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Synthesis Report and Way Forward



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Acronyms and Abbreviations

AMMAR	Agriculture Modernization, Market Access and Resilience Project
ASAP	Adaptation for Smallholder Agriculture Programme
CSA	Climate Smart Agriculture
ECA	Europe and Central Asia (Region)
ENPARD	European Neighborhood Programme for Agriculture and Rural Development
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
GA	Georgian Amelioration
GDP	Gross domestic product
GEL	Georgian lari (currency)
GHG	Greenhouse gas
GHGA	Georgian Hazelnut Growers Association
GHMD	Georgia Hydro-Meteorology Department
GoG	Government of Georgia
GRID	Green, Resilient, and Inclusive Development (Approach)
hg/ha	Hectogram per hectare
I&D	Irrigation and drainage
ICT	Information and communications technology
IFAD	International Fund for Agricultural Development
ISET	International School of Economics at University of Tbilisi
IWRM	Integrated water resources management
M&E	Monitoring and evaluation
MEPA	Ministry of Environmental Protection and Agriculture
NAPR	National Agency for Public Registry
NASP	National Agency of State Property
NSDI	National Spatial Data Infrastructure
O&M	Operation and maintenance
OECD	Organization for Economic Co-operation and Development
RAPDI	Rural and Agricultural Policy and Development Institute
RDA	Rural Development Agency
UNFCCC	United Nations Framework Convention on Climate Change
VGGT	Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries, and Forests in the Context of National Food Security
WUO	Water Users Organization

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PREFACE

This Synthesis Report summarizes the main constraints and opportunities that Georgia faces in amplifying the contribution of the agriculture sector to the country's economic growth and diversification, employment creation, poverty reduction, food security and nutrition, and climate resilience and mitigation. Successful achievement of these multiple objectives, however, requires an integrated set of multi-sectoral policies. Key sectors to focus on were identified by applying three sets of filters:

- **Natural resources affecting agricultural production and productivity.** Land and water are finite resources and factors of production on which agricultural production and productivity depends. This is even more pronounced in Georgia where national trends toward a warmer and drier climate (with some exceptions) will continue contributing to grave consequences such as water shortages and land degradation (Shatberashvili et al 2015).
- **Evidence and findings from previous World Bank work.** This Synthesis Report builds on earlier analysis carried out by the World Bank. Insights and conclusions from that review of the agriculture sector in Georgia identified opportunities to improve the targeting and effectiveness of support to the agriculture sector, and especially for smallholder farmers, by addressing deep-seated constraints, including in the water and land sectors (WBG 2020a).
- **Stakeholder consultations and sector-level assessments for the sectoral focus areas.** Evidence and analysis from the previous work were complemented with new findings and extensive consultations on the experience of agricultural value chain integration, climate smart agriculture (CSA), as well as standalone analytical reports on the irrigation and land sectors in Georgia.

Synergistic public and private investments in agriculture, water, and land can lead to increased production and productivity by transitioning from low returns from agriculture to high-value crop production. Identified policy areas connected with agriculture, water, and land sectors were sorted for the elements of “urgency” and “technical readiness” by the Government of Georgia (GoG) sectoral stakeholders during a (virtual) technical workshop carried out on May 19, 2021, and follow-up discussions with GoG stakeholders between June and August 2021. This Synthesis Report builds on the following detailed sectoral notes that are available as companions to this report: “Constraints to sustainable, efficient, and resilient irrigation systems in Georgia – What is a Possible Way Forward?”, “Policy note on agricultural land market development in Georgia”, and “Climate Smart Agriculture Country Profile for Georgia.”

A vision for the future of agriculture in Georgia by 2030

1. **The potential of agriculture in Georgia to contribute to achieving green, sustainable, and inclusive development is clear; and years of focused policy interventions and investments in this sector have started to bear fruit.** Despite external shocks, the past four years have been positive in terms of economic growth with a gross domestic product (GDP) real growth rate of 5.1 percent in 2019, with Georgia moving from a lower- to upper-middle-income country during this period (SDG ICG 2020). The agriculture sector has played a vital role in this economic growth story despite the relatively small size of the sector: agriculture makes up 8.4 percent of the Georgian GDP (2020), and agro-processing accounts for a further 7-8 percent. Agriculture is also the country's largest employer representing 19.1 percent of total employment. Even though agriculture contributes a modest share to total GDP, it makes a significant contribution to exports: as of 2020, agri-food products constituted 28 percent of the country's total exports.

2. **Recent developments in Georgia's agri-business space and its rich history in the sector are reasons for optimism about the future potential for sustainable growth.**¹ In the past decade the value of food production has increased sharply, and some export-oriented producers and agri-business enterprises (involved mainly in wine, hazelnut, and edible fruit production) have been successful in developing value chains and have shown that sustainable growth is feasible. Furthermore, the agri-business sector in Georgia has proven more resilient to the COVID-19 pandemic than other economic sectors (PwC Georgia 2020, and Tevdoradze et al 2020). Georgia has a rich agricultural and food tradition that it can build on and, with concerted efforts, can transform into a vibrant sector that contributes to economic growth, and capitalize on opportunities in markets that value high end agri-food products that meet high-quality standards and that have been produced in an environmentally sustainable way.

3. **Yet, despite these successes and potential opportunities, challenges remain.** A significant share of Georgia's population, and most of its rural population, remains working in low-productivity agricultural activities, contributing to high levels of poverty and inequality, especially in rural areas. Farms in general have a low level of productivity and are disconnected from markets, and agri-food export products and destinations remain highly concentrated. A recent World Bank review of the agriculture sector in Georgia has identified a critical opportunity to improve the targeting and effectiveness of support to the agriculture sector, especially for smallholder farmers, by addressing deep-seated constraints jointly across two key inputs to the agriculture sector: water and land, and

¹ The term "agri-business" spans from primary agricultural production along the value chain to markets.

by moving toward a joint and integrated policy approach for the agricultural, water, and land sectors (WBG 2020a).

4. **To unlock the potential of Georgia’s agriculture sector, this Policy Summary presents a vision for Georgia’s agriculture sector in 2030, which is grounded in an agriculture-water-land nexus approach.** This Policy Summary advocates that by 2030 Georgia can increase the agricultural sector’s contribution to economic growth, create employment, contribute to poverty reduction, improve food security and nutrition, and enhance climate resilience and mitigation by focusing on joint and coordinated actions across the agriculture-water-land policy nexus. Progressing toward the 2030 vision entails ensuring water and land tenure security for the agricultural sector by improving access to reliable and ecologically sustainable irrigation & drainage (I&D) services for all types of farm structures, encouraging higher value crop production, further enhancing land administration services delivery, completing the rural cadastre and land registration process, increasing land use efficiency, and improving agricultural land markets functioning to make land accessible to those who want to make farming a business.

5. **With joint and coordinated investments in sustainable use and management of water and land resources, Georgia will be able to create successful agricultural value chains and expand on emerging opportunities in a green and climate-resilient manner,** equipping farmers with the capacity to better cope with risks and to adapt food supply to changing climate and market demands. The agriculture sector will be organized around value chains that are well-integrated from production to final markets, and that will also enable women and youth to thrive. This approach directly aligns with the GoG Ministry of Environmental Protection and Agriculture (MEPA) strategic goals for agriculture and rural development, which are “based on the sustainable development principles, to diversify/develop economic opportunities in rural areas, improve social condition and quality of life.”

6. **This is an opportune time for Georgia to transform its agriculture sector to contribute to its vision of achieving sustainable and inclusive economic development and growth.** Georgia is part of the Food Systems Summit Dialogue, with the first meeting held in April 2021. The country has identified the key trends to ensure sustainable agri-food systems in Georgia; those include ensuring competitive agricultural value chains, effective systems of food safety, sustainable use of natural resources, and climate change mitigation and adaptation. Earlier in December 2020, Georgia launched its new strategy, the GoG Program for 2021 – 2024, “Towards Building a European State,” that sets forth key directions to “secure the country’s rapid economic recovery and development, along with building a strong, unified democratic State.” A strong agriculture sector in Georgia is at the center of both.

7. **The renewed policy interest in sustainable agri-food value chains occurs against the backdrop of favorable external developments in Georgia’s important trading partner, the European Union (EU).** The European Green Deal,² and specifically the component on food that calls for “creating

² https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en

a fair, healthy, and environmentally friendly food system “from farm to fork” is of particular importance to Georgia. The EU aims to promote new global food standards with the goal of becoming a leader in setting standards for sustainability. To tap into the opportunities presented by the European Green Deal, Georgia needs to articulate and assert practices that render it not only competitive but also sustainable and green in meeting these aspirations and eventually complying with new standards. Georgia can be successful in meeting this challenge by overcoming a set of inter-related constraints. This Policy Summary and the Synthesis Report aim to aid in that challenge.

Understanding the linkages and interactions between the agriculture-water-land nexus in Georgia

8. **Constraints and opportunities in the agriculture, water, and land sectors are interlinked, and cannot be addressed in isolation in Georgia.** Land and water are finite resources and factors of production on which agricultural production and productivity depends. This is even more pronounced in Georgia where national trends toward a warmer and drier climate (with some exceptions) will continue contributing to grave consequences such as water shortages and land degradation (Shatberashvili et al 2015). While agriculture in Georgia is primarily rainfed, I&D investments are vital to guard against climatic extremes and are critical for high-value agriculture production. The eastern part of the country, which is subject to frequent droughts, requires the use of irrigation to buffer climatic extremes, while the western part of the country, which is wetter, is confronted with drainage problems. Meanwhile, I&D infrastructure has deteriorated due to lack of maintenance, difficulty of continuing operation of large-scale infrastructure, and reduced financial resources allocated to I&D management, eroding I&D services provision in Georgia (Box 1). Pressure on land resources is also expected to grow, making better agricultural land management in Georgia imperative.

9. **Georgia is facing a reduction in total irrigated lands due to shortage of irrigation infrastructure capacity.** Significant steps have been taken by the Government of Georgia, including the

Box 1: High reliance on rainfed agriculture in Georgia translates into rising climate vulnerability

- Actual irrigated area, comprising around 386,000 hectares by the end of 1980s, shrank to 43,000 hectares by 2015 due to the lack of O&M.
- Recent investments in the rehabilitation of irrigation infrastructure have allowed a portion of the previously serviced areas to be brought back under irrigation.
- Despite considerable achievements by GoG to expand the irrigable area from 88,000 hectares in 2015 to about 130,000 hectares in 2020, a significant area of agricultural land remains under rainfed agriculture.
- Total public irrigated area in Georgia is only about 65,000 hectares, implying that only an estimated 31 percent of total agricultural production comes from irrigated land.
- Rainfed agricultural systems are vulnerable to projected climate change. Increasing temperatures, eroding soils, fluctuating rain precipitation, and increased aridity and drought, which are already affecting Georgia combined with farmers’ low climate adaptation, exacerbate vulnerability.

Source: Authors.

rehabilitation of a large part of the main canal systems, and in some areas secondary and tertiary irrigation systems, expanding the irrigable area from 88,000 hectares in 2015 to about 130,000 hectares in 2020. The Irrigation Strategy for Georgia for 2017-2025 has a goal to increase the total irrigated area to 200,000 hectares by 2025 (MEPA 2017b). According to Georgian Amelioration (GA), the national irrigation agency the main irrigation service provider in Georgia, there were a total of 123 irrigation schemes under use in 2020. Thus, as of 2020, although a total of 130,000 hectares is available for irrigation, only about 65,000 hectares is publicly irrigated. This is largely because many I&D systems still require rehabilitation and establishment of institutional organizations that enable the systems to be sustainable. However, the ongoing reconstruction of existing irrigation schemes alone will not suffice to improve service delivery to targeted areas as the availability of irrigation water becomes a limiting factor with the increasing impacts of climate change. This underscores that an integrated suite of water security investments that improve efficient and sustainable delivery of I&D services from the basin to the farm are critical for the transition from low-productive agriculture to more economically viable, high-value agriculture and are vital to enhance resilience against climatic extremes threatening growth of the agriculture sector in Georgia.

10. **Water security investments in agriculture entails providing efficient and affordable I&D services to farms in Georgia within an integrated water resources management framework.** The ability to increase the agricultural sector’s contribution to economic growth, create employment, and contribute to poverty reduction is directly linked to the availability of adequate, reliable, timely, and affordable I&D services. Irrigated agriculture is, on average and globally, at least twice as productive per unit of land as rainfed agriculture, thereby allowing for more production intensification and crop diversification (Box 2). However, in terms of water consumption, agriculture accounts for more than 70 percent of total water use in Georgia, with abstraction from surface water for agriculture more than doubling since 2003 (UNECE 2016).³ This underscores the need to manage available use of water resources for agriculture in a sustainable and integrated manner.

Box 2: Losses and potential benefits for farms from I&D expansion

- In 2018, the annual estimated loss of agricultural productivity compared with the maximum productivity of water storage capacity in the form of reservoirs was US\$21 million.
- The annual income per hectare of each farm in Georgia would increase by 59 percent, or US\$250 (700 GEL) for small and marginal farms, and by 85 percent, or US\$2,380 (6,720 GEL) for medium and large farms, if the land is irrigated and drained.

Source: WBG (2020e).

³ Groundwater resources are mainly used for drinking water in Georgia and therefore less applicable for agricultural purposes (EEA 2020).

Box 3: Agricultural land ownership and management in Georgia

- As of 2021, 64 percent of registered agricultural land belongs to, and is managed by, public authorities.
- There is no integrated nationwide land management system containing land use, land cover and registration, and cadastre data. The land balance report and corresponding database, which had monitored and evaluated soil quality, land cover and use nationally in the former Soviet Union countries, has not been updated since 2004.
- The NASP has an incomplete inventory of state land (only 72 percent of land is registered) and status of land leases (the data are only complete and up to date for leases concluded since 2014). Rental fees for leases, which were signed before 2014 and for unregistered land, have therefore not been paid.
- The system of allocation and monitoring of state-owned agricultural land does not provide visibility and predictability to farmers (especially small-scale farmers) for renewing leases or planning long term, therefore limiting their willingness to invest into perennial crops, soil quality improvement, and infrastructures construction and maintenance.
- This situation has a direct impact on foregone revenues to the State budget and indirect impact on GHG emissions from agriculture, as the cultivation of perennial crops would have captured on average three times more GHG emissions.

Source: Authors.

11. Resolving agriculture sector constraints is a necessary but insufficient condition for improving sector performance: simultaneous interventions will be required in addressing core sector constraints in the water and land sectors in Georgia. The availability and efficient use of water resources in a reliable, timely, and flexible manner for farmers and functioning agricultural land markets are critical for sector growth. Improved land management and administration underpins sustainable and productive management of land resources, provides secure land ownership, and supports investments in agricultural production (Box 3). The timing is even more urgent when factoring in increasing climate change variability and risks.

12. Agricultural productivity in Georgia is low and stagnant for most crop products; and the predominance of small agricultural holdings within the country's farm structure are some of the major constraints to growth. Yields in hectogram per hectare (hg/ha) for major crops in Georgia have not shown marked

improvements in the last decade and are lower than world averages.⁴ Low yields have been attributed to a variety of factors that include poor accessibility to improved varieties, seeds, and seedlings; high cost and low quality of pesticides and fertilizers; lack of adaptive testing and development of local seeds; inadequate agronomic practices; and inadequate irrigation (WBG 2020d). Globally small-scale farming systems produce more than 50 percent of the world's food and control anywhere from 40 to 50 percent of global farmland (Samberg et al 2016). Under the right conditions (access to inputs, resources, and opportunities), smaller farms can be more productive per hectare than larger farmers; they invest in their lands' fertility, and they also tend to grow a wider variety of crops, contributing

⁴ Indicatively, for grapes, slightly over 100,000 hg/ha (world) versus less than 50,000 hg/ha (Georgia); for apples, over 150,000 (world) versus less than 50,000 (Georgia); for tangerines and mandarins, almost 100,000 (world) versus less than 50,000; for potatoes, a little over 200,000 (world) versus less than 150,000 (Georgia); and for maize, a little over 50,000 (world) versus around 25,000 (Georgia) (WBG 2020b).

thus to agrobiodiversity. In Georgia, however, the fragmented, small-scale farming has become an impediment to growth.⁵ A small and growing cohort of commercial farmers in Georgia, focused on quality, has not yet achieved the scale required to service demanding external markets, which require minimum volumes to control transaction costs. In addition, many agri-businesses resort to vertical integration as the best means to secure consistent flows of raw material rather than through procurement from smallholders (WBG 2020d). High land fragmentation for private agricultural land, inefficiency of management and allocation of state agricultural land, and weak development of rural land markets create barriers for endogenous farm growth and the entry of larger-scale producers. This constraint needs to be at the core of the agri-food sector transformation policy agenda.

13. Climate change has put unprecedented pressure on water resources and land systems and on agriculture to become a more efficient user of natural resources. Despite being rich in water resources, with 14,000 square meters of surface water per capita compared to the European average of 9,300 square meters (MEPA 2019), available water resources are not evenly distributed in Georgia and they are mainly accumulated in the western part of the country (FAO 2008). Moreover, the availability of water resources is highly seasonal. River flows, especially in Eastern Georgia, depend on snowmelt with high flows occurring in April-May and low flows in July-August during the peak of when crops need water. During the last 50 years, the number of glaciers in Georgia decreased by 13 percent and the glacier area decreased by 30 percent. With global warming, their full melting is projected by 2160. The warming trend is clear in Georgia,⁶ but estimates for the changes in precipitation are uncertain. Observations suggest that a decrease of rainfall in the summer period is expected. Climate change is also expected to negatively affect irrigation-water availability by reducing river flows with significant impacts on most crop yields (about 30 percent in the eastern lowlands in the 2040s) (Ahouissoussi et al 2014). Soil salinization is mainly observed in the eastern region of the country, specifically in the Kakheti region, where salinized soil constitutes 22 percent of the total area. In the south-western region of Adjara, high levels of precipitation have increased soil erosion and led to landslides and avalanches, resulting in a net reduction in agricultural land area of 7.4 percent between 1980 and 2010. Desertification, which is an extreme case of soil erosion, is causing an expansion of semi-arid and arid areas in Georgia due to increased temperatures, severe droughts, and intense winds. The predicted increase in temperatures and dry periods over the coming decades is likely to compound the problem of desertification and water availability in East Georgia (WB and FAO 2022). While agriculture is a large contributor to global warming, accounting for about a quarter of total greenhouse gas (GHG) emissions globally (WBG 2015b), it also has a big role in adaptation and

⁵ Almost 80 percent of households operate less than one hectare of agricultural land, 14.9 percent operate one to two hectares, 4.3 percent operate two to five hectares and only 1.3 percent (8,577 households) have five hectares or more (WBG 2020c). For most small farms, the combination of small farm size and low farm productivity means that agricultural incomes are too low to survive on farm earnings alone. In fact, non-farm wages and income transfers are the major sources of rural household income. Small and micro farms (less than 1 hectare) sell small surpluses and have little incentive to invest in yield improvements and product upgrading. This structure increases the transaction costs and risks of downstream packers, processors, exporters, and large-scale retailers who require compliance with minimum product standards.

⁶ According to all available projections, temperature is expected to increase by +1.6°C to 3.0°C in 2041-2070 compared to 1971-2000 (MEPA 2021).

mitigation measures being a major provider of environmental services sequestering carbon, managing watersheds, and preserving biodiversity (WBG 2007). The CSA approaches, taken to scale in Georgia, can play a critical role to attain a triple win by implementing agriculture and food production practices that not only boost productivity but also enhance resilience and lower GHG emissions.

14. Improvement of agricultural land markets in Georgia would enable more private sector investment in agriculture and a move toward higher-value crops production. Currently 64 percent of registered agricultural land is still under state ownership, and around one million plots across the country, primarily in the rural areas, have not yet been registered according to the 2021 data from the National Agency of Public Registry (NAPR). The responsibilities for state land management and allocation are not clearly delineated between national and local authorities. This leads to abandonment of certain farms due to inefficiency of the state land management system and land tenure insecurity for some of the rural dwellers, especially for those leasing state land. These two phenomena result in abandonment or inefficient use of agricultural land, overgrazing of pastures, and disincentives to invest into the soil quality improvements and to maintain infrastructure. High-level fragmentation for already privatized land is another critical bottleneck hampering investment, agribusiness development, and commercialization. Limited access to credit among farmers is a major constraint to increased use of technologies and inputs and is largely related to farmers' lack of collateral as only 72 percent of the land under GoG control is registered.⁷ The privatization process for land in state ownership has practically ceased since 2010. Given high-level of fragmentation for agricultural land in private ownership and certain inefficiencies in allocation and management of state agricultural land, improvement in valuation and taxation regulatory frameworks and their implementation could incentivize land pooling and consolidation for those desiring to create larger land plots that would be suitable for commercial agriculture and attractive to national and foreign private sector investors.

Pathways for joint action – recommendations to achieve Georgia's vision for the future of agriculture by 2030

15. To address the environmental, sustainability, and productivity challenges facing food production in Georgia, there is a need to move toward an integrated policy approach by considering agricultural, water, and land policies together. This Policy Summary lays out four pathways of joint action, which can reduce bottlenecks and mitigate the pressure on resources while contributing to a green, resilient, and inclusive transition toward a more economically profitable agriculture sector:

1. Implement a holistic approach to infrastructure investment in water, land, and agriculture systems.
2. Reform and strengthen institutions that deliver water, land, and agricultural services at multiple scales.
3. Strengthen information systems and scale technological innovations across the agriculture-water-land nexus.

⁷ One out of three plots is registered, and this proportion is lower for agricultural land.

4. Invest in human capital development and systems for monitoring progress.

1. Implement a holistic approach to infrastructure investment in agriculture, water, and land systems

16. **To provide adequate water for agriculture, and to enhance the economic potential of all types of farms, the priority need is to increase access to irrigation by more farmers.** This can be done by increased rehabilitation and modernization of main, secondary, and tertiary systems. However, future I&D investment projects need to analyze and consider the constraints and requirements of water use, soil, and cropping needs of the farmers; the needs of the surrounding environment, including economic, social, and ecological factors so that the effect of the planned investments can be anticipated; and their design adjusted, when needed. This can be complemented with a detailed operations and maintenance (O&M) plan for ensuring the viability of the infrastructure in the medium to long term.

17. **Concurrently, measures are needed in the agricultural sector across agricultural value chains from farm to market.** The measures should improve market integration, increase flow of raw materials from smallholders to agri-business, encourage market linkages and product aggregation, close the knowledge gaps, increase access to finance, improve transport and agrologistics, encourage innovation along the value chains, and foster public-private dialogue. These measures should also widen the use of public-private partnerships in areas such as agrologistics, information systems, and training programs. Such measures would benefit both the small cohort of progressive, larger farmers and agri-business enterprises focused on the export of high-value commodities and the larger group of more traditional smallholder farmers who produce for themselves and family agri-businesses that focus largely on production for domestic markets.

18. **The Government of Georgia has expressed the need for an investment plan for the agricultural sector which should be taken up seeking input by all main sectoral actors (public and private sectors, civil society, and development partners).** Similarly, the land sector would benefit from the development of a unified policy document outlining the GoG approach toward sustainable land management and administration, and a clearer distribution of responsibilities for land management and administration among central and local governments as well as different agencies and units of different ministries and government authorities. Additionally, investment into a National Spatial Data Infrastructure (NSDI) connecting and sharing data among different stakeholders would provide a solid foundation for strategic and policy decision-making, enable savings on data acquisition costs, and support monitoring of land policies implementation.

2. Reform and strengthen institutions that deliver water, land administration and management, and agricultural services at multiple scales

19. **Since 2010, public expenditure on agriculture has increased significantly, both in absolute terms and as a share of total public expenditure.** There is scope in Georgian agricultural public spending to be re-oriented to serve better GoG strategic objectives and aspirations for agriculture.

Public services such as research, extension and training need more budget support. Although a re-organization of Georgia's agricultural research institutions has established a more rational base for research activity, the public research system remains under-funded, and the research agenda is not aligned with the needs and interests of commercial agriculture. Moreover, food safety systems in the country are under-developed: there is no state certification system to enhance the competitive advantage of high-standard producers. And although accredited, many laboratory services lack international recognition and credibility.

20. **Also, measures to promote private investment through support for subsidized loans and insurance premiums need to be re-formulated.** Public support for commercial bank lending should target smallholder farmers more widely and emphasize support for collateral substitutes rather than interest subsidies. Simultaneously, Georgian Amelioration has limited capacity to deliver irrigation services to farmers in a timely and operationally efficient manner, and there is limited willingness of water users to pay a higher irrigation tariff without significant improvement in the service quality, leading to a vicious cycle of build-neglect-rehabilitate. This leads to limited recovery of O&M costs by Georgian Amelioration, increased reliance on state funds for GA operational activities, deterioration of irrigation schemes, which were recently upgraded, and reduction in irrigated lands. Thus, an important reform to accelerate improved service delivery of irrigation and drainage services is to reform the GA governance and operational capacities, and to invest in establishing viable and active farmer-led institutions such as Water User Organizations (WUOs), in relevant command areas where I&D infrastructure is improved and modernized, or where farmers are willing to improve, maintain, and operate infrastructure. In addition, gender-inclusive irrigation management institutions and community-based organizations can deliver and manage water more effectively than those that exclude women as key stakeholders. There is some evidence that women's participation in WUOs results in better enforcement of rules, collection of fees, conflict management and resolution, and sustainable irrigation systems (WBG 2012; Quisuimbing 1994; Vasavada 2005; van Koppen 2002; Najjar et al 2019; Imburgia et al 2020). In conjunction, a revised tariff for I&D services needs to be rolled out in consultation with farmers as GA capacity is improved.

21. **The recently created Land Management Agency under MEPA needs further strengthening to fulfill its responsibilities of land-balance establishment, land management and monitoring, and facilitation of agro-investments providing access to and information on available agricultural land for potential investors.** The completion of nationwide systematic land registration should enhance land tenure security and willingness of landowners and users to invest in irrigation infrastructure maintenance and sustainable management of land resources. The revision of the land valuation and taxation frameworks and their implementation would incentivize reallocation of land resources and their more efficient use. Political decision on resuming the privatization process for agricultural land should further enable agricultural land market development.

22. In addition, knowledge and competency in gender equality and women's empowerment needs to be built in MEPA and its agencies, including the Regional Information Consultation Centers as well as Georgian Amelioration, Land Management Agency under MEPA, and NAPR.

3. Strengthen information systems & scale technological innovations across the agriculture-water-land nexus.

23. **Innovations that can support resilience to climate change are necessary to support Georgia to reach the future vision of agriculture by 2030, which can be implemented at multiple scales.** At the farm level, CSA practices and technologies can sustainably increase agricultural productivity and farmers' income, and build resilience to climate change, and reduce and/or remove GHG emissions in line with national development priorities.

24. **To accelerate the transition to CSA, however, smallholders need to be incentivized to adopt climate-smart agriculture technologies.** In turn, these technologies must be readily available and affordable. Farmers need incentives and enabling conditions to make transformations on the ground, which must be facilitated by institutions and policies. State institutions are particularly important for the production and dissemination of information related to technology options and management methods, climate variability, and value chain conditions. The CSA development requires intensive communication among farmers, authorities, and agri-businesses. In addition, an analysis of a MEPA agricultural program showed that targeted support was needed in awareness-raising at policy and field level to pursue programs that improve women's access to information, knowledge, and innovation; technology, machinery, and agricultural inputs; markets; and agri-finance (Powell et al 2020).

25. For the water sector, one of the key innovations that can support adaptation to climate risks is to invest in systems for integrated monitoring of water and agriculture, using advanced tools such as remote sensing, big data analytics, and ICT-based applications as well as ground collected data to rollout a bundle of Decision Support Systems (DSS) tools such as water accounting, drought and flood monitoring, irrigation and crop monitoring system, and basin management reports to provide actionable information across the scales from farm to basin targeting institutions that works across the food, water, land sectors such as MEPA, NAPR, Georgian Amelioration, and others. Effective NSDI implementation should enable multi-scale reference and sectorial data exchange.

4. Invest in human capital development and systems for monitoring progress.

26. **Strengthening human capital is necessary as investments in capacity building will ensure that staff are properly skilled to perform responsibilities at the policy setting, implementation, and monitoring levels, and that service providers (agriculture extension specialists, veterinarians, etc.) have the necessary skills.** Knowledge of modern technologies, how and where to innovate along the value chain and market opportunities and behavior needs to be strengthened throughout the agricultural sector in Georgia. This can be achieved by increasing the number of well-trained extension officers, food technologists, and agri-business advisers together with the re-organization of the institutional base for knowledge transfer. Simultaneously, investing in human capital is highly relevant for the I&D sector where there is need to strengthen cooperation with higher education

institutions and the Ministry of Education and Science of Georgia to increase specialist (male and female) graduates for recruitment in key GoG water sector agencies.

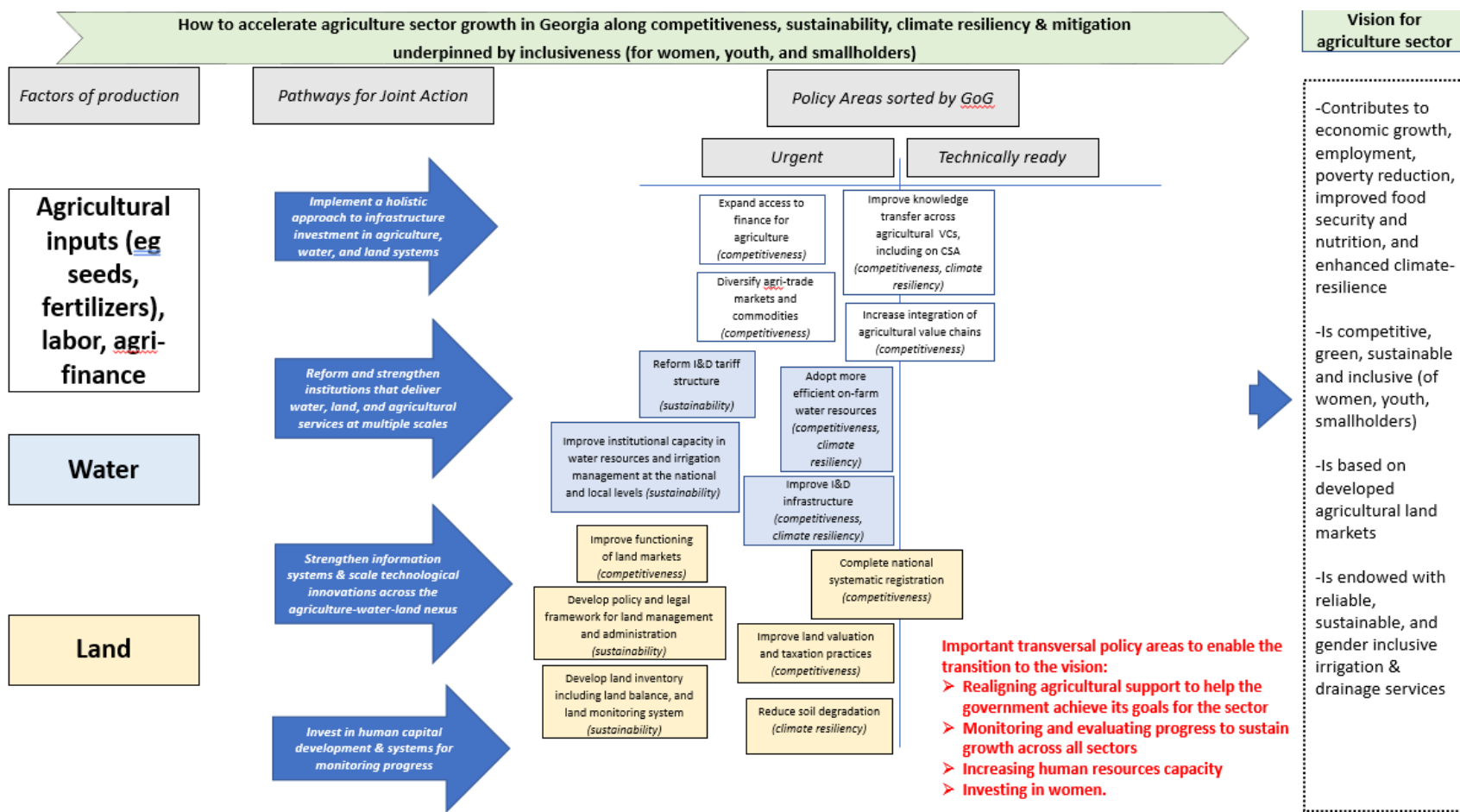
27. In addition, the establishment of a monitoring and evaluation (M&E) framework for public programs and policies would help to strengthen the performance and effectiveness of government programs by providing useful feedback on program outcomes and outputs, detecting implementation difficulties, and identifying actions to overcome them. Objective and transparent M&E of agricultural support programs should be conducted and used to facilitate policy design and implementation based on concrete evidence. Currently no such framework exists in the sector. This also applies for irrigation services, where there is need to improve M&E procedures, where entities such as MEPA and Georgian Amelioration can reliably collect, share, analyze, and act on irrigation system performance and user data to further improve service delivery and financial accountability. As a necessary complement, NSDI establishment at governmental, sectoral, and municipal levels would support optimal planning of resource use and efficient management of processes as well as increase quality of decisions made by central and local government based on standardized, systematized, valid, reliable, and current information.

28. **Although the Government of Georgia has an ambitious yet incomplete agricultural transformation agenda, multiple opportunities for joint sectoral coordination exist, which can accelerate progress toward Georgia’s future vision of agriculture by 2030** (Figure 1). Land and water are finite resources and factors of production on which agricultural production and productivity depends. Resolving agriculture sector constraints is a necessary but insufficient condition for improving sector performance. Simultaneous interventions will be required in addressing core sector constraints in the water and land sectors along the four broad pathways of joint action.

29. **Although all policy areas identified in the Synthesis Report are important, consultations with the Government of Georgia revealed some that are deemed more urgent than others, and some that are more technically ready with solutions sufficiently in place.** Even though some areas were not sorted for urgency and technical readiness, they are still of relevance. Addressing these areas will be important to enable the transition to the vision. These include realigning agricultural support to help the government achieve its goals for the sector; M&E progress to sustain growth across all sectors; increasing human resources capacity; and investing in women.

30. **This Policy Summary outlines the rationale for an agriculture-water-land nexus approach to realize a vision for the future of agriculture by 2030 in Georgia.** In the following sections, the Synthesis Report presents a multi-sectoral approach grounded in three themes: competitiveness, sustainability, and climate resilience and mitigation, underpinned by inclusiveness.

Figure 1: How to accelerate progress toward Georgia’s future vision of agriculture by 2030



Source: Authors.

I. INTRODUCTION

- 1. The purpose of this Synthesis Report is to identify binding constraints and knowledge gaps in the development of the agriculture, water, and land sectors in Georgia, and to identify pathways for the future of Georgian agriculture.** This Synthesis Report proposes recommendations across the three sectors fostering a productive, competitive, environmentally sustainable, and diversified agriculture sector in Georgia, which can serve as actionable inputs for future investment operations both for donors and the Government of Georgia. This Synthesis Report builds on earlier analysis carried out by the World Bank and complements that with new findings and extensive consultations on the experience of agricultural value chain integration, climate smart agriculture (CSA) as well as a standalone analysis of the irrigation and land sectors in Georgia (WBG 2020a).
- 2. Constraints and opportunities in the agriculture, water, and land sectors are interlinked, and cannot be addressed in isolation.** Synergistic public and private investments in agriculture, water, and land can lead to increased production and productivity by transitioning from low return agriculture to high-value crop production. Mismanagement carries the risk of degradation of water and land resources. A recent analysis on the cost of environmental degradation points to an increasing trend of unsustainable resource use in Georgia (WBG 2020e). The updated evaluation of agriculture and forest land, air quality, lead exposure, and the state of Georgia's coastal zone indicates negative effects on the country's economy, with costs that include both direct costs and the cost of lost economic opportunities from compromised future resource production potential (WBG 2020c).
- 3. The need for an integrated approach is becoming more relevant and urgent given climate change trends and their impacts in Georgia.** Current trends of climate change in Georgia such as increasing temperature, eroding soils, intensifying droughts, floods, and an increased occurrence of hail are expected to reduce yields in major agricultural regions, including the eastern region of Kakheti. The incidence of destructive natural disasters such as landslides and mudflows has increased considerably. Hail and drought in the eastern part of the country have caused large losses in Georgia's agricultural sector, and the frequency and length of these hazards have increased in recent years (WBG 2019). Georgian agriculture is expected to be negatively affected by the direct impact of temperature and precipitation changes on crops, the increased irrigation demand required to maintain yields, as well the decline in water supply associated with higher evaporation and lower rainfall. The latter includes the potential for increasing dry days, meaning the consecutive days without rainfall events. Although climate change has a relatively mild negative effect on crop yields when ignoring irrigation water constraints and is even predicted to boost yields of certain crops in Georgia (particularly in the eastern mountainous region), the phenomenon is expected to greatly decrease irrigation water availability in the country during key months for agricultural productivity (Ahouissoussi et al 2014). Climate change also increases the risk of reduction of the agricultural land fertility and degradation intensity growth (MEPA 2017a).
- 4. Georgia is facing significant water resource challenges due to risks related from climate change.** Water resources availability in Georgia varies greatly by season and geographical area (ADB

2020). Water distribution is uneven throughout the country, given the levels of precipitation observed in the humid west and semi-arid east.⁸ The western part of Georgia has sufficient resources while the eastern part is relatively dry, and water is scarce. Also, increasing temperatures will lead to glacier melt reducing water surpluses (OECD 2021b). During the last 50 years, the number of glaciers in Georgia has decreased by 13 percent, and the glacier area decreased by 30 percent. With global warming, their full melting is projected by 2160 (ADB 2020). The country is already experiencing significant variability in precipitation and surface water run-off. These are projected to be more severe in the coming years. Glacial run-off is projected to decrease by 40 percent by 2100 compared to 2010 levels, which will severely impact Georgia's energy, agriculture, and ecosystems (IEA 2020). Droughts are also expected to put further pressure on water availability (OECD 2021b).

5. **Pandemic-related exogenous shocks are impacting the agri-food sector in Georgia and renewing calls for investments in the sector's growth and resilience given its importance to food security and employment.** COVID-19 has had a direct negative impact on the Georgia's gross domestic product (GDP) that contracted by 6.8 percent in 2020 (WBG 2021a). Even though the agri-food sector in Georgia proved more resilient to the pandemic than other economic sectors (PwC Georgia 2020, and Tevdoradze et al 2020), the pandemic also exposed the vulnerabilities of Georgia's agri-business sector. A survey of micro, small, and medium-size enterprises in Georgia revealed that, farmers financially survived the crisis slightly better than non-food manufacturing enterprises of small and medium size (FAO et al 2021). Nevertheless, access to agricultural inputs, including labor, and access to output markets declined. A survey, conducted during the first wave of the pandemic (March-April 2020) by the Georgian Farmers' Association, revealed that 61 percent of surveyed farmers and agricultural businesses had their access to agricultural inputs curtailed as the price of the imported agricultural inputs increased. In addition, 42 percent of surveyed farmers cited limited access to machinery services and construction materials. Movement restrictions and curfews complicated workers mobility and the logistics and marketing of products (GFA 2020). Sixty percent of surveyed farmers reported that they were simply unable to sell their products due to closures in the food-and-beverage and tourism industries (such as restaurants, cafés, and hotels).

6. **Concerted efforts to increase growth in agriculture can contribute to decreasing rural poverty in Georgia.** Overall, growth originating from agriculture has been two to four times more effective at reducing poverty than growth originating from other sectors. And there is some evidence that income gains from agricultural activities have been no more costly to achieve than income gains in other sectors (WBG 2015a). A significant share of Georgia's population, and most of its rural population, remains working in low-productivity agricultural activities. This contributes to continued high levels of poverty in rural areas (WBG 2021a). As of 2013, the average annual salary of a farmworker amounted to only 64 percent of the national average (Geostat 2021).

7. **An integrated approach addressing bottlenecks in the agriculture-water-land nexus simultaneously might also provide the opportunity for quality employment for women by**

⁸ Droughts are common in the eastern region, and irrigation is necessary there.

addressing practices that keep women in lower paid, casual work. Despite GoG progress in establishing national legislative frameworks and developing gender equality policies over the previous two decades, gender inequality persists in agriculture, water, and land. Operating under pervasive gender stereotypes that define family and the household as the women's domain, women's contribution to agriculture is often overlooked and largely under- and even un-paid. In agriculture, hunting and forestry, women earn 75 percent of what a man would earn; in fisheries women earn 35 percent of a man's wage (FAO 2018a). More than half (60 percent) of self-employed women in agriculture are non-paid workers, reflecting the traditional view that assumes that female household members will participate in agriculture labor for free, in addition to household and family care (FAO 2018a). Constraints to women's growth in agri-business range from: (1) *accessing information, knowledge, and innovation*, where rural advisory services are primarily targeting male farmers and where female providers of these services are only between 9 and 25 percent of all employees. Women tend to be also under-represented in producer organizations, where those exist. For example, only 25 percent of all farmers' cooperative members are female; and out of 2,106 cooperatives, only 100 were reported to be headed by women (FAO 2018a); (2) *accessing technology, machinery and agricultural inputs*, given that men tend to be considered as the decision makers and responsible for accessing resources and for capital-intensive tasks, while women carry out mostly manual and labor-intensive farm work. According to 2019 data provided by the National Agency of Public Registry (NAPR), the percentage of female water users (i.e., landowners who have irrigation service contracts) is just 3.7 percent indicating a gender gap in accessing water resources; (3) *accessing markets, and in particular wholesale markets*. Women are active in retail markets but have less mobility and more restricted access to transport, that would allow them to participate in more profitable settings. Female farmers were particularly hard hit by the suspension of public transport as part of the containment response to COVID-19. Reportedly male farmers utilized private means of transport, that are not available and accessible to women, to reach markets (Tevdoradze et al 2020); and (4) *accessing agri-finance*, as women tend to not have any collateral registered in their name (FAO 2018a). Even when women own property, and in fact female landowners or co-owners represent 40 percent of total landowners, their parcels are on average 30 percent smaller than those owned by the men.⁹ All these constraints, that are also associated with the low level of female entrepreneurial participation in Georgia, have only gotten aggravated due to COVID-19 (Tevdoradze et al 2020).

8. **Agriculture has a unique and critical role in improving nutrition.** Georgia has been exhibiting some worrying food security and malnutrition trends. Prevalence of undernourishment estimates, which is a measure of hunger, from 2004 to 2019 in Europe and Central Asia (ECA), place Georgia among the countries with the highest rates of prevalence of undernourishment in the region (at 8.2 percent). On another measure of approximating hunger, the prevalence of moderate food insecurity, Georgia is among the four ECA countries that have rates higher than the world average (38.3 versus 25.5 percent). At the other end of the malnutrition spectrum, the prevalence of overweight among children younger than five in Georgia was 19.9 percent (2012) – almost four times the global average

⁹ According to statistical data provided by NAPR to the task team in September 2021.

(5.6 percent in 2019). Lastly, of all the ECA countries, only Georgia (and Moldova) was found to not have access to the 400 grams per day of fruits and vegetables¹⁰ recommended by the Food and Agriculture Organization (FAO) of the United Nations, and the World Health Organization (WHO). High rates of prevalence of undernourishment, moderate food insecurity and overweight prevalence, in combination with low availability of fruits and vegetables indicate that both hunger and regular access to healthy food are issues of concern for Georgia (FAO et al 2021). There are several pathways through which to contribute to improved food security and nutrition (Herforth and Ballard 2016). The Government of Georgia can contribute to improved nutrition through agriculture by enhancing public programs and investments that make local production more productive and competitive (*increase availability of safe, diverse, and nutritious food*), while increasing export competitiveness of selected products (*increase incomes*). This should be complemented with campaigns to *raise awareness* on healthy diets and nutrition, as also recognized by the Food Systems Summit Dialogue in Georgia. Moreover, very importantly, continuing to *invest in women's empowerment*, as also supported by this Report, have been shown to translate into nutrition improvements in their households. The economy of tomorrow will demand a healthy, educated, and resilient workforce. Agriculture can make or break countries' ability to be ready for this future.

9. Overall, this Synthesis Report aims to assess how to increase growth in the agriculture sector in Georgia by examining the government's policies and strategic sector goals in agriculture, land, and water, detailing constraints, and opportunities across all three sectors, and identifying policy actions to address jointly the integrated challenges and support Georgia in achieving a modernized agriculture sector by 2030. This Synthesis Report summarizes the rationale for an agriculture-water-land nexus approach to realize a vision for the future of agriculture by 2030 in Georgia along four broad action pathways. In the following sections, the brief presents a multi-sectoral approach grounded in three themes: competitiveness, sustainability, and climate resilience and mitigation, underpinned by inclusiveness. These themes reflect the three dimensions of the Green, Resilient, and Inclusive Development (GRID) Approach identified by the World Bank in Box 4 as important ingredients to achieving a more sustainable and equitable recovery from COVID-19 and a long-term development paradigm (WBG 2021b). These dimensions make the GRID Approach a useful framework for developing solutions/policy recommendations. This multisectoral approach can unlock core constraints, reduce water, and land degradation, foster coordinated actions, and support Georgia in becoming an export-oriented agriculture producer that can compete in EU markets while transitioning to greener, more gender- and small-holder producer inclusive, and sustainable water and land use and food production standards.

¹⁰ Measured in availability of fruits and vegetables for consumption.

Box 4: The three dimensions of the GRID Approach

Green: Environmental, socio-economic, and financial sustainability will be considered. Sustainability hinges on promoting growth through public and private sector investments that eliminate (or mitigate) the adverse side effects of activities that threaten future growth. Growth can be impacted due to risks such as disasters, health effects of pollution, or the degradation of fertile soils. Risks also arise from getting locked into activities for which there is declining demand. By extension, growth opportunities emerge from investing in clean products for which demand is rising.

Resilient: To safeguard development, countries and firms face the need to prepare for, mitigate and adapt to a wide range of risks and uncertainties, including recessions, financial shocks, conflict and violence, natural hazards, climate change, and pandemics driven by zoonotic diseases. By building resilience to a variety of shocks – economic, social, climate, or health-related – countries and firms would avoid diverting scarce resources to repeated cycles of shock, restructuring, recovery, and rebuilding.

Inclusive: Rising inequality and the exclusion of different social groups from services, markets and opportunities impedes development and foments discord. Ensuring that the recovery does not leave anyone behind can reduce disparities in opportunities and outcomes and help excluded groups to realize a fair share of benefits. Including diverse perspectives and involving communities in the design of policies and investment projects by private and public sector entities can ease implementation challenges.

Source: World Bank (2021c).

10. The rest of this Synthesis Report is structured as follows:

- **Section II** examines the context and developments in Georgia’s rural sector and presents recent developments in agriculture, water resources, and land management areas.
- **Section III** presents concrete recommendations to support Georgia in achieving its vision for the future of agriculture by 2030 along the three main themes of competitiveness, sustainability, and climate resilience and mitigation.
- **Section IV** concludes by suggesting specific policy actions that are required for moving the agriculture sector forward by considering the nexus between agriculture, water, and land in Georgia.

II. CONTEXT AND DEVELOPMENTS IN GEORGIA'S RURAL SECTOR

11. **The rural sector in Georgia is changing, shaped by a combination of opportunities, constraints, and the country's overall economic development trajectory.** Current policy and program developments affecting agriculture, water, and land are discussed below.

A. GOVERNMENT POLICIES AND STRATEGIC SECTOR GOALS IN AGRICULTURE, WATER, AND LAND

12. **Georgia's agriculture policy and overarching national policies recognize the need for integrated investments across agriculture, water, and land to advance agriculture and value chain development.** Specifically, the Strategy for Agricultural Development 2015-2020 prioritized hydro-amelioration and soil fertility, specifically improvement of the I&D systems, and reasonable use of soils. The Social-economic Development Strategy of Georgia (or Georgia 2020) acknowledged that I&D investments would contribute to elevating Georgia's agriculture export potential, as well as that addressing the weaknesses of the land cadaster system would improve access to agricultural finance. The Government Program 2021-2024: Toward Building a European State envisions investments in water/irrigation and land (including land ownership) as key parts of its agenda on development of rural areas and agriculture. The country's climate commitments reflect the same understanding.

13. **Georgia recognizes agriculture as one of the country's sources of economic development and identifies specific objectives to develop it.** The MEPA-issued Agriculture and Rural Development Strategy 2021-2027 aims to ensure sustainable socio-economic development of rural areas with the following strategic goals:¹¹

- (a) Development of competitive agricultural and non-agricultural sectors;
- (b) Sustainable use of natural resources, ecosystem conservation, and climate change adaptation;
and
- (c) Development of efficient systems in food/feed safety, and veterinary and plant protection.

To increase the competitiveness of the agricultural sector, the following specific objectives are prioritized:

- (a) Increasing farmers' knowledge and skills;
- (b) Developing value chains through their diversification, adoption of innovative technologies, and promotion of cooperation among farmers;
- (c) Increasing access to finance;
- (d) Supporting market integration of farmers and entrepreneurs;

¹¹ The Strategy for Agricultural Development for 2015-2020 and for 2017-2020 have been revised and consolidated into one MEPA-issued strategic document, the Agriculture and Rural Development Strategy 2021-2027.

- (e) Supporting young farmers and entrepreneurs in rural areas;
- (f) Increasing access to infrastructure and services; and
- (g) Improving irrigation and drainage systems.

Agriculture is also at the center of “build back better” from the COVID-19 agenda guiding the United Nations Food Summit Dialogue in which Georgia is participating (UN 2021).

14. **Georgia has been aligning its food/feed safety and veterinary and plant protection-related objectives and legislation with the EU regulatory framework, as it committed under the Association Agreement signed between the two.** Established in 2010, the National Food Agency implements all activities related to food safety, veterinary services, and plant protection. The spending on food safety and veterinary control however is particularly low, and a relatively small number of enterprises are inspected annually on a permanent basis. The need for more efficient and transparent state control is constantly emphasized by sector stakeholders (World Bank 2020a).

15. **The Irrigation Strategy for Georgia 2017-2025 sets out the vision to modernize irrigation infrastructure and boost the area of irrigated lands to 200,000 hectares by 2025.** The strategy sets out an ambitious agenda to not only increase irrigated area, but also to reform Georgian Amelioration into a professional and financially sustainable irrigation service provider with database management and decision-making, a new irrigation tariff system, and local-level management entities as its clients (e.g., WUOs). Overall, the strategy has the following objectives: (a) Improve reliability of the water supply through renovation and rehabilitation of infrastructure; (b) Ensure financial sustainability of amelioration service providers by reducing their dependency on direct government subsidies; (c) Ensure efficient allocation of water across alternative uses; and (d) Increase the competitiveness of Georgia’s agricultural sector by providing reliable irrigation and drainage services at reasonable prices (USAID 2016).

16. **An important part of the strategy is to reform the current tariff arrangements for I&D services, which the strategy states is the single most important factor in determining the success or failure of the institutional architecture for irrigation services in Georgia.** Currently, the bulk irrigation tariff in Georgia is set at such extremely low levels that it does not even cover the costs of service provision and does not provide any incentive to use water efficiently (USAID 2016). The strategy clearly points out that the current tariff arrangements are sub-optimal, not only as regards the level of the tariff, but also in that it is structured as a per-hectare payment based on voluntary annual contracts with water users. Therefore, the development of a new I&D tariff methodology is another key reform that is urgently needed in the Georgian I&D sector. According to best international practices, this methodology should focus on one of two strategies: (a) cost-recovery (ensuring the financial sustainability of service providers), or (b) demand management (ensuring the efficient allocation of water resources). The Government is currently in the early stages of consultations with internal and external parties on how best to reform the existing irrigation tariff and with the support of the World Bank has launched a study to determine how to calculate a fixed and variable binary bulk irrigation tariff for Georgian Amelioration to charge to future WUO members.

17. **In December 2019, legislation supporting the formal establishment and operation of WUOs was introduced.** The legislation transferred the responsibility of managing localized irrigation canals to WUOs with the expectation that local water resource management will improve (ADB 2020). The main WUO functions are as follows: (a) Management, storage, maintenance, and utilization of existing infrastructure in the WUO service area (i.e., secondary/tertiary canals, the local irrigation system, and hydrotechnical unit) and provision of irrigation services; (b) Provision of services to WUO members in accordance with the organization’s statute, and provision of services to other water users in accordance with an agreement; (c) Record-keeping of water at the supply point and its rational distribution; (d) Collection of fees for water use and settlement with a primary water user; and (e) Issuance of a writ of execution on forced payment of fees for water use, the form of which is approved by the Ministry, in accordance with the Law of Georgia on Enforcement Proceedings (Parliament of Georgia 2019a).

18. **Land registration has been identified as a pre-requisite for land market development in the Government Program 2021-2024: Toward Building a European State.** The Government’s vision on land sector development is to some extent reflected in the Government Program 2021-2024, which sets the completion of the land reform as top priority related to the land sector. The government plans to continue its work on “the development of concepts, schemes, and plans for nationwide and municipal spatial planning, and plans for land use and development regulations for cities, settlements, and villages; land registration; state serving as a mediator in land disputes; privatization and leasing of state-owned land and development of land balance” (GoG 2020).

19. **Land market development, support of land registration process, and improvement of NAPR services are prioritized in the State Budget Note for 2021 for the next three years.** Two state policy goals regarding land are outlined in the State Budget for 2021: (a) land market development, and (b) supporting land registration and improving NAPR services. Over the next years, the Government of Georgia has planned a range of activities under each goal: (a) Systematic land registration in 74 settlements of five municipalities (Sagarejo, Tetri Tskaro, Gardabani, Gori, and Kareli); (b) Upgrade of NAPR property registration information system for purposes of systematic registration of irrigation areas; (c) Capacity building of specialists who prepare the plot sketch plans and systematic registration of land (1.2 million hectares); (d) Creation of records for property ownership, leases, and other documents; (e) NSDI development; and (f) Update NAPR with spatial data. Establishment of NSDI is an EU requirement, which is set for its Member States. Like EU Member States, the availability of high-quality geographic data and the development of location-based services are a priority for Georgia in terms of crisis and emergency management, transport, tourism, agriculture, environment, urban planning, and property markets. A newly established Land Agency is responsible for developing land balance and an integrated database of land resources (Parliament of Georgia 2019b).

20. **Georgia acknowledges the importance of the implementation of the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries, and Forests in the Context of National Food Security (VGGT).** The following major objectives, as defined in the Guidelines, are relevant for Georgia but not well reflected in major strategic documents defining Georgian land policy (FAO 2012):

(a) Improve tenure governance by providing guidance and information on internationally accepted practices for systems that deal with the rights to use, manage, and control land, fisheries, and forests; (b) Contribute to the improvement and development of the policy, legal, and organizational frameworks regulating the range of tenure rights that exist over these resources; (c) Enhance the transparency and improve the functioning of tenure systems; (d) Strengthen capacities and operations of implementing agencies, judicial authorities, local governments, organizations of farmers and small-scale producers and fishers and forest users, pastoralists, local peoples and other communities, civil society, private sector, academia, and all persons concerned with tenure governance as well as to promote the cooperation between the actors mentioned.

21. Management of natural resources focuses on adoption of sustainable, climate-smart agricultural practices, agrobiodiversity conservation, eco-tourism development, sustainable management of forests, and promotion of renewable energy sources. The Georgian Nationally Determined Contribution has a target to reduce greenhouse gas emission by 30 percent below 1990 levels by 2030. Georgia's first Nationally Determined Contribution was updated and submitted in 2017, updated again in 2019, but in 2021 is still waiting to be adopted (OECD 2021b). The main sectors that would be affected by adapting these emission target levels are energy, industry, and agriculture and water resources management (including for improved food production). In addition, improving the policies that govern these sectors are part of the Government's adaptation priorities: introduce innovation irrigation management and water application techniques, implement coastal zone protection technologies, and implement a list of strategic documents/policies (OECD 2020). Furthermore, the 2030 Vision outlined in the Climate Change National Adaptation Plan for Georgia's agriculture sector calls for CSA practice in Georgia, ensuring food security, rural poverty elimination, and sustainability of agro-ecosystem services through introduction of the highly effective production methods and management of the climate change-associated risks (MEPA 2017a). Georgia has established a high-level Climate Change Council, chaired by the MEPA Minister. The Council is intended to provide policy direction and guidance on climate action; improve cross-ministerial coordination; and oversee the country's measuring, reporting, and verification system (OECD 2021b).

22. Although, the Government of Georgia has aligned its national cross-sectoral policies to recognize the importance of agricultural development, I&D systems, and land market development through various discrete initiatives, implementation of these important initiatives is hampered by critical constraints blocking progress in all three sectors. Georgia 2020, adopted in 2014 as the country's plan of development and business support, places high priority on increasing the export potential of the country's agricultural products and, moreover, recognizes the importance of improving the country's I&D systems in increasing the export potential of the country's agricultural products. Georgia 2020 outlines also the importance of land market development. The Government Program 2021-2024 spurred on by the COVID-19 crisis pledges to implement activities under the unified Agriculture and Rural Development Strategy 2021-2027 (MEPA 2017c). Moreover, under the Development of Rural Areas and Agriculture, the Government Program 2021-2024 focuses on land registration activities and pledges that in the next three years systemic registration of 1.2 million hectares of land will be carried out. Specifically, the land-related objectives of the Government

Program 2021-2024 are (a) development of land balance, inventory of all agricultural areas, and development of a unified database of land resources; and (b) privatization of state-owned agricultural lands. The Government Program 2021-2024 also announces investments in rehabilitation of water supply (and sewage) systems as well as more than 220 million GEL (US\$70.4 million) to be invested in the irrigation of an additional 40,000 hectares and in the dewatering of almost 1,000 hectares of land. The combination of these strategic objectives, goals and implementation plans paints a promising opportunity for Georgia to take advantage of important synergies across all three sectors. However, as detailed in the next sub-sections, each of the three sectors is facing complex and a unique set of constraints that are preventing accelerated progress on these initiatives.

B. RECENT DEVELOPMENTS IN THE AGRICULTURE SECTOR

23. **Agriculture is one of the most important sectors of Georgia's economy in terms of GDP contribution, employment generation, and foreign exchange earnings.** The sector's contribution to the national economy during the last five years on average has been 7.8 percent. In 2020, agriculture was one of the sectors of the economy that was relatively less affected by the COVID-19 pandemic. Preliminary estimates show that while the country's economy contracted by 6.2 percent, agricultural share in total GDP increased by one percentage point from 7.4 to 8.4 percent in 2020 (RAPDI 2021). The sector's contribution is typically underestimated when measured without taking forward and backward linkages and the associated multiplier effects into account. Studies have shown large, positive linkages to rural growth and employment creation associated with primary agriculture (Morris et al 2020). In fact, agro-processing accounts for a further 7-8 percent of Georgian GDP (WBG 2020a). Approximately 41 percent of the total population live in rural areas, and the majority of those living in rural areas still rely on agriculture for their livelihoods. Agriculture provides 19.1 percent of total employment.¹² Even though Georgia is a net importer of agri-food products, its trade balance significantly improved during the last decade. For the period of 2010-2020 agricultural imports and exports exhibited increasing trends, but agricultural exports grew at a higher rate than imports. As of 2020, agri-food products constituted 28 percent of the country's total exports, while the corresponding share in total imports was 15 percent (Geostat 2021). In the domestic market, the production and processing of cereals, meat, milk, and processed foods for domestic markets faces high competition from imports which account for 65 percent of all calories consumed. Supermarket penetration is low, with 70 percent of food commercialized through bazaars, although this presents a growth opportunity in the formal retail sector, subject to improved product standards (World Bank 2020d).

¹² In 2020, Geostat updated the methodology for calculation of employment and unemployment statistics in accordance with the International Labour Organization (ILO) in Labour Force Statistics. According to the new methodology, self-employed persons who are not market-oriented and produce mainly agricultural products (more than 50 percent) for their own consumption are no longer considered as self-employed. Persons with this status were reclassified into other categories (unemployed, population outside the labour force) depending on whether they are looking for or ready to start a job. As a result, the percent of employed persons in agriculture out of total employment changed from 41 percent in 2019 to 19.1 percent in 2020.

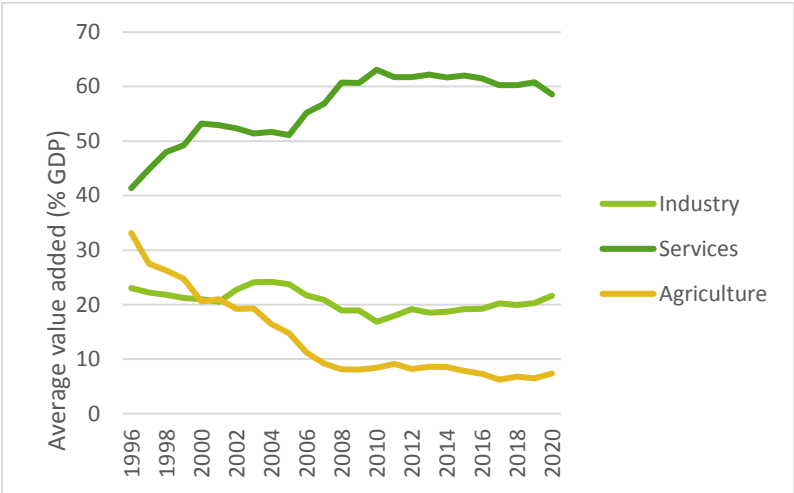
24. **Notwithstanding domestic and export market opportunities, the agricultural sector growth rate remains far below potential.** Productivity is low and stagnant for most crop and livestock products, both in absolute terms and relative to comparator countries. Almost 80 percent of households operate less than one hectare of agricultural land, 14.9 percent operate one to two hectares, 4.3 percent operate two to five hectares and only 1.3 percent (8,577 households) have five hectares or more (WBG 2020d). For most small farms the combination of small farm size and low farm productivity means that agricultural incomes are too low to survive on farm earnings alone. In fact, non-farm wages and income transfers are the major sources of rural household income. A small but progressive cohort of larger, export-oriented producers and agri-business enterprises involved in wine, hazelnut, and edible fruit production have developed successful supply chains and show that sustainable growth is feasible. The remaining farmers are poorly integrated into commodity markets. The smaller agri-business enterprises are mostly focused on domestic markets and struggle to compete with imports. Moreover, despite the increasing value of agricultural production in Georgia, forward and backward linkages with input industries and agro-processing could be stronger. This is true with other sectors of the economy as well. The impact can be consequential for the value-added potential in agriculture and sector modernization and competitiveness. The role of markets in the value-added process continues to be limited. Direct sales to households and household consumption, in general, continues to be important for the sector. Many agri-businesses resort to vertical integration as the best means to secure consistent flows of raw material rather than through procurement from smallholders (WBG 2020d).

25. **Georgian farmers have still to take advantage of green technologies.** Key practices to respond to climate change implemented by farmers in Georgia include conservation agriculture (crop rotation, mulching, no tillage, or minimum tillage), precision irrigation, or micro irrigation technologies, wind breakers, anti-hail, and anti-frost system as well as investment in pastures. Nevertheless, most of the practices and technologies identified for crop and livestock systems in Georgia have a low degree of adoption rates (less than 30 percent) despite their multiple CSA benefits. The key cross-cutting barriers to wider-scale CSA adoption include limited financial capacities, lack of knowledge and practice, lack of equipment and skills (WB and FAO 2022). Limited access to credit among farmers is a major constraint to increased use of technologies and inputs and is largely related to farmers' lack of collateral as only 40 percent of the land is registered. Alongside land plots' size, limited land tenure security has shown to be a critical bottleneck hampering investment, agri-business development and commercialization. All this demonstrates a large potential for increasing agricultural productivity under rainfed and irrigated conditions. Climate change has added a further challenge creating the need for irrigation, which is currently practiced on a small share of the potential area.

26. **Agriculture in Georgia is on a path of structural transformation.** As in other countries in the region, while the sector continues to grow in absolute terms, the relative contribution of primary agriculture in the economy is diminishing, with other sectors generating greater value-added (Figure 2), and the sector is employing fewer people in primary production (Figure 3). Other elements of structural transformation typically include increased value added for agro-related industries. Indeed

during 2010 and 2019, production of manufactured¹³ food products as well as production of beverages have increased (Figure 4). The value added in food production has significantly increased from 222.9 million GEL in 2010 to 401.8 million GEL in 2019 in real terms, while the value added in production of beverages has increased almost three times from 222.3 million GEL to 596.4 million GEL (GeoStat 2021).

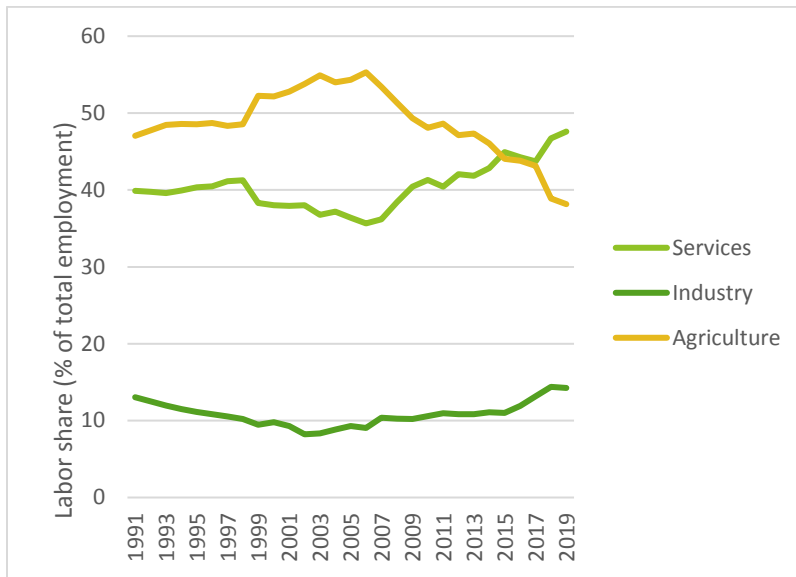
Figure 2: Sectoral shares of value added (1996 - 2020)



Source: WBG (2021d). Note: Accessed in September 2021.

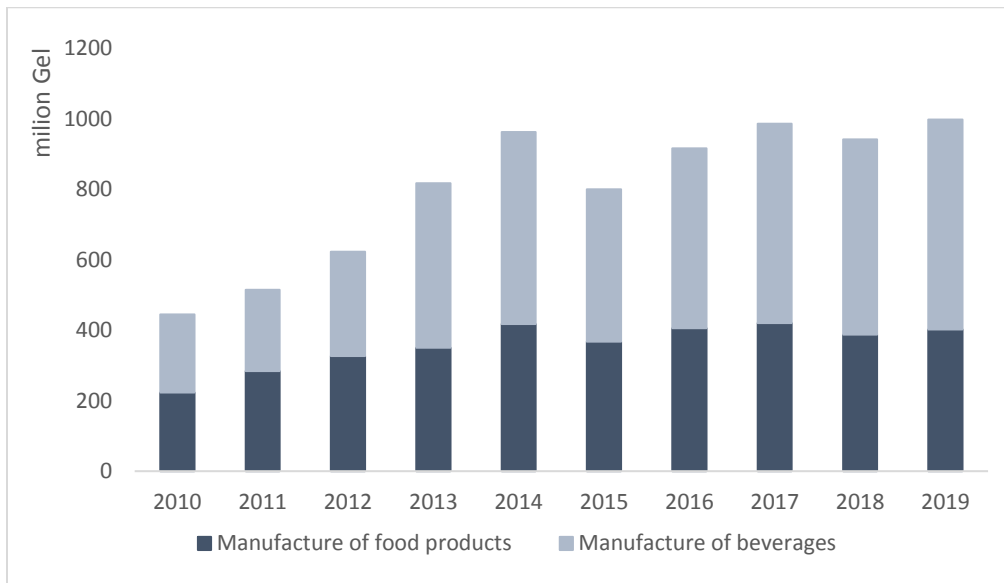
¹³ GeoStat follows the [NACE Rev. 2 classification](#) of national accounts. According to this classification, manufacture of food includes the processing of the products of agriculture, forestry and fishing into food for humans or animals, and includes the production of various intermediate products that are not directly food products. The activity often generates associated products of greater or lesser value (for example, hides from slaughtering, or oilcake from oil production).

Figure 3: Sectoral shares of employment (1991 - 2019)



Source: WBG (2021d). Note: Accessed in September 2021.

Figure 4: Value added in manufacturing of food products and beverages at 2015 prices



Source: GeoStat (2021). Note: Accessed in June 2021.

27. **Nevertheless, a high proportion of Georgia’s work force is involved in low productivity agriculture.** Approximately 41 percent of the total population live in rural areas, and the majority of those living in rural areas still rely on agriculture for their livelihoods. Almost 80 percent of holdings own no land or operate less than one hectare of agricultural land, 14.9 percent operate one to two hectares, 4.3 percent operate two to five hectares and only 1.3 percent (8,577) have five hectares or more (WBG 2020d). Georgia’s farm structure, with its predominance of small agricultural holdings, is

a major determinant of the high contribution that agriculture makes to total employment. But as this workforce generated only 8.4 percent of GDP in 2020, it means that a high proportion of Georgia's work force is involved in low productivity employment. Labor productivity should ideally be presented in actual hours worked or in full-time equivalent rather than output per worker. This information, however, is not available for Georgia. Actual labor productivity might in fact be underestimated because farming is a part-time job for most farmers, even those 19.1 percent, which are counted by statistics as agricultural labor force. The Georgia 2018 Household Incomes and Expenditures Survey reveals that Georgian farms derive only 8 percent of their income from farm sales and 16 percent from own production. The remaining income comes from wages, pensions, and non-farm self-employment. The weight of agricultural sales increases with farm size but does not exceed 25 percent even in the largest farms (WBG 2020d). Even if the average agricultural labor productivity is higher than perceived, however, it still should be increased by moving more subsistence farmers to the cohort of commercial farmers. While structural transformation leads to less jobs in primary production, typically it creates more jobs in other parts of the agri-business sector: downstream such as food manufacturing and food services, and upstream such as agricultural inputs and services. It can also mean better jobs in primary production. Creating good quality jobs will require the rethinking of policies and of spending priorities and focus on improving sector performance and creating opportunities.

28. Agricultural structural transformation is driven by interrelated processes in improved productivity, changes in composition of production (from staples to high-value products) and commercialization (Divanbeigi et al 2016). Previous analytical work carried out by the World Bank showed that Georgia needs to make more progress on all: crop production is dominated by cereals, grapes and potatoes, with cereals (maize, wheat) accounting for 42 percent of cropped area; crop productivity is low relative to comparator countries and crop yields have increased little in the past decade; and although agricultural exports are growing faster than imports, they comprise a small number of export commodities (wine, hazelnuts, mineral water) and are driven by a small cohort of larger, progressive farms and agri-business enterprises (WBG 2020d).

29. In turn these processes driving agricultural transformation are affected by adoption of efficient technologies (such as irrigation), appropriate regulatory systems over water and land, and access to markets and finance amongst others (Divanbeigi et al 2016). While issues pertaining to water, irrigation and land are discussed later in this Synthesis Report (Sections IIC and IID), in terms of access to finance, the previous analytical work carried out by the World Bank noted that financial inclusion and credit for agriculture in Georgia compares favorably with other ECA countries. Specifically lending to primary agriculture production and agri-businesses has grown in significance and has outperformed the growth of lending in the overall economy (although after 2017 it reached a plateau and has declined relative to total credit to businesses). Moreover, for the past 17 years, following the introduction of the GoG agricultural preferential credit program, substantially more credit has gone to agriculture and agri-business (WBG 2020c). Nevertheless, it was noted that other than banks, there are very few other sources of finance. Banks tend to be conservative to be able to keep low levels of non-performing loans by relying on rather conservative loan underwriting and high

collateral requirements. This is happening in a context of very limited use of moveable collateral and low penetration of digital financial services in rural areas. Moreover, while the reliance on foreign currency lending is being reduced, particularly to primary agriculture (due to smaller loan sizes), foreign currency lending is quite dominant in agri-business loans which should be an issue of concern particularly for agri-business firms that do not rely on exports (WBG 2020c). In terms of access to markets, the previous analytical work carried out by the World Bank ascertained that the market structure is generally competitive, but value chains are fragmented and uncoordinated (WBG 2020d).

30. **Weak integration of emergent smallholder farmers and agri-businesses is the most critical constraint to agricultural sector growth in Georgia** (WBG 2020d). Given the prevalence of small-scale farming, a key challenge for established buyers (processors, wholesalers, exporters, intermediaries) of farm products is to obtain the right quality in sufficiently large volumes of acceptable quality inputs from small scale farmers, often incurring high transactions costs of working with many individual smallholders. Moreover, on one hand linkages between farmers and buyers are mostly informal and are based on spot market cash transactions, as is the case in the beef and sheep (live and product) markets, as well as in the nut, berry, fruit, and vegetable crops markets (RAPDI 2021). Linkages between suppliers and buyers are relatively more developed in those value chains where production and demand are not characterized by seasonality, and agro-processors have established market linkages, such as the dairy milk sub-sector, but only between large producers and large buyers¹⁴ (RAPDI 2021). On the other hand, farmer- or producer-based organizations (such as associations and cooperatives) that could have facilitated linkages between smallholders and buyers are lacking in Georgia (RAPDI 2021). Women tend to be also under-represented in producer organizations, where those exist. For example, only 25 percent of all farmers' cooperative members are female; and out of 2,106 cooperatives, only 100 were reported to be headed by a female (FAO 2018a). Among buyers of farm products there is a preference to work with fewer but larger farmers capable of delivering consistent quality products at large volumes rather than with many individual small farmers (RAPDI 2021). Many buyers have also begun to integrate vertically and engage in production. Vertical integration allows for better control over how a product is grown, harvested, and handled. It also allows processors to maintain high-capacity utilization in processing or ensure minimum throughput in cases of failure to source raw materials in sufficient quantities on the spot market (RAPDI 2021). It comes at the expense of small and medium-size producers, however.

31. **Overall, existing agricultural value chains integration mechanisms in Georgia fall short of pulling smallholder farmers in and up the value chain.** Across the spectrum of arrangements to enhance cooperation amongst agricultural value chain actors in Georgia, supply chain integration arrangements, such as found in the dairy milk sub-sector (Annex case study), stand at the most formalized end. Spot market arrangements, which are the most prevalent, stand at the other end of the spectrum. Between the two ends are experiences with producer organizations that at best are

¹⁴ For the purposes of this Brief, RAPDI (2021) categorized farm sizes as follows: *small* (at most 1 hectare of land and at most 5 head of cattle); *medium* (1-5 hectares of land, or 6-20 head of cattle); and *large* (more than 5 hectares of land, or more than 20 head of cattle).

mixed (except for the success in the hazelnut sub-sector as described in an Annex case study), and with contractual links, such as contract farming arrangements, which in general have not been positive where tried as described in Annex case studies on wine grapes and meat sub-sectors. Table 1 presents the landscape of integration mechanisms that were observed across the ten agricultural value chains examined in Georgia via interviews and focus group discussions between April and June 2021 for the purpose of this Synthesis Report.¹⁵ The table captures experience with mechanisms, irrespective of whether that was successful or not. Also, agricultural value chains might be characterized by multiple arrangements concurrently.

¹⁵ Between April and June 2021, RAPDI conducted 32 interviews with agri-businesses and 10 focus group discussions with the total participation of 150 farmers across 10 select agricultural value chains, specifically dairy milk; beef; wheat; corn; potato; peach/nectarine; blueberry; culinary herbs (mainly coriander, dill, parsley, and celery); hazelnut; and wine grapes. The following criteria were used to select the agricultural value chains for the analysis: (a) contribution to agricultural GDP; (b) generation of foreign exchange inflows; (c) high participation of small-scale farming households in production; (d) contribution to food security; (e) existence of sectoral associations; (f) GoG and donor support; and (g) existing quality-based payment systems.

Table 1: Landscape of integration mechanisms across ten agricultural value chains in Georgia

	Dairy (milk)	Beef	Wheat	Corn	Potato	Peach/ nectarine	Blueberry	Culinary herbs	Hazelnut	Wine grapes
More formalized										
Supply chain integration via contracts (incl. price)	✓									
Contract farming (excl. price)		✓	✓		✓				✓	✓
Vertical integration	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Independent retailers and other intermediaries /aggregators	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Producer organizations (horizontal integration)									✓	
Less formalized										
Spot market/ on farm	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Source: Authors based on RAPDI (2021).

32. **A variety of agricultural value chain integration mechanisms are active to different degrees, but contractual links, where they exist, are largely informal and they almost never involve pre-agreed prices.** Current arrangements involve (a) a network of middlemen who perform the functions of on-farm purchase, assembly, and transportation, and (b) a predominance of spot market, cash-based transactions between farmers and buyers. These markets are characterized by many small and disorganized intermediaries between producers and consumers, who moreover lack specialization, do not rely on formal grades and standards, conduct one-on-one negotiations, and work on the basis of informal agreements. Informal agreements before the harvest, which are common for most of the selected value chains, usually include “handshake deals” on transactions in very general terms. They rarely involve agreement on specific volume and quality, and nearly never on price. Even when general purchase agreements are concluded after the harvest and even after inspection of the farm product, as in the case of wheat, agreements may specify quantities and time periods of transactions, but never the price. The exceptions have been linkages in those value chains with no seasonality of production and with relatively long supply chains, as in the dairy milk sub-sector, where market arrangements have been more developed and based on long-term cooperation (RAPDI 2021). Elements that would enable the strengthening of contractual relations amongst actors, such as a

warehouse receipt system, and market and price information services, do not seem to be utilized in Georgia.¹⁶

33. Low skills and poor infrastructure compound the difficulties of integrating along the agricultural value chains.¹⁷ Knowledge of modern agricultural technologies, innovative how-to along the agricultural value chain, and farm-to-market opportunities are insufficient throughout the sector. Farmers often lack access to critical information, and as a result become also reluctant to adopt improved production technologies and modern business practices. Processors rely on international consultants to guide investment in plant and equipment. All actors, sector-wide, lack guidance on how to find new markets and to manage weather and market volatility. A major part of these disconnects is a shortage of well-trained extension officers, food technologists, and agri-business advisers, further exacerbated by a small and fragmented institutional base for knowledge transfer. Although a re-organization of Georgia's agricultural research institutions has improved the knowledge and innovation activities in the sector, the public research system remains seriously underfunded. In addition, research priorities are not adjusted to the changing needs of commercial agriculture (World Bank 2020). Moreover, while MEPA is expanding extension & advisory services through its Regional Information Consultation Centers (established in 2013) and ICT instruments, these services are weakened by the limited knowledge of staff, as most have no formal training in agriculture. Women are further disadvantaged in accessing information, knowledge and innovation with rural advisory services primarily targeting male farmers, and with female providers of these services being only between 9 and 25 percent of all employees (FAO 2018a). Some private companies that sell inputs also offer advisory services to farmers, but they focus mostly on providing branded products to larger farms. Some donor-supported companies and non-governmental organizations are generating innovative systems for technical assistance, with immediate potential for addressing this gap.

34. In addition, food safety systems in Georgia are under-developed, with weak control of informal and non-compliant enterprises. There is no state certification system to enhance the competitive advantage of high-standard producers, and there are gaps in the regulation of inputs and logistical services. Although accredited, many laboratory services lack international recognition and credibility (WBG 2020d). Poor regulation of the small-scale processing sector (including households) also creates food safety issues. And as most of the smaller enterprises produce for non-EU markets there is little incentive to meet the high cost of compliance with EU standards (WBG 2020d).

35. Furthermore, transport and agrologistical capacity are insufficiently developed, and both internal and external connectivity are low. Although the government has made significant strides in improving primary and secondary road networks, tertiary road infrastructure remains limited. Fuel costs are high, and the transport system is still reliant on old, soviet-era trucks. Georgia also scores

¹⁶ For example, it is unclear what is the status of the agricultural market information system that FAO has supported MEPA with (FAO 2020); or of a 2007 proposal that would introduce a warehouse receipt program in Georgia in the context of a project to integrate the grain markets of Georgia, Ukraine, Azerbaijan and Moldova (Hollinger and Rutten 2009).

¹⁷ They have been analyzed under the Maximizing Finance for Inclusive Development of Agri-food Value Chains in Georgia.

low for most indicators of the World Bank Logistics Performance Index, although progress has been made with customs clearance (WBG 2020b). Processing costs are also increased by a high reliance on imported equipment, packaging material and other inputs. A shortage of qualified equipment operators obliges firms to hire foreign specialists, often at high cost (WBG 2020b). Larger agri-businesses are not immune to these constraints either, but they have more resources at their disposal to overcome them. Both small and larger agricultural sector players would benefit from measures to improve market integration and product aggregation, increase the flow of raw materials from smallholders to agri-business, fill knowledge gaps, encourage innovation along value chains, improve access to agri-finance and agrologistics, and stronger public-private dialogue (WBG 2020d). Furthermore, women tend to be disadvantaged in accessing markets. Even though they are active in retail markets, they have less mobility and because of more restricted access to transport they cannot participate in more profitable settings (i.e., wholesale markets that might be a distance away). Indicatively, female farmers were particularly hard hit by the suspension of public transport as part of the containment response to COVID-19. Reportedly male farmers utilized private means of transport, that are not available and accessible to women, to reach markets (Tevdoradze et al 2020).

36. **Georgian agriculture is vulnerable to climate change.** Current trends of climate change impacts in Georgia, such as increasing temperature, eroding soils, drought in specific areas of Georgia, intensifying floods, frost, and hail in addition to new pests and diseases affecting crops, forests, and livestock, are expected to reduce yields in major agricultural regions. Georgian agriculture is expected to be negatively affected by the direct impact of temperature and precipitation changes on crops, the increased irrigation demand required to maintain yields, and the decline in water supply associated with higher evaporation and lower rainfall, including the potential for more dry days (WB and FAO 2022). The expected impact of climate change on specific agricultural sub-sectors in Georgia is described in Box 5.

Box 5: Expected impact of climate change on specific agricultural sub-sectors in Georgia

Wheat: Over 60 percent of wheat is produced in Kakheti (eastern region), and the rest is almost completely concentrated in other regions of eastern Georgia (Shida Kartli and Kvemo Kartli). In the current climatology, wheat is more frequently subject to drought during the tillering phase compared to the historical data (1956-1985). The last of these severe droughts happened in 2020, resulting in yields that were lower than average. The negative impact of warming will be more evident in rainfed and drought-prone regions like Shiraki and Eldari. If sufficient moisture is available, an increase in carbon dioxide concentration will have a positive effect on wheat productivity. The projected average annual temperature rise of 3.6°C expected in 2071-2100 will reduce wheat yields approximately by 15-25 percent, if the same agro-technology is applied. Higher expected temperatures will create favorable conditions for an increase in pest populations, which can also have adverse impacts on wheat yields.

Maize: About 70 percent of maize comes from western Georgia, where humidity is high and therefore production is not significantly dependent on the irrigation system. Kakheti in the east, also a maize producing region, has seen a change in rainfall pattern which requires the use of irrigation for short periods in summer, at critical stages of grain filling. The projected average annual temperature rise of 3.6°C expected in 2071-2100 will reduce maize yields approximately by 15-25 percent, if the same agro-technology is applied. In addition, higher expected temperatures will create favorable conditions for an increase in pest populations, which can have adverse impacts on maize yields.

Viticulture: The cultivation of grapes is widely practiced in Georgia, particularly in the country's eastern region: approximately 38,000 to 40,000 hectares are currently dedicated to grape production, and there are more than 35,000 small-scale grape growers. Over the past two decades, Georgia has faced increasingly heavy rainfall, hail, and flooding events, which have affected the Kakheti wine region, causing severe damage to hundreds of vineyards. The expected climate change may have a significant negative impact on yields, primarily because of longer drought periods, which would result in significant deterioration of yield and quality characteristics.

Potatoes: Almost half of the potato production in Georgia comes from Samtskhe-Javakheti (central southern region), where the precipitation level (May - June) has increased by 10 percent in the past ten years. This has led to high water and flooding in areas of newly harvested potato seeds as well as higher infestations of fungus, especially *phytophthora* and *alternaria*. A joint assessment by Aquacrop (FAO) model and experts on the impact of present and expected climate changes on potato productivity in three regions of Georgia (Akhaltzikhe, Dusheti-Pasanauri, Khulo) revealed that, based on climate change scenario of A1B, non-irrigated potato productivity will probably increase in Mtskheta-Mtianeti, and will significantly decrease in the highland of Adjara (by 10-40 percent) and Khulo. Productivity of irrigated potato cultivation is expected to increase in all production areas; the effect of irrigation is especially high in Akhaltsikhe and is relatively

insignificant in Mtskheta –Mtianeti, which is explained by different precipitation regimes and, also, the granulometric composition of soil.

Tangerines: Most of the tangerines in Georgia come from the Adjara and Guria region (south-western region). The expected increase in average temperatures, in general, will positively impact the sector in terms of expected yield, extension of suitable area, and duration of harvest season. However, currently the sector is characterized by huge production and price volatility due to frequent early fall frosts and hail, when fruits are not yet fully developed and are highly susceptible to climatic conditions. In addition, moisture needed for citrus production will substantially drop by 2100, thus zones favorable for tangerine (citrus) production will be reduced by three times if irrigation does not occur. Climate change could also increase the conditions suitable for pest and disease occurrence in the coastal areas which might affect tangerine productivity.

Hazelnuts: More than half of the hazelnut production comes from Samegrelo (western region). Increases in precipitation levels during the vegetation period have been observed along with droughts in July through August. Frequency duration and velocity of hot winds have been increasing in the last five years which have damaged the harvest and negatively also influenced the future harvest as the plant is weaker and poorly developed. Future climate projections indicate a negative impact on the yields, specifically in long dry periods and after warm winters. Increased amount of extreme precipitation in Samegrelo would cause temporary flooding of lowlands. Changes in temperature regime would increase the harmful pathogen load and cause the need for more comprehensive plant protection measures. Stronger hot winds would increase losses and decrease yield.

Livestock: Warm winters can increase the spreading of livestock diseases and even the introduction of new types of pest and disease. Temperature and prolonged periods of hot days in summer may cause heat stress in animals that impacts animal health and productivity. Georgia counts about 1.9 million ha of meadows and pasture areas, half of which is in Kakheti (eastern region). The most severe impacts are expected in arid and semi-arid grazing systems, where higher temperatures and lower rainfall are expected to reduce yields and increase land degradation.

Source: WB and FAO (2022).

37. **The CSA can help achieve a more resilient and sustainable sector in a cost-effective way.**

The CSA approach supports development and ensures food security in the face of climate change by (a) sustainably increasing agricultural productivity and farmers' income, (b) adapting and building resilience to climate change, and (c) reducing and/or removing greenhouse gas emissions in line with national development priorities. In addition, CSA practices are relatively cost-effective. Although, estimates on the costs and benefits of adaptation to climate change vary, ex-ante economic analysis shows that, over a 20-year timeframe, the 32 country-level Adaptation for Smallholder Agriculture Programme (ASAP)¹⁸ investments approved since 2010 will generate and redistribute net worth

¹⁸ ASAP is an IFAD flagship program for channeling climate and environmental finance to smallholder farmers. The program is incorporated into regular IFAD investment processes. For more information, see: www.ifad.org/en/asap.

US\$0.44 to 1.63 per dollar invested to smallholder farmers and other project beneficiaries and generate a mean net present value of US\$6.8 million (WB and FAO 2022).

38. Although CSA is a priority for MEPA, farmer adoption of CSA practices is not widespread in Georgia. Georgia has set the following specific climate change adaptation priorities:¹⁹ (a) The restoration of pastures and windbreaks to reduce wind and water erosion, siltation problems in irrigation canals, as well as to improve microclimate conditions and soil fertility in agriculture land; (b) Water conservation and water use efficiency, by rehabilitating and improving irrigation schemes and employing advanced irrigation methods such as micro-irrigation technologies; (c) Soil conservation cropping systems and technologies, such as conservation agriculture to improve soil structure, soil fertility and soil water retention; (d) The selection of more water-efficient crops, such as drought-resistant varieties of higher-valued fruit and vegetable crops; (e) The diversification of landscapes and income to help buffering against climate impacts through a diversified on-farm production and eco-agriculture techniques that improve environmental services and resilience to natural disasters and soil erosion; (f) Effective storage and processing technologies for the diversification of agriculture products to address increased variability and shortfalls in high demand months; (g) The improvement of agricultural research and extension capacity; and (h) The development of early warning systems for natural disasters and seasonal forecasting. During April and June 2021, several CSA practices were identified in Georgia as a result of research as well as participatory stakeholder workshop and consultations for each production system. Identified practices range from conservation agriculture (crop rotation, mulching, no tillage) in wheat and maize; drip irrigation in the potato fields of Samtskhe-Javakheti, and drip irrigation with row middle grass cover for grape wines; to windbreakers in hazelnuts, and free movement shelter without grazing, using cattle forage blend (including feed supplements and premixes) for livestock (WB and FAO 2022). Most of the practices and technologies identified for crop and livestock systems, however, have a low degree of adoption rates (less than 30 percent) despite their multiple CSA benefits. The key cross-cutting barriers to wider-scale adoption of CSA in Georgia include limited financial capacities, lack of knowledge and practice, lack of equipment and skills (WB and FAO 2022).

39. In addition to CSA skills, the capabilities for collecting, measuring, and utilizing up-to-date agrometeorological data are acutely needed in Georgia. Agriculture-relevant weather forecasts can yield immediate benefits to farmers, providing information on temperature and precipitation in the short term and facilitating irrigation planning over the long term. Knowledge of an impending drought, for example, can help farmers choose crops and manage irrigation as well as help the irrigation service provider to adequately manage water supply shortfalls through irrigation infrastructure and allocation measures. While there is no legal framework that governs hydrometeorology and agrometeorology,

¹⁹ According to the Technology Action Plans for Climate Change Adaptation (2012) and the Second National Communication to the United Nations Framework Convention on Climate Change (UNFCCC) (2009). Other climate change adaptation and mitigation commitments made by Georgia are listed in Section IIA.

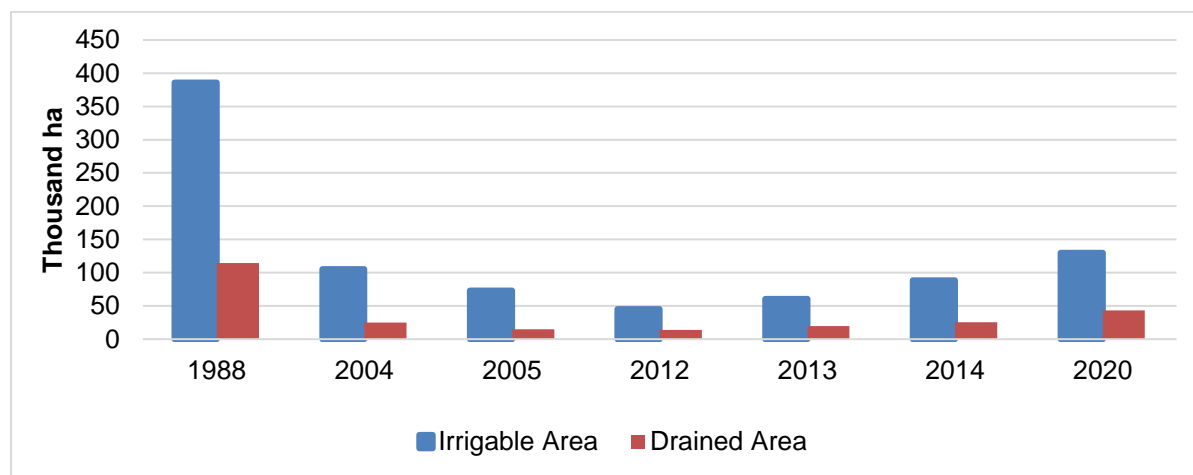
a general regulation issued by the MEPA Minister spells out the obligations, functions, and responsibilities of the Georgia Hydro-Meteorology Department (GHMD). Agricultural meteorological services are among the oldest services of GHMD, and every district in Georgia has agriculture extension services that provide farmers with information from GHMD bulletins (World Bank 2019). The Department of Hydrometeorology is also responsible for collecting data on river discharges and meteorological conditions throughout the country. However, it currently collects little real-time data on river discharges (MEPA 2017b).

C. RECENT DEVELOPMENTS IN WATER RESOURCES MANAGEMENT

40. **Agriculture in Georgia, as in many countries in the region, is primarily rainfed, but I&D investments are vital against climatic extremes and are critical for high-value agriculture production.** Non-irrigated areas are used for livestock grazing and rainfed cereal crops, while irrigated areas in the lower elevations are devoted to fruits and vegetables. The eastern part of the country, which is subject to frequent droughts, requires the use of irrigation to buffer climatic extremes. The western part of the country, which is wetter, is confronted with drainage problems.

41. **Following the collapse of the former Soviet Union, the actual irrigated area in Georgia has declined significantly.** This can be partly attributed to the abandonment of I&D infrastructure in Georgia due to lack of maintenance, difficulty of continuing operation of large infrastructures, and reduced financial resources allocated to I&D management resulting from lack of economic or financial viability. All these factors contributed gradually to the overall erosion of I&D services in Georgia. According to the Irrigation Strategy for Georgia 2017-2025, “actual irrigated area in Georgia, which was as much as 400,000 hectares during the Soviet period, had dwindled to one-tenth of that by 2015.” (Figure 5). The poor performance of the sector combined with the characteristics of farming systems, land reforms, the transition to a market economy, and the loss of markets with traditional trading partners have also contributed to a significant reduction of the irrigated area (FAO 2019). Although some reports show that there is a substantial uncertainty about the desirability of expanding the irrigated area back to the Soviet Union coverage (ISET 2016), the irrigation potential is estimated to 725,000 hectares (FAO 2019). However, out of these, only about 17 percent of total area is equipped with irrigation today (World Bank 2021a).

Figure 5: Area covered with irrigation and drainage infrastructure 1988 – 2020



Source: Authors. Note: For data 1988-2011, refer to ISET (2016). For data 2012- 2020, refer to GACo (2021) (accessed in June 2021).

42. **The I&D services have been falling short of what would be optimal for the country, in both quantitative and qualitative terms** (USAID 2016). Further investments in I&D systems are necessary to support the growing production of high-value food products such as fruits and vegetables. Labor-intensive high-value crop production fundamentally depends on reliable and affordable irrigation services, which are currently lacking in Georgia (World Bank 2018). However, I&D systems are in the process of being developed and improved, with areas of land served by I&D infrastructure increasing every year with the help of state programs. Modern irrigation systems are also gradually being introduced (MEPA 2019). However, many small and marginal farmers cannot afford to modernize (e.g., adopting drip or sprinkler systems) or switch to producing higher-value crops. This is coupled with institutional challenges with I&D service delivery in Georgia where there exist poor schemes for irrigation management and O&M; poor financial cost recovery of I&D capital investments; and limited human resources and skilled staff employed in the I&D sector in Georgia. These factors underscore the need to address these issues from an integrated systems perspective. The course of action would involve upgrading and modernizing irrigation systems in conjunction with investments to support institutional service delivery reform, modernizing on-farm investments by individual farmers, reforming the tariff structure in the country, and upgrading skills and staffing of key I&D agencies to deliver improved I&D services to farmers.

43. **Despite some progress on increasing the overall irrigated area, questions remain on the criteria driving the prioritization of rehabilitation activities and the reliability of the water service.** As of December 2019, according to MEPA, 130,000 hectares had already been rehabilitated. But the rehabilitation is only partial since it focused on primary canals and not the entire irrigation system,

including secondary and tertiary canals.²⁰ Climate change, together with the existence of substantial water losses and the overall increase in water demand, can be expected to increase pressure on both the irrigation systems and the risks of conflict with other water-using sectors. Mostly the irrigated area is served by gravity systems (i.e., open canals). Drip irrigation is not widespread. The approximate number of hectares irrigated with micro irrigation is not known. The government also aims to implement irrigation management transfer for the secondary and tertiary levels of irrigation systems from LTD Georgian Amelioration²¹ to WUOs, which are yet to be established. Irrigation management transfer is expected to be implemented in parallel with reform of the water tariff since the actual GA operating income, excluding government subsidies, constitutes just 13 percent of its expenditures. This low contribution of I&D service revenue can be attributed to (a) low level of tariffs, (b) low level of contracting associated with the lack of land registration, and (c) low reliability of services. A fourth cause of the low-level cost recovery is the structure of GA incentives, which faces soft budget constraints (i.e., losses are covered by transfers from the government budget).

44. **The reform of the water tariff is key for coverage of the costs of the irrigation system and for encouraging efficient use of water, in conjunction with improved I&D service delivery for improved cost recovery from water users.** Two key aspects to note when developing the new tariff structure are (a) the ability to pay and willingness to pay by the farmers and (b) the potential impact of the new tariff on the competitiveness of the agricultural sector. It has been suggested by several stakeholders that the introduction of the new tariff should be accompanied by a broad effort to increase awareness about the potential benefits associated with the new setup of the I&D sector, namely, increasing the likelihood of successful implementation of both tariff reforms and establishing a process for establishment and development of Water Users Organizations.

D. RECENT DEVELOPMENTS IN LAND MANAGEMENT SECTOR

45. **The land reform in Georgia followed two stages after the collapse of the Soviet Union in 1992.** During the first stage, land was distributed to the households in private ownership, free of charge during 1992-1998. As a result, hundreds of thousands of small family farms were created (with an average of about one hectare of land, that was often fragmented into three or four parcels of land). During the second stage completed by 2005, the rest of the state-owned agricultural land was leased out. The state transferred non-agricultural land, such as residential, commercial, and industrial buildings, free of charge to private ownership but maintained ownership of the land on which the buildings were located.

²⁰ Sourced from stakeholder consultations. In parallel to this brief, the World Bank Water Global Practice in ECA in partnership with BRL and ISET has produced a standalone irrigation sector policy gap analysis, which provides a more granular picture of the constraints and opportunities for the irrigation sector in Georgia. The study is forthcoming and is due to be published by the end of 2021.

²¹ Georgian Amelioration, which operates under MEPA, has become the sole provider of water and drainage services in the country. It carries out rehabilitation works of amelioration infrastructure, including I&D systems.

46. **Over time, the legal and institutional frameworks for land registration and privatization have changed.** In 1996, the Parliament of Georgia issued a law on land registration, which is a legal and institutional framework built on restoring the right to private property. There were several shortcomings, such as the following: the NAPR recorded only initial owners and not subsequent transactions; there was no unified cadastral system; and the arrangement of documentation was based on maps of the site in municipalities and villages. In 1999, the President issued a decree on "Urgent measures for the initial registration of agricultural land ownership rights and issuance of registration certificates to Georgian citizens." To ensure that the process of initial registration was transparent and less time-consuming, the decree minimized the number of documents required for land privatization and initial registration. The process of documenting the recognition of ownership of agricultural land started in the late 1990s with the help of international donors and continues today as new laws on land registration and privatization were adopted during the last 10-15 years. The land ownership rights are regulated by the "Law on recognition of property rights of the parcels of land possessed (used) by natural persons and legal entities under private law" adopted in 2007. The privatization of state-owned land is regulated by the "Law of Georgia on State Property" adopted in 2010 as amended.

47. **Some institutional issues have been progressively addressed to better support the needs of land users.** From 1998 to 2004, two different agencies were responsible for registering property in Georgia: the Bureau of Technical Inventory, which was responsible for surveying and registering apartments and buildings; and the State Department of Land Management, which was responsible for land administration and management that included registering property rights and maintaining the cadastre, privatizing and leasing state-owned land, categorizing and compiling land statistics, controlling the use of land and natural resources, and mediating land disputes. Some of these responsibilities were overlapping with mandates of other government agencies, and procedures were vague. Following the Rose Revolution in 2003 and subsequent reforms that included privatization of state properties, the Government of Georgia abolished both the Bureau of Technical Inventory and State Department of Land Management and established the NAPR under the Ministry of Justice to handle land administration (i.e., maintaining the cadastre and registration of property rights).

48. **The process of formal registration of land through the cadastral and property registration systems has been slow.** Only around 20 percent of rural properties have been registered. The second stage of land registration reform started in 2016 and employed sporadic as well as systematic registration approaches, with the major focus on sporadic registration. In 2016 the Parliament adopted the "Law on the improvement of cadastral data and the procedure for systematic and sporadic registration of rights to plots of land within the framework of the State Project." Systematic registration has only been piloted in a few settlements across Georgia. The Parliament of Georgia adopted a new decree in 2019, to further simplify systematic registration procedures based on the results of piloting of systematic registration activities under the Georgia Irrigation and Land Market Development Project financed by the World Bank. The NAPR uses blockchain technology to increase transparency and efficiency in the registration process of land titles and to ensure increased security and reliability of digital certificates of properties.

49. **The land tenure pattern and incomplete systematic registration constrain agricultural productivity and investment.** According to statistical data provided by NAPR dated October 2021 so far only 72 percent of land plots are registered in the country. This figure is even lower for agricultural parcels and is around 30 percent. Overall, there remains around 1million unregistered agricultural land plots in rural areas. This fact undermines agricultural production and productivity. As of 2019, only 20 percent of land is operated by holdings owned by women (GeoStat 2021). The lack of ownership of land limits women from participation in some agricultural programs, and lack of collateral limits women from qualifying for credit and grant schemes that operate in the regions (FAO 2018b).

With the aim of determining the purpose of land use and providing a basis for land use planning and monitoring, a new land agency has been established. In 2019, the MEPA Minister issued an approval of the Statute of the Legal Entity under Public Law called the National Agency for Sustainable Land Management and Land Use Monitoring (Land Agency). According to the law, the functions of the Land Agency are to (a) draw up a balance sheet for land, (b) register agricultural land resources and create an integrated database, (c) carry out state monitoring of land use, and (d) ensure the availability of relevant information (Parliament of Georgia 2019b). The Land Agency will resume a land inventory process to build a foundation for future increased land consolidation and efficient land use (World Bank 2020f). While there is a separate agency for regulating some of the land-related matters, there is no consolidated strategic document that covers all aspects of agricultural land management and administration. A comprehensive action plan for implementing land-related policies is also absent.

50. **In 2013 Georgia started to work on establishing NSDI with NAPR as designated leading organization; the nationwide full-scale NSDI implementation is yet to be developed and operationalized.** The respective "Law on the establishment of a governmental commission for the establishment and development of the NSDI in Georgia" was adopted in 2013 and amended in 2014 and 2015. The NAPR was tasked with coordinating the creation, operation, and development of the NSDI in the country. The NAPR leads the activities dedicated to the deepening of cooperation between the main agencies producing and consuming spatial data in the country and the discussion on the issues of sharing geodata (UN 2015). Although NSDI has a webpage and an institutional structure, its establishment is not yet finalized, and some of its components are operating in a piloting regime (e.g., Geo Portal). The Georgian NSDI Metadata Specification was designed in 2015 and revised in 2016. Metadata Regulation sets out the requirements for the creation and maintenance of metadata for spatial data sets, set series and services. To ensure proper management of geospatial information, Georgia has started to work on the Integrated Geospatial Information Framework, with Norway funding pilot action and investment plans.

III. ACHIEVING THE VISION FOR AGRICULTURE IN GEORGIA BY 2030: OPTIONS FOR ITS INCREASED CONTRIBUTION TO ECONOMIC, SUSTAINABILITY AND RESILIENCE GOALS

51. **Georgia has the potential to improve the competitiveness, sustainability, and climate resiliency of its agricultural sector, in line with its Agriculture and Rural Development Strategy 2021-2027 vision and objectives for the sector, adding value to the economy, while accelerating the sector's structural transformation.** Chapter III provides concrete recommendations across all three sectors along the following three themes: (a) competitiveness (specifically agricultural value chain integration, including agrologistics, agri-finance, I&D infrastructure, on-farm agricultural water resources management, land registration, land taxation and valuation, and agricultural land markets); (b) sustainability, including financial/fiscal sustainability (specifically I&D service delivery, I&D tariff, institutional capacity in water resources planning and management at national and local levels, unified government policy of land management and administration, legal framework for land management and administration, and agricultural public spending); and (c) climate resiliency (specifically CSA practices, agrometeorological and water accounting capacity, and land degradation and soil health). These three themes are underpinned by inclusiveness for women, youth, and small holders.

COMPETITIVENESS

A. INTEGRATION OF AGRICULTURE AND AGRI-BUSINESS

52. **Globally demonstrated strategies for integrating small-holder producers, such as producer-driven models (e.g., producer organizations), and buyer-driven models (e.g. contract farming), that have been tried in Georgia could be strengthened.** Out of the mechanisms active in Georgia there seems to be scope to address the factors that would enable their development. Specifically,

53. **Contract farming.** Despite some negative past experiences, during the interviews and focus group discussions there was significant interest expressed from both sides (producers and buyers) in continuing to explore contract farming to improve the quality, quantity, and consistency of supply (from the buyer side), and predictable access to markets with more consistent income streams (from the producer side). Perishable, high value, export-oriented products with quality-sensitive markets where food safety standards are enforced and there is strong buyer and supplier interest in contract farming emerged as a good fit for a contract farming mechanism (RAPDI 2021). Efforts to introduce and strengthen contact farming operations are ongoing. Most notably MEPA has been collaborating with FAO on technical support toward the promotion of responsible contract farming operations, which FAO is providing together with the EU under the flagship program, the European Neighbourhood Programme for Agriculture and Rural Development (ENPARD).²² The Government of Georgia can help strengthen the enabling environment needed to support contract farming operations, such as development/ establishment of reliable market and pricing information services,

²² <https://eu4georgia.ge/enpard/>

uniform product marketing standards, warehouse receipt system, as well as quick and accessible dispute resolution mechanisms.

54. **Producer organizations.** ENPARD has also been funding work on analyzing the agricultural cooperatives experience in Georgia and supporting some of them. Findings include calls to focus more on service cooperative development (and agriculture value chain development in general) (Kakulia 2017). Also, access to finance, assets (machinery, land, etc.), inputs and markets were ranked as the most pressing concerns affecting the success of agricultural cooperatives (Kochlamazashvili 2017). The Government of Georgia could seek support in implementing the Productive Alliance approach, whereby a group of smallholder producers, one or more buyers, and the public sector are connected through a business proposition, or “business plan”, which describes the capital and services needs of the producers and proposes improvements that would allow them to upgrade their production capacities and skills to strengthen their linkage with the market, i.e. the buyer(s) (World Bank 2016). The approach can encourage the development of both horizontal alliances among the producers and vertical alliances between the producers and buyer(s). In response to constraints to access to finance, financial support to PAs can be provided through matching grants, which is a mechanism that Georgia has a positive experience with (under the IFAD AMMAR Project, for example).

- **Short-term recommendation (1):** Perform deeper analysis on areas comprising the enabling environment for contract farming, such as development/ establishment of reliable market and pricing information services, uniform product marketing standards, warehouse receipt system, as well as quick and accessible dispute resolution mechanisms.
- **Short-term recommendation (2):** Perform feasibility analysis for implementing the PA approach.
- **Medium-term recommendation:** Create public-private dialogue platforms on agriculture and agri-business to feed into policy process and facilitate clustering, bundling, and vertical coordination along value chains, paying particular attention to the inclusion of women and youth. These need not be new structures but would ideally build on the Regional Information Consultation Centers that MEPA established in 2013. These Centers provide agricultural extension services, including informing farmers about state policy and programs, and collect information and statistical data from farmers related to agricultural production, local context, and current constraints. They could become a wider platform on agriculture and agri-business to inform the policy process and facilitate clustering, bundling and vertical coordination along value chains.

55. **As mentioned earlier, there are more, well-documented weak points affecting the development of the agricultural value chains in Georgia that persist regardless of the integration mode.** These include low skills and poor infrastructure (including transport and agrologistics capacity) that compound the difficulties of integrating along the agricultural value chains, as well as under-

developed food safety systems.²³ A variety of simultaneous actions would be needed to start addressing these issues that include:

- **Short-term recommendation (1):** Develop and implement training and apprenticeship programs in partnership between the private sector and government in order to develop the necessary skills in agriculture and agri-business.
- **Short-term recommendation (2):** Examine current exports and potential product pipelines to markets in Europe, the Gulf, and East Asia to develop a sequenced logistics improvement strategy in collaboration with the private sector.
- **Short-term recommendation (3):** Reduce costs of certification and incentivize scaling up of supply of fresh products for export by supporting cluster and value-chain certification processes.
- **Short-term recommendation (4):** Promote wider use of GLOBAL GAP standards that have been applied in Georgia since at least the early 2010s. They are adopted however by primarily big agricultural players (with the facilitation of private companies). Economy of scale considerations and maintenance costs of the certification prevent Georgian smallholders from adopting them. Efforts could be extended to create awareness of the local g.a.p. program²⁴ that incorporates the special needs of small-scale producers through a stepwise approach toward certification, and the GLOBALG.A.P. Farm Assurer program that seeks to train independent consultants who advise farmers locally in their audit preparation or establishment of quality management systems and thereby reduce costs.²⁵
- **Medium-term recommendation (1):** Create a scholarship program for tertiary education abroad to create the critical mass of professionals required to reduce the capacity gap and sustain future agriculture and agri-business growth.
- **Medium-term recommendation (2):** Invest in market intelligence advisory services to understand options in trade logistics, and to develop marketing strategies for high-value products.
- **Medium- and long-term recommendation:** Identify and promote public private partnership options for agrologistic zones, warehousing, and cold chains, as well as agrologistic supports services (such as shipping).
- **Long-term recommendation:** Explore bundling and clustering opportunities to gain scale for exports to new markets.

²³ Constrains and proposed solutions were analyzed under the Maximizing Finance for Inclusive Development of Agri-food Value Chains in Georgia.

²⁴ https://www.globalgap.org/uk_en/for-producers/localgap/

²⁵ As of now, there is no registered Farm Assurer in Georgia: https://www.globalgap.org/uk_en/what-we-do/the-gg-system/gg-farm-assurers/Farm-Assurer-List/

56. **Actions to increase competitiveness should be taken with the aim of explicitly responding to the needs of women and reducing the barriers they face.**²⁶ This means that knowledge and competency in gender equality and women's empowerment needs to be built in MEPA and its agencies, including the Regional Information Consultation Centers. They also need to be supported in awareness-raising at policy and field level to pursue policies and programs that improve women's access to information, knowledge and innovation; technology, machinery and agricultural inputs; markets; and agri-finance. Specific activities could include (a) adapting capacity building to women's (substantive and logistical) needs; (b) mobilizing various channels of communication (i.e., ICT, women's groups) to spread information; (c) training extension and advisory services to reach women by adjusting place and time of outreach (e.g., closer to home); (d) encouraging women to enroll in vocational and tertiary education and training in agriculture and agri-business; and (e) employing more women as extension officers so they can serve as role models.

B. ACCESS TO FINANCE FOR AGRICULTURE

57. **Georgia has relied on government programs that are primarily focused on subsidizing interest rates to expand lending to agriculture and agri-businesses.** While these programs have led to an increase in both the absolute level and the share of total lending in agriculture and agri-business, measures are still needed to address supply constraints. Supply constraints have mainly to do with risks and service costs as banks perceive agriculture as risky. Measures to enable more commercial bank lending without public support would help to broaden and deepen the mobilization of private sector finance for investment, together with increased use of guarantees and other collateral substitutes (e.g., warehouse receipts) as an alternative to collateral-based lending. Such a move would also enable women to benefit from agri-finance products and services. Since women tend not to be registered as property owners of land, houses, capital equipment or other assets, they are less likely to qualify for and access agri-finance (FAO 2018a). Wider use of loan guarantees could also be linked to a reduction of interest rates and a reduced consequent use of subsidized credit. These changes would significantly reduce the fiscal cost of promoting private investment in the sector, allowing for more resources to be allocated to public goods that require greater funding (such as agricultural knowledge generation and transfer) (World Bank 2020c).

- **Short-term recommendation:** Enable/facilitate technical assistance to banks in lending to agri-business and developing appropriate products. Banks are conservative when it comes to agri-finance and building their awareness on what products and services are suitable for the agriculture sector will be needed.
- **Medium-term recommendation (1):** Promote the expansion of digital financial services in rural areas, heightening impact in expanding financial inclusion and credit to agriculture.

²⁶ Activities informed by FAO 2018a.

- **Medium-term recommendation (2):** Reduce interest rate subsidies for agriculture and improve credit program targeting, with particular attention to value chain financing and working capital.
- **Medium-term recommendation (3):** Increase use of guarantees and other collateral substitutes (e.g., warehouse receipts) as an alternative to collateral-based lending. Such a move would also enable women to benefit from agri-finance products and services, who are less likely to be registered as property owners of assets.

C. I&D INFRASTRUCTURE

58. **As of 2015, only 11 percent of the production area in Georgia was irrigated.** A deteriorating irrigation infrastructure has severely constrained the provision of adequate irrigation service delivery to end-users, namely farmers. In many systems, a deteriorated facility limits water management options to basic on/off control with possibly some crude adjustment of operating levels in canals (MEPA 2017b). Therefore, beyond rehabilitation, options for modernization of existing systems need to be explored where economically viable. Without reliable, flexible (on-demand), and equitable water delivery, farmers' risk to crop failure increases. Just as importantly, farmers may also be reluctant to adopt more innovative farming activities that require access to water. The combination of farmers being reluctant to pay the irrigation fee and the service provider being unable to recover the costs of delivery through service fees leads to a vicious cycle of most irrigation systems in the country (rehabilitate/neglect/rehabilitate). To that end, investment in rehabilitation of non-functional irrigation infrastructure is necessary with an expected restoration of the irrigable area to 200,000 hectares by 2025.

59. **Water storage capacity is diminishing.** Due to the predicted and progressive loss of snowpack storage resulting from climate change, water shortages in Georgia are expected to increase, particularly in later growing seasons when demand is high and river flows are at their minimum (MEPA 2017b). This will require supplemental storage options to be explored in high-risk areas as well as potential overflow regulation tanks that address potential issues of overflow and prevent increased water loss in applicable areas.

60. **Investment in I&D infrastructure requires comprehensive planning to meet future objectives.** Beyond purely engineering criteria of the system, I&D infrastructure must incorporate factors related to economic, climate, environment, and social aspects in selection of a rehabilitation or modernization plan to ensure sustainability. Before extending irrigable areas and selecting specific plans for rehabilitation/modernization, an I&D master planning exercise is needed to clarify the objectives to improve the reliability and the capillarity (ensured by the proper development of secondary and tertiary channels) of the water service in areas already served. A prioritization methodology should also be incorporated into the I&D master planning exercise to guide investments according to objective criteria. Early in the process, consideration should be given to where systems are economically viable with potential for farmers to scale higher-value crop production from the additional irrigation area expanded, including on whether agriculture is primarily male, female or dual

as this has an impact on design of infrastructure and delivery of services (WBG, FAO, and IFAD 2009), and where schemes are at risk of water stress from changes in precipitation and run-off, which may need additional storage options as well as other environmental and social criteria.

- **Short-term recommendation:** Define a shared vision and methodological approach for the development of the I&D sector to guide and prioritize investments. This will include the clear definition of the role and mandate of the main actors. An irrigation master plan can be one way to achieve this, which can also incorporate a multi-criteria decision-making model to support decision makers to think about investments from environmental, social, and economic perspectives. For example, it is important that the master plan also considers aspects of gender inclusion such as the importance of incorporating women’s preferences in irrigation infrastructure design, and considering including in the infrastructure design, water systems that are often more valued by women because they support both domestic and irrigation uses (e.g., multiple-use water systems).

D. ON-FARM AGRICULTURAL WATER RESOURCES MANAGEMENT

61. **Current on-farm agricultural water management practices in Georgia employ low-technology furrow and flood application methods, with uncontrolled flow rates.**²⁷ Sprinkler irrigation systems can be found in the Kakheti region; however, their use is not widespread since capital costs for installation are high and typical small farm holdings do not justify the use of larger equipment (such as center pivots). Drip irrigation, used for horticultural crops on relatively small areas, is growing in popularity as most farmers recognize its advantages in reducing water use, raising yields, and improving product quality. A particular emphasis is given to enhancing private groundwater development for irrigation in the Georgian Irrigation Strategy 2017-2025, particularly in conjunction with drip irrigation technology, which is expected to expand to cover as much as 10 percent of irrigated area by 2025 (MEPA 2017b).

- **Medium-term recommendation (1):** Update the national licensing and regulation scheme for groundwater pumping and develop a national licensing and regulation scheme for surface water use, which coincides with strengthened capacity of MEPA to monitor quantity and quality of groundwater and surface water resources at the national, regional, and basin scales.
- **Medium-term recommendation (2):** Develop and implement a comprehensive on-farm agricultural water resources management program, including starting farmer field knowledge and information training programs for improving farmer knowledge about potential irrigation technologies and potential yield and income benefits from sprinkler/drip adoption. This can potentially target farmers as future WUO members. Attention must be paid also to the provision of irrigation technologies preferred by women (e.g., easy to use, small-scale, labor-

²⁷ Field crops are typically irrigated by furrow and tree crops by borders between the tree lines.

saving, cost-effective, socially acceptable) undertaken together with targeted outreach to women to inform them about available irrigation technologies. In addition, in areas where agriculture productivity enhancement measures are planned or ongoing, consideration can be given to scaling up matching grants schemes under the Georgia Rural Development Agency. Lastly, consideration can be given to targeting the provision of irrigation water supply to activities that particularly benefit and generate jobs/income for women (e.g. horticulture, home gardens).

E. LAND REGISTRATION

62. **The land registration process in Georgia has been going slowly until recently and most of agricultural land in Georgia is yet to be registered** (World Bank 2021a). Some constraints contributing to slow land registration are (a) problems with documentation (i.e., mistakes in registration of owner name, old documents, lack of documents, problems with the plot sketch plans, time-consuming and prolonged procedures); (b) misunderstandings or disputes with neighbors (i.e., unfixed fences, overlaps); (c) underdeveloped infrastructure (i.e., difficulties in accessing plots for measurements); and (d) lack of and competence of specialists (both in private and public sector) who prepare the plot sketch plans.

63. **Many private landholders avoid registering their land for various reasons.** Some landholders fear losing their social allowance or losing (registered) land to credit authorities. Others fear land taxation and disputes about land demarcation. Many hold the view that land belongs to the household and does not need to be registered. There are cases of absent landholders from the country or the region (due to migration). Lastly some avoid registration because of the registration cost, or lack of information about the land registration reform (ISET Policy Institute 2018).

64. **The process of legalization of deficient documents for land registration was slow and cumbersome until recently.** The local governments had been in charge to conduct the legalization process which takes place when the owners cannot prove their ownership of agricultural land due to deficient documentation. This task has now been taken over by NAPR as part of the systematic registration process. It is now up to NAPR to deal during the Systematic Land Registration with challenges such as discrepancies in the measurement plans and overlaps of parcel boundaries, lack of access to old records by municipalities, and lack of human and financial resources that leads to delays in the legalization process.

65. **Most of privately owned land registered to natural persons belongs to men.** As of May 2021, according to the statistics produced by NAPR, the total area of land under private ownership was 778,784 hectares out of which 76.5 percent was owned by natural persons and 23.4 percent by legal entities. Men and women own/co-own 80 and 36 percent, respectively, of the land registered in the ownership of natural persons. In terms of plots, men and women own/co-own 77 and 51 percent, respectively, of plots registered and owned/co-owned by natural persons. The average size of the parcel owned by women is of around 0.3 hectare, while the one owned by men is around 0.44, which is practically 50 percent bigger (Table 2). The results obtained during the Systematic Land Registration

conducted under the Georgia Irrigation and Land market Development Project show that thanks to public awareness campaign and gender-sensitive business processes introduced by NAPR the outcomes for registration are more gender-equitable in terms of number and size of parcels owned and co-owned by women. Women’s limited land ownership (as compared to men’s), limits also their access to some of the agricultural programs, credit and grant schemes that operate in the regions due to the lack of collateral (FAO 2018a). It is noteworthy, that only 1 percent of total private lands are in foreign ownership and 0.7 percent are owned by religious organizations. While most of the landowners have small land parcels, the average size of registered land is the highest for religious organizations and amounts to 2.53 hectares per plot.

Table 2. Private land ownership by gender (As of May 27, 2021)

	Area of registered land (ha)	%	Number of plots	%	Average area of land plots (he)
Women	216,184.9	36	728,024	51	0.30
Men	477,654.3	80	1,089,342	77	0.44

Source: NAPR (2021).

66. **The low rate of property registration can cause delays in investment in critical rural needs like irrigation, roads, and electrical supply.** Delays might be caused by prolonged land expropriation process. Only registered land is eligible for compensation in cases of expropriation.

67. **The NSDI should function on national (across various governmental stakeholders), sectorial, and municipal levels.** NSDI has not yet been fully established in Georgia. Once it is functional and fully operational, it would support optimal planning of resource use and efficient management of business processes as well as improve the quality of decisions made by central and local governments based on standardized, systematized, valid, reliable, and current geospatial data and other information.

- **Short-term recommendation (1):** Create additional incentive mechanism for landholders to register their property and do it in a gender-equitable way. That needs to be accompanied by delineation and registration of public lands like pastures, mitigating conflicts over boundaries with private lands.
- **Short-term recommendation (2):** Build capacities of private and public sector personnel in the land administration sector.
- **Medium-term recommendation:** Ensure further development of NSDI to increase data transparency, sharing and openness of public institutions involved in land registration and market development and to support evidence-based decision making and land policy design.
- **Long-term recommendation (1):** Mobilize financial resources to complete nationwide systematic registration.

- **Long-term recommendation (2):** Evaluate cost-efficiency of policy interventions and reforms based on the data obtained through NSDI from relevant stakeholders.

F. LAND TAXATION AND VALUATION

68. **Agricultural land taxation is administered by the Ministry of Finance through its Revenue Service.** The base rates for property taxes are regulated by Article 204 of the Tax Code of Georgia (Parliament of Georgia 2010a). The current tax and regulatory system provides no incentives to change the current pattern of land use and small-scale production. In many cases, the system of property taxation is not assessing properties based on their current market values. Instead of current market values, the tax amount is determined according to the geographical location of land. An individual owner pays the tax on their property and objects on the land such as unfinished buildings and other structures. Moreover, the Tax Code of Georgia changes frequently. It has been amended 173 times. It is difficult for taxpayers to follow their tax obligations in light of these frequent changes. Moreover, according to stakeholders, tax collectors are not trained properly and may not have up-to-date information on recent amendments to the Tax Code of Georgia.

69. **Stakeholders lack trust in the agricultural land valuation approach currently applied to define land value.** In 2008, the National Agency of Standards, Technical Regulations, and Metrology of Georgia registered International Valuation Standards that had been elaborated and approved by the International Valuation Standards Committee. This internationally recognized land valuation approach was employed by LEPL Levan Samkharauli National Forensics Bureau under the Georgian Ministry of Economy and Sustainable Development²⁸ but is still questioned by stakeholders consulted in the context of this study. Some stakeholders thought that agricultural land was overvalued, which prevents its privatization. Other stakeholders thought that land was undervalued, which reduces landowners' access to finance. There are several instances when land valuation is required: (a) when buying and selling land; (b) securing credit; (c) entering or withdrawing capital from the enterprise; (d) implementing an investment project; (e) determining the best use of the land; (f) gift-giving in cases of inheritance; and (g) proving and arguing the tax base in cases provided by the Tax Code. The first two cases – buying/selling land and securing credit – have proven to be the most problematic with stakeholders. The stakeholders do not trust the competencies of state valuers although the National Accreditation Center has accredited the Valuers and Experts Professional Development Center in line with the international accreditation standard.²⁹ The valuers of LEPL Levan Samkharauli National Forensics Bureau are accredited by the Valuers and Experts Professional Development Center and, under this scheme, pass their examinations. They follow the International Valuation Standards and are recertified every two years.³⁰

²⁸ The major state entity responsible for land valuation in Georgia.

²⁹ ISO 17024 is the standard for bodies that accredit personnel and so does not contain any requirements about valuations.

³⁰ LEPL Levan Samkharauli National Forensics Bureau conducts most land valuations even though there are private companies conducting land valuations. From a competitive standpoint, the Bureau valuations are more prioritized in court during disputes.

70. **The regulatory framework for land valuation is underdeveloped.** A law on valuation that is required by the Law on Accounting, Reporting, and Audit has not been adopted. Over the last five years, there have been draft laws produced by the Service for Accounting, Reporting, and Auditing, but these drafts are not publicly available. No significant progress in this direction has been made so far because of the many interested parties who struggle to reach consensus on the issues. The draft law is expected to regulate adoption of valuation standards, establishment of councils for solving disputes regarding land valuation, and certification process for specialists, among other provisions.

- **Short-term recommendation (1):** Seek ways of making the use of International Valuation Standards more effective and increase transparency of the land valuation process and build trust between stakeholders (landowners, users, valuers, etc.) involved in the land valuation process.
- **Short-term recommendation (2):** Encourage meaningful participation of the private sector in the land valuation process through fair competition and transparent settlement of disputes regarding land valuation.
- **Short-term recommendation (3):** Build the capacity of tax collectors and provide consultations to taxpayers to help them submit their tax declarations.
- **Medium-term recommendation:** Finalize the development of the draft law on valuation in order to ensure establishment of proper valuation standards, procedures to settle disputes, high qualification of staff involved in land valuation, etc.
- **Long-term recommendation:** Reform the system of property taxation. Land taxation should be based on transparent market valuation. It is important to encourage the involvement of private valuers and promote the formation of self-regulating organizations to support them. According to the VGGT, the information about land valuation and taxable amounts should be publicly available and taxpayers should be able to engage in disputes regarding valuations. A high level of transparency in the taxation process and objectivity in the valuation process should be ensured by the state (FAO 2012).

G. AGRICULTURAL LAND MARKETS

71. **The agricultural land market in Georgia faces several constraints and obstacles to its development.** Lack of unified land policy and long-term strategy for agricultural land use optimization, incomplete legislative framework and land registration, gaps in land taxation and valuation systems, high level of land fragmentation and degradation, high-level of state ownership of agricultural land and a practical halt of its privatization process perpetrate agricultural land use inefficiency and low contribution from its use into the national budget. Even though the State has multiple revenue sources from land taxes and land-related transactions, they contribute very little, around 0.1 percent to the total national budget (State Treasury at Ministry of Finance of Georgia, 2021). During 2012-2020, the National Agency for State Property (NASP) held 3,895 auctions in total and in only 2.5 percent of auctions agricultural land with or without buildings was privatized (NASP 2021).

72. **Land market and administration-related information is not publicly available and is difficult to obtain upon request.** Limited availability of data makes it difficult to assess the progress of land policy interventions and reforms and identify avenues for improvement. The data on policy interventions and reforms should be available to evaluate the efficiency of the interventions and develop recommendations for next steps.

73. **Agricultural land in Georgia is characterized by highly fragmented, small-scale plots in private ownership (36 percent of all agricultural registered land) and agricultural plots of larger sizes in State ownership and management (64 percent of all registered agricultural land).** One of the ways to move from subsistence to commercial agriculture is to enable progressive consolidation of agricultural land in private ownership. The average agricultural land area operated by an agricultural holding is 1.37 hectares. In terms of land holding, the largest average agricultural land area is 3.55 hectares in Kakheti region, followed by Samtskhe-Javakheti region (2.21 hectares). More than 50 percent of the agricultural land in Samtskhe-Javakheti is dedicated to pastures (GoG 2013). Kvemo Kartli region is third in terms of average agricultural land with 1.81 hectares (GFA 2018). In the remaining regions, most of the agricultural holdings are small-scale family farms under 1.37 hectares, which is the country's average.

74. **Despite significant advances in property registration systems and simplification of procedures 28 percent of land nationwide, predominantly agricultural, is yet to be registered.** Weak rural land markets create endogenous limitations to both growth (i.e., farmers seeking to enlarge their farms) and entry (i.e., farmers or agri-business enterprises seeking large, contiguous blocks of rural land for investment). Creation of an ad hoc regulatory and legislative mechanism, such as the National Sustainable Land Management Strategy, including policy agenda on land consolidation, would support overcoming these limitations. There is already an implicit demand for regulation of land consolidation as 11 percent of agricultural plots registered during the Systematic Land Registration campaign underwent consolidation following a spontaneous demand from the owners.

75. **Agricultural land market in Georgia represents a significant potential for development through a carefully balanced approach.** In Georgia 64 percent of land is registered as agricultural in the name of State or municipalities and 28 percent of land is not yet registered and most of this land is likely to be agricultural (approximately 82 percent according to the estimations by NAPR from the Systematic Land Registration piloting). To enable agricultural transformation and move out of subsistence agriculture, better land tenure security should be provided to the farmers, especially those leasing land from the State. The privatization of agricultural land leased before 2005 was stopped in 2011, and the decree to relaunch this process has been with the Parliament for the past 10 years. The State land leases, which have expired since 2005, have not been renewed. As a result, the agricultural land in State ownership for those expired leases is either abandoned, or still being utilized by the same lessees, but without paying the rental fees and taxes and thus without contributing to the State budget. Without provided land tenure rights users hesitate to invest into sustainable land management practices, such as CSA perennial crops, and/ or rotation of pasture use to prevent overgrazing. The phenomena of pastureland grabbing by reclassifying it as agricultural land

and privatizing it, is also taking place. Table 3 presents details on the land tenure pattern for registered land.

Table 3: Land tenure pattern for registered land in Georgia

Type of land	Total (ha)	State ownership (ha)	%	Municipality ownership (ha)	%	State/ municipal or municipal/private co-ownership (ha)	%	Private ownership (ha)	%
Total land area excl. forests and occupied territories	3,399,666								
All registered land (72% of Total)	2,453,355	1,423,929	58	163,586	7	87,057	3	778,784	32
Registered agricultural land (82% of All registered)	2,014,655	1,071,261	53	133,262	7	81,015	4	729,117	36
Registered non-agricultural land (18% of All registered)	438,687	352,664	80	30,323	7	6,040	1	49,660	12

Source: NAPR (2021).

- **Short-term recommendation:** Elaborate a privatization strategy of underutilized state land and auction medium-to-large blocks (greater than 50 hectares) to attract agri-business investors. Elaborate a national land consolidation strategy and regulations facilitating its implementation.
- **Long-term recommendation:** Speed up development of the Farm Registry, linked to the Land Registry and the future National Sustainable Land Use System. This will provide geo-localized land quality and tenure data for investors and would facilitate the implementation of sanitary and phyto-sanitary measures and traceability systems required by demanding markets.

SUSTAINABILITY

A. I&D SERVICE DELIVERY

76. **Reliable water service is critical to the sustainability of an I&D system as well as helps create the conditions for better valorization of the farming systems by mitigating risks linked to variable water supplies.** Tackling any improvement in key I&D service delivery functions for Georgia would take a multi-dimensional approach. On the one hand, it requires setting up conditions for the objectification of the reliability of the service in each area. On the other hand, it is based on a full understanding of water users' needs, including of female water users. Finally, it requires clarifying the

relationship between the service provider and the water user. When taking this approach, it is important to (a) establish indicators to monitor and evaluate the reliability of the water service, (b) characterize the users and uses of water under different conditions, and (c) define measures to make both the service provider and the water users accountable for their actions.

B. REDEFINITION OF THE I&D TARIFF

77. **The existing tariff for I&D services (75 GEL per hectare or approximately US\$23 per hectare) does not incentivize farmers to save water and does not cover O&M costs of GA-provided infrastructure.** Therefore, the tariff must be redefined in such a way as to prevent blocking the I&D management transfer to WUOs and leaving Georgian Amelioration in a position where the water service has to be heavily subsidized by the state budget.

78. **The definition of the water tariff must take into consideration multiple elements.** First, the tariff structure must be redefined to encourage a more efficient use of the water resource at the farmer's level. The transition to a pricing system that includes a direct or indirect volumetric share (i.e., using information on the crop systems to be irrigated) could require a review of rehabilitation design and, more generally, the creation of conditions for effective monitoring or estimation of volumes consumed, including adding meters at certain off-take points where Georgian Amelioration intends to supply bulk water services to WUOs. The redefined tariff should also consider the different types of water uses such as for industry, fish farm, and small gardens in peri-urban area, as well as a gender-informed analysis of who would pay. Second, the level of tariffs must be progressively increased. This increase should cover a larger share of O&M costs at the initial stage with the objective of covering the full O&M costs in the long term. WUOs will be key change agents in supporting Georgian Amelioration when convincing farmers of the need for revising the tariff to provide improved and reliable services. And third, the redefined tariff must consider, with the O&M transfer process, the new relationships that will result between Georgian Amelioration and the water users. The role of the Georgian National Energy and Water Supply Regulatory Commission must be clarified to consider the diversity of possible relationships between Georgian Amelioration and water users, either part of organizations or individual users. Finally, the definition of the water tariff must consider the new basin management approach and therefore consider the possible implications of the implementation of the integrated water resources management framework.

C. INSTITUTIONAL CAPACITY IN WATER RESOURCES PLANNING AND MANAGEMENT AT NATIONAL AND LOCAL LEVELS

79. **In Georgia, unsustainable abstraction of groundwater and surface water in some localities is evident.** Water variability, in the form of flooding and the occurrence of local and seasonal shortages, is seriously problematic in many localities. The need is urgent for water resources management planning at the basin scale, including watershed and river basin management, water storage and flood control, and habitat and ecosystem protection. Water pollution is also serious and widespread, needing action on municipal wastewater treatment, control of industrial and mining effluent, and improved solid waste management (OECD 2018). In its 2016 Environmental Performance

Review of Georgia, UNECE concluded: “the absence of effective pollution prevention and water extraction control mechanisms is one of the major problems related to water resources in Georgia” (WBG 2020e). In addition, there are no special permits for surface water abstraction and wastewater discharge. The government is hoping to address these concerns by passing a comprehensive water resources management law.

80. **Establishment of viable local-level management entities remains. In the early 2000s, Amelioration Associations were established to operate irrigation facilities at the local level but were disbanded.** In December of 2019 the law for establishing Water Users Organizations was approved (ADB 2020). Additionally, provisions were established for a newly formed WUO Support Unit to assist in forming and supporting local-level organizations with provide service to individual users. At that time, Georgian Amelioration would assume the role of bulk water supplier to these local-level organizations. To that end, once these local-level organizations would be established, Georgian Amelioration would sign contracts with them for bulk water supply (MEPA 2017b). However, establishment and operationalization of the local-level organizations to support WUOs has been severely delayed with limited progress made thus far. Moving forward, it must be clear that WUOs would be established only where it is feasible and where there is a willingness of water users to self-organize, and maintain systems, allocate water among users, and collect fees. In addition, it is equally important to consider the role of women when forming WUOs in Georgia. As such, there are various effective approaches to increasing the membership, leadership, and voice of women in decision-making in community-based water organizations. These include changing membership criteria, supporting women’s access to land, providing training to women on specific topics (such as legal status of the committee, running a meeting, leadership, conflict resolution, communications, bookkeeping and public speaking, etc.) (UN 2012).

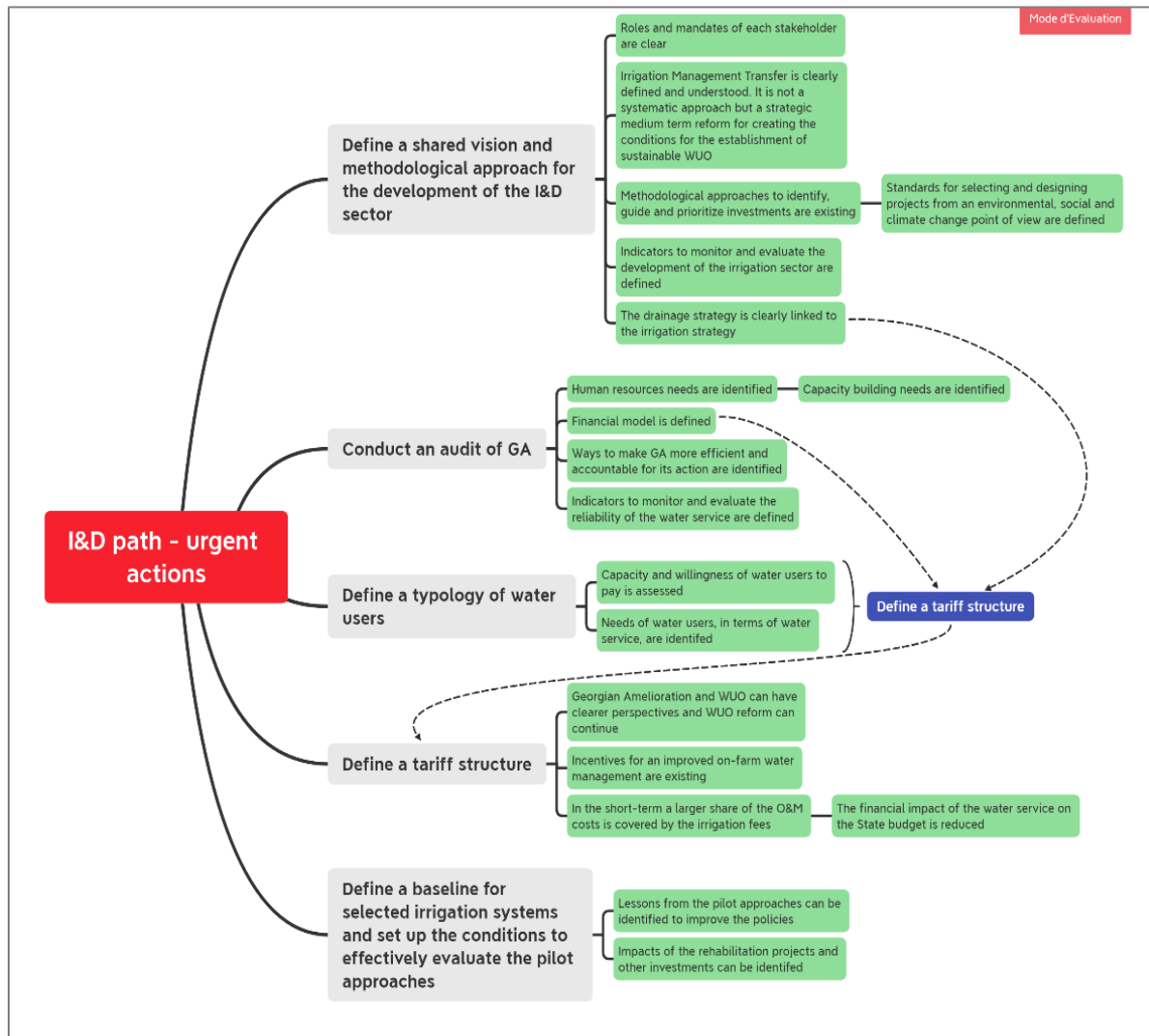
81. **A capacity shortage of technically skilled individuals is unable to meet the demands for growth of the I&D system.** The Georgian higher education system is not equipped to teach the technical skills associated with the growth of I&D systems to support development of the sector. According to ongoing stakeholder consultations, Georgian Amelioration needs to strengthen its staffing and expertise to adequately manage I&D systems. A scarcity of civil engineers and agronomists with relevant knowledge and experience has a debilitating effect on management and operation and the future of the I&D sector in Georgia. The few professionals with expertise in these areas were all trained in the Soviet period. Stakeholders report the extremely limited number of students with relevant specializations in water resources management, civil engineering, hydrology, agronomy, and related fields; this problem is coupled with outdated academic programs lacking an applied focus with field experience. This skilled capacity shortage is expected to increase with the rehabilitation of secondary and tertiary channels and with WUO establishment. The Georgian higher education system should revisit its curricula and provide the necessary training for a future cadre of skilled human resources to replace the retiring experts and to expand the staff to meet the growing needs of the sector.

- **Short-term recommendation (1):** Conduct an audit of Georgian Amelioration to identify potential reorganization needs, human resource and capacity-building needs, financial model and cost structure over time, and ways to make Georgian Amelioration more accountable for their activities.
- **Short-term recommendation (2):** Define a typology of water users to better understand average size of farms, types of irrigation sources used, types of crops grown, and how and whether they access I&D services.
- **Short-term recommendation (3):** Clarify and agree on a clear tariff structure for I&D services that will ensure financial sustainability to Georgian Amelioration in the long run. The tariff should not only ensure the financial sustainability and efficiency of the I&D service provider, but the survival, evolution, and competitiveness of the agriculture sector.
- **Medium-term recommendation (1):** Staff and train regional WUO Support Units to become effective and operational to lead WUO establishment where schemes are going to be fully rehabilitated (i.e., primary, secondary, and tertiary systems) and where water users express the will to self-organize. Hire female WUO support unit staff to lead female WUO engagement. Complement efforts to support WUOs development with, for example: adding gender-affirmative measures in by-laws such as quotas for women in leadership positions; specific training (communication skills, technical skills) to help women have their concerns heard in male-dominated spaces; gender sensitive training in all training sessions for example to explain the benefits of having balanced representation.
- **Medium-term recommendation (2):** Implement the recommendations resulting from the audit of Georgian Amelioration.
- **Medium-term recommendation (3):** Based on a study of the root causes of the limited appeal of higher education and vocational programs to provide technical courses and degrees in water resources management, strengthen the cooperation with higher education institutions and the Ministry of Education and Science of Georgia to address lack of professionals in the water sector and update the relevant curricula and expand the number of courses and degrees offered as well as incentivize the enrollment in higher education and vocational programs for degrees related to water resources management.
- **Medium-term recommendation (4):** Invest in upgrading the capacity of the MEPA to monitor, measure, and analyze river basin water supply and demand, including investments in staffing, skills, technological instruments, to allow improved water resources management and basin-scale planning; and in capacity in dealing with gender issues. In addition, invest in improving water quality monitoring and regulatory systems for controlling pollution and water abstraction from agriculture and non-agriculture activities at a river basin scale. These measures would be in place prior to large-scale investments in dam or irrigation scheme modernization.

- **Medium-term recommendation (5):** Merge the local service centers from Georgian Amelioration and from MEPA to have a single structure in charge of a global support to farmers.

To summarize, Figure 6, below, provides a detailed synthesis of the short-term recommendations and action for irrigation and drainage.

Figure 6: Summary of short-term I&D reform actions



Source: Authors.

D. LEGAL FRAMEWORK FOR INTEGRATED WATER RESOURCES MANAGEMENT

82. **The lack of a comprehensive framework for integrated water resources management (IWRM) leaves Georgia without a legal provision for basin-to-farm water resource allocation (MEPA 2017b).** Although a new IWRM Law was drafted in 2015 with the aim of re-establishing a water-

permitting system in the country, its adoption has been delayed (OECD 2020). In addition, with the abrogation of the Law on Amelioration of Georgia (the Amelioration Law) in 2010, Georgia has no legislation in place governing its I&D sector (MEPA 2017b). Instead, the sector is subject only to laws of general application such as the Water Law of 1997 with several references to irrigation and use of water for agriculture purposes. The Government of Georgia is notably working to approve and pass the comprehensive IWRM Law. Certain aspects governing I&D services will fall under this draft law; however, it is not yet clear if there is an immediate need for amendments on I&D to address and regulate aspects that may not be covered in the new IWRM Law to be adopted.

- **Medium-term recommendation:** Conduct analysis of the draft IWRM Law to ensure that I&D uses are correctly covered by the law's provisions and, if necessary, include provisions in the draft law to address these aspects.

E. NEED FOR A UNIFIED GOVERNMENT POLICY OF LAND MANAGEMENT AND ADMINISTRATION

83. **There is no unified policy document outlining the government's approach to sustainable land management and administration in Georgia.** A fragmented land management system leads to an uncoordinated sector. One of the main constraints in land management and administration is lack of an integrated management system. This results in an unclear vision for the sector's development and the absence of specific indicators to track progress in the sector. There are two strategic documents that outline the government's vision regarding land sector development: the State Budget Note 2021 for the next three years and the Government Program 2021-2024: Toward Building a European State. The latter outlines land registration reform as a top priority for development of the land sector. The State Budget Note 2021 sets goals for land market development and supporting land registration and for improving NAPR services. Currently, there are several institutions without a unified approach or coordination in the sector. These institutions and their major functions are listed in Table 4.

Table 4: State agencies and their functions regarding land management and administration

State entity	Functions
Department of Hydrology and Land Management (MEPA)	<ul style="list-style-type: none"> • Developing land policy, strategic documents, and regulations • Reviewing and providing feedback on normative acts, policy documents, strategic documents and research reports • Participating in discussions on land administration and management
National Agency for Sustainable Land Management and Land Use Monitoring (MEPA)	<ul style="list-style-type: none"> • Drawing up a balance sheet for land • Registering agricultural land resources and create an integrated database • Carrying out state monitoring of land use and ensure the availability of relevant information
Agrarian Committee of the Parliament of Georgia	<ul style="list-style-type: none"> • Developing regulatory framework for land management and administration • Supporting land policy development
National Agency for Public Registry (NAPR)	<ul style="list-style-type: none"> • Carrying out land registration • Coordinating creation, operation, and development of the NSDI
National Agency of State Property (NASP)	<ul style="list-style-type: none"> • Managing and disposing of state property • Transferring state property for use • Exercising powers of a partner/shareholder in enterprises with state ownership • Managing issues related to the agreement, registration, production, storage, usage, and expert utilization of strict accounting forms • Facilitating management of the property of interested individuals and legal entities, including through the electronic auction website
Levan Samkharauli National Forensics Bureau	<ul style="list-style-type: none"> • Involved in land privatization through land valuation and deriving the initial prices for auctions • Participating in landowners' disputes regarding overlapping land plots and/or land valuation
Revenue Service of Georgia	<ul style="list-style-type: none"> • Collecting land tax
Local governments	<ul style="list-style-type: none"> • Carrying out legalization of deficient documents for land registration

Source: Authors.

84. **The distribution of roles among central and local governments in land management and administration is not efficient.** The inefficiency in distribution of roles arises in case of pasture management and spatial planning. Pasture management is not decentralized as pastures are owned by the NASP under the Ministry of Economy and Sustainable Development of Georgia. However, it is not clear who is responsible for their management. The current management and administration approach led to the number of challenges in this sector. Due to the gaps in the system of renting of the state-owned pastures, most farmers are using pastures informally which results in overgrazing. As for the spatial planning, the roles and responsibilities of local government for spatial planning are not clearly defined. Proper land administration and management in the context of spatial planning requires the involvement of local authorities and strict division of responsibilities between local and central government to avoid duplicating the activities (Georgian PRC 2020). Stakeholders recognize a

need for review and adjustments of the legal framework as well as the adjustments in execution of currently defined roles and responsibilities.

- **Short-term recommendation (1):** Clearly define the roles and responsibilities of stakeholders involved in land management and administration.
- **Short-term recommendation (2):** Strengthen the capacities of municipalities to increase local stakeholder participation in land management and administration.
- **Medium-term recommendation:** Develop a unified strategic document that outlines the government’s vision regarding the land sector, its objectives, outcomes and outputs, and develop a monitoring and evaluation system to measure progress against targets.
- **Long-term recommendation:** Decentralize management responsibilities between central and local governments to improve the efficiency of land management.

F. LEGAL FRAMEWORK FOR LAND MANAGEMENT AND ADMINISTRATION

85. **Various land-related issues are currently regulated by separate and sometimes inconsistent legal acts creating a complicated legislative framework and leading to inefficient land management.**

A review of the legislative framework for land management reveals the absence of a unified document, such as a Land Code, that would include regulations for all types of land bodies (Chitanava 2020). This leads to inefficient land management and prevents the development of the land sector. The main legal documents that regulate specific aspects of land-related matters include the following:

- ***Law on Agricultural Land Ownership*** defines agricultural land as “land parcel registered in NAPR as agricultural land used for livestock and plant production purposes,” and includes household land as well.
- ***Law on State Property*** states that pastures and livestock grazing routes are not subject to privatization unless they have been leased by the local government prior to July 30, 2005, together with the attached building. These pastures are permanently used by neighboring villages; however, they are legally owned by the State (Parliament of Georgia 2010b).
- ***Law on Fundamentals of Spatial Planning and Construction Development*** regulates spatial planning in Georgia and defines the planning process and authorized agencies.
- ***The Forest Code of Georgia*** recognizes forest land as an open area of land inside a forest boundary such as land used as grassland or pasture; special purpose land; land that comprises marshes, rocks, and rocky ground located in a forest or other land not used for afforestation; infrastructure necessary for the implementation of forestry measures (forest roads, timber yards, landings), and others. (Parliament of Georgia 2020).

86. **Some core legal documents pertaining to land management require updates (e.g., Law on Soil Protection) or expansion of scope. The current legal framework should be updated to include such concepts and their applications as for example: (i) the status of community land ownership,**

including both use rights and the specific rights of rural groups, and (ii) the legal status of internal roads passing through privately owned properties in commercial areas. This is particularly challenging in the context of village pastures. The community groups do not have use and ownership rights of pastures potentially resulting in alienation of these pastures.

- **Medium-term recommendation:** Develop unified and integrated Land Code that serves as a basis for the legislative framework on land-related matters and defines the responsibilities between central and local governments.
- **Long-term recommendation:** Define the status of group/community land especially for village pastures, including both use rights and the specific rights of rural groups. Under the current framework, cooperatives can be established, and they can be given the right to use village pastures with associated responsibilities to maintain the land resource.

G. AGRICULTURAL PUBLIC SPENDING

87. **There is scope in Georgian agricultural public spending to be re-oriented and support improvements in competitiveness, sustainability, and climate resiliency as per GoG strategic objectives and aspirations.** Since 2010, public expenditure on agriculture has increased significantly, both in absolute terms and as a share of total public expenditure.³¹ The recent agricultural public expenditure review (WBG 2020a) pointed to three main areas that the Government of Georgia could take into account when considering its support to the sector.

1. Economic composition of agricultural spending: public versus private goods

88. **A key dimension in understanding the effectiveness of public expenditures is the share of public spending directed to support the production of public goods and services (i.e., research and development, extension services, and irrigation infrastructure) and the share of spending dedicated to subsidizing the provision of private goods and services (i.e., input or energy subsidies).** Public spending on private goods directly benefits individuals (Morris et al 2020). Empirical evidence shows that a shift of ten percentage points of total agricultural public spending from private to public goods — while keeping total expenditure constant — leads to a five percent increase in value-added per capita. Alternatively, by keeping the composition of expenditure constant, such an increase would require a corresponding agricultural expenditure increase of 25 percentage points (Morris et al 2020). In Georgia, during the period 2010-2019, the composition of spending fluctuated among categories, with the share of subsidies in total agricultural spending increasing over time, and accounting for the largest share of agricultural spending, on average 21 percent (WBG 2020a). Most of these subsidies are interest rates subsidies (i.e., private goods) that have been credited with most likely having contributed the most to the increase of private sector investment in agriculture (by facilitating bank extension of credit to the sector) but have come at a fiscal cost.

³¹ For the period 2010-2019 the average annual rate of growth for agricultural spending was ten times faster than that of total public spending. It has accounted for two to three percent of total expenditure since 2012 (World Bank 2020a).

2. Functional analysis of agricultural spending: high-return public investments

89. **The most important spending category in total agricultural spending in Georgia is agriculture development programs.** As of 2019, spending in this category accounted for 44 percent of total spending. The corresponding shares for irrigation and drainage; food safety, veterinary and plant protection; and wine support program were 27, 21 and 5 percent respectively (World Bank 2020a). Investments in I&D support sustainable productivity growth and improved resilience, and since the end of 2012, spending on this type of infrastructure has increased six times from 6.2 million GEL to 43 million GEL in real terms. As a result, irrigated agricultural land area and area covered with drainage have increased (World Bank 2020a). Spending on food safety and veterinary control, which is another area supporting growth and resilience, is particularly low (WBG 2020a).

90. **Within public goods it is important to ascertain how much is spent on agricultural research and development, which has been proven to have high returns on investment.** The latest OECD Agricultural Policy Monitoring and Evaluation study reports that from the overall US\$102 billion of expenditure (in the form of general services for the agricultural sector), which includes US\$76 billion of public investments in research and development, biosecurity and infrastructure just six percent is on agricultural research and development (OECD 2021a). Meanwhile in Georgia, the share of spending allocated to research and development was the smallest, and averaged two percent of total spending during 2014-2019, which is less than the OECD reported average (OECD 2021a).

3. Supported-programs composition

91. **Since 2012, the Government of Georgia has prioritized agricultural sector development.** Major initiatives include launching more than ten agricultural support programs managed by what has become the Rural Development Agency (RDA), the mission of which is to contribute to the competitiveness of the agricultural sector and the sustainable production of agricultural goods through introduction of international food safety standards. The RDA programs account for around 45 percent of total agricultural spending in the country, and most of RDA resources (67 percent) are used for financing the Preferential Agro-credit Program.³² Around 11 percent of RDA budget is spent on the Plant the Future Program³³ with 9 percent going to each program on agro-insurance and co-financing of agro-processing and storage enterprises. Furthermore, RDA's programs mostly support primary

³² Preferential Agro-credit Program was implemented in 2013 with the intention to support primary production, processing, and storage by providing legal and natural entities with cheap, long-term, and preferential credit. Agro-credits are issued by commercial banks and financial institutions involved in the project, in compliance with the terms and conditions set by the RDA. Through the program, the government subsidizes interest rates of the following financial products: (a) current assets; (b) fixed assets; (c) preferential agro leasing; and (d) the state program Produce in Georgia.

³³ Plant the Future Program, initiated in 2015, is designed to improve the effective use of agricultural land plots in Georgia through subsidizing the planting of perennial crops. The program's goal is to substitute imports and increase the export potential. Co-financing is carried out in three different components: (a) co-financing of perennial orchards; (b) co-financing of nursery gardens; and (c) co-financing for the installation of anti-hail systems and/or arrangement of a well/borehole pumping station. The component of co-financing perennial orchards includes provision of financial and technical assistance to beneficiaries. Orchards eligible for co-financing differ across regions and the program determines the types of perennial plants that may be planted in different regions of Georgia.

agricultural production and only a few of them target processing and value-added (World Bank 2020a). While this is a common pattern in countries' agricultural spending, it may be a potential tool to increase agricultural value-added.

CLIMATE RESILIENCE AND MITIGATION

A. CSA KNOWLEDGE TRANSFER ACROSS AGRICULTURAL VALUE CHAINS

92. **To accelerate the transition to CSA, smallholders must use farming technologies that are readily available and accessible in Georgia.** Farmers need incentives and enabling conditions to make transformations on the ground, which must be facilitated by institutions and policies including investments in agricultural research and innovation systems. Partnerships among governments, research institutions, private sector technology partners, and farmers are particularly important for the production and dissemination of information related to technology options and management methods. Development of CSA requires intensive communication among farmers, authorities, and agri-businesses.

- **Short-term recommendation (1):** Create /reinforce regional communication platforms to facilitate the adoption of agronomic practices by farmers. Support demonstration plots and farmer field schools that allow farmers to better understand CSA good practices.
- **Short-term recommendation (2):** Support knowledge transfer (adequate agronomic and veterinary practices, targeted vocational training, and technical assistance services for business development and exports) based on specific market demands or market-driven value-chain strategies.
- **Medium-term recommendation:** Develop incentive programs to increase private sector research and development on inputs and technologies adapted to Georgia's varied agro-ecosystems. Promote innovation partnerships with research institutions, private sector technology partners, and farmer groups, to identify new ways to bring CSA technology to a larger audience (CIAT and World Bank. ND).
- **Long-term recommendation:** Explore the option of payments for environmental services (or payments for ecosystem services), especially if land tenure issues are addressed in the country. Such an arrangement would be useful to support overall investments and incentivize farmers to change practices.

93. **A gender-responsive approach to CSA would need to be taken.** This means that the needs and priorities of men and women will need to be recognized and adequately addressed in the design and application of CSA so that both men and women can equally benefit. Beyond understanding the gender balance in the local context and developing practices that meet both men and women's needs given their preferences, constraints, and potential benefits, this also means giving attention to gender issues in CSA policymaking and building an evidence base on gender in CSA (Nelson and Huyer 2016).

B. AGROMETEOROLOGICAL AND WATER ACCOUNTING CAPACITY

94. **The agrometeorological and water accounting capacity of Georgia is not adequate to respond to emerging climate risks in the agriculture and water resources sector.** While the Department of Hydrometeorology is responsible for collecting data on river discharges and meteorological conditions throughout the country, it currently collects little real-time data on river discharges (MEPA 2017b). Management and further development of water resources is thus constrained by a lack of national hydrological data collection and analysis systems. As part of its service delivery systems, GHMD should further advance and modernize its capability for monthly and seasonal long-range weather forecasting to provide detailed and accurate representation of localized extreme climate events (WBG 2019).

- **Medium-term recommendation (1):** Invest and improve the hydrometeorological and water accounting capacity of the National Environment Agency of Georgia and Georgian Amelioration, as well as strengthen farmer capacity to more accurately measure and monitor weather patterns for improved agriculture decision support.
- **Medium-term recommendation (2):** Invest in the generation, processing, and dissemination of market and agro-climatic information to facilitate decision-making and risk management in agriculture and agri-business, in partnership with the private sector.
- **Medium-term recommendation (3):** Expand farmer support services to crop insurance and incentivize farmers to use agricultural insurance.

C. LAND DEGRADATION AND SOIL HEALTH

95. **There are no official statistics on the degraded land area in Georgia, and accounting and monitoring of losses of fertile arable lands is practically non-existent.** However, it is estimated that more than 100,000 hectares of land is degraded in Georgia (ISET Policy Institute 2020).

96. **Land degradation has a direct effect on the country's economic health.** The causes of land degradation in Georgia are numerous and include: overgrazing; lack of soil protection measures; implementation of agricultural activities in areas at risk of natural disasters; improper land rotation practices; excessive water consumption; loss and/or reduction of forest cover; exploitation of forest resources; post-harvest clearing fires; absence of a legislative base for soil protection; and unclear division of responsibilities between stakeholders (ISET Policy Institute 2020). According to World Bank estimates, land degradation directly reduces national GDP by 0.7 percent and GDP in agriculture by 8 percent yearly. Natural hay meadows and pastures comprise about 1.91 million hectares in Georgia, of which a significant amount is degraded due to unsustainable agricultural practices and overgrazing. Soil degradation resulted in a productivity reduction of about 23 percent and is estimated at about 7 tons of dry matter per hectare. This loss of pasture productivity (valued with a market price of a substitute) generates total annual costs of around US\$59 million (WBG 2020e).

97. **Soil degradation is another factor affecting agricultural productivity.** Soil fertility has declined over time due to lack of technologies, capital, and basic skills and practices for soil management (MEPA 2015). Poor quality soils are mostly concentrated in the eastern parts of the country where overgrazing and reduced precipitation have led to wind erosion. The annual land productivity loss has been estimated at 1.8 percent with a total annual agricultural productivity loss of about US\$11.9 million (WBG 2020e).

- **Short-term recommendation (1):** Increase farmers' awareness on the importance of soil protection by showing the impact of soil quality on agricultural productivity and losses associated with land degradation.
- **Short-term recommendation (2):** Clearly define central government, municipality, and private sector responsibilities regarding soil protection and pasture management.
- **Medium-term recommendation (1):** Develop incentive mechanisms for agricultural producers to adopt soil protection measures.
- **Medium-term recommendation (2):** Improve data collection regarding land degradation and ensure its regularity.
- **Medium-term recommendation (3):** Strengthen soil monitoring and soil health-related educational programs for farmers in areas where soil conditions are known to be severely degraded from agricultural activities.

98. The institutional set up, specifically the concentration of many of the agencies governing all three sectors and the environment under one ministry, MEPA, facilitates the implementation of actions and reforms in these identified policy areas (Table 5).

Table 5: Summary of roles and responsibilities of state & local agencies

Agency	Role & responsibility	Responsible for identified policy areas
MEPA (various departments)	Oversees the implementation of the State policy in the areas of environmental protection, agriculture, and rural development.	<ul style="list-style-type: none"> • Realign agricultural public support. • Improve institutional capacity in integrated water resources management. • Improve functioning of land markets.
Regional Information Consultation Centers (under MEPA)	Provide agricultural extension & advisory services.	Improve knowledge transfer across agricultural value chains, including on climate smart agriculture.
State Laboratory of Agriculture in Georgia	Responsible for diagnosis of and development of measures against animal and plant diseases.	Under recommendation area, diversify agri-trade markets and commodities, contribute to the development of efficient systems in food/feed safety, and veterinary and plant protection.
MEPA and RDA	RDA is the management and implementation agency for agricultural support programs.	<ul style="list-style-type: none"> • Increase integration of agricultural value chains. • Expand access to finance for agriculture.
GNERC	Reviews and approves tariffs charged by Georgian Amelioration (from 2023).	Reform I&D tariff structure.
Georgian Amelioration	In charge of O&M and development of I&D schemes; is held by the National Agency for State Property Management, a division of Ministry of the Economy; and reports to MEPA.	Improve I&D infrastructure.
Georgian Amelioration WUO Support Unit, and Water User Organizations	This sub-unit is in charge of establishment of WUOs and supporting WUOs (or farmers) to use sustainable on-farm practices; WUOs will be run by local water users but is a legally recognized entity.	Adopt efficient on-farm water management practices.
NAPR (under Ministry of Justice), and local governments	Carries out land registration, and coordinates creation, operation, and development of NSDI. Local governments carry out legalization of deficient documents for land registration.	Speed up property registration process.

Agency	Role & responsibility	Responsible for identified policy areas
MEPA Department of Hydrology & Land Management, and Agrarian Committee of the Parliament of Georgia	<p>Department of Hydrology & Land Management develops water and land policy, strategic documents, and regulations.</p> <p>Agrarian Committee develops regulatory framework for agriculture, land management and administration, and supports land policy development.</p>	Develop policy and legal framework for land management and administration.
Revenue Service of Georgia, and Levan Samkharauli National Forensics Bureau	<p>Revenue Service collects land and all other taxes.</p> <p>Levan Samkharauli National Forensics Bureau is involved in land privatization through land valuation and deriving the initial prices for auctions and participates in landowners' disputes regarding overlapping land plots or land valuation.</p>	Improve land valuation and taxation practices.
MEPA National Agency for Sustainable Land Management and Land Use Monitoring	National Agency for Sustainable Land Management and Land Use Monitoring carries out state monitoring of land use.	<ul style="list-style-type: none"> • Develop land inventory including land balance, and land monitoring. • Reduce soil degradation.
National Agency of State Property	Manages state property.	Ensure efficient management of state property and support its privatization.

Source: Authors.

IV. MOVING FORWARD TOWARD GROWTH AND SUSTAINABILITY

99. **Agriculture plays a vital role in the economy of Georgia despite the relatively small size of the sector.** Agriculture is the country’s largest employer and makes a significant contribution to exports even though agriculture contributes a modest share to total GDP. The Government of Georgia has made substantial efforts to increase support to the agriculture sector and recognizes that actions are urgently needed to increase competitiveness, sustainability, and climate resilience and mitigation as a way of driving growth in the sector.

100. **Securing sustainable growth will require increased investments in agriculture, water, and land sector development.** Land and water are finite resources and factors of production on which agricultural production and productivity depends. Resolving the sweep of agriculture sector constraints associated with top export concentration, farm structure, knowledge gaps, and weak agrologistics is a necessary but insufficient condition for improving sector performance. Simultaneous interventions will be required in addressing core sector constraints in the water and land sectors. The availability and efficient use of water resources in a reliable, timely, and flexible manner for farmers and functioning agricultural land markets are critical for sector growth. Improved land management and administration underpins sustainable and productive management of land resources, provides secure land ownership, and supports investments in agricultural production. The timing is even more urgent when factoring in increasing climate change variability and risks. Although all policy areas identified in this Synthesis Report are important, some of them are deemed more urgent than others, and some are more technically ready with solutions sufficiently in place. Figure 7 provides an overview of policy areas connected with agriculture, water, and land sectors as they were sorted for the elements of “urgency” and “technical readiness” by GoG sectoral stakeholders.³⁴

³⁴ As discussed during (virtual) technical workshop carried out on May 19, 2021, and follow-up discussions with stakeholders between June and August 2021.

Figure 7: Matrix of policy areas

	Urgent	Technically ready
Agriculture	<p>Expand access to finance for agriculture <i>(competitiveness)</i></p> <p>Diversify agri-trade markets and commodities <i>(competitiveness)</i></p>	<p>Improve knowledge transfer across agricultural value chains, including on CSA <i>(competitiveness, climate resiliency)</i></p> <p>Increase integration of agricultural value chains <i>(competitiveness)</i></p>
Water	<p>Reform I&D tariff structure <i>(sustainability)</i></p> <p>Improve institutional capacity in water resources and irrigation management at the national and local levels <i>(sustainability)</i></p> <p>Improve I&D infrastructure <i>(competitiveness, climate resiliency)</i></p>	
Land	<p>Improve functioning of land markets <i>(competitiveness)</i></p> <p>Develop policy and legal framework for land management and administration <i>(sustainability)</i></p> <p>Improve land valuation and taxation practices <i>(competitiveness)</i></p> <p>Develop land inventory including land balance, and land monitoring system <i>(sustainability)</i></p> <p>Reduce soil degradation <i>(climate resiliency)</i></p>	<p>Complete national systematic registration <i>(competitiveness)</i></p>

Source: Authors.

Note: Figure 7 is based on results of (virtual) technical workshop carried out on May 19, 2021, and follow-up discussions with stakeholders between June and August 2021.

101. **Even though some areas were not sorted for urgency and technical readiness, they are still relevant transversal policy areas to enable the transition to the vision, and they include:**

- **Realigning agricultural support can help the government achieve its goals for the sector.** Public services such as research, extension, and training need more budget support; and measures to promote private investment through support for subsidized loans and insurance premiums need to be re-formulated.
- **Monitoring and evaluating progress is necessary for sustaining the growth across all sectors.** The establishment of a monitoring and evaluation framework for public programs and policies would help to strengthen the performance and effectiveness of government programs by providing useful feedback on program outcomes and outputs, detecting implementation difficulties, and identifying actions to overcome them. This in turn would support the adjustment of policy design and identify the key elements of spending programs such as the objectives, priorities, and expected use of resources to achieve targets.
- **Increasing human resources capacity is an investment in the citizens of Georgia.** Strong human capital is necessary to implement these changes. Investments in capacity building will ensure that staff are properly skilled to perform responsibilities at the policy setting, implementation, and monitoring level, and service providers (public and private) will be well-equipped.
- **Investing in women is a priority with implications beyond just agricultural productivity and rural development.** Women's active participation in the economy, and ownership and control of and access to of productive assets contributes to economic development, to poverty reduction, and better life outcomes for their offspring.

102. **The government of Georgia has all the potential and the tools at hand to accelerate its agricultural transformation agenda.** This Synthesis Report has outlined the rationale for an agriculture-water-land nexus approach to making progress toward a vision for the future of agriculture by 2030 in Georgia, examined constraints and opportunities across all three sectors, and identified policy actions to jointly address these interconnected challenges and support Georgia in moving the agriculture sector forward including effective water and land management. The sorting of identified policy areas between "urgent" and "technically ready," and within those areas the outlining of phased recommendations for the short-, medium-, and long-term is meant to help facilitate implementation. These recommendations can be taken up in the context of GoG's expressed need for an investment plan for the sector, and/ or be pursued by any main sectoral actors (public and private sectors, civil society, and development partners). The process of developing the Synthesis Report as well as the accompanying sectoral studies was underpinned with inclusive stakeholder consultations and an iterative process that has hopefully set the stage for a new, more joint and collaborative dialogue with the government in securing a strong future for agriculture sector in Georgia.

CASE STUDY ON DAIRY MILK SUB-SECTOR – SUCCESSFULLY INTEGRATED BUYER-PRODUCER EXPERIENCE (RAPDI 2021)

Industry Description: There has been strong competition for quality fresh milk among a wide range of downstream actors along the dairy value chain. Recently adopted Government of Georgia regulation on the labelling requirements of dairy products, along with increased consumer demand for quality dairy products, has contributed to an increased demand for fresh milk. Buyers of fresh milk are large-scale processors, middlemen (aggregators), and small- and medium-scale processors. Processors transform milk into assorted dairy products. Large- scale processors mainly have been involved in the production of cottage cheese, fresh milk, sour cream, and other dairy products, while small- and medium-scale processors mainly have been involved in cheese production.

Coordination/Cooperation Arrangements – Large-Scale Processors: Demand for dairy products produced by large processing companies has been stable and high. Also, they have sufficient market power to negotiate terms of payments with downstream actors and have not faced significant difficulties in the collection of accounts receivable. Large dairy processors primarily transact with bigger dairy farmers. Large suppliers can deliver consistent quality products at large volumes. Also, the transaction costs associated with negotiation, monitoring of quality, and milk collection are less if the company works with a small number of large farmers. To engage with large dairy processors, dairy farmers must make investments in livestock and farm infrastructure such as milking machines, milking parlors, and cooling tanks. Small-scale farmers cannot afford such investments, do not organize to work collectively, and hence have been excluded from the opportunity to work directly with large processors.

Transactions are based on formal written contracts. Contracts between parties specify responsibilities of the parties, including quality and volume requirements, terms of payments, penalties for the breach of responsibilities, collection periods of product, and dispute resolution. As a rule, the duration of contracts is for one year, and contracts are renewable. The contracts specify prices and provide incentives to dairy farmers in terms of premiums for the quality and the volume of supplies above the established thresholds. The contracts do not consider provision of any inputs to farmers and represent purely commercial contracts between a product supplier and a buyer. During the inspections of dairy farms that take place on a regular basis, the company representatives provide recommendations to dairy farmers on various improvements on an as-needed basis.

Coordination/Cooperation Arrangements – Small- and Medium-Scale Processors: In the case of small- and medium-scale processors, transactions with small- and medium-scale farmers have been based on trust through informal agreements, and their sourcing of fresh milk is through cash-based, spot transfers with dairy farmers either directly or through middlemen, aggregators. Given the high competition for fresh milk, some companies provide dairy farmers with access to livestock feed to try to secure an uninterrupted supply of fresh milk. In contrast to large-scale processors, demand for dairy products produced by small- and medium-scale processors has not been stable. Volatility in

demand and frequent delays of payments by downstream actors to dairy processors, has led to frequent delays of payments to farmers by small- and medium-scale processors. Small- and medium-size dairy processors lack the human and financial capacity to negotiate terms and conditions of the contracts, monitor production practices and quality at the producer level, and ensure contract compliance.

One of the large dairy processing companies, in addition to sourcing fresh milk directly from large dairy farmers, has been sourcing fresh milk through company-established milk collection centers.

Several years ago, due to the absence of farm marketing organizations and only a few large dairy farms, this company established milk collection centers in major dairy production regions throughout the country. This outsourcing approach allows the processor to reduce transactions costs and ensure quality of raw material while allowing small- and medium-scale farmers to participate in formal markets. This model for milk collection centers is conducive to replication to increase proliferation of supply chain mechanisms that include smallholder producers. Providing support to small- and medium-scale milk collection centers to upgrade their practices to qualify as suppliers to the large-scale processors would lead to greater availability of quality and safe fresh milk and improve the cash in-flows of milk collection centers and their small- and medium-scale farmer suppliers. Additional support to develop the dairy value chain could include development and adoption of uniform marketing standards along with promotion and introduction of quality-based pricing schemes.

CASE STUDIES ON MEAT AND WINE GRAPES SUB-SECTOR – *CONTRACT FARMING EXPERIENCE* (RAPDI 2021)

MEAT (BEEF)

Industry Description: While livestock sales are free from regulations, beef sales require livestock to be slaughtered at registered slaughterhouses before it enters the market. Primary cattle beef production is concentrated among small-scale producers. A few medium- and large-scale beef cattle farmers have emerged, but their share in the sector is still not significant. High inefficiencies, especially in terms of feeding and fattening of the livestock, characterize livestock farming.

Coordination/Cooperation Arrangements: Cattle and beef markets are characterized by cash, spot market transfers involving many small, specialized, and organized middlemen. There are no established grades; prices are negotiated one-on-one; and there are mainly informal agreements.

Most slaughterhouses in the country provide only slaughterhouse services to cattle farmers and middlemen. Sourcing of cattle is based on simple purchasing agreements and there are no formal contracts between sellers and buyers. All suppliers are paid immediately upon delivery of the cattle. Slaughterhouses do not provide any production inputs to the suppliers. The main challenge of sourcing cattle from all categories of suppliers has been the quality (cattle sold by suppliers are not in a condition to be slaughtered in terms of weight).

Two interviewed buyers of cattle have had disappointing experience with contract farming: One buyer, a processing company, was involved in the production of high-value meat products. The other buyer operated a slaughterhouse, who in addition to the provision of slaughtering services to livestock farmers, was also involved in sourcing of live cattle from farmers for further fattening.

The first buyer, the processing company, has fully vertically integrated operations, including primary production, research and breeding, slaughterhouse operations, processing, logistical/distribution services, and retail sales. The company also started an out-grower scheme with the objective to promote sound beef farming practices, improve availability of homogeneous quality products, and to increase capacity utilization of processing facilities. The scheme included 20 farmers. The company supported scheme participants with the establishment of sophisticated farm infrastructure, and with obtaining bank loans. It also provided farmers with the livestock, free veterinary and breeding services, as well as a market outlet for fattened cattle. In addition, the company provided to the farmers, farm machinery for livestock feed preparation, and funds for cattle husbandry activities, as well as it paid for the delivery of cattle with the premiums. Based on the agreement, all farm infrastructure would have transferred under the farmers' ownership in a seven-year period. Contrary to expectations, 17 out of 20 farmers failed on their commitments to deliver cattle to the company. Two main factors contributed to the failure of this out-grower scheme: poor screening and selection of scheme participants, and provision of financial support to farmers without attaching significant responsibilities.

The second buyer, the slaughterhouse operator, entered into formal written agreements with livestock farmers. The slaughterhouse operator supplied livestock farmers with the feed and grain milling services free of charge and allowed participation in transactions at the livestock market without charging any fees. Livestock farmers reportedly engaged frequently in side-selling activities, and the slaughterhouse operator terminated the contractual relations with farmers and collected accounts receivable from indebted farmers through informal channels.

Livestock farmers expressed interest in contract farming. Aspects of contract farming that were attractive for them included predictable markets, improved availability of feed, and the possibility to concentrate on farming activities.

WINE GRAPES

Industry Description: The Government of Georgia operates the “Grape Price Subsidy Program”, and the wineries participating in the program source most of their needs from small- and medium-scale farmers. Farmers sell grapes to individual consumers as well as to wineries. Individual consumers buy grapes from farmers and make wine for their own consumption and that of their extended household. The quality of grapes sold to individuals reportedly has often been superior to that of grapes supplied to the wineries.

Coordination/Cooperation Arrangements: Transactions between wine grape growers and wineries are based on spot transfers. Grape growers sell in spot markets, and transactions between buyers and

sellers depend only on price and do not involve any other commitments. A key challenge for wineries has been that they do not always fulfill their sourcing plans due to inability to obtain the desired quality of grapes (e.g., in terms of sugar content, mold, and consistency) from small farmers. To address this challenge, wineries have established cooperation arrangements with large grape growers. Transactions have been based on trust and informal agreements. In few cases wineries advance cash to the most trusted farmers so that they can finance agronomic activities. Some wineries also have been vertically integrated to have more control over grape production and harvest.

Based on focus group discussions with grape growers and individual interviews with wineries, contract farming was introduced by one of the wineries several years ago. Farmers were provided with production inputs and had committed to deliver specific volumes and quality of grapes. However, commitments were defaulted upon. This was a negative experience in the sector and has caused skepticism about contract farming.

CASE STUDY ON HAZELNUT SUB-SECTOR – *PRODUCER ORGANIZATION EXPERIENCE* (RAPDI 2021)

Industry Description: There has been high competition among buyers for quality hazelnuts. Buyers of hazelnuts are processing companies, middlemen, and aggregators of all sizes. Hazelnuts are produced by various types of growers, although production is concentrated among small- and medium-scale growers.

Coordination/Cooperation Arrangements: Transactions between hazelnut growers and processing companies have been based on spot transfers and involve cash. As a strategy to attract hazelnut growers and source more quality hazelnuts, some processing companies have introduced storage services for medium- and large-scale farmers and farmer groups, where growers deliver hazelnuts after the harvest. Processing companies conduct an analysis of delivered products on amongst others moisture content, extraction rate, and internal moldiness. Terms and conditions offered by processors are favorable for farmers who opt to sell their production off-season and to generate higher incomes. Processing companies' responsibility includes to maintain the quality of product throughout the storage period. Farmers who store hazelnuts at the processors' storage facilities are free to decide when, where and to whom to sell their product, and are subject to storage service fee payment only after hazelnuts either leave the storage facility or change ownership. In certain cases, processing companies do not charge any service fees if the farmer decides to sell their product to them.

Farmers who are members of the Georgian Hazelnut Growers Association (GHGA) market their production through GHGA that provides a range of services, including advisory, post-harvest handling (de-husking and drying), and storage. In 2021 GHGA designed a special program in cooperation with a commercial bank to improve access of growers to quality production inputs under favorable terms and conditions. Moreover, GHGA also provides incentives for growers in terms of premiums for the quality of delivered hazelnuts above the established thresholds. Transactions

between growers and GHGA or GHGA-linked buyers involve purchasing agreements that are simply based on weight and price.

Other buyers of hazelnuts include middlemen and collectors. Sales to middlemen take place in the spot market, and transactions do not involve any long-term commitments and depend only on price. Middlemen are mobile, village-based operators, and procure hazelnuts from local growers. They are not subject to any regulations (i.e., food safety, traceability, taxes, etc.), they do not have adequate storage facilities, they do not maintain the quality of hazelnuts, and they use weights and measurements that are not standardized. Despite these shortcomings, they are useful in that they facilitate linkages between small-scale farmers and hazelnut processors. As a strategy to compete with the middlemen, some processing companies intend to establish small-scale storage facilities in the proximity of major hazelnut production areas and establish direct linkages with small-scale growers. Small-scale growers with their small volumes of output find it easier to sell their production to middlemen operating in the same village rather than travel relatively long distances to processing facilities.

Neither processing companies nor hazelnut growers expressed interest in contract farming arrangements. Currently followed transaction practices were deemed satisfactory by both sides.

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