solutions piloted in part by ARDS.
		Established two fully-equipped Centers for Veterinary Services in Luhansk and Donetsk oblasts to provide veterinary services to the maximum number of dairy farms in the region.
	Co-organized Ukraine's first GLOBALG.A.P Tour in partnership with Syngenta.	
	Developed methodological guidelines for introducing HACCP safety standards at wholesale and retail markets.	
	Finalized Local System Development Program by publishing 10 geoportals of hub consolidated communities to publicly manage and administer land and other resources.	
	Supported two pilot projects implementing climate-smart technology and a harvest control and traceability system to improve pest control and product quality.	

This “bottom to top” approach included the project’s implementation of first one, then a second and a third pilot program in select CCs. Focused on strategic local economic development, the project provided tools and trainings that enabled community leaders, economists, land surveyors, and agri-businesses

to successfully address challenging land management issues, thus building their capacity to design and implement national reforms on the local level. Based on pilot results, ARDS created a CC-based Local Systems Development (LSD) program and, working with 74 CCs in six oblasts, promoted its market system development

approach aimed at fighting corruption in land management. One huge technological innovation saw ARDS develop modern GIS technology that allowed for public access to land information, transparent public management of assets, and contributed to battling corruption. After training CC land surveyors and economists on how to

combine modern GIS with economic analysis to achieve sustainable development, ARDS launched Ukraine’s first GIS-based Land Use Planning and Management portal. This achievement led to the opening of a total of 74 publicly-accessible geoportals.



Photo: Loma Tychostrup

SUCCESS STORY

Ukrainian Agrarian Lyceum Grows Future Farmers

To inspire teenagers to enter careers in agriculture, ARDS sponsored a 13-person FFU delegation to participate in a 10-day study tour to the University of Missouri.



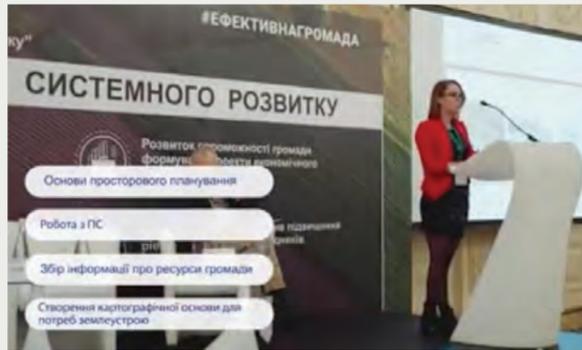
Photo: ARDS project

VIDEO

I want to be a farmer because... it's cool!

Meet the Future Farmers of Ukraine, a youth organization that portrays Ukraine's agriculture in a new light and says farming is cool, modern, trendy, and fashionable.





VIDEO

Effective community land management: Why is it necessary, possible, and important?

Learn more about ARDS work with consolidated communities and the goals of the Local System Development Program.



Taken as a whole, these supportive, capacity building activities increased regional awareness, strengthened CC capacities, and gave them the courage to defend their land rights and push Members of Parliament (MPs) to move forward with promised reforms. Seen as one of its greatest achievements and paramount to long-term sustainability of Ukraine's agri-sector, this support garnered at the local level drove ARDS' success in the development of crucial agri-industry legislation foundationally important to land market reforms. Although its most challenging, the project's regional-level efforts changed the national perception of rural community development as a concept and recast the national legislative land reform agenda to include the needs of local, rural communities "bottom-to-top." This is a first in Ukraine, which, previous to ARDS interventions and like so many other countries, adopted legislation "top-to-bottom" without taking into consideration the needs of local communities.

Chief among ARDS' land market reform legislation successes was the adoption of the Law on Agricultural Land Turnover (#2178-10), which is slated to come into effect on July 1, 2021, and will not only result in lifting Ukraine's restrictive 19-year land sale moratorium on 96 percent of Ukraine's agricultural land, but also bring the country one step closer to receiving a \$5.5 billion International Monetary Fund loan program aid package. Thanks to ARDS' support,

to date, seven draft laws, including laws on National Geospatial Data Infrastructure and Land Use Planning, have been adopted by Ukraine's parliamentary body, the Verkhovna Rada. [See Table 1 for a complete list of these laws.] Among them and crucially important to meeting required EU standards and increasing exports, ARDS successfully reformed and improved State agri-controls and quality standards.

Legal provisions now in place ensure adherence to modern phyto-testing (pesticides, soil, insects, etc.) and certification procedures; permit private labs to conduct phytosanitary tests and issue certificates, thus breaking the State monopoly on testing; and contain detailed regulations and procedures both State and private labs must follow. As a result and once again thanks to ARDS' support, one of Ukraine's first private food control laboratories—Prime Lab Tech—has been the first to obtain partial accreditation and, at the project's end, was on its way to full accreditation.

The above is just a sampling of the seeds ARDS planted (more detailed information can be found in following sections). Taken as a whole, these innovations and successes have resulted in attracting private agri-investment via co-investment and loans, boosting agri-exports, reducing corruption, and herald Ukraine's entering the 21st century as an equal and competitive international agri-market partner.

CHAPTER TWO

RULES AND REGULATIONS

Ukraine's Ministry of Agrarian Policy and Food (MAPF) published the "[National Strategy and Action Plan for Agriculture and Rural Development 2015-2020](#)" in 2015, which provided the overall policy framework for ARDS support. In July 2016, the MAPF defined nine of the strategy's short-term reform priorities, five of which ARDS worked on: 1) Land Reform; 2) Rural Development, 3) Agricultural Markets; 4) Organic Production and Niche Crops; and 5) Irrigation Systems. In addition, ARDS worked on building the capacity of government agencies and other stakeholders to implement these reforms. Embracing the [U.S. Government's Global Food Security policy programming guidance](#), and in support of Ukraine's decentralization efforts allowing for the transfer of political, administrative, and financial national powers to the local level, ARDS targeted the following:

- **Ukraine's country-led, prioritized public policy agenda;**

- Improving an institutional architecture that ensures transparent and evidence-based policy change, employs inclusive dialogue, and strengthens policy and advocacy institutions;
- Ensuring mutual accountability that includes such norms as multi-stakeholder participation, stakeholder commitments, joint responsibility for progress, regular document review, and transparent communications on progress;
- Engaging the government, private sector, civil society, academia, and media in solutions and tactics to foster buy in, ownership, and action.

To improve rules and regulations, ARDS focused on the following four areas:

- 1. Land market reform**
- 2. Institutional capacity**
- 3. Capacity of Consolidated Communities**
- 4. State agri-food controls**



VIDEO

Authority. Community. Business. Local System Development program

The cartoon video describes how effective collaboration of authority, community, and business improve the well-being and increase the investment potential of the community.



LAND MARKET REFORM

Seen as a powerful measure to boost economic growth and job creation, agricultural land reform has been a stated priority in Ukraine since it declared independence in 1991 and began its journey towards a market economy. Although land reform was viewed as a priority, due to a lack of consensus on how to conduct agri-land sales, (e.g., who can buy agri-land? under what conditions? how many hectares can be sold to one entity?) Ukraine's 2001 Land Code included a restrictive Land Moratorium, which banned the sale of 96 percent of land used for farming and other agri-production (75 percent of which is privately-owned, with 20 percent leased by agri-holdings), including the transfer of land shares allocated to citizens as part of the land reform process.

Despite its potential to transform the agricultural sector and Ukraine's rural economic landscape,

land reform remained a politically sensitive issue over the years. The moratorium acted as a major impediment to the development of a legal and transparent land market reform framework free of corruption, compounded by the central government's reluctance to cede power to the local level. Not only violating the constitutionally guaranteed right to private ownership of land and depriving farmers the ability to sell land, the moratorium and absence of a transparent and operational land market blocked development of small- and medium-sized farms, given that farmers could not use land as collateral to attract bank financing. It also fostered displacement of farmers forced to rent their land to large, mechanized agri-holdings that shrink job opportunities, resulting in increased poverty; decreased local government revenues, resulting in degradation of rural infrastructure and standards of living; and created market inefficiencies and distortions that adversely affected agri-value chains.



Photo: ARDS project



Photo: ARDS project



7 steps of effective management of land and other community resources

ARDS proposed seven steps to help implement a transparent governance system that takes into account the interests of all community members.

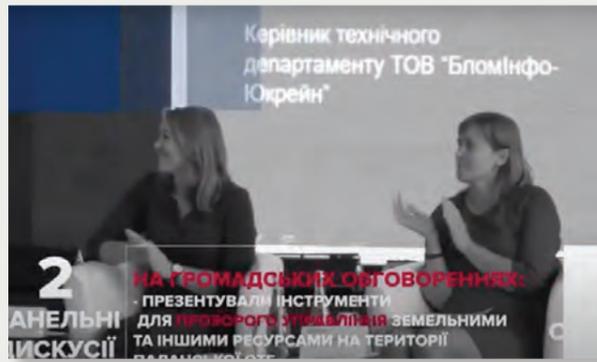


Events of 2013-14 — Ukraine's ousting of its pro-Russian government in favor of one that immediately set on establishing strong ties with the EU — opened the door to long-awaited land market reforms. Decentralization reforms set the stage for the transfer of political, administrative, and financial rules and responsibilities from the central government to the local level, with a focus on empowering local self-governance, developing a sustainable land market system, and combating corruption. In 2019, the International Monetary Fund (IMF) listed land reform among Ukraine's top three priorities and linked its financial assistance to the country's passage of reforms.

Objectives

To boost rural development and reduce corruption in land management, ARDS prioritized the creation of a legal framework to support the opening of a transparent land market. It accomplished this by deepening stakeholder understanding and identifying incentives that changed mindsets and behaviors, and fostered ownership and action. ARDS efforts focused on three areas in parallel.

1. **Develop a “farmer-centric” model of agri-land market legislation** supported by the consensus of all actors and general society by partnering with a range of stakeholders on public communications to increase citizen understanding of land reform and their land rights.
2. **Improve land governance** by simplifying land administration procedures, regulating land management, improving the maintenance of the StateGeoCadastre and registry of rights, and strengthening land rights protections by partnering with the MAPF and other stakeholders to improve the land governance system at the national and local levels by developing agri-land market legislation comprised of transparent rules and regulations.
3. **Build the capacity of the newly-created Consolidated Communities**, established in accordance with decentralization-mandated transfer of central authorities to the local level, to manage their land resources, in order to build trust and public support for land reform by allowing citizens to experience



Palanka Consolidated Community public hearings on land management

Palanka CC hosted the first land management public hearings engaging local communities, state authorities, businesses, and media.



its benefits, and providing local systems and structures to support the eventual opening of an agricultural land market.

4. Strengthen the capacity of Ukrainian associations to advance land reform.

Although ARDS strove to partner first with the Verkhovna Rada (2017), and then later worked with the MAPF and other stakeholders, by 2018, little progress had been made at the national level towards meaningful land reform. While awaiting finalization of the much debated Law of Agricultural Land Turnover, which laid the groundwork for all ensuing agri-land market legislation, ARDS refocused and intensified its efforts on the regional level. Collaborating with the World Bank, Ukrainian Association of Communities, All-Ukrainian Agrarian Council, Ukrainian Agrarian Confederation, the parliamentary Committee on Agrarian Policy and Land Relations, MPs, and select pilot CCs, ARDS built the capacity of Ukrainian associations, councils, and committees, and increased citizen awareness on how land management reforms would benefit them personally in their communities.

Using this “bottom to top” approach, ARDS implemented first one, then a second and third pilot program in select CCs focused on strategic local economic development. Providing them with tools and trainings, these CC “models” successfully addressed challenging land management issues. As word of these successes grew, so did regional awareness and engagement in land reforms and their benefits. Support grew from 15 percent in 2017 to almost 40 percent by 2019. These successes also helped ARDS grow its partnership efforts to 74 CCs in six oblasts where the project built CC capacity (in varying degrees) to design and implement national reforms on the local level.

This increase in support for land market reform coupled with ARDS successes in building CC capacity put pressure on MPs to move forward with promised reforms. Supporting development of these reforms, ARDS successfully laid the groundwork for a complex array of draft agri-land market legislation, much of which has been adopted, as shown in Table 1.

Results

- Five agri-land market reform laws implemented and two adopted in the first reading
- The March 31, 2020, adoption of the Agricultural Land Turnover law (#2178-10), which will come into force on July 1, 2021, establishes Ukraine’s land market and describes all the key elements of how it should operate, which, as a result, automatically lifts the land sale moratorium, and brings Ukraine one-step closer to receiving an IMF aid package of \$5.5 billion loan program
- Increased the percentage of citizen support for land market reforms from 15 to 39 percent

Table 1: Land Market Reform Draft Laws Developed by or with ARDS Assistance

Name of Law	Purpose/Result/Effect	Status
Law on Collective Ownership (#2498)	Creates transparent land management procedures and environment, supports land transfers, reduces corruption, prevents illegal land takeovers	Adopted July 2018
Agricultural Land Turnover (#2178-10)	<ul style="list-style-type: none"> • Establishes the land market and describes all the key elements of how it should operate • Automatically lifts land sale moratorium • Brings Ukraine one-step closer to receiving IMF aid package of \$5.5 billion loan program • Limits land sales to one entity/person to 100 hectares (down from 100,000), will increase to 10,000 in 2024 • Foreigners and companies based abroad are banned from buying farmland 	Adopted Mar 31, 2020; Slated to come into force July 1, 2021
Deregulation in Land Relations (#2194)	Empowers communities and supports land use rights, builds capacity of actors in the agri-land market, helps newly established communities to manage, defend their rights, resulting in increased capacity	Adopted First Reading Nov 2019
Electronic Auctions (#2195)	Defines land auction rules, increases transparency	Adopted First Reading Nov 2019
Counteraction to Illegal Takeovers (#0858)	<ul style="list-style-type: none"> • Introduced automated data exchange between State Registry of Rights and State Land Cadastre • Delegates the StateGeoCadastre to input land data into the State Land Cadastre • Obliges registrars and notaries to verify property rights and the current status of property with all registries 	Came into force Jan 2020
National Geospatial Data Infrastructure (#2370)	Introduces EU standards to the spatial data infrastructure	Adopted April 2020
Land Use Planning (#2280)	Introduces complex spatial planning	Adopted June 2020

INSTITUTIONAL CAPACITY

Based on its market system approach, as mentioned above, ARDS partnered and built the capacity of multiple stakeholders: Ukraine's parliament, MAPF's restructuring priorities and its Reform Support Teams (RSTs), and selected Ukrainian Associations. ARDS began capacity building efforts with the MAPF by conducting a comprehensive restructuring needs assessment. As priorities shifted, in 2018, ARDS adapted by transferring its capacity building support to the RSTs in the following three areas: 1) rural development, 2) organic production, and 3) irrigation system rehabilitation and development. To this end, ARDS hired technical experts embedded in the RSTs who drafted respective strategies, laws, and by-laws resulting in: 1) the creation and approval of a development strategy for private farming and cooperatives; 2) the drafting of numerous laws and bylaws, including a recently (June 2019) adopted law on organic marking that meets EU standards; and 3) the 2019 adoption of the *Irrigation and Drainage Strategy in Ukraine* until 2030.

As this work ended, ARDS refocused its efforts and began working to strengthen institutional capacity in the areas of anti-raiding and the StateGeoCadastre (SGC). As per the government's request and with USAID approval, ARDS supported the establishment of an Anti-Raiding Office within the Ministry of Justice (a work still in progress at project's end).

In December 2019, Ukraine's SGC—the country's core body implementing land-centered reform provisions and charged as the main voice to inform the public of proposed legislative land reform changes—was significantly restructured as it began transitioning from a bureaucratic entity to a service-oriented institution. All department and oblast heads were dismissed as the SGC reviewed its hierarchical functions and duties. Focusing on building the SGC's institutional capacity (its ability to set and achieve its social and economic goals), as well as supporting its forthcoming communication campaign, ARDS conducted seminars for SGC employees in 24 oblasts where SGC changes were to be explained as well as its new role

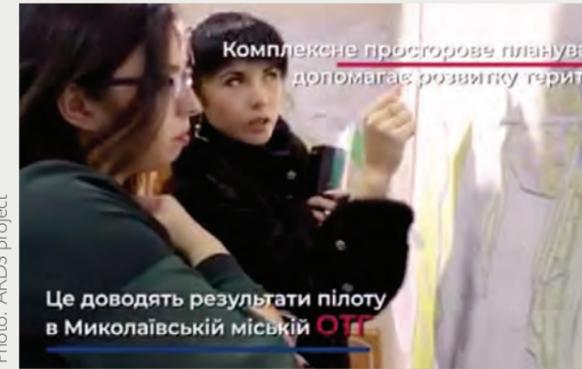


Photo: ARDS project



Comprehensive spatial planning of the community: From pilot to bill

The video provides insights on Ukraine's first ever comprehensive spatial planning in an urban community. The approach laid the foundations for the adoption of draft law #2280.



within local communities. During facilitated discussions, ARDS identified a “bureaucratic” communication style that worked to increase negative attitudes in communities and aggressive behavior in businesses. To help SGC employees improve their working relationships and achieve greater success at spreading the message of reforms and their benefits, ARDS provided positive communication skills trainings for regional employees, and assisted the SGC's development of a widespread information dissemination communication campaign.

To support creation of basic and transparent rules for the emergent land market, at the SGC's request, ARDS contracted specialists in spatial planning of settlements, economics of urban land use, regional economics, land survey, and land cadastre. Together they developed a methodology for the normative monetary valuation of land—standardized criteria to calculate how much a parcel of land is worth based on its size and how it is classified (agricultural, residential, commercial, etc.). This methodology was validated by the successful use of the ARDS-developed complex spatial community online platform, a project implemented with the Mykolaivka

CC (Donetsk Oblast), which sets standardized prices for parcels via a transparent, simplified, and time-saving system. ARDS drafted a resolution for the Cabinet of Ministers, which the StateGeoCadastre published on its [website](#) for public discussion. By the project end, recommendations from experts will be incorporated and a finalized draft resolution on the normative monetary valuation of land will be ready for the Cabinet of Ministers.

CAPACITY OF CONSOLIDATED COMMUNITIES

One key decentralization success saw the voluntary merging of local villages into Consolidated Communities, headed by one elected official who guides development and growth. Each CC has its own decision-making powers and budget transferred from the central government, their futures and responsibilities for those futures are in their own hands. With land resources a main source of rural economic development, the vast majority of CCs acknowledged they had limited abilities to effectively manage their land.

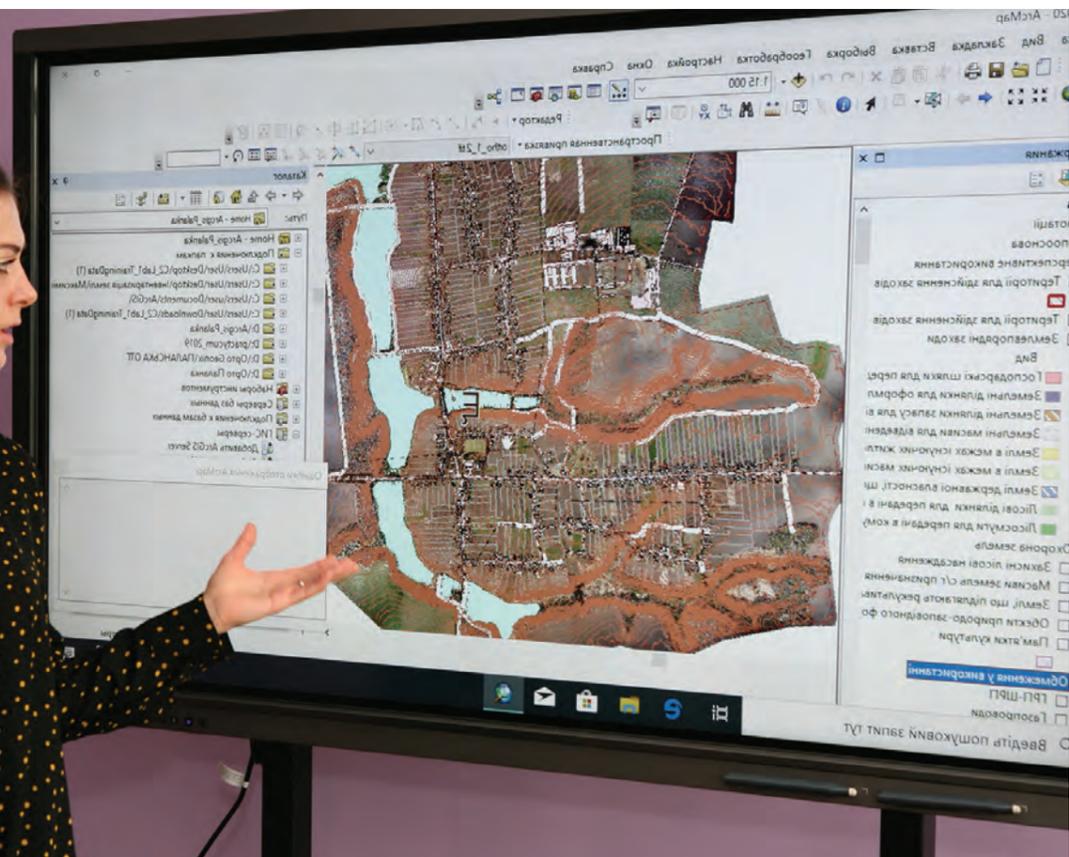


Photo: Lorna Tyhostup

Objectives

- Prepare CCs to work efficiently under decentralization and agri-land reforms
- Build CCs' capacities to carry out land use planning and asset management
- Support CC economic growth and sustainability
- Advance legal initiatives that will support CCs' local economic growth

Results

In 2017, ARDS initiated a pilot project in Kipti CC (Chernihiv Oblast), the first of its kind in Ukraine, aimed at developing the CC's economic strategy and proposals for investment projects by building its capacity to manage its resources and thrive. With ARDS support and trainings, Kipti CC collected all available information on current land use within its territory (designated use, legal status, existing restrictions, etc.), and developed a GIS database that: a) produced a series of maps used in land use planning, public discussions, and decision-making, and b) helped the CC to identify opportunities to increase annual revenues, public control over management, and use of publicly-owned land.

Based on these successes, ARDS developed a *Practical Toolkit for CC Land Management*, to

guide community leaders, and drafted two laws supporting CC land management capacity: 1) *On Land Management and Spatial Planning at the Local Level*, which allows new CCs to establish formal boundaries and manage land resources within them, and contains a precise definition of CC councils' land-related authorities; and 2) *Sensitizing National Government to CCs and Rural Development*.

In June 2018, after a presentation by Kipti CC Mayor Volodymyr Kuchma, successes in Kipti CC drew both support for the above draft law and accolades for the impacts of its land management initiative from visiting G7 Ambassadors and Vice Prime Minister Hennadiy Zubko after a presentation by Kipti CC Mayor, Mr. Volodymyr Kuchma.

"Today, at Kipti, we experienced a presentation of a fantastic and necessary project, 'Land Management and Implementation of Local Economic Development strategy in Decentralization'. Now it is very important to pass the law on transferring land resources to CCs and land territorial planning."

~ Hennadiy Zubko, Vice Prime Minister
(2014-2019)

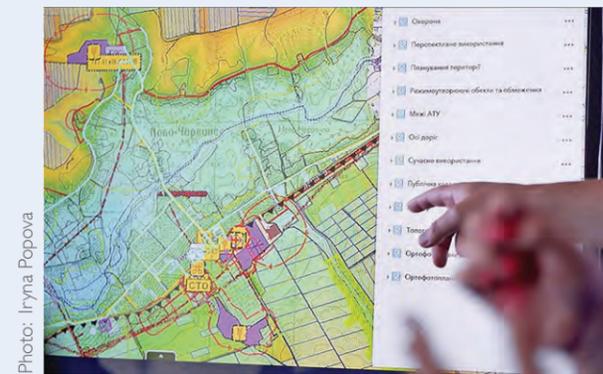


Photo: Iryna Popova



SUCCESS STORY

Land Market Reform Unlocks Investment Potential

ARDS worked with 79 consolidated communities in six oblasts to support the emerging land market and efforts to redraw administrative land maps to better identify and utilize regional resources.



In 2018-19, ARDS built on the successes of the Kipti CC model and expanded efforts to a second (Palanka CC, Cherkasy Oblast) and then a third (Mykolaivka CC, Donetsk Oblast) pilot supporting their emerging land markets and efforts to redraw administrative land maps to better identify and utilize regional resources. From these findings, ARDS developed its CC-based Local Systems Development (LSD) program aimed at increasing the wellbeing of rural families by unlocking the investment potential of their territories, and gaining access to information on local resources and funding sources. Using its LSD program, ARDS later expanded this cooperative effort to include a total of 79 CCs in the six oblasts where it promoted its market system development approach to combat corruption in land administration and management: Donetsk, Dnipropetrovsk, Kharkiv, Kherson, Luhansk, and Zaporizhzhia.

In 2019, ARDS launched Ukraine's first GIS-based Land Use Planning and Management geoportal offering spatial planning schematic maps on current and efficient land use and protected areas for CCs in six oblasts, an important milestone. Sharing information on administrative boundaries, land use plans, and other spatial data, the geoportal allows users

to search for information using the cadastral map number, location, or land use, thus decreasing citizen time and effort and increasing transparency and public engagement in land planning processes.

To meet their needs for relevant, comprehensive, and precise information on land value, ownership, taxation, zoning, etc. to accurately assess rural development needs and planning strategies, ARDS provided trainings to land surveyors, economists, and managers from all 79 CCs on such topics as the fundamentals and use of GIS in spatial planning; land and other resource administration and management; and how to collect, analyze, and apply community land use resources. Transformed into a comprehensive lecture series available at Kherson State Agrarian University for land surveyors and managers, the trainings are also available free-of-charge online, as is the ARDS-developed geoportal and its offering of spatial planning schematic maps on current and efficient land use and protected areas.

Based on their commitment and potential impact, ARDS selected 10 of the 79 CCs to serve as Centers of Excellence that prepared (using the newly-available GIS information) local economic profiles and developed the



Photo: Triada-MK

groundwork for 20 investment projects, 10 of which were developed and circulated to potential investors and donors. To further build CC capacity, ARDS initiated a series of business trainings for CCs and communal enterprises on how to recognize investment opportunities and bring them to fruition, including how to attract investors, develop CC infrastructure projects, build a business plan, and establish CC-public-private consortiums.

By the project's end, ARDS had developed geoportals for 74 CCs in Kharkiv, Dnipropetrovsk, Donetsk, Luhansk, Zaporizhzhia, and Kherson oblasts, and trained specialists on expected changes in the land management legislative package who went on to collect information on administrative boundaries, land use plans, and other spatial data to add to the geoportal. To date, thanks to trainings disseminated in other oblasts, more than 600 land surveyors have been trained in land management, and 24 investment projects have been supported.

Thanks to these and other capacities built with ARDS' assistance, CC members can now identify lands that could be leased or transferred to local households, discover and update intentionally

lowered lease rates to meet current market prices, and identify lands currently misclassified as pasture with lease rates that earn just pennies-per-hectare and reclassify them as arable lands that earn per hectare rates as high as \$75. They can use newly-acquired skills to identify investment opportunities and develop and implement projects either with income added to their local government budgets by way of appropriately classified lands that bring in more revenue, or with the capital acquired from the investors and donors they attract. They can grow their communities, reduce poverty, inspire the young to have hope for their futures, grow business, and have opportunities for more economic growth.

And perhaps most importantly, inspired by the recent, June 2020 adoptions of the Laws on National Geospatial Data Infrastructure #2370 (which introduces EU standards to the spatial data infrastructure), and Land Use Planning #2280 (which introduces complex spatial planning), they will continue to add their newly-educated, more experienced, confident voices to those on the national level and insist on additional legislative changes that will support their local economic growth.



Photo: PLT Laboratory

STATE AGRI-FOOD CONTROLS

The parliament's 2014 ratification of the Deep and Comprehensive Free Trade Area (DCFTA) agreement put Ukraine on a path to joining the EU and offered lucrative opportunities for its agri-sector. In accordance with DCFTA and to compete in EU and international agri-markets, Ukraine began to implement European sanitary and phytosanitary standards to comply with EU technical regulations and procedures with a special focus on phytosanitary certification reforms regarding import, export, and re-export (goods transiting through Ukraine).

Horribly outdated phytosanitary laws (circa 1993) hampered Ukraine's agri-businesses to compete in the international export community. State labs were rife with corruption, leading wary EU and other markets to require duplication of the same tests by international labs, thus doubling the costs of agri-exporters. ARDS began by assessing the regulatory environments of four targeted value chains (fruit, vegetable, dairy, and

meat), and veterinary and phytosanitary controls; and analyzing international best practices in agri-food control. Discussions conducted between stakeholders and market actors helped ARDS identify reform solutions to burdensome state control constraints over agri-food safety and quality that prevented competitive agri-market competition.

Objectives

1. **Demonstrating to the government the ability of private sector agri-business associations to perform specific state functions** by assisting them to institutionalize self-regulatory food safety control functions (e.g., voluntary certification, compliance confirmation, accreditation, monitoring, etc.)
2. **Improving the permit and administrative service system** by developing and supporting the adoption of laws to streamline the regulatory environments of the four targeted value chains



Photo: ARDS project



Implementation of a geoportal in Verbkiivska CC (Dnipropetrovsk region)

This video summarizes the results of working with communities and outlines the results of implementing a geoportal for a CC in its first months of operation.



Strengthening Ukraine's Agricultural Sector through Phytosanitary Reform

✓ In collaboration with the Phytosanitary Association of Ukraine, ARDS drafted a **law that reflects international best practices on phytosanitary standards**. The law was approved by Ukraine's Parliament and came into force in February 2019.

✓ The law established strict rules that meet international fruit and vegetable supply chain sanitation standards, helping to attract **more foreign and domestic investments in Ukraine's agricultural sector**.

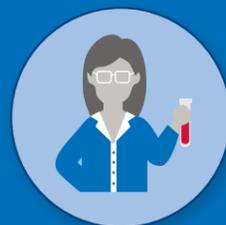
✓ The law has **increased import, export, and re-export** of agricultural goods; **created more economic opportunities** for Ukraine as a European country; **streamlined business activities** across sectors; and **reduced corruption** in agricultural industries.



Ukraine's phytosanitary legal provisions now include:



Modernized phyto-testing (pesticides, soils, pests, etc.) and certification procedures



Authorization of private labs to conduct phytosanitary tests and issue certificates



Standardized steps private labs must take to get accredited



Detailed regulations and procedures both State and private labs must follow

3. **Decreasing corruption and increasing transparency** by developing and supporting the adoption of laws to ensure private sector involvement in official veterinary and phytosanitary controls

Results

Crucially important, ARDS succeeded in building government consensus to support its approach in the institutional development of broad membership, institutionally capable and incentivized agri-business associations to serve as self-regulatory organizations (SROs) over food product controls. This was accomplished by collaborating with newly-forming agri-business associations seen as most capable to perform self-regulatory and control operations for their members — Union of Honey Producers, Association of Pest Control, Association of Food Safety, and the Phytosanitary Association of Ukraine (PAU) — and supporting development of their internal procedures (e.g., codes of practice, membership rules, monitoring systems, etc.).

In conjunction, ARDS worked with the MAPF and its State Service for Food and Safety and Consumer Protection to streamline services, increase efficiency and transparency, and transfer certain functions to the selected SROs, which

resulted in their gaining government authority to serve in an officially-recognized capacity.

Close collaboration between ARDS and the newly-formed PAU (consisting of 12 major Ukrainian fumigation companies) under the direction of its president, former Advisor to the State Chief Phytosanitary Inspector Vladislav Sedyk, saw the successful development of draft legislation encompassing strict phytosanitary rules that meet international fruit and vegetable supply chain sanitation standards and ensure inclusion of private sector entities. This legislation was finalized in June 2018 and came into force in February 2019. [Please note: after the 2019 elections, the MAPF was dissolved and replaced by a new Ministry of Economic Development, Trade, and Agriculture (MEDTA), which accelerated the passage of this legislation.] Once these international-aligned phytosanitary controls were in place, PAU, in close collaboration with ARDS and with State assistance, created databases that can exchange information, and is currently developing supporting software, as well as institutional regulations or by-laws for private labs.

Photo: ARDS project



SUCCESS STORY

Phytosanitary Reform Opens Agri-business Export

With the support of ARDS, phytosanitary legal provisions in Ukraine now meet international food safety standards and have created new market opportunities for the country.



CHAPTER THREE

ENHANCING VALUE CHAINS AND SUPPORTING FUNCTIONS

INTRODUCTION

For decades, household-level farmers and SMEs in the four value chains targeted by ARDS (fruit and vegetable, dairy, and meat) grappled with multiple interconnected constraints such as weak market linkages, poor quality produce and lack of safety standards, small volumes and unstable supply for buyers, lack of proper packing and packaging, limited access to finance, limited value addition, poor branding and marketing, and limited access to markets.

To improve Ukraine's agri-market system by providing opportunities for rural households, improving rural livelihoods, and boosting economic development, ARDS worked along these four value chains focusing on:

1. **Integrating rural households, agri-SMEs, and rural non-farm enterprises** into these four value chains;
2. **Helping household farmers and agri-SMEs obtain fair prices for their produce and access local and global markets** by building local systems to boost productivity;
3. **Improving the enabling environment and core functions that support these value chains:** information, infrastructure, skills, and technology; and the services surrounding them needed to support them as engines for rural growth: labs, financial services, irrigation, input supplies (such as fertilizers, seeds, equipment, etc.), and post-harvest services (such as processing, freezing, logistics, etc.).

ARDS *field to table* approach to improving Ukraine's value chains

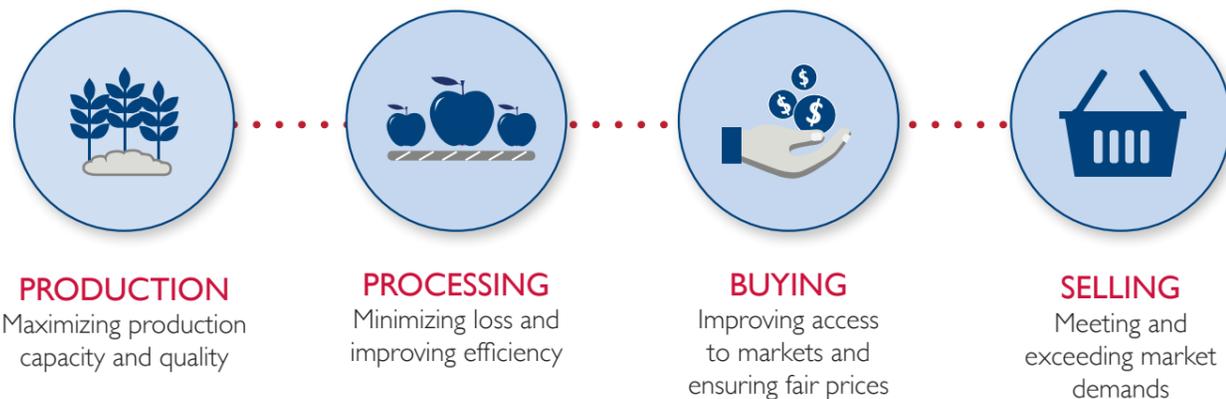


Photo: USAID Ukraine

Embracing the U.S. Government Global Food Security Strategy's Guidance Market Systems and Value Chain Programming, ARDS applied a comprehensive market systems approach. Understanding that to change the system is to deeply know the system, the project developed solutions by examining aspects of the four value chains and their respective "field to table" market systems: production, processing, buying, selling, and the environment (including those shocked economically or by conflict) where each value chain exists. ARDS also explored how to create viable market linkages to replace lost markets in the NGCAs of Donetsk and Luhansk oblasts, and Russia.

During its first two years, ARDS tested its market system solutions at champion grantee firms' markets via co-investment pilots and came to understand that simply providing money would not change the system or make it sustainable. Placing less emphasis on grants, the project focused more on spreading its approaches and their resulting benefits.

FRUIT AND VEGETABLE VALUE CHAINS

Producing roughly 2.8 and 9.8 million tons, respectively, of fruits and vegetables in 2014, these two sectors were poised for success thanks to growing global demand for fresh and prepared fruit; and, domestically, a falling hryvnia pushing national retailers and processors to replace fruit and vegetable imports with home grown. Although a potential boon for micro, small, and medium producers who account for 80 percent of Ukrainian fruit and vegetable production, initial ARDS' SME assessments revealed an estimated 20 to 30 percent of fruit and 50 to 60 percent of vegetable production was wasted due to a lack of proper post-harvest storage and processing facilities. In addition to producing raw produce without further sorting and packing, fruits and vegetables that did make it to market lacked traceability and tended to have low marketing appeal, i.e., damaged produce, unattractive packaging, lack of creativity, etc., which limited their market potential.



Photo: PLT Laboratory

Objectives

To help family farms obtain fair prices for their produce and integrate into supply chains that reach local and global markets, ARDS focused on:

1. **Increasing harvest control and productivity** to decrease harvest losses
2. **Expanding postharvest support services**
3. **Expanding market services**
4. **Supporting entrepreneurship and market linkages** for farm SMEs to increase, improve the quality of, and aggregate production

Results

1. Increasing Harvest Control and Productivity to Decrease Harvest Losses

ARDS supported two pilot projects with three partnering berry-producing champion firms: AgroVesna, Triada, and Nikdaria, which self-financed software and equipment with project co-financing.

- **Climate-smart technology (SMART-IT)**
Includes meteorological stations that define

the most suitable weather conditions to maximize impact and mitigate risks, and trap counts that target insects in near-real time, allowing farms to better monitor crops and strengthen pest control by applying pesticides when needed. AgroVesna and Nikdaria also established demonstration sites to test the tools in Ukraine's climate conditions. DataAgro used the demonstration sites and pilot results to promote the system among Ukrainian farmers.

- **Harvest control and traceability system**
Improved pest control and product quality and enabled companies to track the full production cycle and monitor conditions at each stage of production: collection on the field, transfer to storage, recordkeeping of temperature, monitoring delivery time and freezing time, and analyzing each employee's productivity. After the pilot, the three partners expanded the system at cooperative partners' fields to build an optimized business process allowing cooperative members to consolidate their efforts in creating a large batch of products with a holistic traceability system.



Photo: Larysa Maslaj

SUCCESS STORY

Factory Expansion Supplements Villagers' Incomes

ARDS co-investment efforts supported women and the elderly by retrofitting bottling and packaging equipment, resulting in a 40 percent increase in horseradish processing.



Overall, this has contributed to the safe and effective use of pesticides, better traceability of product safety from field-to-table, improved pre-sale processing quality and competitiveness, and better access for SMEs to retail chains and other organized markets, including export.

As one of the first projects to address the use of pesticides, ARDS became the recognized leader in promoting standards implementation to improve fertilizer use based on new production innovation and technologies and ensure proper pesticide controls. Co-investing with one of Ukraine's first private food control

laboratories — PrimeLabTech — saw the successful establishment of an independent laboratory for detecting pesticide residues in food products, and targeting the prevention or minimization of the negative effects of pesticides by monitoring toxic pesticide residues in the environment: soil, groundwater and water sources, plants, feed, fruits, vegetables, and other food products.

Starting out by providing pesticide and nitrate residue tests to only a small numbers of farmer clients, ARDS intervened and consulted with co-investment partners, which resulted in PLT expanding by promoting its services to trading



Photo: Vladyslav Sodel

SUCCESS STORY

New packaging and unified branding improve sales and profits for potato producers in Ukraine

The acquisition of modern weighing and packing equipment has allowed Agrico and partners to meet market demand and sell their product at retail markets.





VIDEO

Horseradish Value Chain, grantee – Vinnytsya Food and Gustatory Factory

ARDS' partnership with Vinnytsya Food and Gustatory Factory benefits more than 1,500 households and farms



networks and supermarkets, and developing a pesticide-free product branding sticker. Today, PLT works with leading national traders providing services for their SME suppliers — the monthly number is now equal to the amount provided in its first 19 months before ARDS intervention. This has spurred local farmers to produce fruits and vegetables in accordance with international quality and safety standards, and helps them save on fertilizer costs, as modeled by Agrico Ukraine, one of ARDS' champion firms. Soil testing PLT conducted on Agrico land in Semypolky (Kyiv Oblast) provided Agrico with an understanding of the soil's chemical structures that not only enabled it to lessen the amount of fertilizer used, resulting

in a 25 percent savings, but also the development of a fertilizing dosing system for potatoes that was shared with 100 Agrico partners.

2. Postharvest Improvements

Agrico Ukraine

ARDS co-investment with Agrico also: 1) identified its unattractive and weighty (20 kg) potato packaging as a consumer put-off; 2) developed a PAPAS trademark and visual identity; 3) equipped its existing potato grading line with weighing and packaging stations; and 4) supported Agrico's partnering with regional potato SMEs to provide smaller bag packaging



SUCCESS STORY

Horseradish Factory Expands Exponentially

Learn how ARDS support of Vinnytsya Factory's equipment upgrade yielded exponential results and increased export potential



services and embed international pre-handling and production quality and safety standards (i.e., cultivation techniques, varieties, sales, etc.). This resulted in Agrico expanding its packing and supply partnership network to farmers from Kyiv, Chernihiv, Zhytomyr, Kharkiv, and Volyn oblasts who now supply supermarkets with 2.5 kg bags of potatoes under the umbrella PAPAS brand.

Vinnytsya Food and Gustatory Factory

ARDS' co-investment with the Vinnytsya Food

from six oblasts to eight. Overall, this resulted in increased hiring of procurement agents and doubling the number of supplier households from 3,000 to 6,000, who now get paid 43 percent more for their horseradish roots.

Postharvest Fruit Processing Centers

ARDS identified four segments for Ukrainian fruit producers and processors to target: 1) fresh fruit for immediate consumption and/or preparation; 2) fresh cut fruit products that are "ready-to-eat"



and Gustatory Factory (Vinnytsya Oblast), one of the few in Ukraine that processes the beloved horseradish root, saw the factory upgrade its bottling and packaging equipment line that resulted in increasing processing capacity from 1,200 to 1,600 tons yearly; expansion of its product line from two to 12, including introduction of a new brand that offers three different types of certified organic products; and growing its geographical procurement area

or "ready-to-cook"; 3) semi-processed products that are intermediate products (e.g., juice concentrates); and 4) processed fruit for direct or later consumption. ARDS co-invested with the following post-harvest processing centers, all of which reaped immediate and positive results.

- **Fruktona (Vinnytsia Oblast):** enhanced its fruit and berry product processing with new equipment, which resulted in doubled processing volume due to increased



VIDEO

Berry value chain, grantee — Malyn Factory

ARDS co-invested in Malyn Factory's post-harvest processing line, enabling the company to double its processing volume and expand its products.



SUCCESS STORY

Fruit and Berry Processing Ushers in New Era

ARDS co-investment assistance expands Ukraine's agri-market reach to global markets.



production capacity and a prolonged processing season, and attracted 21 new SMEs-input suppliers, which allowed it to increase its product line from four to 30.

- **Malyn Factory (Zhytomyr Oblast):** its upgraded berry pre-sale handling line saw it become a regional center for berry and fruit post-harvest processing, providing a range of services to Ukrainian producers, including representing their products at world markets. The factory increased its daily freezing capacity from 15 to 30 tons (360 to 483 tons annually); added six new products, including highly-valued mushroom varieties (porcini and chanterelles) as well as an assortment of mashed fruits; and expanded its supplier base from five to 13 SMEs.
- **Sady Donbasu (Donetsk Oblast):** improved post-harvest processing and fruit storage, improved pre-sale preparation (sorting and

packing apples), introduced product safety in accordance with international HACCP standards that saw it expand markets, including exports; developed a new brand, Fruit Ball, that promotes its products throughout Ukraine; and increased value-added production.

Thanks to this increased capacity, these champion firms, highly motivated to obtain raw materials to meet market quality and quantity requirements, increased the capacity of other market actors in their value chains (collectors, input suppliers, and producers) by introducing international safety standards, smart agriculture, innovations, and new technologies. This resulted in directly benefiting 29,000 agri-SMEs and private households that were not only provided a guaranteed market for their improved crops, but inspired to increase production volumes.

3. Expanding Market Services

Seizing the opportunity to develop exports to meet the rising global demand for fruits and vegetables, with ARDS support, Ukrainian producers and processors sought to increase their ability to compete internationally. Hence, they systematically implemented good agricultural production practices and efficient post-harvest practices and technology among their SME value chains to ensure consistent quantities and high-quality products, as well as developed branding and marketing to appeal to international markets. This not only opened international markets but the increased sales also improved the lives of rural Ukrainians. The following highlights are the most successful of ARDS co-investment projects.

- **Asia Fruit Logistica 2018 Delegation:** ARDS supported the first-ever delegation of agri-businesses (including representatives

of Ukrainian Fruit Growers Association, USPA FRUIT, and others) to attend Asia Fruit Logistica, Asia's largest international agri-trade fair. In addition to networking and collecting valuable information regarding market demand, standards, prices, shipment times, packaging requirements, and most importantly, the existence of phytosanitary agreements between countries and how to meet them, the delegation also generated significant interest in Ukrainian products from several countries.

- **USPA FRUIT Delegations:** In addition to supporting USPA FRUIT's attendance at Asia Fruit Logistica 2018, ARDS also supported other USPA FRUIT delegations to Fruit Logistica (Berlin 2018, 2019), and Fruit Attraction (Madrid, 2019), which resulted in the export of 2,063 tons of Ukrainian apples to 18 countries (Bahrain, Egypt, Hong



SUCCESS STORY

Establishing Family Farming Business To Prove That Land Ownership Brings Profit

With the support of ARDS, Malyn Factory has been able to enhance its production capacities and improve local livelihoods.



VIDEO

Veterinary Service Center: Quality, Warranty, Profitability

The Veterinary Service Center was established with the support of ARDS, resulting in improved milk quality and production.



Photo: USPA



📖 SUCCESS STORY

From a start-up trade company to a driver of Ukrainian apple exports in three years

USPA was one of 27 Ukrainian small and medium producers of fruit and berry supported by ARDS to participate in Asia's largest international trade show.



Kong, India, Indonesia, Kuwait, Malaysia, the Netherlands, Oman, Philippines, Qatar, Saudi Arabia, Singapore, Spain, Sweden, UAE, the United Kingdom, and Vietnam).

- **Sady Dondasu (Donetsk Oblast):** Jumpstarting the apple industry in eastern Ukraine after its facilities were destroyed in 2014, the company moved from the NGCA to Dachne (Donetsk Oblast) and improved pre-sales preparation (sorting and packing apples); introduced international HACCP safety standards and a traceability system; expanded sales markets, including exports; and developed the new brand Fruit Ball that promotes its product throughout Ukraine and abroad. Entering the export market in 2018, Sady Donbasu shipped 122 tons of apples to Belarus — the first fruit export from Donetsk Oblast since 2014, which

set an inspiring model for other SMEs in Donetsk and Luhansk oblasts. In March 2020, Sady Donbasu shipped 20 tons of apples to Qatar — the first export of apples from war-affected territories to a Middle East country. Today, Sady Donbasu employs 40 full-time and 60 seasonal workers, most of whom are internally displaced people from the conflict zone.

- **Kolosok Apple Processing:** Thanks to modernizing production with new equipment, Kolosok now produces clarified (filtered) apple concentrate and exports the final product — \$180,000-worth to Germany to date. Overall, this enabled Kolosok to expand its markets, increase production volumes, and increase the purchase of apples from local suppliers — currently, over 4,500 local households and farms have access to an

additional apple sales market for primarily nonstandard apples, as well as earn a higher competitive price for their product.

To further disseminate system solutions piloted within co-investment projects, ARDS supported scaling up the solutions from champion firms to early adopters: champion firms' peers and suppliers. This was done through supporting the champions' own efforts in working with their suppliers and peers as well as through direct spread of the best practices and lessons learned: practical demonstrations (so called field days), trainings, seminars, conferences and webinars, publications, videos etc. The events supported by ARDS to promote behavior change among champion firm peers included an international forum on "Added Value in Fruit Production", National Congress "Berry and Cooperation-2019", International Value Chain Forum "S-Fruit Transformation 2020: Soft and Stone Fruits", Profihort Investment Forum: Processing and Export-2019, Strategic Development and Cooperation in Fruit and Berry Value Chains conference, Potato Workshops, Syngenta's Fruit and Vegetable Market Partners Club meetings, etc. The other events, like seminars and trainings initiated and conducted by champion firms themselves, strengthened the sector by deepening champions' ties with existing suppliers and encouraging new partnerships.



Photo: Triada-MK

Photo: Vladyslav Sodel



📖 SUCCESS STORY

Agri-firm reclaims its place as leading apple producer in Eastern Ukraine and helps other producers along the way

Modernized facilities have helped Sady Donbasu deliver the first fruit export from Donetsk Oblast since 2014.



Photo: Ludmilla Honchar



📖 SUCCESS STORY

Female Retiree Becomes Successful Berry Farmer

ARDS' co-investment with Triada, a fruit and berry processor, has benefited women, the elderly, and entire households.





Photo: ARDS project

DAIRY VALUE CHAIN

Known as the “land of milk and honey”, Ukraine is facing great challenges as it moves its agri-economy into the 21st century and works to meet EU and international standards. A declining dairy cattle population — the lowest in Ukraine in decades — has resulted in a 15 percent decrease in milk production since 2007. This in a country where strong demand for raw milk and processed dairy products is met by four million small family dairy farms and private rural households that produce more than half the country’s gross agri-product and 75 percent of its dairy. This decline in dairy cattle worsened in 2014 when Russia’s military aggression ignited a massive exodus — over 500,000 in Luhansk Oblast alone — as people fled to escape the violent shelling. Emptying coal mines, steel factories, and farms, the war inflicted a punishing loss of urban markets in the NGCA

and Russia that devastated the economy in conflict-affected areas.

Even before the conflict, Ukrainian milk productivity and profitability was low compared to other European countries due to a failure to ensure animal welfare and appropriate feed regimes, and the absence of feed quality controls. Accustomed to hand-producing lower-quality milk — 88 percent of which was second grade due to poor milking and storage sanitary conditions, and did not meet quality standards required in Ukraine’s 2014 EU Association agreement thus earning lower prices — small producer profits were too low in many cases to meet operating expenses. With limited access to quality veterinary services, and lacking the capital to invest in modern technologies or knowledge of how to improve milk quality to meet EU extra-grade standards and gain access to better markets, many simply culled their herds.

On top of all this, when ARDS began its work, there were no commercial laboratory services for determining the quality of milk or providing services to improve the health of the dairy herd. The fragmented milk production market structure (value chain) was missing a middle market player to link small producers to larger processors by providing milk collection and pre-processing services, including testing for milk quality, bacteria and disease, and feed quality, or advising on how to increase productivity or prevent mastitis and other health issues

Objectives

Based on assessments, discussions with stakeholders and dairy value chain actors, ARDS focused on market solutions aimed at:

1. Improved dairy cow productivity and raw milk quality
2. Enhanced milk collection and aggregation

Results

1. Higher Quality Systems for Raw Milk

In cooperation with Ukraine’s Association of Milk Producer (AMP), ARDS identified opportunities for innovation and growth. Ukraine’s relatively low consumption of milk (139 liters per capita

versus 239 in Romania) suggested considerable potential for the dairy industry. Local demand for extra-grade milk would increase, as schools, kindergartens, hospitals, and supermarkets would now be required to serve only extra-grade dairy products. The extra-grade milk could be distributed within the region and would open the door for the industry to export to new markets in the EU and beyond.

To help transform the dairy industry nationally, ARDS partnered with AMP to establish a central laboratory for testing milk quality and livestock health, piloted a new milk collection model, and enhanced farmer education as a result of their co-investment in Uman Laboratories (Cherkasy Oblast). A contemporary, independent national lab, Uman combines milk quality and livestock productivity testing, and identifies cow diseases that affect milk quality. These services allow milk producers to meet international standards for raw milk quality and safety, improve the welfare and health of their cows, and adjust feed mix ratios based on milk testing results.

Exceeding all expected results, Uman Laboratories is now a sustainable provider of commercial services to AMP members and non-members, with more than 4,000 rural family farms and 150 SMEs in 20 regions benefiting



Photo: ARDS project

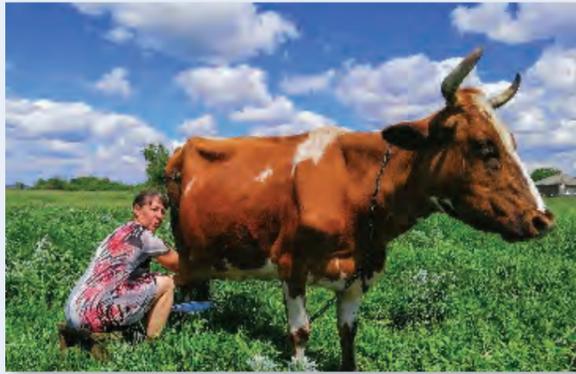


Everything will be ... MILK! Quality and delicious MILK

Together with the Association of Milk Producers, ARDS established a laboratory to control the quality of milk enabling producers to increase productivity and ensuring cows stay healthy.



Photo: Volodymyr Shuhailo



SUCCESS STORY

Woman-run Dairy Farm Survives Despite Conflict

Thanks to ARDS' co-investment in the local milk processing factory and surrounding small household farms, farmers have been able to maintain production despite harsh conditions.



from its services. In its first six months of operation, extra grade milk quantities supplied to processors increased 36 percent, and milk production in all grades increased overall. In 2018, the Lab developed an innovative Mastitis Kit (M-Kit) for farmer use, comprised of a set of tests for rapid identification of mastitis and sensitivity to antibiotics that is responsible for a 30 percent decrease in mastitis disease. Uman Labs also developed its portable M-Lab. Currently under patent review, M-Lab diagnoses dangerous bacteria and their resistance to antibiotics at the farm level, and provides real-time data processing for a herd or a single cow, and treatment effectiveness controls, sanitary hygiene measures, and detergents and disinfectants used. Uman Labs also plays an important role in the operations of the Centers of Veterinary Services (CVS) by providing a set of tests to measure the quality of milk and fodder and enabling CVS specialists to provide farms with feed conversion analyses, optimized feeding rations, and raising animal productivity and milk quality.

In addition, the ARDS/AMP partnership developed and tested guidelines in alignment with HACCP norms and in compliance with

food safety legislation at raw milk processing facilities. ARDS and AMP helped dairy farms to introduce the guidelines into their daily routine by conducting trainings for AMP members on good practices in milk production and preparing a number of publications promoting best practices and preparing farms for the new legislative requirements.

2. Milk Collectors/Pre-processors

Bilovodsk Butter Factory

To meet the needs of farmers in the eastern regions of Ukraine with their additional challenges due to the ongoing conflict with Russia, ARDS turned its attention to Luhansk Oblast. Heavily affected by the ongoing conflict, the exodus of its local inhabitants, and the loss of nearby markets in industrial cities caused a 25 percent decrease in the dairy cattle population between 2014 and 2016. Transforming the fragmented milk production system required close collaboration — more stable market links — between milk input suppliers and dairy processors. ARDS partnered with Bilovodsk Butter Factory in a co-investment project that provided a market to farms that otherwise would not have an avenue to sell their milk, and

in turn ensured the factory's survival. Located just 15 kilometers from the Russian border, the factory not only had to deal with the lowest cow population in all of Ukraine in decades, but also low grades of milk produced by surrounding small family farms. Producing 59 percent of the region's overall yield, 90 percent of the milk from these farms did not meet required EU quality standards.

In collaboration with ARDS and AMP, Bilovodsk Butter Factory provided comprehensive trainings to milk collectors on how to increase milk quality, and protect the health of livestock by preventing mastitis and other diseases through basic hygiene practices and eliminating the use of antibiotics. In turn, the milk collectors — the people who have direct daily contact with dairy farmers — shared with them information gleaned from these trainings, along with ARDS-developed handouts and visual guides. By the time Ukraine's new milk quality law came into effect in September 2019, the factory's number of milk suppliers had

increased to almost 3,000 (from 2,005 in 2017), and the quality of first- and high-grade milk processed had risen to more than 80 percent (from 21 percent in 2017). As a result of its strengthened role as lead buyer and processor of extra-grade milk, the factory was able to introduce six new products, and increase and expand export to Morocco, Algeria, and Turkey.

First Milk Cooperative

Established by AMP members in 2016, ARDS selected First Milk Cooperative (FMC) as a pilot milk collector and milk processing center. With ARDS support, FMC launched a 75 ton-per-day processing capacity milk logistics platform in Uman (Cherkasy Oblast), that fully employs HACCP standards as it receives, chills, stores, and transports milk. Working with Uman Laboratories, the platform helps farmers improve milk quality and safety in accordance with Ukraine's new legislative requirements, decrease antibiotic usage, and increase productivity. Thanks to the platform, 20-25 small dairy farmers now



Photo: Association of Milk Producers

combine their respective daily raw milk yields (less than six tons) to form larger lots that earn higher prices — as much as 10 percent more from processors, yielding each of them \$64,000 additional income yearly.

MEAT VALUE CHAIN

When ARDS launched, Ukraine's meat sector was extremely challenging due to swine flu and cattle modular dermatitis, as well as the environmental risks due to how meat was processed. Although there were strict standards for handling slaughterhouse process waste, most meat processing SMEs were not yet following the new regulations. In addition, the low purchasing power of many Ukrainian consumers contributed to low demand for processed beef and pork and a growing demand for poultry, which is cheaper and represents 46 percent of

meat consumed, followed by 38 percent pork, and 15 percent beef.

Beef

In addition to a [12 percent decline in beef production 2010-2016](#), the existing fiscal policy and national subsidy system had contributed to the dissolution of a transparent beef market that lacked: 1) safety controls for cattle breeding, 2) slaughterhouse and beef pre-sale preparation infrastructure, and 3) port infrastructure for shipping live cattle (except in Mykolaiv). The result was a beef industry monopoly rife with corruption. In addition, complex permit documentation procedures for animal exports and ineffective regulations, fiscal policy, and tax liabilities inadvertently encouraged a shadow market feeding on the illegal slaughter of up to one million young calves yearly. Properly raising these calves to produce beef

would increase farmer incomes significantly. Yet villagers quickly sell them to illegal dealers before the required 21 days of age to avoid paying tax and/or losing subsidies from an official sale — calves must be registered when five days old and are then subject to taxation upon sale and other government controls — and because the cost of milk to feed the calf is greater than the illegal income earned by its sale. Beef producers, on the other hand, are not officially allowed to buy calves from private households due to fiscal policy and therefore cannot obtain proof-of-purchase documents that would allow them to feed them. By trade standards, the yearly illegal sale of calves represents 450,000 tons of beef with a real market value in excess of \$1 billion and a \$400 million annual loss of potential profit—a systematic issue in the meat value chain and a lost opportunity for Ukrainian beef producers.

Pork

In 2017, Ukraine lacked international standards and guidelines for pig breeding and processing that would raise the competitiveness of its national pig industry, improve ecological conditions for rural citizens living near pig farms, and increase the quality of pork on the domestic market. A lack of pig breeding safety control, bouts of swine flu that prohibit export and threaten the domestic market, and the environmental risks posed by how meat is processed all added to a rapid decline in pork production, after a steady rise that ended in 2010.

Objectives

Cooperating with meat producer sector associations, lead processing companies, traders, retail chains, and the MAPF, ARDS focused on:

1. **Implementing international safety control and traceability systems** for animal feeding and slaughter;

2. **Eliminating the shadow cattle market** (the slaughtering and sales of calves without registration);
3. **Increasing incomes of rural private households and small cattle farm enterprises** as key suppliers of young cattle;
4. **Expanding local markets and exports.**

Results

Beef

ARDS improved the meat value chain by creating appropriate infrastructure, providing advocacy support, and incentivizing farmers to keep and properly raise calves, and implementing quality and safety standards for both pork and beef production and processing.

Identifying breeding centers as a viable alternative to killing newborn calves — a new value chain actor linking private households and beef producing farms to SME meat-buying processors — ARDS collaborated with the Food and Agriculture Organization of the United Nations (FAO), which had developed a business plan for large farms able to invest \$6 million in a calf-raising center. Following U.S. experience, ARDS developed a sustainable business model to create calf-raising centers based on the potential of using dairy bull calves from family and small farms and individual households. Supported by detailed financial impact calculations of two farm types (600 and 2,000 head of cattle, respectively) that took into consideration profit, operations, and investment costs, the model was reviewed with experienced meat value chain actors who verified feasibility and potential sustainability; and in a public discussion with experts, and representatives of cooperatives, industry organizations, cattle exporters, and other market participants. A final model was presented at the [XI International Dairy Congress, March 6-7, 2018](#),



in Kyiv and was used as the basis for two co-investment pilots ARDS undertook — each using a different approach regarding private household cooperation — that successfully tested its financial sustainability.

1. **Byky Cherkashchyny, a cooperative in Cherkasy Oblast, was selected to pilot breeding services.** This pilot resulted in the reconstruction of one of two production facilities for housing calves, the purchase of equipment that ensures effective operations, and development of a Farmer's Dairy brochure and poster for farmers with recommendations for raising calves up to three months of age. Both publications, focused on the use of breeding services to achieve marked improvements, guide farmers and households in the raising of healthy calves with strong immune systems and improved genetics. ARDS also supported the development of a simplified contract for calf fattening, insemination, and veterinary services for private households, and the creation of management monitoring system at the calf-breeding center. The cooperative ran a highly successful information campaign among private households in Cherkasy and Vinnytsia oblasts that explained their services

that brought in more than 500 signed pre-agreements for fattening calves in 2020 (when the calves will be born).

2. **Lebid Agro, a cooperative in Rivne Oblast, selected to pilot raising calves purchased from private households that now serves as a demonstration site of best international practices in rearing calves and producing quality beef.** ARDS worked closely with Lebid Agro to purchase equipment and develop a site reconstruction plan that resulted in successful opening (October 2019) of a facility for the industrial rearing of calves collected from farms and households. Initially collecting 30 calves, the facility has the potential to hold as many as 4,000. Thanks to ARDS co-investment in new equipment (calf hutches, feeder mixer, feeders, milk taxi for calves, etc.) and consultations, Lebid Agro introduced modern technologies for rearing calves of different age groups and developed specialized feed diets. In addition, ARDS delivered trainings to staff and calf-supplying farmers on topics such as using sexed sperm to improve the genetic pool for high-performance calves, and on the benefits of producer cooperation within the region.



Photo: Sterling Riber

With benefits currently reaching farms and households in Vinnytsia Oblast, ARDS expects up to 4,000 households and 30 farms in Rivne, Khmelnytskyi, and Cherkasy oblasts to eventually be involved in these pilot projects. The community-based calf-raising center and the breeding of calves for further profitable sale have great potential to be a sustainable solution to the systemic issues in the meat value chain. Establishing this new business model across Ukraine will help revive the beef industry and increase rural household incomes.

Pork

To support Ukraine's development and adoption of international standards and guidelines that would raise the competitiveness of the national pig industry, improve ecological conditions for rural citizens living near pig farms, and increase the quality of pork on the domestic market, ARDS:

1. Worked with the Association of Ukrainian Pig Breeders (AUPB) and five SMEs to develop and pilot the Guidelines on Compliance with Food Safety Legislation at Facilities for Growing, Keeping, Slaughtering Pigs, and Cutting Meat. Based on the pilot results, the guidelines were amended and sent to the Ministry of Health for approval.
2. Supported the AUPB in developing a pilot project on national standards and guidelines

for an environmental impact assessment and hygienic requirements at pig-breeding enterprises. Technological instructions for the storage, disinfection, and disposal of pig manure were finalized and included a manual on treatment and decontamination of manure, which was submitted to the State Service of Ukraine for Food Safety and Consumer Protection and the MAPF for approval.

3. Supported AUPB's efforts to finalize two documents: 1) *National State Standards of Ukraine on Environmental Impact Assessment, Pig Complexes, and Evaluation Criteria and Documents*; and 2) *National State Standards of Ukraine on Environmental Impact Assessment, and Guidelines for Preparing a Report on Environmental Impact Assessment*. Both documents have been sent for approval to the Ukrainian Scientific-Research and Training Center for Standardization, Certification and Quality Problems ([DSTU](#)).
4. Partnered with the Ukrainian Stock Breeders Association (USBA), the AUPB, and ARDS' champion firms to conduct events and webinars for households and farmers presenting a wide uptake of good practices in pig breeding, as well as trainings for 24 local consultants of [Feedlance](#), an international group of companies specializing in the development, production, and export



Photo: Iryna Khomenko

 **SUCCESS STORY**

Never give up: An enterprise in the east of Ukraine rebuilds networks and helps local farmers survive

ARDS supported Miasne Remeslo in upgrading their meat processing and sausage producing equipment and helped introduce food safety standards.



of nutritional products for agri-animals on modern knowledge and practices. These consultants are now equipped to consult with household and family farms, sharing the latest information regarding pig and cattle breeding, while at the same time, selling them appropriate feed diets for their animals.

SUPPORTING FUNCTIONS

Objectives

When ARDS launched, supporting functions in the targeted value chains were weak or non-existent. ARDS recognized that supporting meat, dairy, fruit, and vegetable value chains core actors as an engine for rural economic growth needed to go beyond the support provided to the core value chain actors. Using a sophisticated market system approach, ARDS supported functions that sustain core value chains, including information, infrastructure, skills, technology, and a range of services for value chain actors, e.g., finances, inputs, and post-harvest processing.

Results

Centers of Veterinary Services Introduced

To address the severe lack of quality veterinary services and reliable sources of related

medications, ARDS partnered with the AMP, and supported the establishment of two fully-equipped Centers for Veterinary Services in Svatove (Luhansk Oblast) and Novoselydivka (Donetsk Oblast). These CVSs, outfitted with state-of-the-art mobile equipment and tools for timely diagnosis, prevention, and treatment of bovine diseases, as well as trained specialists and vehicles, provide quality consulting services to regional dairy farms, in addition to improved veterinary medicines. New services significantly decreased postpartum diseases, pathological births levels, and reproductive system and metabolism diseases; increased fertility of cows from 30 percent to 55 percent; and increased the gross milk yield by an average of 10 percent. Access to modern veterinary services has also helped livestock owners to realize increased savings and attract investments that allow for modernization, expansion, and increasing their herds while meeting international quality and safety milk production standards. Given successful farms serve as key employers in rural areas, increased productivity is expected to result in a 30 percent increase in jobs. And as word of CVS services spreads, their client base is growing as well, as will the need for additional centers to meet the growing demand for high quality meat and dairy products.

Technology Infrastructure Advanced

Focusing on improving the management of irrigation systems, ARDS selected 15 irrigation systems in Donetsk, Kherson, Odesa, and Zaporizhzhia oblasts as pilots for innovative approaches to irrigation systems management. Although communities were eager to develop irrigation systems, given they boost the economy and solve self-employment issues, their reconstruction and modernizing requires significant financial resources — normally an overwhelming burden for both small agricultural producers and community budgets. ARDS conducted assessments of the selected irrigation systems that identified development baselines, developed a list of recommendations for each of the piloted systems, and consulted system users about the process of improving the irrigation systems.

Advancing Market Information Flow

ARDS developed the PROD mobile application, the first marketplace platform for connecting fruit and vegetable producers and buyers. Despite positive feedback from users and a range of activities to promote the application, PROD experienced difficulties in attracting new users and placing sales announcements. A desktop version of the mobile application was developed (<https://prod.ua>), which increased the number of users and made the application more convenient. Lessons learned included:

1. Since there were not any similar products on the market, the **developers did not have objective and measurable data to assess the market** for this service and overestimated the market response to the mobile application;
2. Despite projections of 3G and 4G Internet connectivity in the countryside, **users experienced access difficulties.**

Nonetheless, ARDS intervention reached its goal as PROD drew market attention to the need/demand for this type of service. This led to the creation of at least three similar products, which resulted in users being able to choose between the different information sources. As of July 2020, the PROD application had 2,823 users.

Enhancing Laboratory Services

Co-investing with one of Ukraine's first private food control laboratories — PrimeLabTech — saw the successful establishment of an independent laboratory with modern equipment for detecting and minimizing the negative effects of pesticide residues in soil, groundwater and other water sources, plants, animal feed, fruits, vegetables, and other food products. Mitigating the risks of production, supply to retail networks, and recycling of chemically contaminated products, the new lab's services allow producers and buyers to substantially reduce time and expense for international standard product certification; certify organic produce; efficiently control the quality of crop protection agents; and assist SMEs in litigation with suppliers of crop protection agents. The knowledge gained during an ARDS-sponsored study tour to Germany and the Netherlands for PLT representatives supported the lab's becoming an efficient part of the state control system on its way to gaining full accreditation.

PLT signed its first contract (late 2018) with the Good Wine trading company agreeing to conduct tests to detect pesticide and nitrate residue in products from 28 of its fruit and vegetable producer/suppliers. This prompted four larger trading companies (Billa, Fozzy, ATB, and Auchan) and three supermarkets (Silpo, Flora, and Le Silpo) to also sign up for these testing services. In October 2019, with ARDS support, PLT and Good Wine launched a highly successful joint "Pesticides are Under Control" pilot that increased Ukrainian awareness of food safety



SUCCESS STORY

Farmers in Eastern Ukraine Benefit from Professional Veterinary Services

Centers for Veterinary Services offer a great alternative for employing a full-time veterinarian for small- and medium-sized farms.





Photo: USAID Ukraine

issues and to promote pesticide control services. This included development of a pesticide-free product branding sticker adhered to PLT/Good Wine client products that provides detailed information on the types of laboratory tests conducted and their results.

In advance of the pilot, ARDS and Good Wine trained supermarket staff on pesticide use on farms and its negative health effects, how to provide the necessary information on pesticides to consumers, and the methods PLT uses to test pesticide residues. Striving to assure its customers that all of its fruit and vegetable products are safe for consumer health, Good Wine expanded the pilot to include inspections of each product batch, committing to eliminate non-compliant products from the supermarket. Taken as a whole, this new marketing tool has increased fruit and vegetable sales and generated demand for products grown with proper pesticide control.

Today, PLT works with leading national traders providing services for their SME suppliers — the monthly number is now equal to the amount provided in its first 19 months before ARDS intervention.

Improving Access to Finance

After numerous efforts to involve bank and credit institutions in financing agrarian SMEs, ARDS began cooperating with the MAPF's State Farmers Support Fund of Ukraine — a government institution that provides interest-free loans and compensation for interest paid on bank loans to farmers incorporated as Farming Enterprises — to help agri-SMEs access low-cost credit. The poor quality of applications the Fund received every year were, in part, the result of many farmers' poor business planning skills. Thus, ARDS searched for ways to increase farmers' financial awareness and improve their financial modeling skills to give them a competitive edge for financing.

In 2017, ARDS began collaborating with AgriAnalytica [Please see the AgriAnalytica Success Story, below] providing farmers with trainings centered around preparing detailed and realistic business plans that resulted in a significant improvement in applications, thus giving farmers a competitive edge when applying for financing. Using its own innovative online platform that was refined thanks to post-training farmer feedback, AgriAnalytica improved farmers' financial literacy and access to finance. Business plans participants developed with ARDS consultations and the online platform resulted in their securing loans from banks, as well as governmental support. A total of 366 farmers received individual consultations, 1,270 submitted loan applications, and 297 loans were awarded totaling \$5.5 million. In 2019 alone, 96 farmers developed business plans, 19 received interest-free Ukrainian State Farmers Fund loans totaling \$308,000, and 190 received loans from Ukrainian banks totaling \$96.3 million.

Encouraged by these results, ARDS supported additional improvements to the AgriAnalytica platform, including the development of IT modules enabling effective remote

communication of consultants and farmers, which facilitates the preparation and submission of loan applications to banks and other financial institutions, and tracks the application approval status online.

Requests for additional post-training consultations initiated creation of the National Center for AgroFinance aimed at increasing farmers' access to financing by developing a new advisory services business model at the rayon level. AgriAnalytica supported this initiative by providing expertise on finance and business plan development. Members pay an annual fee of \$200 per year that supports the Center's hiring of staff and purchasing of furniture and office equipment, and pays AgriAnalytica's annual fee. At project's end, the Center has regional branches in Dnipro, Kherson, Lviv, Ternopil, Poltava, and Vinnytsia, with others slated to open in Kharkiv and Sumy once the COVID-19 pandemic quarantine ends.

Introducing International Safety and Quality Standards

Ukraine's agri-sector lagged behind in international safety and quality standards. When

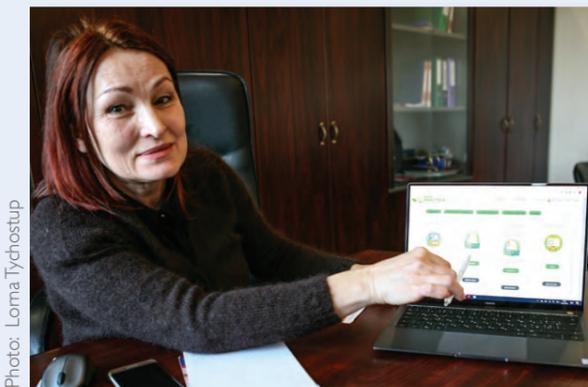


Photo: Loma Tychostup

SUCCESS STORY

Farmers Secure Agri-Financing Online With Ease

ARDS support of the AgriAnalytica online agri-financing platform helps grow Ukraine's burgeoning market economy.



Improving Farmers' Access to Finance with AgriAnalytica

- 1 Due to a lack of financial literacy and daunting application process, **farmers in Ukraine have struggled to secure the financial loans** needed to achieve growth.
- 2 Developed with the support of ARDS, **AgriAnalytica is an online digital financial platform** that gives farmers a user-friendly way to submit online loan applications to all of the country's agri-loaners.
- 3 **Information on how to obtain financial support** from the State, banks, and other institutions is now easily accessible as well as **tools to develop business plans** needed to prove their creditworthiness.
- 4 In collaboration with ARDS, AgriAnalytica hosted **16 highly successful financial literacy trainings** across Ukraine for 526 farmers on how to use the platform, bookkeeping basics, and business plan development.



- 5 Following the success of the trainings, the **National Center on AgroFinance** was established to provide consulting services aimed at increasing farmers' access to finance. Since opening:

- **366 farmers** received individual consultations;
- **1,270 farmers** submitted loan applications;
- **297 loans** were awarded totaling **\$5.5 million**.

- 6 **Farmers are now equipped with the financial resources they need** to remain competitive, helping Ukraine take its rightful place in the international agri-community. In 2019 alone:



96 farmers developed business plans



19 farmers received interest-free State loans totaling **\$308,000**



190 farmers received loans from banks totaling **\$96.3 million**

ARDS launched, only a few SMEs had been introduced to GLOBALG.A.P. and HACCP safety standards — both of which are critical prerequisite for producers to access organized formal domestic and international markets.

Partnering with volunteer associations (AMP, AUPB, UAPP, UkrSadProm, UkrSadVynProm, and UkrCoopSpilka) and undertaking a guidelines testing process, ARDS developed guidelines to follow when implementing international food safety standards in their value chains. Disseminating the guidelines through the associations, the Agrarian Club by Syngenta, and ARDS champion firms, they assisted numerous SMEs and their supplying partners to implement the required standards. Partner associations trained their own key personnel on how to apply the GLOBALG.A.P. and HACCP standards within their respective associations. ARDS also supported several fruit and vegetable supply chain actors on how to implement the HACCP safety system.

In addition, ARDS and Syngenta co-sponsored Ukraine's first GLOBALG.A.P. Tour (July 2019), which included GLOBALG.A.P. CEO and President Kristian Moeller, who discussed implementation of safety best practices for agri-products by Ukrainian businesses. One immediate result saw the creation of a National Technical Working Group (NTWG) to assist Ukraine's adoption of GLOBALG.A.P. standards, and which now consists of more than 20 representatives of farms, retailers, traders, labs, consultants, certification bodies, academia, and other stakeholders experienced in food safety, ecology, and human and animal well-being. The NTWG, a platform to help harmonize certification activities within the region and the first contact point for the GLOBALG.A.P. Secretariat, represents an important step in bringing global safety and quality standards to Ukrainian growers by translating and

proofreading official GLOBALG.A.P. documents into Ukrainian, developing National Interpretation Guidelines, and supporting the GLOBALG.A.P. Secretariat with proposals from local interested parties.

The NTWG translated the GLOBALG.A.P. standard for Fruit and Vegetables into Ukrainian, harmonized it with local legislation, and this official national interpretation was adopted. At project's end, the official translation was awaiting confirmation by the GLOBALG.A.P. Secretariat, after which it will be published on the [GLOBALG.A.P. website](#).

CONCLUSION

As detailed throughout this report, flexibility, responsiveness, innovation, and adaptation proved to be key to ARDS success. Willingness and ability to take risks, try innovative approaches, and truly take in learning significantly enhanced ARDS' impact, and became even more important during the COVID-19 pandemic and quarantine. A quick pivot to online activities actually expanded ARDS' reach, allowing more people and from a broader geographical area to be included in events than would have been possible with traditional conferences or demonstrations. USAID particularly praised ARDS for its swift reaction and effective adjustment during and after the quarantine.

Throughout its work and in particular through its adoption of the Market Systems approach, ARDS identified and piloted systemic solutions to address major market system constraints in the Ukrainian agricultural sector. Having measured the effectiveness of implemented solutions, ARDS developed a Behavior Change Communications Strategy to further scale up initiatives that demonstrated potential to change system actors' behavior and developed a primary message for each intervention and targeted audience. ARDS summarized behavior change results to highlight outcomes, contributing factors, sources of evidence, and challenges, which proved effective and ensured consistency in delivering the right messages to target audiences.

The COVID-19 crisis has demonstrated the limited resilience of Ukraine's agri-food sector, emphasizing the need for structural change to allow more efficient use of resources, to diversify production and sales, to add value, to continue efforts to organize the private sector to more effectively represent its interests, and for government to further adapt to a market economy in which government sets and enforces rules and regulations but does not normally itself play a major role in production and distribution. In other words, ARDS' market systems approach and behavior change solutions are more important and relevant than ever for Ukraine.

The new USAID Agriculture Growing Rural Opportunities (AGRO) activity will expand on ARDS' successful pilots and achievements. The strong knowledge base accumulated throughout five years of ARDS implementation provides a solid foundation on which to further build and accelerate the economic development of rural Ukrainian communities.

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