Food and Agriculture Organization
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Regional TCP
on Empowering Smallholders
and Family Farms
(TCP/RER/3601)

Smallholders and family farms in Armenia

Country study report

2019

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Abbreviations and acronyms

ADA	Austrian Development Agency
AMD	Armenian Dram
ANAU	Armenian National Agrarian University
BSC	Business Support Center
CARD	Centre for Agribusiness and Rural Development
CBA	Central Bank of Armenia
CEDAW	Convention on the Elimination of all forms of Discrimination Against Women
CEE	Central and Eastern Europe
CIS	Commonwealth of Independent States
CJSC	Closed Joint Stock Company
CPF	Country Programming Framework
CSO	Civil Society Organization
EAEU	Eurasian Economic Union
EDRC	Economic Development and Research Center
EN	European Standard
ENPARD	European Neighbourhood Programme for Agriculture and Rural Development
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
GDP	Gross Domestic Product
GIZ	The Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH
GoA	Government of Armenia
HACCP	Hazard Analysis and Critical Control Points
ICARE	International Center for Agribusiness Research and Education
IFAD	International Fund for Agricultural Development
ILC	Integrated Living Conditions
ILCS	Integrated Living Conditions Survey
ILO	International Labour Organization
IMF	International Monetary Fund
IOM	International Organization for Migration
IPSC	Institute of Political and Sociological Consulting
ISO	International Organization of Standardization
MASC	Marz Agricultural Support Center
MCC	Millennium Challenge Corporation
MNP	Ministry of Nature Protection
MoES	Ministry of Education and Science
NSS	National Statistical Service of Armenia
R&D	Research and development
RA	Republic of Armenia
RAU	Russian-Armenian University
RI	Regional Initiative
SC	Supreme Council
SCREC	State Committee of the Real Estate Cadastre adjunct to the Government of Armenia
SDC	Swiss Agency for Development and Cooperation

SDG	Sustainable Development Goals
SNCO	State Non-Commercial Organization
TCP	Technical Cooperation Programme
UCO	Universal Credit Organization
UMCOR	United Methodist Committee on Relief
UN	United Nations
UNDP	United Nations Development Programme
UNECE	United Nations Economic Commission for Europe
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
USD	United States Dollar
USDA	United States Department of Agriculture
USSR	Union of Soviet Socialist Republics
WUA	Water Users Association
WB	World Bank

Executive summary

The current study on smallholders and family farms in Armenia is prepared within the framework of the FAO Regional Initiative on Empowering Smallholders and Family Farms for Improved Rural Livelihoods and Poverty Reduction. The initiative is carried out in seven countries in Europe and Central Asia: Albania, Armenia, Georgia, Kyrgyzstan, Republic of Moldova, North Macedonia, and Tajikistan.

In all seven countries, smallholders and family farms represent a potentially key resource to achieving sustainable economic, social and environmental development. However, most of them are often not economically viable and thus remain the poorest and most vulnerable part of the population.

The objective of the Regional Initiative and the current country study is to create an inclusive knowledge platform on the needs, challenges and constraints for smallholders and family farms and on the policies and their preconditions for targeting these needs in each of the FAO programme countries. These will further be used to strengthen policy formulation in support of smallholders and family farms in the seven countries and in the region.

Structural analysis and qualitative description of the sector

Currently in Armenia there is no formal definition of smallholder or of family farms, and it is generally accepted that all farms belonging to physical (natural) persons are family farms. At the same time, in most cases family farms also can be considered as smallholder farms, given the size of owned/cultivated land, which is smaller than 3 ha for around 89 percent of household farms in Armenia.

Farmers received land ownership after land privatization in 1991, when, according to estimations, around 320 000 to 340 000 family farms were created. Nowadays, according to the Agricultural Census of 2014 (NSS, 2016a) there are 360 611 household holdings involved in agricultural production.

Farms in Armenia are small. Around 42 percent of family farms are smaller than 0.5 hectares. The average farm size of family farms in Armenia is 1.48 hectares. At the same time, the farms are highly fragmented, with around 30 percent of the land belonging to family farms consisting of more than six land plots. In line with the prevalence of small-scale family farms, the role of family farms in the agricultural sector of Armenia is very significant; roughly 97 percent of the country's gross agricultural output (see Table 5) is produced by family farms, including around 99.5 percent of plant-growing produce and around 92 percent of animal husbandry produce. There is no data on the contribution of family farms to fishery and forestry sectors. The only available data is about area of the basins used for fish farming, where 76 percent of the total area of the basins are managed by family farms.

Agriculture is one of the most important economic sectors of Armenia. During 2005-2015, it comprised around 18 percent of the national gross domestic product (GDP), and each year since 2010 has had contributed significantly to GDP growth. Agriculture is an important source for exports in Armenia,

accounting for more than 20 percent of total exports during recent years (see Table 11). At the same time, agriculture is considered an important income source, and according to official statistics, it provides employment to 35.3 percent of the employed population of Armenia (2015), of which 54 percent are women (NSS, 2016d).

In total, there are 2 045 500 ha of agricultural land in Armenia. This comprises 68.8 percent of the country's total territory, with about 0.15 ha of arable land per capita. As of 2016, 21.3 percent of agricultural land belongs to family farms. At the same time, the level of uncultivated agricultural lands is worrisome; as of July 2016, the majority of land belonging to state or community – around 66.9 percent of the total agricultural land – was neither rented nor used (SCREC, 2016). Furthermore, according to the Agricultural Census of 2014, around 33 percent of arable land belonging to family farms and commercial organizations also is not cultivated.

The small scale of production and the low level of specialization hinder smallholders in forming durable links within value chains. As a result, the cases of long-lasting cooperation between smallholders and their sales channels are very few, and mostly "traditional" value chains prevail. At the same time, vertical and horizontal integration through cooperatives, farmer groups or associations are not common.

Smallholders in Armenia have access to several sources of funding: commercial credits and loans, grants, government subsidies, remittances, and personal savings.

In terms of their availability for smallholders throughout Armenia, the services of financial institutions can be considered satisfactory; however, the accessibility of their services, especially loans, remains problematic. This is mainly because of collateral and guarantor requirements and high interest rates; additionally, there exist only a limited number of products with flexible repayment schedules and grace periods. For women, access to loans is especially severe.

Local production of fertilizers, agrochemicals, animal health and treatment pharmacies in Armenia are nearly absent. Some locally produced organic fertilizers are available, though their production is not set on a wide scale. Although almost all fertilizers and agrochemicals are imported, in practice there are no issues related to the availability of these inputs. The main issue here is the quality. Seeds, seedlings and saplings are mostly produced locally – by scientific centres, breeding stations and farmers themselves. Imports are significant in case of cereal and potato seeds.

To facilitate farmers' access to agricultural inputs, the Government of Armenia has since 2006 implemented several programmes that help farmers access primary agricultural inputs, such as fertilizers, seeds and fuel, with below-market prices. The programmes also help farmers access agricultural machinery and modern production technologies through loans with subsidized interest rates.

The agricultural education in Armenia is not satisfactory and requires improvements. After the introduction of a market economy, the educational institutions didn't manage to adapt to the new situation. Today, the main problem of Armenia's agricultural education is a mismatch between the quality and quantity of graduates and the needs and employment opportunities generated by the agricultural sector. Furthermore, the involvement of women and men in agricultural studies is disproportional to their employment in the sector.

There are a number of scientific centres and research institutions working in the field of agricultural research. However, it should be noted that, in general, expenditures for research and development in

Armenia are low, and the involved organizations are often underfinanced to expand their research. In addition, because of difficulties with information flow, it is challenging for farmers and for research and development institutions to "find" each other.

According to the Ministry of Nature Protection (2015), the territory of Armenia is characterized by high seismic activity and intensive exogenous processes, which contribute to occurrence of landslides and erosion. Another significant problem in Armenia is salinization.

It is expected that the problems related to land quality, water availability and occurrence of natural disasters will continue to worsen because of the negative impacts of climate change.

The supply of drinking water is mainly organized by a privately owned utility company, while the supply of water for irrigation is organized by the Water Users Associations or by the communities themselves.

Since independence, the population of Armenia has recorded a significant decline – from 3.5 million inhabitants in 1990 to 3 million in 2016. Changes in population are related both to migration due to economic hardships after independence and to the declining rate of the natural growth of the population (NSS, 2016h). Thus, according to recent demographic data from the National Statistical Service of Armenia, the population of Armenia is aging (NSS, 2016h), with more than 13 percent of people 60 years old or older.

Agriculture is the biggest employment sector in rural communities – 68 percent of the employed rural population were involved in agriculture in 2015. At the same time, the biggest income source in rural areas is wage earnings – 37.6 percent of total income comes from wage earnings that include both on-farm and off-farm employment. Agriculture-related sources, such as sales of agricultural products and livestock, consumption of own-production food were 25.6 percent for 2015 (see Table 21). On one hand, this trend indicates a strengthened market orientation and higher purchasing power of rural households, and on the other hand, it signals a tendency among rural residents to leave own agricultural activities and shift to paid work, either agricultural or non-agricultural.

Poverty is a serious concern, as almost one-third of the total population – 29.8 percent – are poor (NSS, 2016e). In many communities, problems that still need to be addressed include the availability of pre-school facilities, distance of primary schools, access to sewage systems, quality of roads, and availability of inter-community public transport.

Current political priorities and policies affecting smallholders and family farms

Currently, the main national policy documents related to smallholders include: Republic of Armenia Prospective Development Strategic Programme (PDSP) for 2014–2025; Rural and Agricultural Sustainable Development (RASD) strategy 2010–2020; Republic of Armenia Food Security Concept

Paper and Strategy on Development of Food Safety System in the Republic of Armenia; Concept Paper on Community Amalgamation and Establishment of Inter-Community Unions; Concept Paper and its Action Plan on Consolidation of Peasant Farms in RA, as well as Law on Agricultural Cooperatives.

Overall, agriculture-related national policies in Armenia reflect the needs, constraints and challenges of the agricultural sector and, to some extent, of smallholders and family farms. However, they are written in a vague manner, with no definite measurable indicators and milestones for implementation and monitoring of achievements. Most of the policies are characterized as ad hoc, not targeted towards overall national interests but rather created to solve numerous specific problems.

At the same time, effective implementation of government policies is threatened by the scarcity of financial resources provided to the sector, by the lack of transparent implementation mechanisms, and by the weak institutional and technical capacities of the middle and lower chains of the national and regional public administration bodies responsible for direct implementation.

Conclusions and recommendations

Needs, challenges and constraints of Armenian family farms are largely intertwined with each other; in many cases there is a circular connection among them, and it is difficult to assess which is the primary cause of the others and whether government policies can provide solutions.

The sector's primary needs include higher profitability; more rural non-agricultural jobs; and access to social services, rural infrastructure and improved livelihoods for both women and men. The sector's current deficiencies have led to many challenges, such as reduced involvement in farming; land abandonment; poverty; increased migration; limited investments in agriculture, personal and rural development; deterioration of quality of life in rural communities; the refusal of the young rural generation to work in agriculture and their subsequent outflow from villages; decreased childbirth; ageing farmers; and increasing gaps between livelihoods in rural and urban areas. Other important challenges are climate change and increased competition.

The constraints that prevent smallholders and family farms from fulfilling their needs and realizing their full potential for economic, social and environmental development in Armenia can be categorized as structural constraints (including land fragmentation), lack of access to irrigation and agricultural machinery, product-related constraints, inability of smallholders to cooperate, and price volatility. The financial constraints of Armenian smallholders are mostly in terms of an absence of agricultural insurance, high interest rates, and collateral requirements. Technological constraints are seen as vague links between farmers' challenges and scientific and academic research implemented in the country, and access of smallholders to practical consulting. Constraints related to production resources include quality of inputs and quality of soil.

Other factors worthy of discussion in the context of smallholders' challenges, constraints and needs are the low level of government spending on agriculture, non-efficient and negligent local governance, and

gender-based inequalities that limit women's access to land, financial resources, agricultural inputs, markets, information and extension services (FAO, 2017b).

The main points of policy recommendations in terms of targeting smallholders' needs, challenges and constraints include: formation and enhancement of the regulatory framework for the agricultural sector, particularly the definition of smallholders; farm structure improvement; enhancement of extension services; diversification of employment opportunities; facilitation of cooperative structures; introduction of agricultural insurance; investment support mechanisms and agricultural value chain financing; regional specialization; climate change mitigation and adaptation measures; and advancing rural women's economic empowerment in the framework of Article 14 of the Convention on the Elimination of all Forms of Discrimination against Women.

Ամփոփ նկարագիր

Հայաստանում գործող փոքր ֆերմերային և ընտանեկան գյուղացիական տնտեսությունների վերաբերյալ սույն ուսումնասիրությունը պատրաստվել է Պարենի և գյուղատնտեսության կազմակերպության (ՊԳԿ) Գյուղական համայնքների կենսամակարդակի բարելավման և աղքատության կրճատման նպատակով փոքր ֆերմերային և ընտանեկան գյուղացիական տնտեսությունների հզորացում տարածաշրջանային նախաձեռնության շրջանակներում: Նախաձեռնությունն իրականացվում է Եվրոպայի և Կենտրոնական Ասիայի յոթ երկրներում. Ալբանիա, Հայաստան, Վրաստան, Ղրղզստան, Մոլդովայի Հանրապետություն, Հյուսիսային Մակեդոնիա ն և Տաջիկստան:

Բոլոր յոթ երկրներում, փոքր ֆերմերային և ընտանեկան գյուղացիական տնտեսությունները հանդիսանում են կայուն տնտեսական, սոցիալական և բնապահպանական զարգացման հնարավոր առանցքային ռեսուրս: Սակայն, նրանց մեծ մասը, շատ հաճախ, տնտեսապես կենսունակ չէ և հանդիսանում է բնակչության ամենաաղքատ և խոցելի խումբը:

Տարածաշրջանային նախաձեռնության և սույն ուսումնասիրության նպատակն է ստեղծել գիտելիքների ներառական հարթակ՝ փոքր ֆերմերային և ընտանեկան գյուղացիական տնտեսությունների կարիքների, մարտահրավերների և խոչընդոտների, ինչպես նաև ՊԳԿ ծրագրային երկրներից յուրաքանչյուրում այդ կարիքները հասցեագրելու քաղաքականության և դրանց նախապայմանների վերաբերյալ: Դրանք հետագայում կօգտագործվեն տվյալ յոթ երկրներում և տարածաշրջանում փոքր ֆերմերային և ընտանեկան գյուղացիական տնտեսությունների աջակցման քաղաքականության ձևավորման գործընթացն ամրապնդելու համար:

Ոլորտի կառուցվածքային վերլուծություն և որակական նկարագրություն

Ներկայումս, Հայաստանում չկա փոքր ֆերմերային կամ ընտանեկան գյուղացիական տնտեսությունների պաշտոնական սահմանում, և ընդհանուր առմամբ ընդունված է, որ ֆիզիկական (ոչ իրավաբանական) անձանց պատկանող և գյուղատնտեսությամբ զբաղվող բոլոր տնտեսությունները ընտանեկան գյուղացիական տնտեսություններ են: Միևնույն ժամանակ, շատ դեպքերում ընտանեկան գյուղացիական տնտեսությունները կարող են համարվել նաև փոքր ֆերմերային տնտեսություններ՝ ի նկատի ունենալով սեփականություն հանդիսացող/մշակվող հողատարածքի չափը, որը Հայաստանում գյուղատնտեսությամբ զբաղվող տնային տնտեսությունների մոտ 89 տոկոսի համար փոքր է 3 հա-ից:

Հողատերերը ձեռք են բերել հողի սեփականության իրավունք՝ 1991թ.-ին տեղի ունեցած հողատարածքների սեփականաշնորհման գործընթացի արդյունքում, երբ, ըստ հաշվարկների, ստեղծվեց շուրջ 320 000-ից 340 000 ընտանեկան գյուղացիական տնտեսություն: Այսօր, ըստ 2014թ.-ի Գյուղատնտեսական համատարած հաշվառման (ԱՎԾ, 2016ա), 360 611 տնային տնտեսություն զբաղվում է գյուղատնտեսական արտադրությամբ:

Հայաստանում գյուղատնտեսությամբ զբաղվող տնտեսությունները փոքր են: Ընտանեկան գյուղացիական տնտեսությունների շուրջ 42 տոկոսն ունի 0,5 հա-ից ոչ մեծ տարածք: Ընտանեկան գյուղացիական տնտեսությունների միջին տարածքը կազմում է 1,48 հա: Միևնույն ժամանակ, տնտեսությունները բավականին մասնատված են. ընտանեկան գյուղացիական տնտեսություններին պատկանող հողատարածքների ավելի քան 30 տոկոսը բաղկացած է վեց և ավել հողամասից: Թեև Հայաստանում գերակշռում են փոքր ընտանեկան գյուղացիական տնտեսությունները, այնուամենայնիվ, դրանց դերը շատ կարևոր է երկրի գյուղատնտեսության համար. գյուղատնտեսության համախառն արտադրանքի մոտավորապես 97 տոկոսը (տե՛ս Աղյուսակ 5) արտադրվում է ընտանեկան գյուղացիական տնտեսությունների կողմից, այդ թվում՝ բուսաբուծության արտադրանքի շուրջ 99,5 տոկոսը, և անասնաբուծության արտադրանքի՝ մոտ 92 տոկոսը: Ձկնաբուծության և անտառային տնտեսության ոլորտներում ընտանեկան ֆերմերային տնտեսությունների դերի վերաբերյալ տվյալներ առկա չեն: Տվյալներ հասանելի են միայն ձկնաբուծարանների կողմից օգտագործվող ավազանների տարածքների վերաբերյալ, ըստ որի՝ ավազանների ընդհանուր տարածքի 76 տոկոսը տնօրինվում է ընտանեկան գյուղացիական տնտեսությունների կողմից:

Գյուղատնտեսությունը ՀՀ տնտեսության կարևորագույն ոլորտներից մեկն է: 2005-2015թթ. այն կազմել է երկրի համախառն ներքին արդյունքի (ՀՆԱ) մոտ 18 տոկոսը, և 2010թ.-ից ի վեր, յուրաքանչյուր տարի, զգալիորեն նպաստել է ՀՆԱ աճին: Գյուղատնտեսությունը կարևոր դեր է զբաղեցնում երկրի արտահանման կառուցվածքում. վերջին տարիների ընթացքում այն կազմել է արտահանման ընդհանուր ծավալի ավելի քան 20 տոկոսը (տե՛ս Աղյուսակ 11): Միևնույն ժամանակ, գյուղատնտեսությունը համարվում է եկամտի կարևոր աղբյուր, և ըստ պաշտոնական վիճակագրության, այն աշխատանք է ապահովում ՀՀ զբաղվածների 35,3 տոկոսին (2015թ.), որոնց 54 տոկոսը կանայք են (ԱՎԾ, 2016դ):

ՀՀ-ում գյուղատնտեսական նշանակության հողատարածքները կազմում են 2 045 500 հա, ինչը կազմում է երկրի ընդհանուր տարածքի 68,8 տոկոսը: Մեկ բնակչին բաժին է ընկնում մոտ 0,15 հա վարելահող: 2016թ. դրությամբ, գյուղատնտեսական նշանակության հողերի 21,3 տոկոսը պատկանում է ընտանեկան տնտեսություններին: Միևնույն ժամանակ, չմշակվող գյուղատնտեսական հողերի քանակը մտահոգիչ է: 2016թ. հուլիսի դրությամբ, պետական և համայնքային սեփականություն հանդիսացող հողերի մեծ մասը, որը կազմում է ընդհանուր գյուղատնտեսական նշանակության հողերի մոտ 66,9 տոկոսը, վարձակալված չի և չի օգտագործվում (Անշարժ գույքի կադաստրի պետական կոմիտե, 2016թ.): Բացի այդ, ըստ 2014թ. Գյուղատնտեսական համատարած հաշվառման, ընտանեկան գյուղացիական տնտեսություններին և առևտրային կազմակերպություններին պատկանող վարելահողերի մոտ 33 տոկոսը նույնպես չի մշակվում:

Արտադրության փոքր ծավալները և մասնագիտացման ցածր մակարդակը խոչընդոտում են փոքր ֆերմերային տնտեսություններին ամուր կապեր հաստատել արժեշղթաներում: Արդյունքում, փոքր ֆերմերային տնտեսությունների և դրանց՝ արտադրանքի իրացման ուղիների միջև երկարատև համագործակցության դեպքերը շատ քիչ են, և հիմնականում գերակշռում են արժեքի ստեղծման «ավանդական» շղթաները: Միևնույն ժամանակ, կոոպերատիվների, ֆերմերային խմբերի կամ ասոցիացիաների միջոցով ուղղահայաց և հորիզոնական ինտեգրման պրակտիկան տարածված չէ:

ՀՀ-ում փոքր ֆերմերային տնտեսություններին հասանելի են ֆինանսավորման մի քանի աղբյուրներ՝ վարկեր, դրամաշնորհներ, պետական սուբսիդավորում, արտերկրից ստացված դրամական փոխանցումներ և անձնական խնայողություններ:

ՀՀ ողջ տարածքում ֆինանսական հաստատությունների առկայությունը փոքր ֆերմերային տնտեսությունների համար կարելի է համարել բավարար, սակայն դրանց ծառայությունների՝ հատկապես վարկերի մատչելիությունը մնում է խնդրահարույց: Հիմնական խնդիրը շարունակում է մնալ գրավի և երաշխավորների պահանջը և բարձր տոկոսադրույքները: Բացի այդ, գոյություն ունեն միայն սահմանափակ քանակությամբ առաջարկներ՝ վարկերի մարման ճկուն ժամանակացույցով և արտոնյալ ժամանակահատվածով: Վարկերի հասանելիության մակարդակը հատկապես ցածր է կանանց համար:

ՀՀ-ում գրեթե բացակայում է պարարտանյութերի, ագրոքիմիական նյութերի, կենդանիների առողջության պահպանման և վերականգնման դեղորայքների տեղական արտադրությունը: Առկա են տեղական արտադրության որոշ օրգանական պարարտանյութեր, սակայն դրանց արտադրությունը լայնածավալ չէ: Չնայած գրեթե բոլոր պարարտանյութերը և ագրոքիմիական նյութերը ներկրվում են, գործնականում դրանց առկայության հետ կապված խնդիրներ չկան: Հիմնական խնդիրն այստեղ որակն է: Սերմերը, սածիլները և տնկիները հիմնականում արտադրվում են տեղում՝ գիտական կենտրոնների, սերմնաբուծական կայանների և անձամբ ֆերմերների կողմից: Ներմուծման ծավալները նշանակալի են հացահատիկի և կարտոֆիլի սերմերի դեպքում:

Գյուղատնտեսական ներդրանքները ֆերմերների համար ավելի հասանելի դարձնելու նպատակով, 2006թ.-ից ի վեր, ՀՀ կառավարությունն իրականացրել է մի քանի ծրագրեր, որոնք թույլ են տալիս ֆերմերներին շուկայականից ցածր գներով օգտվել գյուղատնտեսական արտադրության կազմակերպման այնպիսի առաջնային ներդրանքներից, ինչպիսիք են պարարտանյութերը, սերմերը և վառելիքը: Վարկերի տոկոսադրույքների սուբսիդավորման միջոցով՝ ծրագրերը նաև ֆերմերներին հասանելի են դարձնում գյուղատնտեսական տեխնիկա և արտադրության ժամանակակից տեխնոլոգիաներ:

ՀՀ-ում գյուղատնտեսական կրթության մակարդակը գոհացուցիչ չէ և պահանջում է բարելավում: Շուկայական տնտեսության ներդրումից հետո կրթական հաստատությունները չեն հասցրել հարմարվել նոր իրավիճակին: Այսօր, ՀՀ գյուղատնտեսական կրթության հիմնական խնդիրը շրջանավարտների որակի ու քանակի և գյուղատնտեսական ոլորտի կարիքների ու զբաղվածության հնարավորությունների միջև առկա անհամապատասխանություն է: Ավելին, կանանց և տղամարդկանց ներգրավվածությունը գյուղատնտեսական կրթության ոլորտում անհամաչափ է՝ ոլորտում առաջարկվող զբաղվածության մակարդակի համեմատ:

Գյուղատնտեսական հետազոտությունների ոլորտում գործում են մի շարք գիտահետազոտական կենտրոններ և հաստատություններ: Այնուամենայնիվ, հարկ է նշել, որ ընդհանուր առմամբ ոլորտի հետազոտություններին և զարգացմանն ուղղված հատկացումները քիչ են, և ներգրավված կազմակերպությունները հաճախ չեն ստանում բավարար ֆինանսավորում՝ ընդլայնելու իրենց հետազոտական գործունեությունը: Բացի այդ, տեղեկատվության հոսքի դժվարությունների հետ կապված, ֆերմերների և հետազոտական ու զարգացման հաստատությունների համար դժվար է միմյանց «գտնել»:

ՀՀ բնապահպանության նախարարության տվյալներով (2015թ.), ՀՀ տարածքը բնութագրվում է բարձր սեյսմիկ ակտիվությամբ և ինտենսիվ էկզոգեն գործընթացներով, որոնք նպաստում են սողանքների և էրոզիայի առաջացմանը: ՀՀ տարածքում առկա մեկ այլ լուրջ խնդիր է աղակալումը:

Ակնկալվում է, որ հողերի որակի, ջրի առկայության և բնական աղետների հետ կապված խնդիրները կշարունակեն վատթարանալ՝ կլիմայի փոփոխության բացասական հետևանքների պատճառով:

Խմելու ջրի մատակարարումը հիմնականում կազմակերպվում է մասնավոր ընկերության, իսկ ոռոգման ջրի մատակարարումը՝ Ջրօգտագործողների ընկերությունների կամ համայնքների կողմից:

Անկախացումից ի վեր, ՀՀ բնակչության աճի տեմպը զգալի անկում է գրանցել՝ 1990թ.-ի 3,5 միլիոն բնակչից մինչև 3 միլիոն՝ 2016թ.-ին: Ժողովրդագրական փոփոխությունները կապված են թե՛ անկախությանը հաջորդած տնտեսական դժվարությունների հետևանքով տեղի ունեցող արտագաղթի հետ, թե՛ բնակչության բնական աճի տեմպի նվազման հետ (ԱՎԾ, 2016թ.): Այսպիսով, ՀՀ Ազգային վիճակագրական ծառայության ժողովրդագրական վերջին տվյալների համաձայն, ՀՀ բնակչությունը ծերացող է (ԱՎԾ, 2016ը). 60 և դրանից բարձր տարիքի անձանց թիվը կազմում է ընդհանուր բնակչության ավելի քան 13 տոկոսը:

Գյուղատնտեսությունը հանդիսանում է գյուղական համայնքներում զբաղվածության հիմնական աղբյուրը. 2015թ.-ին զբաղված գյուղական բնակչության 68 տոկոսը ներգրավված է եղել գյուղատնտեսության ոլորտում: Միևնույն ժամանակ, գյուղական բնակավայրերում եկամտի ամենամեծ աղբյուրը աշխատավարձն է՝ ընդհանուր եկամտի 37,6 տոկոսը, ինչը ներառում է ինչպես գյուղատնտեսությունում, այնպես էլ դրանից դուրս զբաղվածության արդյունքում ստացված աշխատավարձը: Գյուղատնտեսությանն առնչվող եկամտի աղբյուրները, ինչպիսիք են՝ գյուղատնտեսական արտադրանքի և անասունների վաճառքը, սեփական արտադրության սննդի սպառումը, 2015թ.-ին կազմել են 25.6 տոկոս (տե՛ս Աղյուսակ 21): Մի կողմից, նման միտումը ցույց է տալիս գյուղական տնային տնտեսությունների ամրապնդված շուկայական կողմնորոշումը և բարձր գնողունակությունը, մյուս կողմից, այն արձանագրում է գյուղական բնակչության շրջանում սեփական գյուղատնտեսական գործունեությունը թողնելու հակվածությունը և հոսքը դեպի վճարովի աշխատանք՝ ինչպես գյուղատնտեսական, այնպես էլ ոչ գյուղատնտեսական:

Աղքատության մակարդակը նույնպես լուրջ մտահոգության առարկա է, քանի որ ընդհանուր բնակչության գրեթե մեկ երրորդը՝ 29,8 տոկոսը, աղքատ է (ԱՎԾ, 2016թ.): Շատ համայնքներում դեռևս առկա են այնպիսի խնդիրներ, ինչպես օրինակ, նախադպրոցական հաստատությունների բացակայությունը, տարրական դպրոցների հեռավորությունը, կոյուղաջրերի հեռացման համակարգերի հասանելիությունը, ճանապարհների որակը և միջհամայնքային հասարակական տրանսպորտի բացակայությունը:

Ներկա քաղաքական առաջնահերթությունները և փոքր ֆերմերային և ընտանեկան գյուղացիական տնտեսությունների վրա ներգործող քաղաքականությունը

Ներկայումս, փոքր ֆերմերային և ընտանեկան գյուղացիական տնտեսություններին վերաբերող ազգային քաղաքականության հիմնական փաստաթղթերը ներառում են հետևյալը. «ՀՀ 2014-2025թթ. հեռանկարային զարգացման ռազմավարական ծրագիրը», «ՀՀ գյուղի և գյուղատնտեսության 2010-2020թթ. կայուն զարգացման ռազմավարությունը», «ՀՀ սննդամթերքի անվտանգության հայեցակարգը», «ՀՀ սննդամթերքի անվտանգության համակարգի զարգացման ռազմավարությունը», «Միջհամայնքային միավորումների ձևավորման և համայնքների խոշորացման հայեցակարգը», «ՀՀ-ում գյուղացիական տնտեսությունների խոշորացման հայեցակարգը և համապատասխան գործողությունների ծրագիրը», ինչպես նաև ՀՀ օրենքը Գյուղատնտեսական կոոպերատիվների մասին:

Ընդհանուր առմամբ, ՀՀ-ում գյուղատնտեսությանն առնչվող ազգային քաղաքականությունն արտացոլում է գյուղատնտեսության ոլորտի, և որոշ չափով, նաև, փոքր ֆերմերային և ընտանեկան գյուղացիական տնտեսությունների կարիքները, խոչընդոտները և մարտահրավերները: Այնուամենայնիվ, դրանք գրված են անորոշ ձևով՝ առանց իրականացման և ձեռք բերված առաջընթացի մոնիտորինգի համար սահմանված հստակ չափելի ցուցանիշների և առանցքային կետերի: Քաղաքականության փաստաթղթերի մեծ մասը բնութագրվում է որպես «հապճեպ» և նպատակաուղղված չէ ընդհանուր ազգային շահերին, այլ մշակվել է բազմաթիվ մասնավոր խնդիրների լուծման համար:

Միևնույն ժամանակ, ՀՀ կառավարության քաղաքականության արդյունավետ իրականացմանը խոչընդոտում են ոլորտին հատկացվող ֆինանսական միջոցների սակավությունը, իրականացման թափանցիկ մեխանիզմների բացակայությունը, ինչպես նաև ազգային և տարածաշրջանային մակարդակներում քաղաքականության անմիջական իրականացման համար պատասխանատու պետական կառավարման մարմինների միջին և ցածր օղակների ինստիտուցիոնալ և տեխնիկական թույլ կարողությունները:

Եզրակացություններ և առաջարկություններ

ՀՀ ընտանեկան գյուղացիական տնտեսությունների կարիքները, մարտահրավերները և խոչընդոտները մեծ մասամբ փոխկապակցված են միմյանց հետ. շատ դեպքերում, դրանց միջև գոյություն ունի շրջանաձև կապ, և դժվար է գնահատել, թե որն է մյուսների առաջնային պատճառը, և արդյոք կառավարության քաղաքականությունը կարող է համապատասխան լուծումներ առաջարկել:

Ոլորտի առաջնային կարիքները հետևյալն են՝ եկամտաբերության մակարդակի բարձրացում, գյուղական համայնքներում ոչ-գյուղատնտեսական աշխատատեղերի ստեղծում, սոցիալական ծառայությունների և գյուղական ենթակառուցվածքների հասանելիություն և կանանց ու տղամարդկանց կենսապահովման մակարդակի բարելավում: Ոլորտի ներկայիս թերությունները հանգեցրել են բազմաթիվ մարտահրավերների, ինչպիսիք են՝ գյուղատնտեսության մեջ ներգրավվածության մակարդակի նվազումը, լքված և անմշակ հողերի առկայությունը, աղքատությունը, արտագաղթի աճող տեմպերը, գյուղատնտեսության, անհատական և գյուղական համայնքների զարգացման համար սահմանափակ ներդրումները, գյուղական համայնքներում կյանքի որակի վատթարացումը, գյուղական երիտասարդության հրաժարումը գյուղատնտեսական աշխատանքից և նրանց արտագաղթը գյուղերից, ծնելիության ցածր մակարդակը, գյուղատնտեսությամբ զբաղվող խմբերի ծերացումը, գյուղական ու քաղաքային բնակավայրերի կենսամակարդակի միջև աճող ճեղքվածքը: Այլ կարևոր մարտահրավերների թվին են դասվում նաև կլիմայի փոփոխությունն ու մրցակցության աճը:

Այն խոչընդոտները, որոնք թույլ չեն տալիս հայաստանյան փոքր ֆերմերային և ընտանեկան գյուղացիական տնտեսություններին բավարարել իրենց կարիքները և օգտագործել իրենց ամբողջ ներուժը տնտեսական, սոցիալական և բնապահպանական զարգացման համար, կարող են դասակարգվել որպես կառուցվածքային սահմանափակումներ՝ ներառյալ հողամասերի մասնատվածությունը, ոռոգման ենթակառուցվածքների և գյուղատնտեսական տեխնիկայի բացակայությունը, արտադրանքի հետ կապված սահմանափակումներ, ինչպիսիք են՝ փոքր հողատերերի միջև համագործակցության բացակայությունը և գների անկայունությունը: Հայաստանյան փոքր ֆերմերային տնտեսությունների համար ֆինանսական սահմանափակումները հիմնականում պայմանավորված են գյուղատնտեսական ապահովագրության բացակայությամբ, առաջարկվող վարկերի բարձր տոկոսադրույքներով և գրավի պահանջով: Տեխնոլոգիական սահմանափակումների հիմքում ընկած են ֆերմերների առաջ ծառացած մարտահրավերների և երկրում իրականացվող գիտահետազոտական ուսումնասիրությունների միջև թույլ կապը և փոքր ֆերմերային տնտեսությունների համար գործնական խորհրդատվության անհասանելիությունը: Արտադրական ռեսուրսներին առնչվող սահմանափակումների թվին են պատկանում գյուղատնտեսական ներդրանքի և հողի որակը:

Փոքր ֆերմերային և ընտանեկան գյուղացիական տնտեսությունների առաջ ծառացած մարտահրավերների, սահմանափակումների և կարիքների համատեքստում քննարկման արժանի այլ գործոնների թվին են պատկանում գյուղատնտեսության ոլորտին ուղղված պետական հատկացումների ցածր մակարդակը, անարդյունավետ և ոչ-պատշաճ տեղական կառավարումը և գենդերային անհավասարությունները, որոնք սահմանափակում են հողի, ֆինանսական միջոցների, գյուղատնտեսական ներդրանքների, շուկաների, տեղեկատվության և խորհրդատվական ծառայությունների հասանելիությունը կանանց համար (ՊԳԿ, 2017բ):

Փոքր ֆերմերային և ընտանեկան գյուղացիական տնտեսությունների կարիքների, մարտահրավերների և սահմանափակումների հասցեագրմանն ուղղված քաղաքականության առաջարկությունները ներառում են հետևյալ հիմնական կետերը. գյուղատնտեսության ոլորտը կարգավորող իրավական դաշտի ձևավորում և ամրապնդում, մասնավորապես, «փոքր ֆերմերային տնտեսություններ» հասկացության սահմանում; գյուղատնտեսության մեջ ներգրավված տնտեսությունների կառուցվածքային բարելավում; գյուղատնտեսական խորհրդատվական ծառայությունների բարելավում; գյուղական համայնքներում զբաղվածության հնարավորությունների դիվերսիֆիկացում; կոոպերատիվ կառույցների

ստեղծման աջակցություն; գյուղատնտեսական ապահովագրական համակարգի ներդրում; ներդրումային աջակցության մեխանիզմների ներդրում և գյուղատնտեսական արժեշղթաների ֆինանսավորում; տարածաշրջանային մասնագիտացում; կլիմայի փոփոխության ազդեցության մեղմացման և հարմարվողականության միջոցառումների իրականացում; գյուղական համայնքների կանանց տնտեսական հզորացում՝ Կանանց նկատմամբ խտրականության բոլոր ձևերի վերացման մասին կոնվենցիայի 14-րդ հոդվածի շրջանակներում:

1. Introduction to smallholders and family farms and their role in Europe and Central Asia

1.1 Background for the Regional Initiative supporting smallholders and family farms

Europe and Central Asia is largely a region of smallholders and family farms. FAO has in the region 18 programme countries, of which the large majority have farm structures dominated by smallholders and family farms. The farm structures in these countries are either fully dominated by smallholders or are dualistic, with many small farms and few large, corporate farms. In most, but not all, of the countries, the current farm structures are the outcome of land reforms implemented beginning with the transition after 1990 from a planned economy towards a market economy. Smallholders and family farms in the FAO programme countries are usually suffering from a wide range of needs and constraints at the same time. These farms are often not economically viable, and rural people remain the most poor and vulnerable part of the population. Despite this, they represent a potentially key resource to achieving sustainable economic, social and environmental development. Smallholders and family farms can achieve higher levels of income, production and productivity through sustainable utilization of resources and intensification of production, better organization, adequate public services, and better integration into agrifood value chains. Getting family farming right in this respect is a key component in enhancing food security, ensuring equitable and decent livelihoods for all rural women and men, achieving sustainable rural development and diversification in rural areas, and reducing rural poverty.

Supporting smallholders and family farms is one of the four priorities for FAO in Europe and Central Asia, confirmed by the FAO Regional Conference in 2016. In 2014, FAO launched the *Regional Initiative on Empowering Smallholders and Family Farms for Improved Rural Livelihood and Poverty Reduction* in Europe and Central Asia. The Regional Initiative builds on the legacy of the International Year of Family Farming in 2014. In addition, the United Nations General Assembly has officially declared 2019–2028 the Decade of Family Farming, and thus the Regional Initiative will continue to provide the framework for FAO support to family farms in Europe and Central Asia.

The FAO REU Regional Initiative has two main components:

1. *Support policy development and innovative practices for increased sustainable agricultural production.*
2. *Support improvement of rural livelihood and enhanced access to natural resources.*

Through the first component, support is provided to the development of competitive and commercial smallholders and family farms. There is a need to increase the capacities of farmers in terms of sustainable agricultural production, using pilot projects, farmer field schools and strengthened extension services. In this context, FAO supports policy development and practices in line with the Sustainable Food and Agriculture principle (FAO, 2014), such as efficient use and management of natural resources and adaptation and resilience to climate change. More specifically, FAO intends to focus on the promotion of good agricultural practices in the region, such as integrated pest management, organic agricultural techniques, conservation of plant genetic resources, and proactive drought-risk management. In addition, work will be done on modern irrigation systems, sustainable forest management and fish production – including fish seed improvement – and focusing on supporting smallholders.

Another main challenge of the Regional Initiative is to ensure inclusive growth through improved rural livelihoods. This is supported through the second component of the Initiative. There is a

need, both at policy and community levels, to ensure that disadvantaged and vulnerable groups also benefit from economic growth and to accelerate gender equality and rural women's economic empowerment. In this context, under the programmatic approach of the Regional Initiative, FAO supports multi-sectoral rural development policies, integrated community development, improved access to value chains, statistics, decent rural employment, social protection, and implementation of the Voluntary Guidelines on the Responsible Governance of Tenure (FAO, 2012c) – including addressing through land consolidation instruments the structural problems of land fragmentation and small farm sizes.

As part of the preparation of the workplan for the Regional Initiative (RI) for 2018/19, the RI has been re-focused to ensure strong and increased contribution to the implementation of the 2030 Agenda and to achieving the Sustainable Development Goals (SDGs). The Regional Initiative will contribute to SDG 2 on zero hunger, in particular SDG target 2.3 on doubling the agricultural productivity and income of small-scale food producers. Furthermore, the RI contributes to SDG 1 on ending poverty (target 1.4 on ensuring equal rights to land and other natural resources, and target 1.b on pro-poor and gender-sensitive development strategies), to SDG 4 on ensuring inclusive and equitable quality education (especially target 4.3), to SDG 5 on promoting gender equality (target 5.a to undertake reforms to give women equal rights to economic resources and access to ownership and control over land and other forms of property, and target 5.b to enhance the use of enabling technology to promote the empowerment of women). The RI also contributes to SDG 8 on the promotion of sustainable and inclusive economic growth (target 8.2 on achieving higher levels of economic productivity through diversification, and target 8.3 to promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation and that encourage the formalization and growth of micro-, small- and medium-sized enterprises), and also SDG 10 on reducing inequality within and among countries (target 10.2 to empower and promote the social, economic and political inclusion of all, and target 10.4 to adopt policies – especially fiscal, wage and social protection policies – and progressively achieve greater equality).

1.2 Background and objectives of the present country study

The background for conducting country studies on the challenges, needs and constraints of smallholders and family farms in the seven countries has been a wish to further strengthen the Regional Initiative and develop it towards a stronger programmatic approach at both the regional and the country level. In order to provide support to smallholders and family farms, there has been a need to develop a better understanding and knowledge platform of the main challenges, needs and constraints of smallholders and family farms in the specific country context. Even though many of the challenges are the same throughout the region, there are still significant variations among the countries. It is important to be aware of and understand these variations when designing support to smallholders and family farms in each specific country.

During 2017–2018, FAO has conducted country studies on the needs and constraints of smallholders and family farms in seven countries of the region as part of a regional project (TCP/RER/3601). The countries included are the countries that have been the focus countries of the RI during 2014–17: Albania, Armenia, Georgia, Kyrgyzstan, Republic of Moldova, North Macedonia, and Tajikistan.

It has been the objective of the country studies first to analyse the development trend and current state of smallholders and family farms in each specific country, second to study the current political priorities and policies affecting smallholders and family farms, and finally, based on the conclusions made, to provide recommendations, mainly at the policy level, on how to further support the development of commercial family farms and at the same time ensure, in general, inclusive growth, improved rural livelihoods and reduction of rural poverty. It is hoped that the country study will not only be relevant for FAO but also for the Government, donors and other international organizations when formulating policy and preparing programmes. Furthermore, it is the intention that the recommendations from the study will feed directly into the formulation of the Country Programming Framework, which is the multi-annual cooperation agreement between FAO and the country.

Furthermore, the seven country studies contribute to raising awareness on the needs and constraints of smallholders and family farms, and they promote the support to smallholders and family farms provided by FAO under the programmatic umbrella of the Regional Initiative among government institutions, civil society organizations and other stakeholders at the country level, as well as among donors and international organizations. In this way, it is hoped that the studies will lead to the establishment of enhanced partnerships and the mobilization of resources to further scale up support to smallholders and family farms.

As mentioned, it is a global observation that smallholders and family farms face needs, constraints and challenges, limiting their development and reducing their potential, and that current policies only to a limited extent provide appropriate support for their development.

Based on this global observation, it is the objective of the country studies to verify the observations through answers to the following research questions:

1. *What are the trends in and the current role and weight of smallholders and family farms in economic, social and environmental development in the covered countries?*
2. *What are the main needs, constraints and challenges for the realization of the economic, social and environmental development potential of smallholders and family farms?*
3. *Which current administrative procedures, institutional settings and policy interventions are implemented to support or prevent the development of smallholders and family farms?*
4. *Which future administrative procedures, institutional settings and policy interventions can be developed and recommended to strengthen the role of smallholders and family farms in economic, social and environmental development and in the transformational change process?*

The research questions are answered following a common overall methodology presented in Section 2.

2. Methodology and approach

2.1 The overall methodological principles of the Regional TCP on smallholders and family farms

The methodology summarized here is common for all seven country studies, while the country specific approach is presented in Section 2.2.

The research methodology combines the use of desk research, interviews with key stakeholders and case studies.

DESK RESEARCH:

The desk research covered an assessment of available policy documents, research papers, reports, studies, etc. from public authorities, from academia and from international donors and organizations. Furthermore, the desk research covered official statistics from public sources supplemented with poverty and living conditions surveys and data and statistics from academia, donor organizations and other contributors. The desk research contributed to answering all main research questions.

INTERVIEWS:

Interviews were accomplished with the aim of contributing information to help answer the four research questions listed above by filling in data gaps identified during the desk research. Interviews were conducted with selected resource persons representing key stakeholders.

The interviews targeted different stakeholders and were customized for the individual interviewee or groups of interviewees, depending on the findings from the desk research phase.

An interview template has been prepared and was used by the national experts/consultants when interviewing national stakeholders and resource persons. The template includes the themes covered by the project.

Two rounds of interviews were accomplished. The first round was conducted by the national expert/consultant with national stakeholders and resource persons. In the second round, during the final stages of writing the report, the national expert/consultant conducted additional interviews to address the gaps that emerged during the analysis of the primary and secondary data.

The interviews were individual or group interviews, depending on the topic and the situation. The national expert/consultant planned, carried out and reported each interview.

CASE STUDIES:

Case studies were used to illustrate or demonstrate various topics of importance to smallholders and family farms. One example is case studies of policy interventions – in the form of investment support schemes or farmer training accomplished by advisory services – to demonstrate the results and impacts of these interventions. Based on the documentation and information gathered from these interventions, recommendations are formulated for existing or new policies. These good policy examples are useful, not only for the country in question but also for other countries facing similar challenges.

The case studies also include studies of needs, challenges and constraints identified through stakeholder interviews and where the case studies exemplify or illustrate the topics. The case studies were prepared at family/village/municipality level, depending on the selected topic and in order to ensure diversity.

Furthermore, case studies also include examples of administrative procedures and/or institutional settings preventing or supporting the development of smallholders and family farms. These cases were also identified though stakeholder interviews.

WORKSHOPS:

Two workshops were organized in each country.

One *introductory workshop*, accomplished right at the beginning of the working process, had the objective to clarify and define:

a. the definition of smallholders and family farms;
b. the current situation and the state of play of smallholders and family farms;
c. the problem analysis regarding the needs, constraints and challenges of smallholders and family farms;
d. the policy analysis, identifying and targeting administrative procedures, institutional settings and policy solutions to the identified needs, constraints and challenges; and
e. the comparative advantage of FAO *vis-à-vis* the donor community in providing solutions to the identified needs, constraints and challenges.

The second workshop was a *validation workshop*, where the preliminary findings, conclusions and recommendations were presented to the stakeholders who had participated in the first country workshop and to new stakeholders identified through the working process. The objective was to validate the analysis and to establish a common understanding about the conclusions and recommendations. The workshop took place at the end of the process – but before finalization of the study – so that requests for adjustments from the workshop could be taken aboard.

A synthesis report was prepared based on the seven country reports. A regional validation workshop was organized in Budapest in March 2018 for the discussion and validation of the synthesis report and to further enhance support to smallholders and family farms in Europe and Central Asia through the Regional Initiative.

2.2 Approach – Description of the specific approach taken in Armenia

The initial stage of the project was the National Inception Workshop for the introduction of the FAO Regional Initiative on Empowering Smallholders and Family Farms. The workshop was held in Yerevan on 19 April 2017 with the involvement of more than 40 different stakeholders, including farmers and cooperative members; representatives of producers' unions, the international donor community of Armenia, bank and credit organizations, the Ministry of Agriculture and the Marz Agricultural Support Centers,[1] academia, the media, and local civil society organizations involved in rural development, including the one representing the interests of rural women. Roughly two-thirds (68 percent) of the participants were men, and 32 percent were women. The agenda of the Inception National Workshop is presented in Annex 6.4.

The workshop was held in two phases. During the first phase, international consultants presented the objectives of the regional project and activities to be carried out. The second phase was organized as interactive sessions in which groups of participants discussed the challenges, constraints and needs of smallholder and family farms and then presented the results of their discussions along with policy recommendations on improving smallholders' quality of life.

The results of the group work were gathered and summarized, and they have been further used during the development of this study.

With the objective of collecting as much information as possible, the second and the most comprehensive stage of the study was desk research. During this stage, a detailed analysis of the available national agricultural statistics of Armenia was carried out, including the first agricultural census, which was published in 2016. Other studied materials included international statistics available for Armenia – particularly trade statistics and migration statistics, relevant national policy papers, laws governing or related to the agricultural and rural development sectors of Armenia, the activities of donor organizations working in Armenia, and specific documents and studies on the topics of climate change, migration and poverty in Armenia.

This approach of detailed analysis allowed for the discovery of missing information that was not included in the studied publications, literature and materials. It also aided in the better identification of the pool of experts that should be engaged during the interview stage.

For the interview stage, two main categories of interviewees were identified: farmers from different marzes (regions) of Armenia, and experts working in the agriculture and rural development field – including representatives of the Ministry of Agriculture, the banking sector, development agencies, local businesses, academia and civil society organizations, including those representing the interests of women and youth. In total, 30 interviews were conducted, 10 of which were with women.

[1] The Marz Agricultural Support Centers were dissolved in 2017 in accordance with Government of Armenia Decree N 380-A, dated 13 April 2017. Afterward, they were included in the structure of the Agriculture Development Fund established according to Government of Armenia Decree N 243-A, dated 9 March 2017.

The interviews were used not only to fill gaps in information but also to assure the validity of the data gathered during desk research. In addition, the interviewees were an important source of recommendations for the case studies that were developed in the framework of this report. In total, six case studies were developed (see Annex 6.2.) that qualitatively illustrate development trends and hot topics in the Armenian agricultural sector. They include cases of policy-level issues related to consolidation of lands (farms) and to challenges of formal cooperative structures. Also included are cases of successful community development through the internal efforts of community members, and a successful case of joint advocacy of agriculture-related issues through civil society organizations involved in the sector.

For the final presentation and confirmation of the study results, a National Validation Workshop was organized on 25 October 2017 (see Annex 6.4.). The workshop gathered the participants of the inception workshop, who generated preliminary ideas on how to address the needs, constraints and challenges of the smallholders, together with the people who took part in the interviews. The workshop participants confirmed the relevance of the study along with the main data used and the proposed conclusions and recommendations. Additional comments were collected through a written procedure and are addressed in this report.

3. Development trends and the current state of smallholders and family farms in Armenia

3.1 Definition of 'smallholder' and/or 'family farm' in the national context

The concepts of smallholder and family farms are often used as interchangeable or complementary concepts, where the first concept is characterized by size of cultivated land/number of animals, and the second assumes reliance on family labour and usually includes smallholder farms. While there is no formal definition of family farms, all family-based units that are involved in agricultural activities, managed and operated by a family, and predominantly reliant on family labour (including both women and men) are generally considered as family farms (FAO, 2013). At the same time, the definitions of smallholder farms are widespread and vary from country to country. The most popular criterion according to which smallholders are defined is the utilized agricultural area (ha); other criteria include the number of persons working on the farm, the monetary value of the farm's output, the percentage of marketed production, and others.

Currently in Armenia there is neither a formal definition of "smallholder" nor of "family farm." The only law in Armenia where a definition of peasant farms can be found is the Republic of Armenia Law on Peasant and Peasant Collective Farms (SC, 1991) adopted in February 1991, according to which a peasant farm is an *independent organizational unit ensuring production of agricultural products and established based on property of citizens*.

The law was basically adopted to govern the process of the dissolution of collective and state-owned farms after Armenian independence, along with the distribution of their land and other assets and the formation of peasant farms and new types of peasant collective farms. According to this law, all peasants who received land during the land reform were obliged to register their "peasant farm" and have an act of registration. So, basically, all household farms that were formed in Armenia after independence and land privatization were formed in accordance with this law and were registered farms. However, the law lost its force in 2007, and no alternative definition of peasant farm, family farm or any other type of farm owned and managed by a physical person exists nowadays.

The methodology used by the National Statistical Service of Armenia distinguishes two types of primary agricultural producers: commercial farms or holdings, which have a legal status, and individual households or household farms, which do not have a legal status. It should be emphasized that the terms "farm" and "holding" are translated into the Armenian language as the same word.

The first agricultural census (NSS, 2016a) defines the concept of "individual households" as an "association of rural and urban citizens within (in) the household who are linked to each other by family and/or other bonds, have common property and are engaged in production, processing, conservation, transfer, sale, etc. of agricultural products." The other (annual) publication of the National Statistical Service, the Statistical Yearbook of Armenia, defines "the household farms" to include[2] "individual (peasant) households, individual farms of members of gardening companies, and farms of urban population engaged in agriculture." Basically, according to both definitions, the farms that do not have any legal status are considered to be family farms.

[2] The original definition of the publication is as follows, which was reformulated by the author to provide more clarity: "include personal (peasant) households, gardening companies members' peasant farms and urban population engaged in agriculture."

As was already mentioned, in the current Armenian legislation there is no definition of "smallholder" or of "family farm." However, the idea that most of the farms in Armenia are small is persistent in state documents and policy papers. For example, the small sizes of household farms are mentioned in the Concept paper and its Action Plan on Consolidation of Peasant Farms in the Republic of Armenia (GoA, 2011a), the Rural and Agriculture Development Strategy of the Republic of Armenia for 2010–2020 (GoA, 2010a), including the draft version for 2015–2025 (not yet adopted), as well as the Government Programmes for 2012 and 2014 (RANA, 2012a, RANA, 2014a). The contexts for these mentions are either suggesting supportive measures for these farms or highlighting their roles as restricting to the development of the agricultural sector or leading to inefficiency of the sector. At the same time, none of the mentioned documents provides any detail of what characteristics are taken into account for labelling the farms as small.

In this study, we will examine family farms – the "household farms" described by the National Statistical Service – which in most cases can be considered smallholder farms, because around 89 percent of household farms in Armenia have land of less than 3 hectares.

3.2 Structural analysis and a qualitative description of the sector

After land privatization in 1991, it was estimated that around 320 000 to 340 000 family farms had been created. Members of these family farms were adult residents of Armenia who were either living in rural areas or intended to move to a rural area and get involved in farming. The reports of the National Statistical Service from 1995 to 2006 include the number of family farms (see Table 1), but since the abolishment of the Law on Peasant and Peasant Collective Farms (SC, 1991), where the definition of "peasant farms" was given, there has been a data gap, as the National Statistical Service stopped collecting statistics on this type of farm. Fortunately, during 2014, with the support of the international donor community, an agricultural census was conducted for the first time in Armenia. The results were summarized and published in 2016, making visible the change in the structure of agriculture – and among family farms in particular – since land privatization and the establishment of individual family farming in the beginning of the 1990s.

Table 1. Number of peasant farms in Armenia, 1995–2005

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Number of peasant farms, unit	316 774	319 536	321 125	333 820	335 086	332 608	334 759	334 688	337 906	338 502	339 174

SOURCE: NSS YEARBOOKS (2006, 2002, 2001).

The census results revealed 360 611 household farms involved in agricultural production. At the time of the census, only 317 346 of them (88 percent) were present in the community; in other words, 12

percent of family farms had no family member present in the community to take part in the census. Thus, it can be stated that only 88 percent of farms are currently active and that agriculture in Armenia is mostly carried out by around 317 346[3] family farms. One-fourth of those farms are headed by women.

Most of the family farms are concentrated in the Gegharkunik, Ararat and Armavir *marzes*, or regions,[4] representing 15 percent, 14 percent and 12 percent, respectively, of the total family farms (see Figure 1 in this section and Table A1.1 in Annex 6.2.). The distribution of family farms is mostly proportional to the distribution of rural population by regions. The only more-or-less significant differences are noticeable in Yerevan, where the urban population operates 3 percent of the family farms, and in the Armavir, Ararat and Tavush regions. In the Armavir and Ararat regions, where 11.9 percent and 14.0 percent of farms are situated, respectively, a greater proportion of the rural population (16.7 percent and 17.0 percent) and households (15.1 percent and 16.5 percent) reside. Here, there are two key considerations: bigger families and an off-farm employment, which is conditioned by a greater number of processing facilities, and the proximity of those regions to Yerevan, the capital. In Tavush, where the share of farms (10 percent) is greater than the share of rural population (7 percent), the density of farming should be considered.

[3] Out of 317 346 farms, only 312 397 were landowners, while the rest were renting land. The further statistical data is calculated taking into account the active 317 346 holdings. For the analysis of land distribution, 345 875 holdings are taken into account; this is the total number of agricultural holdings that were involved in agricultural production other than only animal and poultry breeding, fish farming or processing.

[4] A *marz* is a regional administrative unit in Armenia, corresponding to a region or province. There are 10 such *marzes* in Armenia, along with the capital, Yerevan, which is not a *marz*.

Figure 1. Distribution of family farms by region

SOURCE: NSS (2016A)

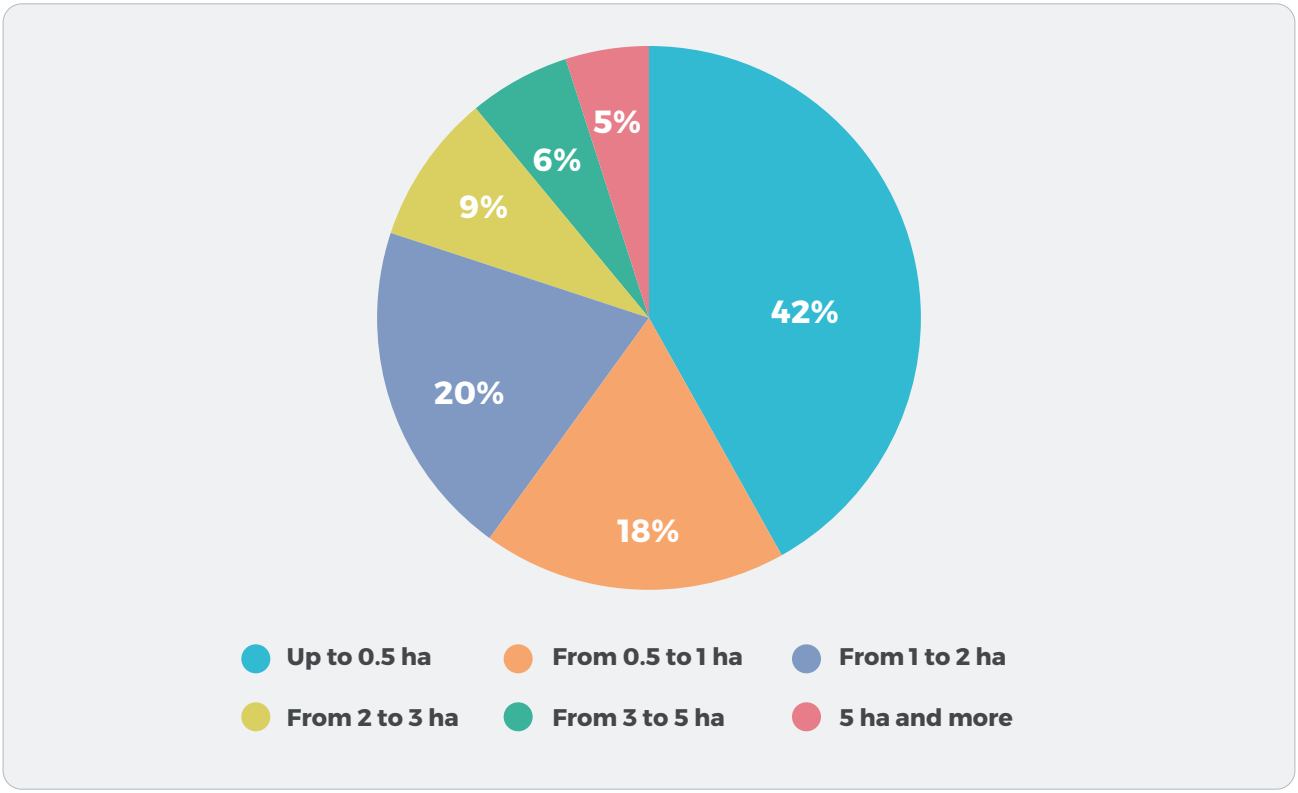
The distribution of the farms that were not present in the community during the census shows that there are some regions with a significant share of passive landowners.[5] Examples are the Tavush and Lori regions, where about one-fifth of the total number of family farms were inactive, or the Gegharkunik and Vayots Dzor regions, with 15 percent and 14 percent of the inactive family farms, respectively. These numbers show that migration from rural areas in these regions is high (see Table 23, Annex 6.2.).

Most of the family farms (54 percent) are involved both in crop production and animal husbandry, while just 4 percent of farms are involved only in animal husbandry. Close to half (42 percent) of family farms are involved exclusively in land cultivation, including the production of crops, fruits and vegetables, and plants and berries.

The study of farm sizes and distributions shows that most of the family farms – 42 percent – are smaller than 0.5 ha, and that the majority of these farms are situated in Ararat (19 percent), Kotayk (13 percent) and Armavir (11 percent) regions. Proportionally, the next big group are farms that are from 0.5 ha to 1 ha and from 1 ha to 2 ha – 18 percent and 20 percent, respectively. In total, 89 percent of farms are 3 hectares or smaller. Of the farms in the 0.5-to-1-ha group, 22 percent are located in the Ararat region, and 23 percent of farms from 1 ha to 2 ha are in the Gegharkunik region (see Figure 2 and Figure 3).

[5] Passive landowners are the family farms that were not present in the community when the census took place. These probably were migrated families who had land and were considered as farms but who had left the village.

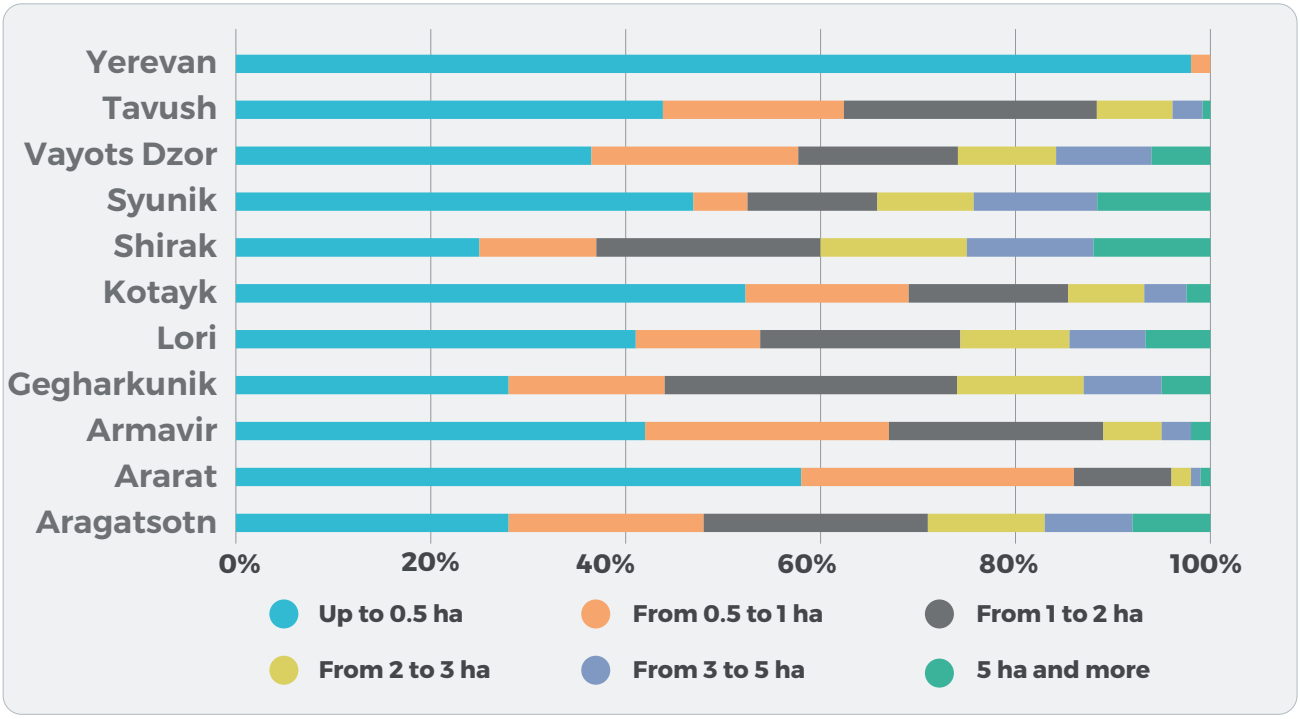
Figure 2. Distribution of family farms by area of owned and rented lands



SOURCE: NSS, 2016A

It is interesting to note that for all regions except Gegharkunik, more farms are in the smallest-size group than in any other group, while the largest-size group, for farms of 5 ha or larger, contains the fewest farms in all regions but Syunik (see Figure 3). In most of the regions, more than half of family farms are smaller than 1 ha. This is especially significant in the Ararat (86 percent), Kotayk (69 percent), Armavir (67 percent) and Tavush (62 percent) regions. In Yerevan, 98 percent of family farms are smaller than 0.5 ha.

Figure 3. Family farms by size of owned and rented agricultural lands, per region



SOURCE: NSS, 2016A

In line with the dominance of small family farms, it is worth mentioning that some of the above-mentioned regions are the greatest producers of agricultural products. For instance, the Ararat and Armavir regions are the biggest producers of fruits, vegetables, melon crops and grapes and have the largest numbers of greenhouses and pigs. Tavush leads in tobacco production by family farms (NSS, 2016a, NSS, 2015a).

At the same time, the Shirak and Gegharkunik regions are significant producers of grain crops and potatoes and have the largest numbers of cattle. The most sheep and beehives are in the Syunik and Gegharkunik regions. For a list of the agricultural specializations of smallholders by region, see Table A1.3 in Annex 6.2.

3.2.1 Development of the importance of smallholders and family farms in the economy in the period 2005–2015

Agriculture is one of the most important economic sectors of Armenia. From 2005 to 2015, together with forestry and fishing it comprised, on average, around 18 percent of the national gross domestic product[6] and has made a significant contribution to GDP growth every year since 2010. For instance, in 2015, 2.3 percentage points of the total 3.2-percent GDP growth was contributed by the agriculture. In addition, agriculture had the largest share of the GDP – around 17.2 percent, followed by industry (16.3 percent) and trade (10.8 percent). In 2005, agriculture was 19.0 percent of the gross domestic

[6] Hereinafter the GDP in Armenia includes agriculture, forestry and fishing as a single category. However, it should be noted that taking into account the value of gross output of the latter two (AMD 29.1 billion in total for 2015, or approximately USD 60.9 million), they have a low contribution to the GDP. For comparison, in 2015 the gross output for agriculture was AMD 945 billion (roughly USD 1.98 billion).

product, providing 2.1 percentage points of the 13.9-percent GDP growth. So, during recent years and especially after the 2008 crisis, agriculture has been the main driver of economic growth in the country (see Table 2). According to projections[7] from the Government of Armenia, with favourable weather conditions agriculture is expected to grow by 4.1 percent per year, on average, during 2017–2019. It also is expected to remain a major supply-side driver of economic growth.

Agriculture is considered an important source of income. According to official statistics, in 2015 18 percent of Armenian labour resources and 35.3 percent of the employed Armenian population were employed in agriculture (379 000 people, of which 54 percent were women).[8] Of the total employed, 31 percent of men and 40 percent of women were involved in agriculture (Table A1.4, Annex 6.2.). In 2005, agriculture accounted for 46.2 percent of the employed population, of which 45.8 percent were women (NSS, 2016d). Taking into account that the agriculture sector is around one-fifth of the GDP, it can be fairly stated that the productivity of agriculture and the level of generated income are relatively low.

According to the 2011 population census (NSS, 2016h), the economic activity rate and employment rate are higher in rural areas, while unemployment is traditionally lower. At the same time, economic activity and employment rates are higher for men living in rural areas than for women – 71.7 percent vs. 60 percent. This is true for all age groups except for the 15–19-year-old age group, meaning that girls are getting involved in work earlier.

Table 2. Main macroeconomic indicators and agriculture in Armenia

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
GDP growth rate, percent	13.9	13.2	13.7	6.9	-14.1	2.2	4.7	7.2	3.3	3.6	3.2
Contribution of agriculture to GDP growth, percentage points	2.1	0.1	1.9	0.5	1.0	-2.7	2.7	1.6	1.4	1.1	2.3
Share of agriculture in GDP, percent	19.0	18.7	18.2	16.1	16.7	16.8	19.9	17.9	18.4	18.1	17.2
Employment in agriculture, percent	46.2	46.2	46.0	44.1	45.6	45.3	38.9	37.3	36.3	34.8	35.3
Gross agricultural output, at current prices, billions AMD	493	555.9	633.9	628	552.1	636.7	795	841.5	919.1	983.0	945.4
Change of gross agricultural output, at current prices, billions AMD, in percent comparison to previous year	-2.2%	12.8%	14.0%	-0.9%	-12.1%	15.3%	24.9%	5.8%	9.2%	7.0%	-3.8%
Volume indices of agricultural output, at comparable prices, in percent comparison to previous year	111.2	100.4	109.6	101.3	99.5	86.4	113.9	109.5	107.1	106.3	108.4

[7] Republic of Armenia Medium-Term Expenditure Framework 2016–2018

[8] According to the National Statistical Service definition, "labour resources" is the sum of the economically active (both employed and unemployed persons) and the inactive populations (those who are neither in employment nor in unemployment, i.e. those who do not have a job and who are not searching for a job). The number of labour resources is similar to the total population of 15–75-year-olds. The "employed population" involves people aged 15–75 who, within the reference week: (a) had been a wage-earner (employee) and non-wage-earner, regardless of whether the job was permanent, temporary or seasonal, one-off or casual, even if that job included an hour in total; (b) were temporarily absent from work for various reasons; or (c) were engaged in household or farm while the production was intended for full or partial sale or exclusively for own final use, provided that the production had a significant share in household consumption. Data on employed population also include armed forces, besides conscripts on mandatory military service.

SOURCES: NSS YEARBOOK (2006, 2011, 2017); EMPLOYMENT, CBA (2017A).

At the same time, it should be noted that because of methodology used by the National Statistical Service, the number of people employed in agriculture is not representative in terms of reflecting full-time employment of labour resources and labour productivity. The National Statistical Service does not provide data for full-time-equivalent employment, and its methodology[9] counts people as employed if, within the reference week, they had any type of job, even if for just one hour.

The only raw estimate that we can get for the full-time involvement of the population in agriculture is for 2014 by combining the census data on the number of family farm members involved in agriculture by months with the number of the employed population during the same period. So, in 2014, an estimated 31.5 percent of the employed population was involved in agriculture for seven or more months, compared to the 34.8 percent reported by the National Statistical Service. At the same time, according to the census data, only 42 percent of the heads of farms and only 35 percent of the members of family farms, including heads, were involved in agriculture for seven or more months during the reference year[10].

Two sources provide data on the gender distribution of those involved in agriculture: the Agricultural Census (NSS, 2016a) and the NSS publication Labour Market of the Republic of Armenia (NSS, 2016d). Because of methodological differences,[11] there is some inconsistency between these sources. In particular, according to the census, the number of women who were involved in agriculture for seven or more months during the reference year is lower than the number of men – 175 604 vs. 181 298 (49.2 percent vs. 50.8 percent). At the same time, according to Republic of Armenia Labour Market data, which covers the same period (Table A1.4 in Annex 6.2), there are more women involved in agriculture – 174 600 men vs. 220 100 women (44 percent vs. 56 percent). The only age group for which women involved in agriculture outnumber men, according to the census, is the 35-to-54 age group.

As we can see from Table 3, the largest age group involved in agriculture for seven to 12 months is those between 45 and 64 years old – 43.8 percent of the total involved in agriculture. Both the largest share of women (44.8 percent) and the largest share of men (42.7 percent) involved in agriculture also belong to this age group.

Regarding employment in agriculture, it is also worth mentioning that the majority of jobs in agriculture are informal.[12] In 2015, for example, 99 percent of the agricultural jobs, 374 900 in total, were informal.

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9 According to the National Statistical Service, an employed person is someone aged 15 to 75 who within the reference week (a) had a paid or unpaid job, regardless of whether the job was permanent, temporary or seasonal, one-off or casual, even if that job included an hour in total; (b) was temporarily absent from work for various reasons; or (c) was engaged in household or farm while the production was intended for full or partial sale or exclusively for own final use, provided that the production had a significant share in household consumption.

10 From 11 October 2013 to 10 October 2014.

11 The data on employment is calculated based on the employment force survey of NSS, where an employed person is someone who was a wage-earner during the reference week. Yet the census provides the number of family farm members involved in agriculture by gender, age and duration of involvement in agricultural activities, by months. To increase the comparability of the census data with the data provided in the employment statistics, only those family farm members who were involved in agriculture for the duration of 7–12 months are represented in Table 3.

12 According to NSS, informal employment includes: (i) employees holding informal jobs, (ii) employers and own-account workers having informal sector enterprises, (iii) all contributing (unpaid) family workers, (iv) members of informal producers' cooperatives, and (v) self-employed/own-account workers who produced goods or services exclusively for own final use by their household, if considered employed. Also considered as informal employed are those contributing (unpaid) family workers who are engaged in the production of goods exclusively for own final use by their household if their production represents a significant contribution to the total consumption of the household.

Moreover, 75 percent of employment in rural areas in 2015 was informal (NSS, 2016d).

Table 3. Age and gender distribution of those involved in agriculture for 7–12 months

	Age groups involved in agriculture						Total
	15-24	25-34	35-44	45-54	55-64	65 and older	
Total involvement in agriculture for 7–12 months	**37 866**	**55 776**	**55 811**	**86 983**	**69 092**	**51 374**	**356 902**
Percent within total	**10.6**	**15.6**	**15.6**	**24.4**	**19.4**	**14.4**	**100.0**
Total men	**21 706**	**31 436**	**26 668**	**42 196**	**35 218**	**24 074**	**181 298**
Men family heads involved in agriculture for 7–12 months	403	4 293	11 137	31 908	31 634	22 548	101 923
Men family members involved in agriculture for 7–12 months	21 303	27 143	15 531	10 288	3 584	1 526	79 375
Total women	**16 160**	**24 340**	**29 143**	**44 787**	**33 874**	**27 300**	**175 604**
Women family heads involved in agriculture for 7–12 months	80	554	1 702	5 798	8 112	13 754	30 000
Women family members involved in agriculture for 7–12 months	16 080	23 786	27 441	38 989	25 762	13 546	145 604

SOURCE: NSS (2016A).

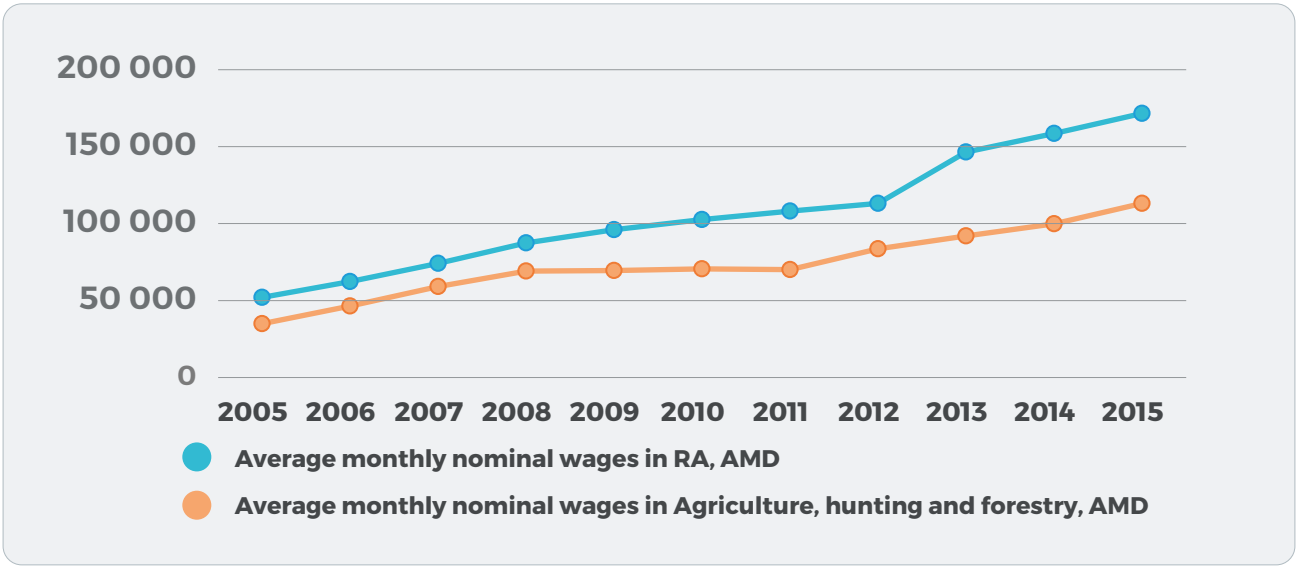
According to the NSS publication Social Snapshot and Poverty in Armenia (NSS, 2016e), in 2015, the average monthly per capita monetary income in rural areas was AMD 42 103 (USD 88[13]), yet the same indicator for urban populations was 39 percent higher. According to the same source, 25.6 percent of income in rural areas was from sales of agricultural products and livestock and from consumption of own-food production. However, some sources report a higher dependency in rural areas from agriculture, especially for small family farms. According to an assessment of farmers' needs conducted by FAO in 2015 (Gannon, 2016), agricultural activity is the main source of income (68 percent) for small farms, with a significant number of family members working on the farm. According to the Economic Development and Research Center publication (2015), 50.7 percent of households in rural areas receive income from agriculture, followed by 49.3 percent from labour, 48.5 percent from age pensions and 27.3 percent from remittances from abroad. Data from the Institute for Political and Sociological Consulting[14] (2016) show that during 2013–2015, sales or own consumption of agricultural products was an income source for 67.2 percent to 74.5 percent of rural households.

It also should be noted that wages earned in agriculture have always been lower than the national average, and as can be seen in Figure 4, during the past ten years, and for the past three years in particular, this gap has considerably increased. At the same time, according to 2015 data, agriculture is the only sector in Armenia in which women are paid very close to what men are paid. In 2015, women in Armenia received, on average, only 66.5 percent of men's earnings, yet in agriculture, women received 94.9 percent of men's nominal wage, on average (NSS, 2016c).

[13] According to the Central Bank of Armenia, the average exchange rate in 2015 was AMD 477.95 per USD 1. Further in the report, for all currency conversions the average annual exchange rate of the Central Bank of Armenia will be used.

[14] Renamed to Breavis in June 2017.

Figure 4. Average monthly nominal wage vs. wage in agriculture in Armenia, 2005–2015



SOURCE: NSS, 2016D AND THE SAME PUBLICATIONS FOR 2014, 2013, 2011 AND 2010

Unfortunately, more official data on family farm earnings or their incomes are not available; however, the International Center for Agribusiness Research and Education country report from 2015 provides income estimates from the production of some selected fruits and vegetables per hectare (see Table 4). The same study also provides estimates for animal husbandry, stating that the average dairy farm with five cows will, after three to four years of operation, be able to generate around USD 3 000 farm income per year.

Table 4. Income for selected farm produce per hectare

Product type	Harvest from one hectare (kg)	Farm income (USD)
Peach	30 000	11 387
Pepper	35 000	10 563
Apricot	30 000	9 978
Grape	25 000	7 066
Eggplant	50 000	5 707
Plum	30 000	3 137
Cucumber	20 000	2 185
Potato	35 000	701
Wheat	2 600	570

SOURCE: ICARE (2015).

As was mentioned before, agriculture in Armenia is mostly carried out by 317 346 family farms, which contribute more than 97 percent of the total agricultural output (see Table 5, and for output value in USD, please see Annex 6.2) and comprise 99.86 percent of all active agricultural holdings. The greater share of the agricultural output belongs to plant growing, where again the same pattern of family farm dominance is visible – more than 99.5 percent of plant-growing produce is produced by family farms. Compared with plant growing, in animal husbandry family farms have relatively less production output – around 92 percent (see Table 5).

Table 5. Gross agricultural output in Armenia for 2005–2015 by types of producers and by animal husbandry and plant growing, at current prices in billions AMD

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Total in Armenia	**493**	**556**	**634**	**628**	**552**	**637**	**795**	**842**	**919**	**983**	**945**
Plant growing	288	356	430	406	347	393	465	516	573	595	550
Percent of total in Armenia	***58.4%***	***64.1%***	***67.8%***	***64.6%***	***62.8%***	***61.7%***	***58.5%***	***61.3%***	***62.3%***	***61.0%***	***58.2%***
Animal husbandry	205	200	204	222	205	244	330	326	346	388	395
Percent of total in Armenia	***41.6%***	***35.9%***	***32.2%***	***35.4%***	***37.2%***	***38.3%***	***41.5%***	***38.7%***	***37.7%***	***39.5%***	***41.8%***
Total by family farms	**479**	**543**	**615**	**611**	**534**	**618**	**770**	**812**	**892**	**955**	**918**
Percent of total in Armenia	97.2%	97.6%	97.1%	97.2%	96.8%	97.0%	96.9%	96.5%	97.1%	97.2%	97.1%
Plant growing	288	356	429	406	346	392	464	515	571	593	548
Percent of total plant growing	***99.9%***	***100.0%***	***99.9%***	***99.9%***	***99.7%***	***99.8%***	***99.8%***	***99.7%***	***99.7%***	***99.7%***	***99.6%***
Animal husbandry	191	186	186	205	189	226	306	297	321	362	370
Percent of total animal husbandry	***93.4%***	***93.3%***	***91.1%***	***92.3%***	***91.9%***	***92.5%***	***92.8%***	***91.3%***	***92.7%***	***93.3%***	***93.7%***
Total by commercial organizations	**14**	**13**	**19**	**17**	**18**	**19**	**25**	**30**	**27**	**28**	**28**
Percent of total in Armenia	2.8%	2.4%	2.9%	2.8%	3.2%	3.0%	3.1%	3.5%	2.9%	2.8%	3.0%
Plant growing	0.2	0.1	0.5	0.3	1.1	0.8	1.1	1.5	1.5	2.3	2.3
Percent of total plant growing	***0.1%***	***0.0%***	***0.1%***	***0.1%***	***0.3%***	***0.2%***	***0.2%***	***0.3%***	***0.3%***	***0.4%***	***0.4%***
Animal husbandry	13.6	13.3	18.2	17.1	16.7	18.4	23.6	28.3	25.2	26	25.5
Percent of total animal husbandry	***6.6%***	***6.7%***	***8.9%***	***7.7%***	***8.1%***	***7.5%***	***7.2%***	***8.7%***	***7.3%***	***6.7%***	***6.5%***

SOURCES: NSS YEARBOOK (2017, 2011, 2006).

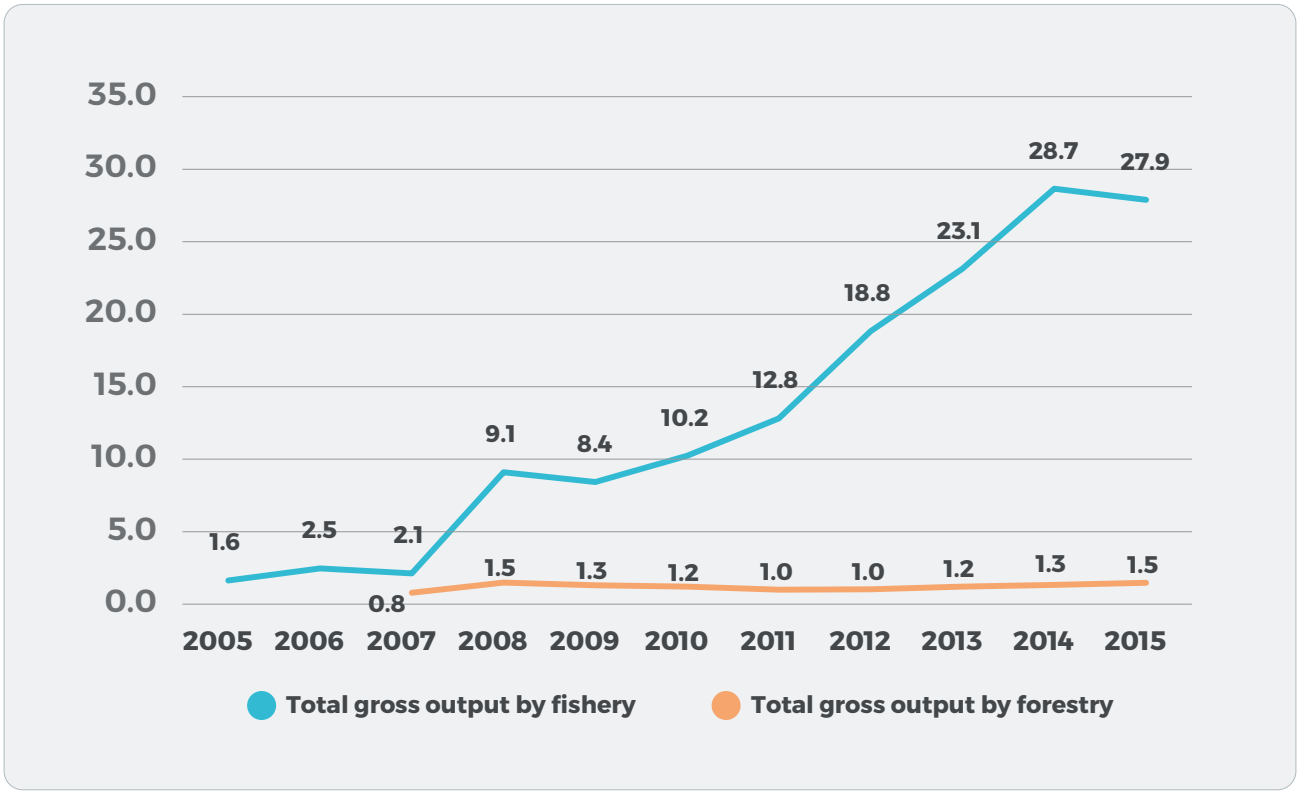
The other 3 percent of the total agricultural output is produced by commercial organizations that comprise 0.14 percent of agricultural farms in Armenia.

The only sectors of agricultural production in which individual households are not so dominant is the production of poultry meat and eggs, correspondingly around 68 percent and 30 percent of total production in 2015 (see Annex 6.2, Table A1.5, Figure A1.1 and Figure A1.2). Currently, there are more than ten medium and large commercial organizations involved in the production of eggs and poultry meat. Around 650 to 700 million eggs and 8 to 9 thousand tons of poultry meat is produced in the country per year (NSS, 2016g).

Unfortunately, there is no data for the value of agricultural output by specific types of products. Only quantity indicators are available. The gross output by the fishery and forestry sectors is very small. The gross output for forestry is around AMD 1.2 billion, on average, for 2007–2015, with very slow annual growth. And yet, the fishery sector grew 16 times – from AMD 1.6 billion in 2005 to 27.9 billion in 2015 (NSS, 2016g, see Figure 5). For both sectors, there is no data on the contribution of family farms.

The only available data about family farms is from the census (NSS, 2016a), where the surface area of the basins used for fish farming is presented. Here also, a larger share of basins – 76 percent of the total are managed by family farms, yet the commercial farms have a greater area of basins per farm – 8 800 square meters vs. 4 700 square meters, for family farms. The biggest number of fish farms and the biggest basins belong to family farms from the Ararat region.

Figure 5. Gross output for fishery and forestry sectors at current prices in billions AMD



SOURCE: NSS, 2016G AND THE SAME PUBLICATION FROM 2006 TO 2015

Home processing for own consumption is very popular in Armenia. In addition to cheese, *matsun* (yogurt) and bread, produced in rural areas, many families countrywide are also involved in own production of fruit and vegetable preserves, jams and compotes, dry fruits, and herbs. And yet, according to the agricultural census (NSS, 2016a) only 39 percent of family farms were involved in on-farm processing, and only 31 percent of those farms sold the processed goods.

LAND FUND DISTRIBUTION

According to the latest data available from the State Committee of the Real Estate Cadastre under the Government of Armenia (SCREC, 2016), there are in total 2 045 500 hectares of agricultural land in Armenia, which comprise 68.8 percent of the whole territory of the country.

Agricultural land is distributed in the following categories: 446 400 ha are arable land, 34 700 ha are perennial plantations, 121 100 ha are hayfields, and 1 051 300 ha are pastures (Table 6).

Table 6. Agriculture, forestry and fishery land distribution by ownership type in Armenia, 2016

Type of land	Total area, ha	belonging to:			
		Armenian citizens, ha	Armenian legal persons, ha	Community, ha	State, ha
Total agricultural land, ha	**2 045 472.3**	**435 583.3**	**19 665.8**	**959 021.4**	**630 674.7**
Arable land	*446 414.7*	*321 869.3*	*2 796.4*	*108 947.3*	*12 626.8*
Land under perennial plantations	*34 691.6*	*31 083.2*	*1 367.1*	*2 186.3*	*23.2*
Hayfields	*121 059.6*	*54 887*	*300.6*	*35 488.6*	*30 376.4*
Pastures	*1 051 286.3*	*17 546.6*	*11 751.7*	*567 913*	*453 824.6*
Other agricultural land	*392 020.1*	*10 197.2*	*3 450.2*	*244 486.2*	*133 823.7*
Backyard land	**89 847.1**	**89 313.1**	**72.8**	**380**	**0.7**
Industrial agricultural land	**12 781.9**	**2 125.8**	**1 598.0**	**8 039.0**	**1 007.8**
Forest land	**334 029.1**	**0**	**0.2**	**595.3**	**333 433.6**
Water surfaces	**25 869.6**	**709.3**	**689.2**	**3 892.5**	**20 578.5**

SOURCE: SCREC (2016).

As of 2016, about 72 percent of arable land, 90 percent of perennial plantations and 45 percent of hayfields belong to family farms. No sex-disaggregated data exist on land ownership, although data do show that 25 percent of farms are headed by women (NSS, 2016a). It has been documented that women have limited access to land ownership and control over land, because of existing social gender-based stereotypes and expectations over daughters and sons within patrilocal marriages, which are widely practiced in rural areas (within which sons are expected to take the lead on the farms, and daughters are expected to move to live with their husbands' families). Within this practice, women lose *de facto* their rights over their parents' land and do not enjoy any rights over their husbands' land, increasing their economic dependency (FAO, 2017b).

With regards to pastures, only 2 percent of all pasture areas are in private ownership, as pastures were not subject to privatization during the land reform. Pastures and hayfields, which are mostly state or community owned, are mainly used by the rural population free of charge, with very few based on lease agreements. Water surfaces are also primarily state or municipal property, and about 10 percent of them are rented by the private sector. The water surfaces owned by Armenian citizens and legal persons, accounting for about 5 percent of the total, are mostly artificial lakes and ponds used for fish farming (Table 6).

The total area of agricultural land under some form of irrigation is 154 825 ha (Table 7). As much as 30 percent of the arable land, 98.6 percent of perennial plantations, including orchards and vineyards,

and 57 percent of backyards belonging to individuals are under irrigation systems. At the same time, this doesn't imply a regular and reliable supply of irrigation water, as the systems suffer from poor maintenance and conveyance losses (UNDP, 2013).

Table 7. Distribution of agricultural land by category of use, status of irrigation and type of ownership, 2016 (in ha and percent)

Type of land	Area, ha	Irrigated, percent	from which belonging to:					
			Armenian citizens, ha	Citizens, irrigated percent	Community, ha	Community, irrigated percent	State, ha	State, irrigated percent
Total agricultural land, ha	**2 045 472.3**		**435 583.3**		**959 021.4**		**630 674.7**	
Total agricultural land, percent	**100%**	**7.6%**	**21.3%**	**29.5%**	**46.9%**	**2.3%**	**30.8%**	**0.2%**
Arable land	*446 414.7*	*26.7%*	*321 869.3*	*30.0%*	*108 947.3*	*18.2%*	*12 626.8*	*9.8%*
Land under perennial plantations	*34 691.6*	*97.8%*	*31 083.2*	*98.6%*	*2 186.3*	*85.1%*	*23.2*	*55.6%*
Hayfields	*121 059.6*	*1.2%*	*54 887*	*2.2%*	*35 488.6*	*0.9%*	*30 376.4*	*0.0%*
Pastures	*1 051 286.3*	*0.0%*	*17 546.6*	*0.0%*	*567 913*	*0.0%*	*453 824.6*	*0.0%*
Other agricultural land	*392 020.1*	*0.0%*	*10 197.2*	*0.0%*	*244 486.2*	*0.0%*	*133 823.7*	*0.0%*
Backyard land	*89 847.1*	*56.8%*	*89 313.1*	*57.0%*	*380*	*17.8%*	*0.7*	*0.0%*
Total	**2 135 319.4**		**524 896.4**		**959 401.4**		**630 675.4**	

SOURCE: SCREC (2016)

According to the land balance of Armenia for 2016, around 66.9 percent of agricultural land in state or communal property (of which 55.6 percent is arable land and perennial plantations) was neither rented nor used.

Regarding land abandonment, according to data from the agricultural census, around 33 percent of arable land (116 846 ha) belonging to family farms and commercial organizations was not cultivated either (NSS, 2016a).

According to a FAO Policy Note on Land Abandonment (2017a), land abandonment is often a result of a complex multi-dimensional process with interlinked social, economic, and environmental factors resulting in the land being unutilized. The reasons for not cultivating the land are various and self-reinforcing, including the farm structure being dominated by small farms, excessive land fragmentation, ageing rural population, migration, heavy dependence of agricultural production on water and the availability of irrigation facilities, various problems along the agricultural value chains, and increasing problems of land degradation.

In the case of public lands, the reason for abandonment often lies with unfavourable soil and the climate and terrain characteristics of the subject lands. It also could be a result of the inefficient implementation of state land management policy.

ANALYSIS OF THE FARM STRUCTURE

In line with continuously increasing volumes of agricultural output, the number of family farms and their landholdings have not changed much during the past ten to 20 years.

After land privatization in 1991, it was estimated that around 320 000 to 340 000 family farms, with an average land holding of 1.4 ha, had been created.[15] According to the census, by November 2014 there were 345 875 family farms with, on average, 1.48 ha of owned and/or cultivated land. Roughly 25 percent of those farms were headed by women.

The change in the average farm holding by family farms and area of available agricultural lands during 1995–2014 is presented in Table 8.

Table 8. Distribution of agricultural lands available in Armenia per type, thousand hectares

	1995	2005	2014
Agricultural land	**1 391.4**	**2 135.3**	**2 045.7**
Of which:			
Arable land	*483.5*	*457.7*	*446.7*
Perennial plantations	*74.7*	*29.0*	*34.4*
Plough land	*138.9*	*127.8*	*121.1*
Pastures	*693.5*	*885.1*	*1 051.3*
Other land	*0.8*	*635.7*	*392.2*
Area of agricultural land in the household farms	*452.7*	*469.7*	*513.0*
Average farm holding by family farms	1.43	1.38	1.48

NOTE: THE FIRST ACCURATE LAND BALANCE REPORT WAS COMPILED ONLY IN 2006. BEFORE THAT, THE SCREC WAS IN THE PROCESS OF INVENTORY/CLASSIFICATION OF LAND UNDER DIFFERENT CATEGORIES. PARTICULARLY, STONY PASTURES INITIALLY CONSIDERED AS NON-AGRICULTURAL LANDS WERE RECLASSIFIED INTO AGRICULTURAL.
SOURCES: NSS (2001), NSS (2006), NSS (2016A), SCREC (2005), SCREC (2015).

By looking at the average farm size today, but also at the pattern of distribution by size, a small tendency towards bigger farm structures can be noticed. According to the agricultural census of 2014, farms larger than 5 ha are around 5 percent of all farms and hold around 34 percent of the agricultural land belonging to family farms and commercial farms (see Table 9). The pattern is the same in the case of family farms, as 5 percent of farms in the category of 5 ha and larger hold 31 percent of the agricultural land. At the same time, almost 60 percent of family farms have less than 1 ha of agricultural land, smaller than the average allocation of 1.4 ha during the reform. Thus, one conclusion could be that although the total number of farms in the country hasn't changed significantly since the land reform, changes have occurred in farm-size distribution: Some family farms have become bigger, while many others have become smaller. According to census data, 23 percent of family farms have land of less than 0.1 ha.

[15] The members of family farms became adult residents of Armenia who were either rural residents or had an intention to move to rural area and get involved in farming. See Republic of Armenia Law on Peasant and collective peasant farms, No N-0242-I, adopted on 22 January 1991 and expired on 4 January 2007, available at: http://www.arlis.am/DocumentView.aspx?docid=30952.

Table 9. Number and size of farms, by size category

Farm size	Family farms		Commercial farms		Total farms		Family farms		Commercial farms		Total farms	
	units	% of total	units	% of total	units	% of total	hectares	% of total	hectares	% of total	hectares	% of total
up to 1 ha	206 270	59.6%	68	19.9%	206 338	59.6%	75 188	14.7%	29	0.1%	75 217	14.1%
1 to 3 ha	101 095	29.2%	53	15.5%	101 148	29.2%	186 627	36.4%	92	0.4%	186 719	34.9%
3 to 5 ha	22 295	6.4%	23	6.7%	22 318	6.4%	89 451	17.4%	86	0.4%	89 538	16.8%
5 ha and more	16 214	4.7%	198	57.9%	16 412	4.7%	161 735	31.5%	21 191	99.0%	182 926	34.2%

SOURCE: NSS (2016A).

While the average amount of land cultivated by a family farm is 1.48 ha,[16] there is a considerable variation by region – from 0.04 ha in Yerevan and 0.72 ha in Ararat to 2.54 in Shirak. The average size of cultivated land is proportional to the share of smallholders in the region. In other words, the average size of the land cultivated in a region is directly related to the number of farms cultivating small or big plots (see Figure 3); there are more big farms in Shirak and more small farms in Ararat.

Household lands are usually highly fragmented. On average, each family landholding consists of three different land plots, while at the same time 33 percent of lands owned by individual households are divided into six or more plots. On average, each plot is around 0.41 ha. According to some estimations, the land plots are located at a distance of up to 10 to 15 km from each other, on average (Vardanyan and Grigoryan, 2006).

Despite the limitations of land resources held by family farms, their role is significant. For example, 93 percent of all vineyards, 99 percent of all berry fields and 96 percent of all orchards belong to family farms, yet at the same time, 58 percent of orchards, 92 percent of berry fields and 72 percent of vineyards are below 1 ha (see Table 10).

Table 10. Distribution of agricultural lands among family farms, by size

	Arable land	Orchard (including nurseries)	Berry field (including nurseries)	Vineyard (including nurseries)	Hayfield	Pasture
Total owned by family farms, ha	346 041.7	18 706.5	92.2	12 533.6	66 189.9	28 932.2
up to 1 ha	65 358.6	10 859.7	84.6	9 000.9	23 969.7	4 469.4
1 to 3 ha	127 787.0	5 683.5	4.7	2 675.0	22 177.3	4 226.8
3 to 5 ha	58 538.6	1 109.2	3.0	326.1	7 111.0	2 286.0
5 ha and more	94 357.5	1 054.1	0.0	531.6	12 931.9	17 950.0

SOURCE: NSS (2016A).

[16] The average farm holding is calculated for all farms, excluding those that are only involved in animal husbandry or processing, i.e. for 345 875 households.

AGRIFOOD TRADE AND FOREIGN DIRECT INVESTMENTS

Armenia is a net importing country, with a negative trade balance of USD 1.7 billion in 2015 and imports more than doubling exports. At the same time, agriculture is the important source for exports in Armenia, with a share of total exports of more than 20 percent in recent years (see Table 11). The country's main trading partners are European Union countries, with 27.8 percent of exports and 25.3 percent of imports, followed by Commonwealth of Independent States countries, where the majority of trade is with Russia – 16.5 percent of exports and 20.0 percent of imports in 2015 (NSS, 2017a).

Table 11. Value of external trade of agrifood in Armenia, 2005–2015, millions USD

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Total exports	973.9	985.1	1 152.3	1 057.2	710.2	1 041.1	1 334.3	1 380.2	1 478.7	1 547.3	1 485.3
Agrifood exports	112.3	115.6	169.0	196.1	126.4	156.3	222.9	313.2	389.0	409.7	430.5
Percent of agrifood exports within total exports	12%	12%	15%	19%	18%	15%	17%	23%	26%	26%	29%
Total imports	1 801.7	2 191.6	3 267.8	4 426.1	3 321.1	3 749.0	4 145.3	4 261.2	4 385.9	4 424.4	3 239.2
Agrifood imports	281.2	308.9	492.5	684.2	553.9	617.8	715.8	744.0	777.4	742.8	787.2
Percent of agrifood imports within total imports	16%	14%	15%	15%	17%	16%	17%	17%	18%	17%	24%

SOURCES: NSS (2016B) AND THE SAME PUBLICATIONS FOR 2012, 2010, AND 2007.

After recovering from the global financial crisis of 2008, exports during 2010–2014, recorded considerable growth in monetary terms, despite a decline in the physical volume of exported products in 2013–2014 (see Annex 6.2, Table A1.6 and Table A1.7). In 2015, despite growth in the physical volume of exported products, the value of exports fell by 4 percent from 2014. This fall was mainly due to depreciation of the national currency. At the same time, agrifood exports recorded 5-percent growth from the previous year.

Meanwhile, continuous growth in agrifood exports, both in value and in volume, have been recorded every year since 2010, with the only exception being 2014, when 80 to 90 percent of the annual apricot yield was destroyed due to spring frosts.

In 2015, a significant share of the agrifood exports of Armenia were alcoholic and non-alcoholic beverages. During the studied period (2005–2015), these comprised, on average, around 60 percent of the value of agrifood exports. Next came tobacco, at around 12 percent, on average. Tobacco gained a considerable share in recent years, from 7 percent of the export value in 2011 to around 40 percent in 2015. In absolute value, since 2011 the exports of tobacco have increased nine to ten times. The third-largest group of agrifood exports is vegetables and fruits, which during the studied period had a relatively stable share of exports, on average comprising 11 percent of the export value, ranging from 7 percent to 13 percent in various years. The biggest component of this subgroup is preserved food, which accounted for 5 percent of total agrifood exports in 2015. The last product with a somewhat considerable share of exports is fish products (fresh or chilled fish and crustaceans), which since 2010, on average, has accounted for 3 percent of volume exports and 6 percent of value exports. For the studied period, Armenia was a net exporter of beverages, mainly brandy, fish (since 2012) and tobacco (since 2014). Thus, processed agricultural products form the principal component of Armenian agrifood exports.

The main export markets for Armenian agrifood products are the Russian Federation (with 40 to 60 percent, on average) and Georgia (with 3 to 5 percent, on average). Recently, Iraq and Syria have been significant export markets, mainly due to increasing tobacco exports; in 2015, 32 percent of all agrifood exports were exports of tobacco to Iraq.

European Union exports are negligible, mainly because of strict food safety regulations and required food certification (ISO, HACCP) by EU countries. Very few Armenian producers are able to initiate the certification process because of the high costs associated with this procedure, including capital investment costs required to remodel production facilities in order to bring them in line with the requirements of the standards.

For export volumes and values of the most significant agrifood products during 2005–2015, please see Figure 6. For import volumes and values, please see Figure 7.

During the studied period, the share of Armenia agrifood imports in total imports was stable, at around 16 to 17 percent. One exception is 2015, when – in line with the decline of total imports by almost 27 percent – agrifood imports grew by 6 percent to account for up to 24 percent of total imports.

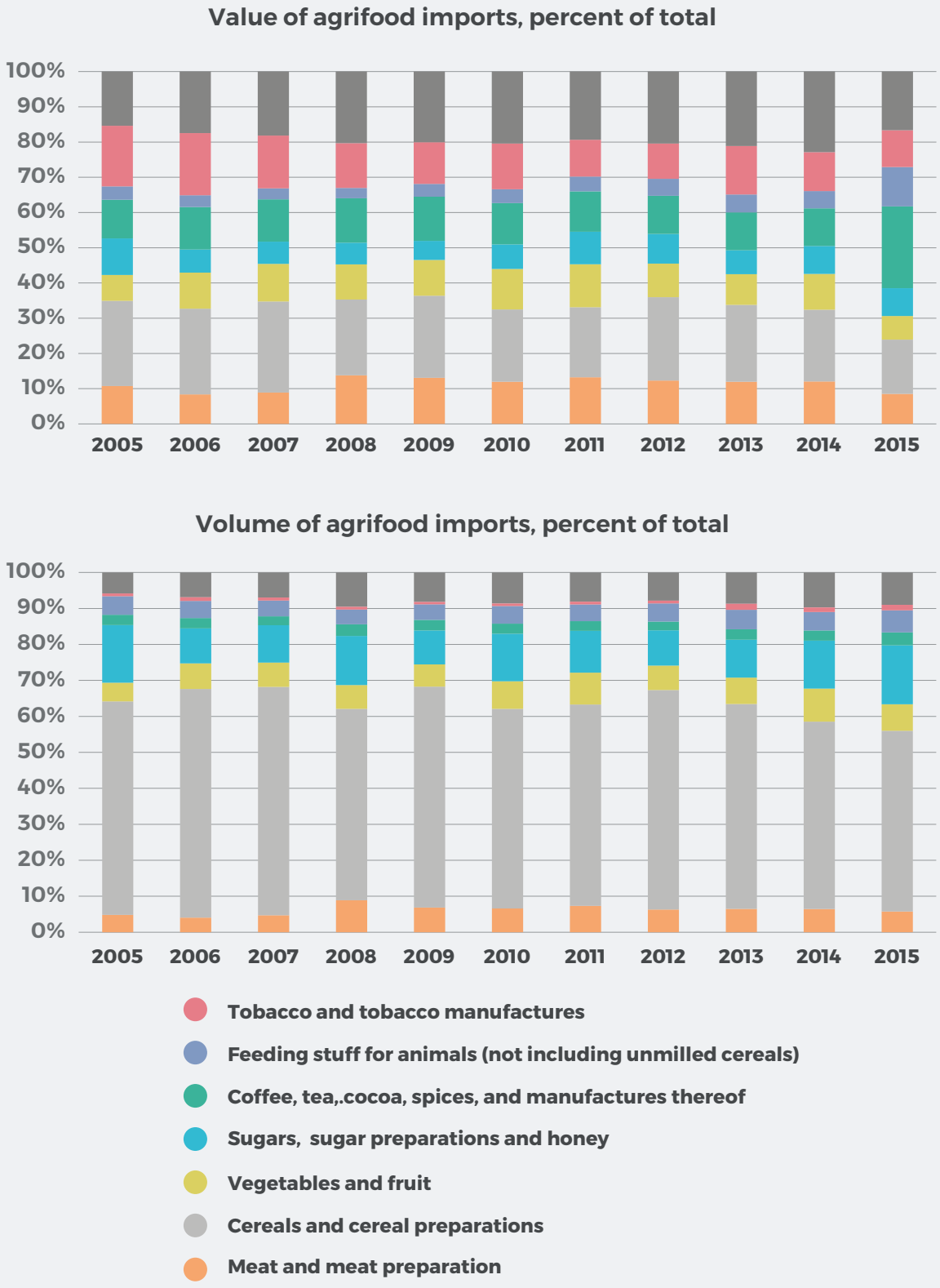
The lion's share of Armenian agrifood imports belongs to cereals and cereal products. During 2005–2015, this category accounted for, on average, 57 percent of volume imports and 22 percent of value imports. Each year, on average, 450 000 tons of cereals is imported. The shares of imported tobacco and coffee, tea, and cocoa are around 13 percent each. The share of meat products (11 percent of average value) and vegetables and fruits (10 percent of average value) of total agrifood imports also are significant. On average, around 55 000 to 60 000 tons of vegetables and fruits are imported each year, mainly citrus fruits, bananas and vegetable preserves.

The most significant import markets for Armenia are the Russian Federation and Ukraine.

Figure 6. Value and volume of main agrifood exports

SOURCE: NSS, 2016B AND THE SAME PUBLICATIONS FOR 2012, 2010, 2007

Figure 7. Value and volume of main agrifood imports, percent



SOURCE: NSS, 2016B AND THE SAME PUBLICATIONS FOR 2012, 2010, 2007

According to 2014 agricultural census, the size of the average landholding in Armenia is 1.48 ha, and each household, on average, has three parcels of land (which, according to some estimations, can be up to 15 km from each other). Moreover, around one-third of land owned by family farms is in six or more parcels. These are the results of ineffective land reform and of the established farm structure, which, among other things, leads to an increased area of uncultivated lands. In 2014, 33 percent of the arable land belonging to family farms and commercial organizations was cultivated.

To support farm structure improvement, FAO launched in 2004 a pilot project in the Nor Erznka community of the Kotayk region in which, through the exchange, purchase, sale or donation of land parcels between landowners (including community), 162 land parcels from 92 owners had been consolidated into 67 parcels. This decreased the average number of parcels owned by each landholder in the community from three to two and increased the average farm size from 1.25 ha to 2.5 ha. The average area of a parcel increased from 0.47 ha to 1.25 ha. The average area of a parcel increased from 0.47 ha to 1.25 ha. *(See Annex 6.2.)*

The volume of foreign direct investments in the Armenian economy is very low. In 2015, the inflow of foreign direct investments comprised only 1.4 percent of the nominal gross domestic product, directed mainly to energy and heating supply and mining. As of 2015, the share of foreign direct investments in the agrifood sector was only 7.4 percent of the net stock of foreign direct investments in Armenia. Yet, crop and animal production, hunting and related services alone had only 2 percent of the net stock of foreign direct investments.

3.2.2 Agricultural land market and property rights

After collapse of the Soviet Union, Armenia went through an extensive land-reform process that established land as private property. The process of land privatization began in 1991 and was completed in 1993. State-owned agricultural land was distributed to rural families in an equal way (Hartvigsen, 2015). However, the amount of land distributed to each family varied greatly, depending on the ratio between the available state land and the number of eligible families in each community. For each rural community, 75 percent of the agricultural land was distributed among the eligible families, with the land being held by the family members in co-ownership. Families with more members got a larger share than those with fewer members. The different categories of land in the community were divided, and a family normally received one to two parcels of arable land, one parcel of vineyard, and one parcel of orchard. A lottery was held to determine the location of the family parcels in the village (Giovarelli and Bledsoe, 2001). Some 25 percent of the agricultural land and all pasture areas were kept under state ownership but were available for lease to private individuals. This state land was transferred to local community councils; these councils still manage the land.

The Land Code of Armenia, adopted in 2001, stipulates that citizens and legal entities have the *right to own, use and dispose of land*. The rights on land descend from privatization, inheritance, land market (buying-selling, exchange and donations), other deals and legal grounds concerning land (court decisions, for example). Besides ownership and use rights, the Land Code also recognizes a number of partial rights, such as mortgage, servitude, etc.

Even though land was distributed equally among women and men, registration was done in the name of the heads of the households, who were mostly men. Even though no sex-disaggregated data exists on land ownership, this, along with reduced awareness or knowledge among land professionals and rural populations on women's land rights, reduces women's *de facto* possibilities to exercise their rights over the

land they own. This issue is even more acute when informal transactions occur (FAO, 2017b). Because of inheritance practices linked to patrilocal marriages (those in which brides go to live with their husbands' families), it can be expected that the number of women owning land will decrease after each generation.

The subjects of land relations in Armenia are the state itself, communities, local and foreign legal entities, citizens, stateless persons, foreign states and international organizations and persons having special residency status. At the same time, according to the Armenian Constitution, foreign citizens and stateless persons cannot own agricultural land in Armenia; they can only use it.

State and community lands can be alienated into private ownership and allocated for free-of-charge use. These lands can also be alienated through direct sale or auctions, and they can be exchanged. State and community lands can be allocated for use through tender. It is also worth mentioning that, according to the Armenian Land Code, the renting of state- and community-owned land in general cannot exceed a duration of 99 years (25 years for agricultural land).The land reform resulted in a highly ineffective farm structure that was characterized by small holding and farm sizes and by high levels of fragmentation of agricultural land, both in ownership and in use.

As was discussed earlier, around 33 percent of the arable land is not cultivated. Besides the technical reasons mentioned above, the cultivation of available land resources is also hindered by low returns from farming, to some extent related to the small sizes of cultivated lands.

The comparative analyses (SCREC, 2005–2015) of the land market for 2005–2015 shows that in the period of 2005–2008, the land market was quite active, with an average of 19 120 ha of land (of all categories) and 17 600 ha of agricultural land alienated[17] annually. A sharp decline in 2009, associated with the consequences of the financial crisis, reduced the level of annual alienations of agricultural land to 8 200 ha, on average (see Table 12).

According to the State Committee of Real Estate Cadastre (SCREC), during 2005–2015 around 90 percent of alienations were related to agricultural land. According to the same source, community or state-owned lands were always subject to alienation during 2005–2015, and a great part (more than 80 percent) of alienated lands were agricultural lands.

Table 12. Land alienation in Armenia, 2005, 2010, 2015

	2005		2010		2015	
	units	hectares	units	hectares	units	hectares
Alienation	-	18 572.56	15 576	8 943.11	18 695	9 556.3
Of which						
Agricultural land	-	17 596.77	7 489	7 923.40	11 332	8 873.98
Community or state sold land	-	-	3 468	2 113.40	3 696	1 612.48
Of which, Agricultural land	*2 132*	*11 328.61*	742	1 894.24	*1 012*	*1 447.55*
Private sold land	-	-	10 423	5 905.60	11 642	6 728.24
Of which, Agricultural land	*5 011*	*5 858.33*	5 850	5 211.42	*8 225*	*6 355.45*

SOURCE: SCREC (2005–2015).

[17] Sales, donation and exchange

It is interesting to note that in 2005, 2010 and 2015, the largest quantity of land was alienated in the Armavir region – 12 307.14 ha, 2 606.73 ha and 2 129.7 ha, respectively. More than 97 percent of these lands were agricultural lands.

The functioning land market for almost 20 years (since 1995) could not solve the structural problems of small farm sizes and excessive fragmentation of holdings and has led in some cases to even higher land fragmentation (FAO, 2017a).

Land turnover as a measure of land market efficiency indicates that the land market in Armenia in 2016 experienced a turnover of around 1 percent; 4 535 ha of private agricultural land was transferred through buy/sell transactions, out of the total of 455 249 ha privately owned agricultural land (FAO, 2017a).

This turnover rate is somewhat on the low side when compared with other countries in Central and Eastern Europe. For example, in Lithuania, the number of sales of privately owned land was constant over the 2000–2003 period, with around 3 percent of privately owned land being transferred either through sales or donations. There was a strong increase in the transfer of private land after 2004, the year of European Union accession, with the share increasing to 5 to 7 percent.

In Czechia, the annual turnover of privately purchased land amounted to about 0.2 to 0.3 percent of the total agricultural area during the period of 1993–2001. However, from 2002 to 2004, the annual turnover of private land increased to 1.5 percent, and even to 3.3 percent in 2005.

This shows that the agricultural land market, while functioning, is still relatively weak, with a limited number of transactions, and would require support measures to accelerate the structural transformation of agriculture (FAO, 2017a). For more details, see Section 5.2.

Registration services and the provision of cadastral information for a particular property are offered in an efficient, transparent, and cost-effective manner and can be obtained from any territorial office in the country. The rights of all legal owners, including women, are registered in ownership certificates and no transactions cannot be made without their approval. Persons who have electronic signatures can apply for registration and information online, without visiting offices. Land transactions must be authenticated by private notaries or directly by the registrars of the SCREC. Private persons qualified as real estate appraisers provide appraisal services.

During recent years, the process of registering rights on real property has become quite easy, transparent and cost-effective. The SCREC maintains a state cadastre of real estate and ensures the operation of the cadastre system in accordance with the legislation of the Republic of Armenia. The land cadastre and the registration system are electronic and unified. Services are provided through a countrywide network of branch offices, which only accept applications for registration and issue final documents (certificates, reference, etc.), excluding direct contact between officials and the rights holders.

In line with the above-mentioned practical improvements in the system of land tenure, organization of property rights and land titles, there are still some obstacles that hinder the development and better functioning of the land market in Armenia. Some of the obvious reasons are low economic attractiveness and high risk of the agricultural sector, which are deepened due to small land parcels and the low availability of off-farm jobs in rural areas, which again keeps landowners attached to the land and forces them to practice subsistence farming. Inaccuracies of land borders also could be mentioned among the technical obstacles, as digital cadastre maps are often not in line with the situation on

the ground. Other obstacles include inadequate cadastral appraisal and valuation approaches of agricultural, fish farms and forest lands, which do not reflect the real market values.

3.2.3 Value chain organization, standards and access to markets

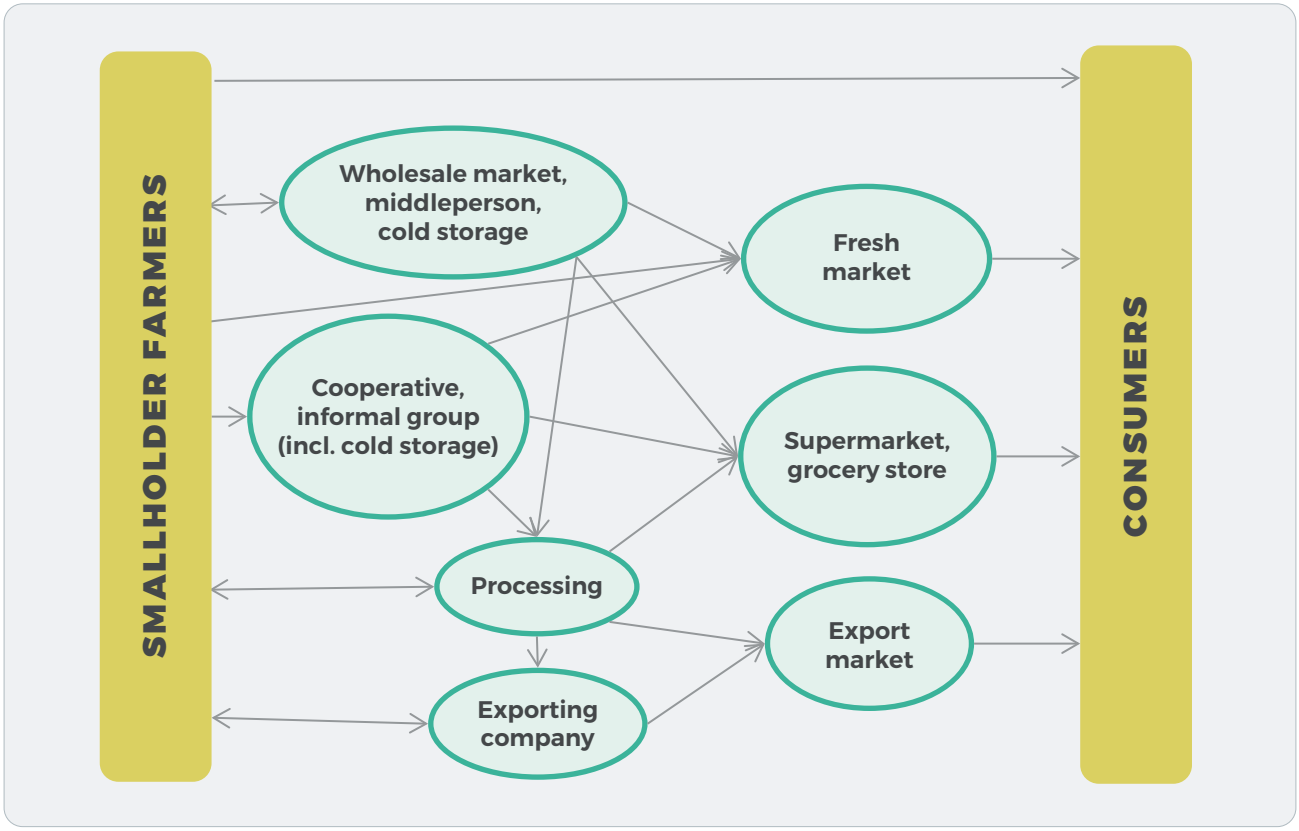
Armenia has a small and vertically integrated economy, with a small number of relatively fragmented value chains, especially in the rural sector (USAID, 2010). The value chains are rather short, with few links among smallholders and final consumers. The cases in which smallholders directly sell to final consumers or in which produce is bartered are widespread, but their volumes are negligible.

Small scales of production and the low level of specialization hinder the smallholders from forming durable links within value chains, and as a result, the cases of long-lasting cooperation among smallholders and their sales channels are few. Thus, it can be stated that in Armenia, the prevailing value chains are mostly "traditional," governed by spontaneous market transactions and involving a large number of smallholder producers and a relatively large number of retailers. The issues of food safety and traceability are not high priorities within the acting value chains, as the competition among value chain actors is mostly price-driven. Interestingly, a recent survey (ICARE, 2013) of supermarkets revealed that in order to gain higher profits from sales, supermarkets prefer buying fruits and vegetables straight from farmers.

For smallholders, there are two big channels for moving produce from farms to markets (see Diagram 1):

- middlepersons, such as *exporters*; *wholesalers* working with processing companies, supermarkets and other retail chains or retailers; *small retailers* working in the fresh market; and a small number of *cold storage owners* working with supermarkets and other retailers (including in the fresh market); and
- processing companies (dryers, canneries, mills, beverage producers, etc.), which usually source the majority of their raw materials directly from smallholders, who in turn usually bring their produce to the processor's facility on their own account and bear not only the costs of transportation but also the costs of transportation losses. Only a few processors employ contract farming and provide inputs to smallholders, such as in the brandy industry, where the majority of the product is for export, and maintaining the established taste and quality of the final product are high priorities (BSC, 2016). Taking into account milk shortages during spring and winter months, several big dairies have established milk collection points and freezers in some communities.

Diagram 1. Value chain: Main channels of smallholder access to final consumers



SOURCE: AUTHOR'S ELABORATION

Middlepersons are more numerous and usually contact a smallholder based on the required produce characteristics, whether for export, fresh market or supermarket. This can be a first-time contact or based on a long-lasting relationship. The middlepersons usually pay immediately at the farmer's location. At the same time, the middleperson is a price maker, and smallholders have little space to bargain. In the case of fruits, middlepersons can also offer to buy unharvested produce and bear the costs of harvesting.

Supermarket chains, which are considered as the main element for the transformation of food systems, are widespread only in the capital city, Yerevan. In other major cities of Armenia, there are fewer supermarkets, with just a few chains and many grocery stores. There is only one supermarket, Carrefour, that is part of a global, organized value chain. The rest are local supermarkets, with lower operational capacities.

To the best of our knowledge, no fresh products of Armenian origin are processed abroad and thus part of any global value chain. Moreover, because of low competitiveness and low levels of compliance with food safety standards, Armenian smallholders, in their current state, are not ready to be part of such chains. The existence of a globally linked supermarket is quite important for local producers, as it can give export opportunity to those local producers who can meet the retailer's quality standards and whose products are demanded abroad.

There are no major distribution and cold storage centres, with the exception of Spayka, the leading exporter of fresh fruits and vegetables from Armenia. Spayka requires premium quality for fresh

produce, and smallholders often find it hard to comply with those requirements. With Spayka being the main exporter, producers often find themselves having no alternative but accept the prices it offers; these prices often are lower than expected, based on quality of the produce and on market prices. It is also worth mentioning that the company has its own greenhouses and processing unit. Moreover, in June 2017, the Government of Armenia approved a decision to grant 110 hectares of new land to Spayka for the construction of a new greenhouse and cheese-processing unit.

The problems associated with the low level of participation and formation of cooperative structures are various, including a low understanding of cooperative principles, the legacy of the socialist past, and legislative issues. Before 2015, the cooperatives in the agriculture sector were formed in accordance with the Law on Consumer Cooperatives and the Civil Code, under which the relationships in the processes of cooperatives' formation, activity and dissolution were not regulated. Furthermore, these regulations were not in compliance with internationally recognized concepts and principles of cooperatives.

So, to support the formation of agricultural cooperatives and to solve the issues arising from small-scale farming, in 2015, with the support of many organizations involved in the field, including FAO, the Law on Agricultural cooperatives was adopted. For the first time in Armenia, through this law the Government takes on itself the obligations to assist in the creation and development of cooperatives and to strengthen their economic viability. *(See Annex 6.2.)*

Vertical and horizontal integration through cooperatives, farmer groups or associations are not common, and thus producers do not benefit from the improved market position that these organizations can provide. Associations and unions rarely perform marketing activities (any upstream or downstream activities); their role is seen more as consulting and providing easy access to inputs.

Participation in cooperative structures is not widespread, and the level of their performance is not satisfactory for the general agricultural sector. Most of the agricultural cooperatives currently operating in Armenia were established through donor-support projects without a clear market or operational objective. Most of the members joined cooperatives only because of a short-term opportunity to receive some tangible or intangible assets from donors (Urutyan and Ayvazyan, 2016). As a result, there are several cooperatives that own some processing or post-harvest handling facilities. However, only a few have continued to successfully operate them after the end of the projects in the framework of which they were established. In general, cooperatives in Armenia are not supported by committed producers. Their market participation is occasional, and they are far from being a part of the agricultural value chain (Urutyan, 2013a, Millns, 2013).

Issues of food safety, hygiene and traceability are still relevant for all levels of value chains, and the issue is especially serious in the case of storage and transportation of products of animal origin. Food safety in Armenia is regulated by Armenian national legislation[18] as well as by technical regulations of the Eurasian Economic Union (CU, 2011). Though these regulations ensure that food composition is safe for use, and though implementation of these regulations is mandatory for locally produced or imported food, monitoring and implementation of these regulations is limited, especially in the case of primary production, transportation, storage and sales of fresh produce.

[18] Republic of Armenia Law on Food Safety, available at: http://www.arlis.am/DocumentView.aspx?DocID=104105. Republic of Armenia Law on Protection of Consumers' Rights, available at: http://www.arlis.am/DocumentView.aspx?docID=107279. Republic of Armenia Law on Veterinary, available at: http://www.arlis.am/DocumentView.aspx?docID=101830. Republic of Armenia Law on Trade and Services, available at: http://www.arlis.am/DocumentView.aspx?docID=107199.

The majority of regulations refer to after-farm production stages of the food value chain. For instance, according to the Armenian Law on Food Safety, the implementation of Hazard Analysis and Critical Control Points system principles, which are highly prioritized by the Government and are required by Eurasian Economic Union food safety regulations, needs to be done in all the stages of the food value chain after primary production. It is planned that by 2023 all participants of local value chains, except for primary producers, will have introduced systems of HACCP (GoA, 2015).

Currently, implementation of HACCP principles is not widespread among processors. Only some big companies that have export targeted production have HACCP and other related food safety certificates. In the companies that focus only on the local market, the implementation of HACCP is very rare (ICARE, 2015). According to the World Bank Enterprise Survey for Armenia (The World Bank, 2014), in 2013, only 25.6 percent of manufacturing firms have an internationally recognized quality certification. However, the exact percentage of food manufacturing firms that implement any kind of quality control management systems is unknown, as there are no official statistics on this. It should also be noted that, according to specialists in this field, the practice of using bogus HACCP documentation or other food safety control systems is common among Armenian food manufacturers (BSC, 2016).

According to Eurasian Economic Union regulations (CU, 2010), a number of products – including some of food origin – require the Certificate of State Registration. In Armenia, these certificates are issued by the State Service of Food Safety under the Ministry of Agriculture. All products for which technical regulations of the Eurasian Economic Union are available should have a Certificate of Conformity or Declaration of Conformity stating that they were produced in accordance with the technical regulations.

At the same time, there are no regulations or standards that govern the farming activities of family farms. Each farmer is free to organize production and waste disposal in their farms however they want. Given the limited coverage of extension services and the limited availability of trainings and consulting for farmers, the situation is quite worrisome, as issues related to on-farm safety for farmers and their workers (in terms of their awareness of basic health and safety-related practices while working with farm chemicals) and to the safety of harvested produce (in terms of residual quantities of pesticides and other chemicals) are fully at the discretion of a given farmer. In addition, it should be noted that the environmental impact of farming is also quite significant. Though there are rules and regulations governing these issues, farmers often neglect them or are not aware of them. For example, the practices of burning leaves in autumn or of burning fields after crop harvests are widespread in the countryside, even though they are prohibited by the Armenian Law on Protection of Atmospheric Air. Also, containers of used chemicals are commonly disposed of in the same location as household waste or near water sources.

Traceability of food sold in fresh markets, grocery stores and even supermarkets is almost non-existent.

Standardization is regulated by the Armenian Law on Standards (RANA, 2012b), which distinguishes national, international, regional and organizational standards. According to this law, implementation of national standards is mandatory only if they are required by the technical regulations. In addition to these, there are numerous systems of standards with which an operator in the food industry must comply, and there are other voluntary standards, such as International Organization for Standardization, European Norms, organic standards and more.

3.2.4 Access to finance

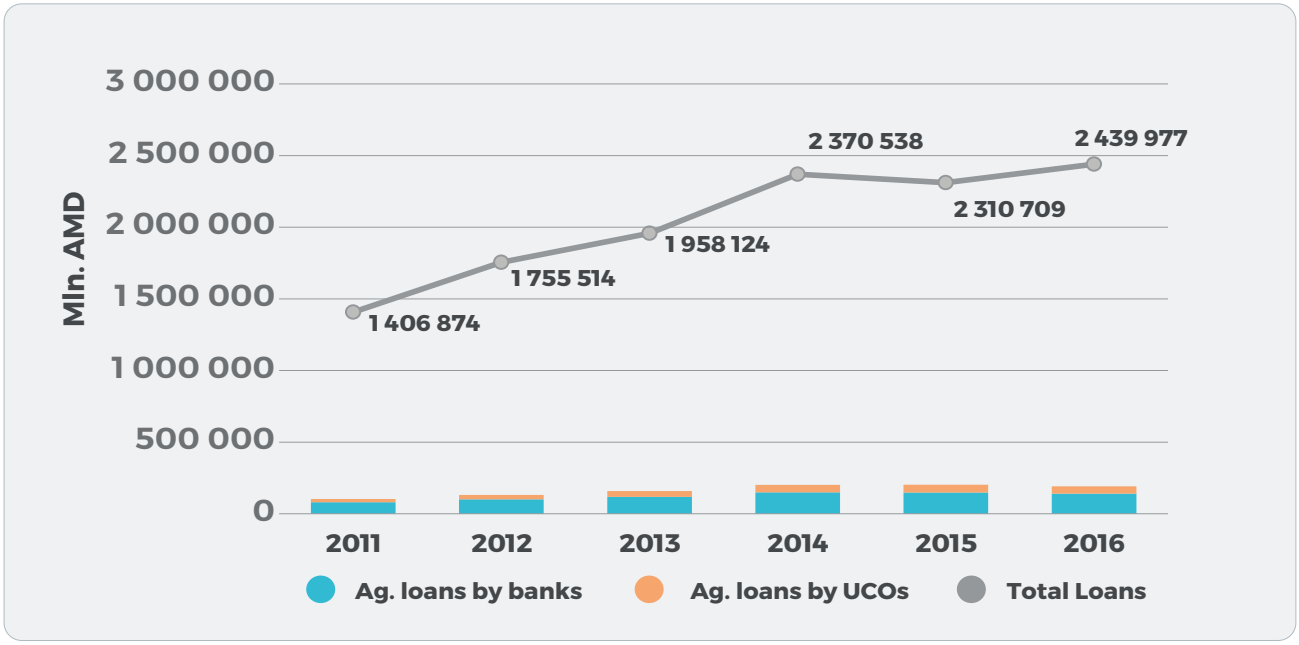
Accessible funding is a crucial factor for the success of the agricultural sector and for the well-being of smallholders, as it provides a number of opportunities: investing in efficient technologies and new product varieties, accessing markets, integrating into a value chain, extending the business, and much more. Access to finance is a leverage for the economic empowerment of rural women and men. There are several sources of funding that smallholders in Armenia have access to. These are: commercial credits and loans, grants, government subsidies, remittances and personal savings.

It should be noted that there is continuing disparity in economic opportunities among women and men in Armenia. Rural women usually benefit from micro-credit or loan programmes provided by donor organizations, which make these funds available on the basis of a specific level of women's involvement (quotas). However, women face difficulties in obtaining loans, partly because they lack property for collateral. Other indirect burdens are women-unfriendly business environments, mobility constraints, limited access to large markets, and the gendered dimensions of social capital (i.e. social interaction and networking) (FAO, 2017b).

Given the high number of work migrants, the volume of remittances is quite significant in the national economy; according to the World Bank, remittances accounted for around 14.2 percent of the gross domestic product in 2015. Yet, at the same time, there is no differentiation of how much of the remittances go to the agricultural sector, and it is not possible to assess the impact of migration on investments in agriculture. Sex-disaggregated data on recipients of remittances is also not available.

As for credits and loans, as of July 2017, the financial sector of Armenia comprises 17 commercial banks and 35 credit organizations, with 696 branches in total. Most of these financial institutions provide agricultural loans and other agricultural financing services. Given the number of financial institutions and the small size of the country, it can be stated that, in principle, the services of financial institutions are available for smallholders throughout Armenia. However, accessibility is a big problem. For instance, in 2017, on average 7.5 percent of loans were agricultural and about 16 percent of rural households received loans for financing their agricultural activities (CBA, 2017b, NSS, 2018). Unfortunately, no sex-disaggregated data on borrowers is available. For more details, please see Figure 8.

Figure 8. Total loans and agricultural loans by commercial banks and universal credit organizations, 2011–2015 (end of the period)



SOURCE: CBA (2017B[19]).

According to a recent (2013) feasibility study of KfW development bank on agricultural finance, access to credit is not a problem. However, there are challenges in the "quality of provided credit"; see below in this section for more details. According to another study – the Assessment of Farmers' Needs in Training and Advice (Gannon, 2016) – 50 percent of surveyed farms indicated lack of finance as their main problem. Yet, at the same time, 39.4 percent of farms had taken loans for expansion and intensification of their farm business.

According to census data during the reference year, 72 874 family farms (23 percent of the total) have had loans, though the data on how many loans they had is missing.

The absence of agricultural insurance, in combination with usually occurring unfavourable weather conditions, increases the riskiness of the sector and consequently hinders financing. Under general conditions, the annual interest rate for agricultural lending can reach 24 percent, with even higher effective interest rates.[20] Loans have short maturity periods and are predominantly in foreign currency, usually United States dollars (Figures 9 and 10). This imposes additional currency-exchange risks for smallholders. For instance, in 2015 only around 38 percent of all agricultural lending in Armenia was in the local currency, while the depreciation of the Armenian Dram against the United States dollar in 2015[21] was 1.8 percent. The depreciation of the Armenian Dram against the United States dollar was 17 percent in 2014.[22]

However, it should be noted that for the studied period of 2005–2015, the volume of agricultural loans

[19] No data is available for the UCOs before 2011, so for consistency reasons the data for commercial banks before 2011 is also not presented here.

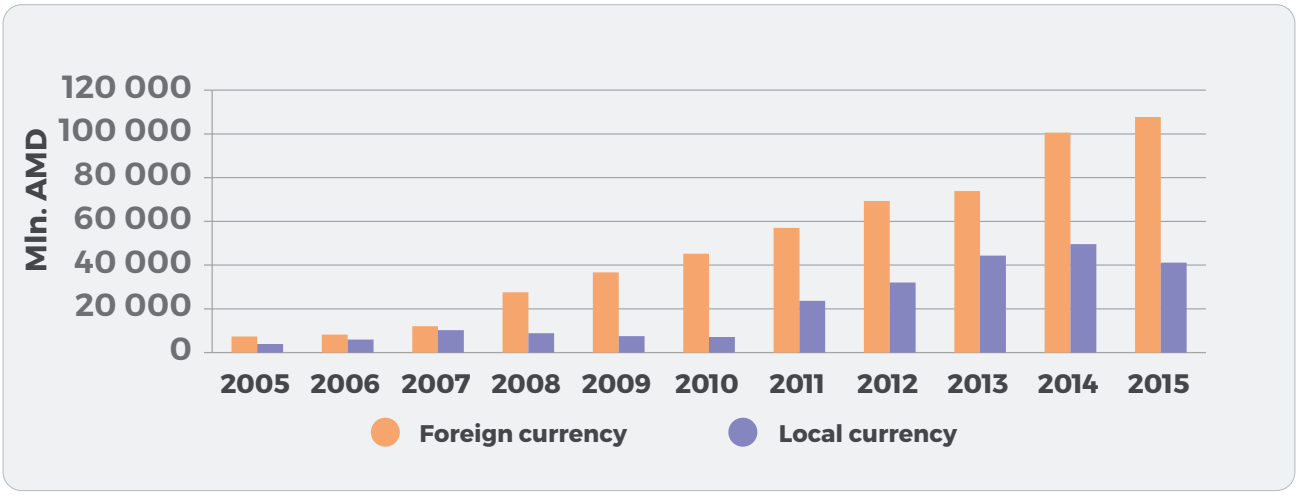
[20] For instance, the agricultural loan of Finca UCO "Gyugh Parz" for working capital and capital investments has a nominal annual interest rate of 24 percent, which for a loan of AMD 1 million for one year costs an effective interest rate of 50.36 percent. See: http://bit.ly/2hs2Mga. Last retrieved on 5 July 2017.

[21] 30 December 2014 to 30 December 2015.

[22] 30 December 2013 to 30 December 2014.

had a positive growth tendency (Figure 9).

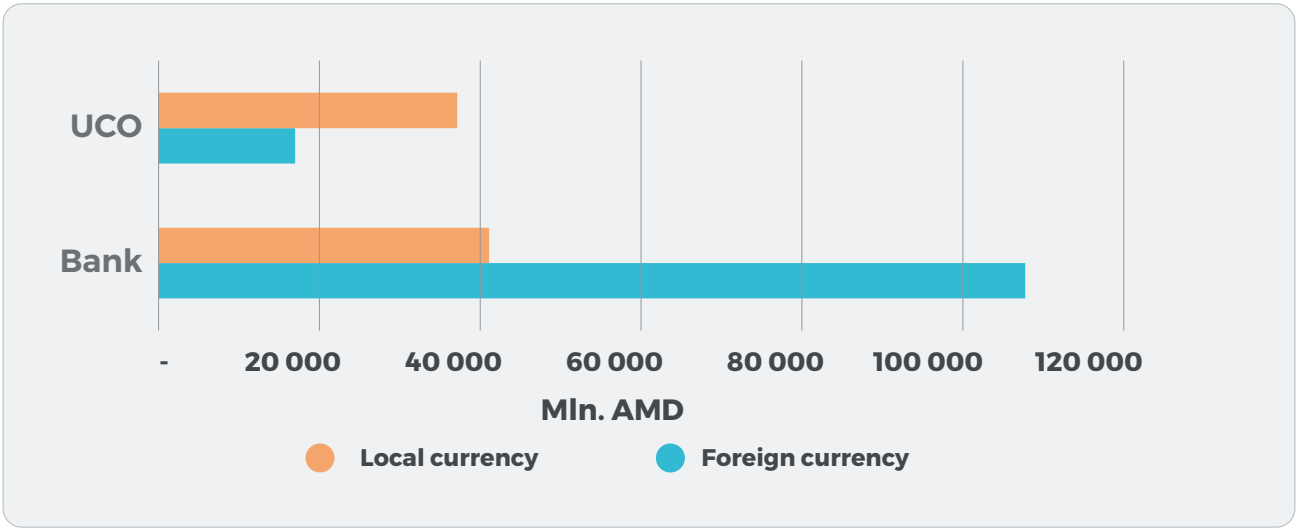
Figure 9. Agricultural loans in foreign and local currencies by commercial banks, 2005–2015



SOURCE: CBA (2017B).

Depending on the value of the loan the guarantor(s) or, collateral such as real estate (land, buildings), vehicles, agricultural machinery, equipment, jewellery and other goods, etc., is usually required. It is worth mentioning that the loan-to-collateral ratio is usually very low, from 40 percent of market value for vehicles to 70 percent for real estate such as buildings. At the same time, financial institutions often do not take "empty" land as collateral and prefer land on which there are at least some buildings. Gold is the only collateral that usually enables the provision of loans of over 90 percent of its value. Additionally, banks appraise collateral property at its fire-sale value (liquidity value) and not the economic value of land, i.e. the potential economic gains. Given that most of the lands are located in rural communities with restricted infrastructure access, their value is usually assessed as much lower than both their market value and economic value.

Figure 10. Foreign and local currency loans by commercial banks and universal credit organizations in 2015



SOURCE: CBA (2017B).

Smallholders also face a lack of flexible repayment schedules, aligned with the seasonality of production and sales. Additionally, loans with grace periods are limited in availability. Another negative factor restricting accessibility of finance for family farms was revealed during the interviews: Some financial institutions don't evaluate the credit history of individual borrowers but take into account the loan portfolio of a community she or he comes from, and if there are many outstanding debts, no new loans will be provided.

The combination of these factors hinders smallholder's access to finance and efficient use of borrowed resources. There are many cases when smallholders take loans and, because they are not able to repay them, lose their property or take additional loans to cover the costs of the first, and thus fall deeper into debt.[23]

To improve farmers' access to commercial funding, since 2011, the Government of Armenia has implemented a programme to subsidize from 4 to 6 percentage points of interest rates for agricultural loans of up to AMD 3 million (GoA, 2011b, GoA, 2017h). However, this programme is limited to funds earmarked annually in Armenia's state budget. For 2015, the allocated amount was AMD 1.16 billion, which was 33.3 percent higher than in 2014. Under this scheme, from April 2011 to June 2017, around 127 500 loans were disbursed, with a total value of AMD 106.4 billion and a total subsidy amount of AMD 5.1 billion (GoA, 2017d). In September 2017, the Government reformulated the programme terms by reducing the interest rate paid by farmers by up to 5 percent, increasing the repayment period to five years, and changing the loan amount, which can now range from AMD 3 million to AMD 10 million (GoA, 2017d). In the framework of the new programme, before applying for a loan all beneficiaries need to complete a training organized by the Agriculture Development Foundation of the Ministry of Agriculture. According to the Government of Armenia, the new programme would support the enlargement of farms and, to some extent, the industrialization of agriculture.

In 2017, the Government started a new programme to support the leasing of agricultural machinery, including subsidizing 7 percentage points of the 9-percent leasing interest rates for most types of agricultural machinery, such as combines, tractors, sprayers, cultivators, etc. At the same time, farmers would have to pay a 20-percent down payment. According to the Decree of the Republic of Armenia Government on Ensuring the Implementation of State Budget 2017, AMD 120 billion will be allocated for this programme. From April 2017 to May 2018, 245 units of agricultural machinery were leased to 115 beneficiaries in the framework of this programme (MoA, 2018).

Another government programme directed to the sector is a programme to subsidize interest rates for the instalment of anti-hail nets (GoA, 2017g). The programme envisions loans for instalment of anti-hail nets on orchards and vineyards with terms of seven years and with a 2-percent annual interest rate. Although the programme does not set any minimal requirements on plot sizes where the nets should be installed, the per-hectare costs are too high for it to be efficient to install the nets on plots smaller than 1 ha. The programme estimates that the average cost for 1 ha of a net on a vineyard is AMD 3.6 million and AMD 7.55 million for 1 ha of orchard.

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[23] "Armenian Farmers Face Ruin in Credit Crunch" article available at: https://iwpr.net/global-voices/armenian-farmers-face-ruin-credit-crunch; "The villagers are massively buried in a credit pit; all the houses of Arevik are pledged" article (in Armenian) available at: https://news.am/arm/news/360951.html; "The villagers appeared in a credit net" article (in Armenian) available at: http://hetq.am/arm/news/43941/gyuxacinery-haytnvel-en-varkayin-sardostayni-mej.html; "Residents of Khachik village sued the loan providers" article (in Armenian) available at: https://www.azatutyun.am/a/27960642.html; "The government subsidizes agricultural loans, and the villagers appear in court" article (in Armenian) available at: http://hetq.am/arm/news/57912/karavarutyuny-subsidavorum-e-gyuxatntesakan-varkery-isk-gyuxacinery-haytnvum-en-dataranum.html

On 21 December 2017, two new programmes on "Subsidization of Interest Rates for the Establishment of Modernized Intensive Orchards" (GoA, 2017e) and "Subsidization of Interest Rates for the Instalment of Drip Irrigation Systems" (GoA, 2017f) were approved by the Government of Armenia. Under the first programme, orchards between 1ha and 10 ha in size and berry fields of 0.5 ha to 5 ha in size will be established with a subsidized interest rate of 5 percent. The programme will be implemented during 2018–2024, and it is expected that in total, AMD 1.695 million will be transferred as subsidies. The second programme does not set any restrictions, and the subsidized interest rate paid by the farmers is 2 percent, with credit terms of three years. Here, it should be noted that no specific quota for empowering women farmers was established under either of the programmes.

As was mentioned earlier, there is no agricultural insurance system in place. Currently, smallholders do not have any protection and bear all the risks connected with climatic hazards and weather shocks. The only help that affected farmers receive in the event of climatic hazards is post-event state assistance, such as small subsidies for input supplies, the waiver of land taxes (Urutyan and Ayvazyan, 2016), or reduced irrigation costs.

One group that has shown some success after the end of a donor-funded project is the Ashotavan raspberry producers.

Ashotavan raspberry producers' group was formed in the framework of World Vision's Economic Development Programme. The aim of the programme was to achieve sustainable increase of producers income.

Previous similar projects in nearby communities involved the provision of heavy assets, which were not effectively used after the end of the projects. This was either because the group owning the asset was not able to organize a joint/shared use, or because the asset went under the control of a few people from the group, while the rest of the group didn't feel ownership of it. So, while working with Ashotavan raspberry producers, particular attention was paid to the formation of groups as teams of cooperating producers.

The formation of a group with its values, joint mission and rules of conduct were a priority this time. This approach, lined up with technical assistance in integration into a local value chain, proved to be a great success. *(See Annex 6.2.)*

There are many reasons for the absence of an agricultural insurance system. The main reasons are as follows: On one hand, the absence of reliable data on the occurrence of insurance events and the underdeveloped infrastructure of preventive measures discourage insurance companies from entering this market. On the other hand, smallholders are not ready to accept agricultural insurance and pay for it. According to the results obtained during the inception phase of the first agricultural insurance pilot project, initiated in two villages of Ararat region by FAO[24] in 2017, even when insurance premiums were subsidized some farmers refused to include their animals in the insurance scheme (Martirosyan, 2017). According to experts, the involvement of the state in the establishment of the system, in terms of subsidizing the premiums during the introductory phase of agricultural insurance, is a must.

Since August 2014, German development bank KfW, together with the Central Bank of Armenia, has been working on a project to implement agricultural insurance. According to initial information,

[24] In the framework of FAO ENPARD, in May 2017, 224 heads of cattle belonging to 32 farmers from Taperakan and Shahumyan villages of Ararat region were insured by Nairi Insurance LLC for one year against death of cattle due to accidents or diseases or forced slaughter directed by a veterinarian. The insurance premium per animal was up to USD 550.

during 2018 several agricultural insurance pilot projects will be implemented, which will be followed by a larger-scale programme and which gradually will introduce agricultural insurance to the Armenian countryside. It is expected that the Government of Armenia will be actively involved in the process and will subsidize the insurance premiums (Martirosyan, 2017).

Since independence, the agriculture sector of Armenia has received significant support from various donor organizations and countries, such as the World Bank, the United Nations, the Millennium Challenge Corporation, the United States Department of Agriculture, the United States Agency for International Development, the European Union, the Austrian Development Agency, the International Fund for Agricultural Development and more. The main areas under consideration have been development of infrastructure and institutional capacities, development of human capital, and promotion of the agricultural credit market. Activities carried out on the government level include work with institutions and the building of infrastructure. On the smallholder level, work has included targeting skills and the development of capacity among individual farmers and farmer groups.

In many cases, work on the smallholder level has included the provision of grants – usually not involving cash but instead certain operational and production means and infrastructures, including animals and rootstock, greenhouses, cold storage and collection points, and tools and equipment, such as tractors, irrigation equipment, milking tools and more. The abundance of support has had a dual result. On one hand, it has significantly improved smallholders' production capacities and position in the value chain. On the other hand, smallholders have become accustomed to working under the umbrella of development agencies and, after the cessation of the programme or donor, have experienced difficulties or shown no progress.

The financial resources of international support funds – such as the International Fund for Agricultural Development, World Bank, European Investment Bank, European Bank for Reconstruction and Development, KfW, Entrepreneurial Development Bank, European Fund for Southeast Europe, and group-financed funds such as Kiva Microfunds – are accessible to farmers only through financial institutions. This significantly increases the cost of funds, as given the riskiness of the sector, the intermediary financial institutions still need to secure their risks.

3.2.5 Access to services

Up to July 2017, the extension service in Armenia was mostly provided by the state-owned Marz (Regional) Agricultural Support Centres (MASCs), operating under the patronage of the Ministry of Agriculture and organized as closed joint-stock companies. There were 10 such centres, one per *marz*, or region. MASCs have been providing consultancy, training and information on modern farming and food processing technologies and best practices to those involved in farming throughout each region.

The MASCs were established in 1999 with the support of the World Bank, and since then they were heavily subsidised by the state, which provided more than 80 percent of their annual budget. The performance of the MASCs was long questioned, as these centres were supposed to be an important link among research and development, "best industry practices" and farmers. However, in spite of state support, they usually experienced too few financial, human and technical resources to perform all the assigned tasks, and thus no practical impact was visible from their operations. They were seen as ineffective and inefficient structures. According to one of the recent studies carried out among 1 800 farms countrywide, only 20 percent of farms have heard of MASCs, and only 10 percent of farms have

received consulting services by MASCs. And at the same time, 47 percent of beneficiary farms have never used for their farming activities the information they were given (EDRC, 2016a). Yet, an evaluation report conducted by the Department of Monitoring and Analysis of the Ministry of Agriculture on the specific set of trainings provided by MASCs states a considerable increase of knowledge among training participants: After the training, the level of right answers on average increased by around 36 percent, according to the report (MoA, 2017b).

According to a government decree (GoA, 2017a), in 2017 all MASCs were liquidated, and their functions were transferred to the newly established Agriculture Development Foundation (GoA, 2017b). To be able to execute extension services, the new Foundation has branches in all regions, and, in total, 139 consultants are involved. The Foundation plans to solve the problem of the malfunction of the MASCs through more practical trainings and targeted farmer education.[25] The Foundation officially started its activities on 3 July 2017, and as of the time of the development of this study, no other information was available about the impact of liquidation of MASCs on smallholder farmers.

At the same time, it is worth mentioning that the Government's new Programme for 2017–2022 (GoA, 2017c) does not include any agricultural advisory or extension services as priority areas for the sector, and thus the future development of the state-financed extension services is not clear.

Besides the former MASCs and the newly established Agricultural Development Foundation, private extension services also are available to smallholders in Armenia. The biggest chain of such services is managed by the Center for Agribusiness and Rural Development (CARD) Foundation. The first of their so-called Farm (and Veterinary) Service Centers was established in 2011, and since then, through the support of different donor organizations, 17 service centres in total have been established in all regions of Armenia. Depending on their location, the centres have different specializations, such as greenhouse, veterinary, or plant growing (CARD, 2018). These centres provide both free-of-charge and fee-based services. Although initially established as donor-funded units, some of the service centres have managed to achieve self-sufficiency. According to CARD, more than 15 000 farmers benefit from these centres. Unfortunately, no sex-disaggregated data was collected on this.

Other sources of farm consulting are retailers of farm inputs, who provide consulting along with the sales of inputs. According to the Ministry of Agriculture, as of August 2017 there were 63 registered sellers and/or producers of agrochemicals and fertilizers in Armenia. As can be seen from Table 13, there are a limited number of retailers in the Shirak, Lori, Gegharkunik and Syunik regions.

[25] News article at The Armenian Times, available at: http://armtimes.com/hy/article/118033, (in Armenian).

Table 13. Distribution of registered sellers of agrochemicals by region, as of August 2017

Region	Number of registered sellers (or producers) of agrochemicals
Armavir	19
Ararat	18
Aragatsotn	6
Kotayk	6
Vayots Dzor	4
Shirak	3
Lori	3
Gegharkunik	2
Yerevan	1
Syunik	1

SOURCE: MINISTRY OF AGRICULTURE LICENSING DEPARTMENT (2017).

The local production of fertilizers, agrochemicals, animal health and treatment pharmaceuticals in Armenia is nearly absent, with the few exceptions of locally produced organic fertilizers, which are not widespread.[26] So, almost 100 percent of fertilizers, agrochemicals, animal health and treatment pharmaceuticals are imported, and according to some estimates, this market is highly monopolized (FAO, 2012). For instance, the annual report of the State Commission for the Protection of Economic Competition for 2016 (SCPEC, 2016) highlights that around 54 percent of the imports of nitric fertilizers belonged to one company, which had set prices that were higher than those from other importers from the same location. At the same time, it should be noted that no customs duties apply to fertilizers or to pesticides. Thus, the high prices of agricultural inputs such as fertilizers and pesticides are set because of monopolized markets. These high prices imply higher production costs for primary agricultural produce.

The imported volumes of fertilizers for the period of 2005–2016 are presented in Table 14.

Table 14. Volume of fertilizers imported to Armenia, 2005–2016, tons

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Nitric fertilizers (N)	46 208	57 921	26 808	24 331	39 542	29 587	35 947	57 447	58 616	48 636	64 292	148 245
Phosphoric fertilizers (P_2O_5)	-	-	-	23	-	34	415	66	559	2 777	1 676	324
Potassic fertilizers (K_2O)	16	1	12	36	5	4	4	514	39	1 700	676	915
Combined fertilizers	229	471	374	212	529	1 699	466	1 643	1 416	1 289	899	1 246

NOTE: THE DATA ON THE VOLUME OF IMPORTED FERTILIZERS REPORTED BY THE CUSTOMS SERVICE OF ARMENIA FOR THE SAME PERIOD IS MUCH LOWER, BUT THE SAME PATTERN OF CONSIDERABLE INCREASE IN IMPORT VOLUMES IS VISIBLE.
SOURCES: INTERNATIONAL TRADE CENTRE (WWW.TRADEMAP.ORG) CALCULATIONS BASED ON UN COMTRADE STATISTICS.

The quantity of imported and thus used fertilizers has significantly increased during the past ten years. According to the same source, the import quantities of pesticides, such as insecticides, rodenticides, fungicides, herbicides, anti-sprouting products, plant-growth regulators, etc., also have recorded significant growth, from 490 tons in 2005 to 2 050 tons in 2016 (1 147 tons in 2015). However, based on

[26] An example of local organic fertilizer is Orwaco (http://www.orwaco.am/). At the same time, for local producers, manure is an important source of fertilizers.

farmers' estimates, the quality of pesticides is low and does not correspond to their needs. According to the 2013 Life Quality Survey from the Institute of Political and Sociological Consulting, in 2012, most of those surveyed mentioned that the factors related to pesticides (56.1 percent) and fertilizers (64.0 percent) negatively impacted their agricultural activities. Moreover, roughly half of those surveyed (45.5 percent for pesticides and 52.6 for fertilizers) also mentioned that the nature of the negative effect was related to the quality of the corresponding inputs. At the same time, it should be noted that the data might be subjective, as the survey does not provide information on whether the right terms and conditions for pesticide and fertilizer application were followed by the respondents.

Besides issues related to the availability and quality of pesticides, there is also an issue related to their safe use. Farmers who use pesticides often neglect storing and labelling instructions, and there are cases of fatal poisoning every year.[27]

According to the World Bank report *Enabling the Business of Agriculture* (The World Bank, 2017a), there are certain regulatory bottlenecks that limit access to fertilizer in Armenia. According to the EBA fertilizer indicator, which is focused on operational and economic constraints, as well as the implementation of legislation affecting the fertilizer industry, Armenia is ranked 53rd among 62 studied countries.

The IPSC (2013) report also covers other factors that negatively affect the agricultural activities of those surveyed: fuel (64.4 percent), seeds (64.3 percent), rent of agricultural machinery (56.8 percent), irrigation water (44.7 percent), and veterinarian services (24.4 percent). For more than 80 percent of respondents, the nature of the negative effect for most of the mentioned factors (fuel, seeds, fertilizers, and rent of agricultural machinery) was related to price.

To facilitate farmers' access to agricultural inputs, since 2006 the Government of Armenia has implemented several programmes that help farmers access main agricultural inputs such as fertilizers, seeds and fuel. In particular, during 2006–2008 and continued from 2011 onwards, the Government implemented a programme on supporting farmers in the purchase of subsidized fertilizers. At the beginning, only nitric fertilizers were included in the programme, but since 2014 the list of fertilizers has expanded to include phosphoric and potassic fertilizers. Under this programme, the selected importers are subsidized to import and sell to farmers the mentioned fertilizers at below-market prices, which are initially set by the Government (see Table 15). In 2012, a programme on the purchase of subsidized diesel fuel was launched.

[27] News article by Armenpress on poisoning due to pesticides, dated 8 June 2017, available at: https://armenpress.am/arm/news/894156/tunaqimikatnerov-tunavorumneri-cucanishy-nvazel-e.html

Table 15. Prices of subsidized fertilizers and fuel for farmers in 2015

	Price for farmers (AMD per sack/litre)	Subsidized amount (AMD per sack/litre)
Nitric fertilizers	6 000	3 215
Phosphoric fertilizers	7 000	5 368
Potassic fertilizers	7 000	5 638
Diesel fuel	350	55

NOTE: FOLLOWING ARE THE PRICES EQUIVALENT TO USD BASED ON AVERAGE EXCHANGE RATE OF CENTRAL BANK OF ARMENIA FOR 2015. PRICE FOR FARMERS (USD PER SACK/LITRE) FOR NITRIC FERTILIZERS - USD 12.55; PRICE FOR FARMERS (USD PER SACK/LITRE) FOR PHOSPHORIC FERTILIZERS - USD 14.65; PRICE FOR FARMERS (USD PER SACK/LITRE) FOR POTASSIC FERTILIZERS - USD 14.65; PRICE FOR FARMERS (USD PER SACK/LITRE) FOR DIESEL FUEL - USD 0.73. SUBSIDIZED AMOUNT (USD PER SACK/LITRE) FOR NITRIC FERTILIZERS - USD 6.73; PRICE FOR FARMERS (USD PER SACK/LITRE) FOR PHOSPHORIC FERTILIZERS - USD 11.23; PRICE FOR FARMERS (USD PER SACK/LITRE) FOR POTASSIC FERTILIZERS - USD 11.80; PRICE FOR FARMERS (USD PER SACK/LITRE) FOR DIESEL FUEL - USD 0.12.
NOTE: THE AMOUNT SUBSIDIZED BY THE GOVERNMENT OF ARMENIA FOR FERTILIZERS VARIES FOR DIFFERENT YEARS. FOR INSTANCE, IN 2016 THE SUBSIDIZED AMOUNTS FOR NITRIC FERTILIZERS WERE AMD 2 729, FOR PHOSPHORIC AMD 6 758, AND FOR POTASSIC AMD 6 799. IN 2014, IT WAS CORRESPONDINGLY AMD 1 870, AMD 4 000, AND AMD 4 500.
NOTE: DURING 2016 AND 2017, THE PER-LITRE PRICE FOR FARMERS WAS REDUCED TO AMD 280, AND THE AMOUNT OF SUBSIDY IN 2017 TO AMD 34.3 PER LITRE.
SOURCES: GOVERNMENT OF ARMENIA DECREE NO. 89-N, DATED 5 FEBRUARY 2015, AND GOVERNMENT OF ARMENIA DECREE NO. 73-N, DATED 6 FEBRUARY 2016

Sales of nitric fertilizers and diesel fuel to agricultural cooperatives and to those beneficiaries that were provided with "super-elite" winter wheat seeds (see later in this section) is provided on a per-hectare basis, without maximum limit. For ordinary farmers, the maximum quantity of diesel fuel is 600 litres, and the maximum for nitric fertilizer is 1 000 kg. There are no limitations for phosphoric and potassic fertilizers.

Since the beginning of the programmes, the following quantities have been provided to farmers.

Table 16. Amount of subsidized inputs and number of beneficiaries in the framework of the government programmes, 2012–2016

Year	Name of subsidized inputs	Total amount subsidized	Number of communities	Number of beneficiaries
2012	Diesel fuel, litre	21 514 805	1 145	43 998
	Nitric fertilizers, tons	30 700	1 039	73 605
2013	Diesel fuel, litre	15 391 766	1 221	38 886
	Nitric fertilizers, tons	37 906	1 203	78 544
2014	Diesel fuel, litre	11 098 706	607	37 595
	Nitric fertilizers, tons	31 770	670	
	Phosphoric fertilizers, tons	1 174	155	67 125
	Potassic fertilizers, tons	592	157	
2015	Diesel fuel, litre	3 177 926	385	14 429
	Nitric fertilizers, tons	32 721	745	
	Phosphoric fertilizers, tons	237	177	74 877
	Potassic fertilizers, tons	857	192	
2016	Diesel fuel, litre	5 005 476	463	19 653
	Nitric fertilizers, tons	31 652	688	
	Phosphoric fertilizers, tons	575	209	70 643
	Potassic fertilizers, tons	1 015	215	

NOTE: IN 2012 AND 2013, THE INPUTS WERE DISTRIBUTED IN TWO ROUNDS - IN SPRING AND AUTUMN, SO THE NUMBER OF COMMUNITIES IS A SUM OF TWO ROUNDS.
SOURCE: MINISTRY OF AGRICULTURE REPLY TO OFFICIAL INFORMATION INQUIRY, AUGUST 2017.

According to a recent evaluation of the fuel and fertilizer programmes, they are in line with the real needs of beneficiaries, in general, and they support increases in agricultural production and farm incomes. However, according to the evaluation findings, subsidized prices still remain high for farms (EDRC, 2016b).

Seeds, seedlings and saplings are mostly produced locally by different scientific centres, breeding stations, and farmers themselves. Imports of cereal and potato seeds are significant; at the same time, these are the two most important crops in terms of their local consumption.

Since 2010, different governmental programmes for supporting the local production of wheat seeds, in addition to the production of cereal and fodder crops such as wheat, barley, maize, alfalfa and sainfoin have been implemented. In the framework of these programmes, seed-breeding farmers holding more than 3 ha of land have been provided with imported and locally produced "super-elite" wheat seeds; after harvest they were requested to return 2 kg of seeds for each kilogram they initially received. At the same time, smallholder farmers holding up to 3 ha of land were provided with the "elite" seeds grown by the larger farmers and were requested to repay the price of the received seeds after harvest. As a state support measure, in the framework of these programmes, barley, maize, alfalfa and sainfoin seeds were provided to producers at lower prices than the cost paid by the government. There were programmes, when producers were to repay the price corresponding to twice the amount of received seeds or when they were to repay next year, after harvesting.

Although there were cases when – due to unfavourable climatic conditions or the low quality of provided seeds[28] – farmers were not able to return the requested amount of seeds or to repay for them, the programme registered a few positive results. In particular, around 80 to 85 percent of wheat seed varieties were renewed, and increases were registered in the availability of "elite" seeds and in productivity per hectare.

In 2016, in the scope of the European Union-financed ENPARD programme, a production of buckwheat was launched. It is included in the Government's 2017 and 2018 programmes on "Developing the production of spring wheat, buckwheat, peas, barley, maize, alfalfa and sainfoin" (GoA, 2017i, GoA, 2018a) It is planned that farmers will be able to produce buckwheat seeds for future years.

The availability of agricultural machinery and equipment in the Armenian countryside is limited. According to the administrative registers of the Ministry of Agriculture (NSS, 2017b), as of 1 January 2017 there were 15 239 tractors, with only 78.5 percent being in working condition. There also were 1 358 grain harvesters (with 75.9 percent in working order), 421 forage harvesters (with 73.2 percent in working order) and 2 318 cultivators (with 84.1 percent in working order). Around 95 percent of agricultural machinery has an expired term of use, which results in low functionality and productivity along with high maintenance costs. However, the agricultural census of 2014 revealed different data. According to the census (NSS, 2016a), the number of agricultural machinery and equipment in working order is much smaller.

In addition, the census revealed an interesting tendency: More than 10 percent of the machinery and equipment held by farmers is not used by them (see Table 17). However, farmers are actively renting different agricultural machinery and equipment. For instance, there are 1 315 farmers who during the studied period did not use their milk-processing equipment while, at the same time, 764 farms reported the rental of such equipment or the use of the services of milk processors.

Wheel tractors and trucks had the highest number unused units and are the highest in demand for rent. A total of 109 422 wheel tractors and 126 417 trucks were rented, while 1 413 wheel tractors and 1 950 trucks were not used by their owners. Other agricultural machinery and equipment with non-usage rates of higher than 15 percent are cultivators, caterpillar tractors, forage harvesters, tractor sprayers, ploughs and combine harvesters. The reasons for this could be various, such as the working condition of the owned equipment, the costs of using owned equipment vs. renting it for short-term use, or the inability of operators to use their equipment, considering the migration processes that have been active in the country.

It is also worth mentioning that women farmers have very limited access to machinery, considering that 95 percent of vehicles are owned by men and that 100 percent of agricultural machinery operators are men in the *marzes*, or regions (ACDI/VOCA, 2011).

[28] Article in Hetq online media on debts accumulated in Armavir region due to the low quality of wheat seeds "In the tracks of wheat 'elite' seeds. Why do villagers feel cheated?" (in Armenian), available at: http://hetq.am/arm/news/81709/coreni-elitar-sermacui-hetqerov-gyuxacinern-inchu-en-irenc-khabvats-zgum.html/

Table 17. Availability of working-order agricultural machinery/equipment among farmers, along with their usage and demand

Name of agricultural machinery and equipment	Number of farms with own agricultural machinery/ equipment in working condition	Number of farms that used their own agricultural machinery and equipment	Non-usage rate	Number of farms that did not use their own agricultural machinery and equipment	Number of farms that rented agricultural machinery and equipment or paid for their service
Caterpillar tractors	2 250	1 864	17%	386	72 369
Wheel tractors	7 950	6 537	18%	1 413	109 422
Trucks	12 235	10 285	16%	1 950	126 417
Combine harvesters	770	646	16%	124	78 506
Forage harvesters (all types)	206	172	17%	34	9 559
Mowers (all types)	9 536	8 444	11%	1 092	82 928
Tractor trailers	3 776	3 215	15%	561	22 893
Hay balers	2 038	1 767	13%	271	87 218
Winnowing machines	185	163	12%	22	20 346
Seed drills	1 404	1 210	14%	194	73 036
Ploughs	3 098	2 565	17%	533	98 356
Cultivators	1 931	1 561	19%	370	59 928
Tractor sprayers	1 076	897	17%	179	50 330
Milk processing equipment	14 807	13 492	9%	1 315	764
Refrigerating facilities for milk storage	322	279	13%	43	311

SOURCES: NSS (2016A) AND OWN CALCULATIONS.

During the period covered by the census (1 August 2013 to 31 July 2014), around 910 000 units of agricultural equipment and machinery were rented, which means that, on average, each farm rented 2.9 units of agricultural equipment during a year.

There are no fixed renting fees for agricultural machinery, and they usually vary across different locations and mostly depend on the availability of the machinery – especially in the case of tractors, combines and cultivators. Regardless of the fees, the availability of agricultural machinery significantly affects the organization of optimal production, as very often there is not enough equipment to harvest or plough all the fields in the required period, which translates into harvest losses. In addition, the absence of competition among agricultural machinery owners means that the quality of work is lacking.

According to the census, there are still some family farms that use horses or other draft animals for agricultural activities. The majority of these farms are in the Lori (2 100 farms) and Gegharkunik (1 070 farms) regions. Unfortunately, no sex-disaggregated data is available.

So, in general, it can be stated that, on one hand, the existing quantity of agricultural machinery and equipment is not sufficient to cover the needs of the farmers, and on the other hand, they are sometimes owned by farmers who do not need them.

In order to increase the availability of agricultural machinery in 2017, the Government of Armenia adopted a decree on the establishment of agricultural machinery stations through public-private cooperation. In addition, as was mentioned before, the Government is also subsidizing the interest rates for most types of leased agricultural machinery and equipment. It is expected that smallholders will benefit from the operation of the stations and the subsidized leasing, as given the small sizes of their holdings, they will not need to invest in buying their own machinery.

After the collapse of the Soviet Union, the availability of post-harvest facilities and service providers has drastically decreased. It is estimated that before the 1990s, there were over 50 cold storage facilities with over 5 000 tons of capacity each (Asatryan and Aghajanyan, 2012). After independence, the existing facilities were privatized and either were used mainly for the needs of their owners or stopped their operations.

Nowadays, farmers' access to post-harvest services, including cooling, sorting and storage facilities, is inadequate. Farmers mostly rely on traditional storing techniques, such as basements, cellars or other structures without temperature control mechanisms.

There is no data on operating cold storage facilities in Armenia today, as there is no state registration mechanism in place. According to the census (NSS, 2016a) there are 2 302 cold storage facilities with a total volume of 119 568 cubic metres.[29] The majority of cold storage facilities owned by family farms – around 60 percent – are situated in the Ararat region. The capacity of cold storage facilities per family farm in this region is 1.2 cubic metres, while in other regions this indicator is below 0.6. The availability of cold storages is minimal in Syunik, Vayots Dzor, Tavush, Shirak and Lori regions; only 8 percent of the total cold storages owned by family farms are in these regions. So, it can be stated that overall, cold storage facilities are limited in number and capacity. Existing cold storage facilities either are owned and used by individual farmers and farmer groups or are operated by export companies for their own needs. The number of storage and cold storage facilities that rent space as a separate business is limited.

The inadequate number and restricted operation of cold storage facilities have unsurprising negative impacts. According to FAO (2012b), about 30 percent of highly perishable fresh produce is lost due to the non-continuous cold chain and post-harvest handling. The limited number of and access to cold storage facilities are the main reasons for food loss during post-harvest handling, which is estimated to be around 4 to 5 percent for cereals, fruits and vegetables (Urutyan, 2013b).

It is estimated that the prices of cold storage handling do not significantly increase the price of stored products – only by 5 to 10 percent (Asatryan and Aghajanyan, 2012) – and thus farmers will readily use the services of cold storage facilities if they are available, as off-season prices are much higher. At the same time, it should be noted that during the past decade the quantity of cold storage facilities and the quality of their services have significantly increased, thanks to the support of some rural development programmes that established cold storages directly on the farms of producers and thus supported the dissemination of the best practices of post-harvest handling and cold storing.

According to census data (NSS, 2016a), individual farmers own 86 346 units of storehouses and sheds, with a total volume of 3.7 million cubic metres. Unfortunately, there is no data differentiation between the capacities of storehouses and sheds and no sex-disaggregated data on their ownership is available. Highest number of storehouses and sheds are in the Armavir region –23 518 facilities with total capacity

[29] Unfortunately, no capacity in tonnes is available, which makes it difficult to compare with production volumes.

of 855 225 cubic metres. The lowest availability of storehouses and sheds is in the Tavush region both by capacity per farms and by number.

3.2.6 Education, research & development, and innovation in the agricultural sector, specifically related to smallholders

The first stage of formal education in Armenia is general education in compulsory primary and middle schools, followed by high school, which in 2017 also became compulsory. During the 12 years of general education, no agriculture-related subjects are taught at schools, including those in rural areas. Moreover, the school curricula have very limited mentions of agricultural education, except those in the context of natural sciences and technology (Bynum Boley and Hammett, 2013).

In vocational education, among others there are six agricultural colleges (middle vocational institutions) located in different regions that provide education in 15 different specialities, such as veterinary, milk technology and apiculture, agricultural mechanization, etc., as well as in specialties not directly related to agriculture, such as management, accounting and finances. In addition to these six agricultural colleges, there are several other vocational educational institutions, including middle and preliminary vocational institutions,[30] that also have programmes of agricultural specialities (for the full list, see Annex 6.2, Table A1.8). Due to amendments of the Armenian Law on Education (RANA, 1999) that led to 12-year compulsory education, as of June 2017 students who are younger than 19 are entitled to obtain preliminary (craftsmanship) and middle vocational education in public institutions, free of charge.

The number of students in agricultural middle vocational educational institutions has varied considerably over the years. According to the National Statistical Service (2016f, 2010), the lowest number of students in these institutions during the period of 2005–2015 was 423, during the 2005/06 academic year. The highest number of students was 1 337, during the 2012/13 academic year. In preliminary vocational educational institutions, the lowest number of students in agriculture-related specialties was 173, during the 2007/08 academic year, and the highest number of students was 601 during the 2009/10 academic year.

Rate of women involvement in these institutions is quite different – there are more women in middle vocational educational institutions and less women in preliminary vocational institutions. As can be seen from Table A1.7 in Annex 6.2, among the preliminary vocational institutions with agriculture-related specialties, the most common speciality is *technical support of agricultural activities*, meaning that graduates are trained to become operators of agricultural machinery. Not surprisingly, given the stereotypical association of machines with men, the share of women involved in preliminary vocational institutions at agricultural specialties is low – during 2015/16 academic year was around 5 percent. At the same time, around 50 percent of agricultural students at middle vocational educational institutions during 2015/16 were women (NSS, 2016c).

[30] It should be noted that graduates of *preliminary* vocational educational institutions are obtaining the status of junior specialist, while the graduates of *middle* vocational educational are obtaining the status of specialist.

It should be mentioned that the conditions of most of the agricultural vocational institutions are not suitable for effective work-based learning. Most of them have not been rehabilitated since the Soviet times and lack functional laboratories and modern equipment. Another problem of vocational education is that the curricula of agricultural vocational institutions are outdated and do not correspond to the demands of the labour market.

To support capacity development of agricultural vocational education and training institutions, different donor-funded programmes have been implemented since 2007. The major donor in this field is the European Union through its state budget support mechanism, which is provided every three years with preconditions for implementation. Recent support includes the EUR-15.2-million project "Better Qualifications for Better Jobs (2017–2019)," which aims to assist Armenia in connecting vocational education and employability with a special focus on employment in agriculture. In line with revising the agricultural curricula of vocational educational institutions, a number of these institutions will be refurbished and rehabilitated. Other donor-funded projects in this sector are implemented by the United Nations Development Programme,[31] GIZ,[32] and the Strategic Development Agency NGO.[33]

The only institution in Armenia that provides higher education in the field of agriculture is the Armenian National Agrarian University (ANAU), which was established in 1930. It has 45 chairs and prepares narrow degree specialists in agronomy, crop selection and genetics, foodstuff technology and certification, agricultural mechanization, veterinary and animal husbandry, land management, as well as in the fields of agribusiness and marketing, agrarian policy and regional development, agrarian production management and economics, and more. The university provides bachelor's, master's and doctoral degrees, and in 2016 had around 10 000 students. Situated in the capital, Yerevan, ANAU has branches in the northern (Lori region, town Vanadzor) and southern (Syunik region, town Sisian) regions of Armenia, along with another branch in Shushi (unrecognised republic of Artsakh) and two colleges in Yerevan and Gyumri. Unfortunately, ANAU reports do not contain sex-disaggregated data, but based on data from the National Statistical Service, the share of women in higher educational institutions is more than 40 percent for food goods and products technology, and more than 20 percent in the agrifood sphere (NSS, 2016c).

Both of the available agricultural colleges and ANAU are under the control of the Armenian Ministry of Education and Science.

In line with the availability of institutions that provide vocational training and higher education in agriculture, the quality of education provided by these institutions is not satisfactory. Besides financial difficulties that hinder the updating of the facilities and equipment required for modern education, there are also problems with the content of the education. Today's educational system in Armenia, despite numerous reforms implemented in the field, still bears the stamp of the communist educational system (Urutyan *et al.*, 2007). In the Soviet Union, the role of universities was to provide a theoretical

[31] Details on UNDP's work related to vocational education in Armenia are available at: http://www.am.undp.org/content/armenia/en/home/operations/projects/poverty_reduction/vocational-education-and-training.html

[32] In the framework of its "Private sector development in South Caucasus" project, in Armenia GIZ works on the development of the VET sector for increasing the role of the social partnership for modernizing the education projects in winemaking, tourism and engineering. More details are available at: http://www.mkuzak.am/wp-content/uploads/20170503-GIZ-PSD-SC-Programme-Results-in-TVET_-Follow-up_Press-Release_Eng.pdf

[33] SDA is a local non-governmental organization. In 2017, it started the implementation of "VET development in Syunik marz" project funded by HEKS/EPER (Switzerland). In the framework of the project, curricula and educational materials for the specialities of Veterinary and Milk Technology have been developed. More details are available at: http://www.mkuzak.am/?p=6876

background and educate good citizens, who upon completion of their studies would receive job appointments in which the true development of their skills would take place and where employees would obtain the practical knowledge required for their positions.

After the introduction of the market economy, the educational institutions didn't manage to adapt to the new situation. Today, the main problem of agricultural education in Armenia is a mismatch between the quality and quantity of graduates and the needs and employment opportunities generated by the agricultural sector. Dominated by smallholders and family farms, the agricultural sector simply can't absorb all of the individuals graduating from agricultural institutions, yet at the same time, the graduates are not equipped with practical knowledge and skills required by the sector. This results in a situation in which a great majority of graduates do not work in their speciality area. Furthermore, there is a significant lack of interest and motivation among students and their families (including because of the low level of wages) to study for pure agricultural professions such as veterinarian, cattle breeding specialist, plant geneticist, etc. For example, during 2014–2016, between 49 percent and 66 percent of bachelor's students at ANAU were studying in the departments of economics and agribusiness (ANAU, 2014, ANAU 2015).

Sadly, in many cases studying in the agricultural university or colleges is a last resort, as these are not considered prestigious institutions, even among rural youth.

Another important component of education is the academic staff of the institutions. In Armenia, this is problematic, since there is a huge lack of motivation among people to work in educational institutions. Because of low salaries and unattractive working conditions, young professionals hesitate to take teaching careers. The implication is that academic staff at ANAU and the agricultural colleges are aging. For instance, the average age of lecturers at ANAU is 52, with around 28 percent of them being older than 63. At the same time, not many members of the academic staff are involved in applied research work, instead mostly focused on teaching theory. The usage of modern teaching tools is lacking, which consequently affects the quality of learning.

According to a recent statement from the Agricultural Alliance of Armenia (2017), there is an increasing gap between the quality of provided agricultural education in Armenia and the existing demand by the economy of the country. There is a significant demand for high-quality agriculture-related specialities, but because of the supply of low-quality graduates from agricultural educational institutions, this demand is fulfilled by invited international experts.

Educational programmes are not in line with the specifications and skills that are valued by the employers. The content of educational programmes and materials, as well as teaching methods, do not correspond to modern educational practices and are more directed towards the provision of information and theory. Innovation, creativity and critical thinking are not encouraged, and students are not involved in analytical work. Students are graded based on technical criteria and not by the level of change or improvement in their skills, knowledge and competences (Agricultural Alliance, 2017).

So, because of the above-mentioned deficiencies, formal education does not provide enough support to smallholders. At the same time, agriculture and rural development projects from international organizations are important sources of practical, non-formal education and technology transfer for Armenian smallholders. During the past 20 years, there have been several comprehensive agriculture support projects in Armenia, with almost all of them including components of knowledge dissemination and new technology introduction. Among them, the biggest ones were the United

States Department of Agriculture's "Marketing Assistance Project" (1996–2005) and the Millennium Challenge Corporation's "Millennium Challenge Account – Armenia" programme (2006–2011). Other organizations that provide capacity building and skills-development trainings in rural areas are the Centre for Agribusiness and Rural Development, International Center for Agribusiness Research and Education, the United Nations Development Programme, Oxfam, World Vision, the United Methodist Committee on Relief, Green Lane, and more.

The interventions of the development projects are very important for the smallholders, as through this type of project they get access to the best available practices and know-how in their field of activity. Usually due to this kind of project, as well as through the work of MASCs, a link between local research and scientific institutions and smallholders is created. However, this link functions for the exchange of information and practice and does not initiate research that is directed towards the provision of solutions to large-scale problems.

While discussing agricultural education in Armenia, we should note the work of the International Center for Agribusiness Research and Education (ICARE), with its Agribusiness Teaching Center (ATC) and EVN Wine Academy. ATC started in 2000, and currently it offers undergraduate and master's programmes based on curricula from Texas A&M University in the United States of America. EVN Wine Academy was established in 2014 to offer short courses for wine enthusiasts, as well as a professional 18-month certificate program in oenology and wine business provided jointly by ICARE and Geisenheim University in Germany. ATC and EVN graduates are highly competitive in the growing regional agribusiness sector and do not have employment difficulties.

There are a number of scientific centres and research institutions functioning under the administration of the Ministry of Agriculture, including the "Scientific Centre of Vegetable, Melon and Industrial Crops" state non-commercial organization (SNCO), the "Agriculture Scientific Centre" SNCO, the "Gyumri Selection Station" closed joint-stock company (CJSC), the "Experimental Station of Industrial Crops" SCJSC, and the "Food Safety Risk Assessment and Analysis Scientific Centre" SNCO. These centres have long histories and traditions, and nowadays they function as state-supported SNCOs or state CSJCs. The overall mission of the centres is to conduct research aimed at the improvement of plant varieties and livestock breeds, as well as to develop plants and varieties with new and improved features and to provide professional support and consultancy to the farmers for using the products they've developed.

Three scientific centres – the Scientific Centre of Agro-biotechnology; the Scientific Centre of Viticulture, Fruit Growing and Wine Making; and the Scientific Centre of Soil Science, Melioration and Agro-chemistry named after H. Petrosyan – used to be managed by the Ministry of Agriculture, and in 2012 were transferred to ANAU, where they have branch status. Other institutions involved in agricultural research are the Scientific Centre of Zoology and Hydro-ecology, the Institute of Hydroponics Problems after G.S. Davtyan, and the "Arm-biotechnology" Scientific and Production Centre. These institutions function under the Armenian National Academy of Sciences.

It should be noted that, in general, the research and development expenditures in Armenia are quite low, and the organizations involved are often too underfinanced to be able to expand their research. For instance, in 2014, research and development expenditures were only 0.24 percent (UNESCO, 2018) of the gross domestic product. Moreover, in the 2017 state budget, the share of public funds allocated to agriculture-related research or scientific institutions was only 6.6 percent of the total expenditure on science (own calculations from the Armenian state budget, Tables 22-2 and 22-3). This number is

extremely low, taking into account that during the past 15 to 20 years, agriculture has provided about 20 percent of the national gross domestic product, on average.

The data from the National Statistical Service, which includes not only public expenses on research but also expenses covered from all kind of resources, such as own resources, client resources or foreign resources, indicates similar results. The expenditures for agricultural research during the past ten years were never more than 4 percent of all funds used for research (see Table 18).

Table 18. Gross expenditures on research and agricultural research in Armenia, 2005–2015

Years	Gross expenses on research works, millions AMD	Gross expenses on agricultural sciences, millions AMD	Share of agricultural science in gross expenses on research works
2005	5 777.9	157.3	2.7%
2006	6 390.1	171.3	2.7%
2007	6 647.2	137.3	2.1%
2008	8 006.5	214.9	2.7%
2009	9 140.1	338.9	3.7%
2010	8 352.6	227.2	2.7%
2011	9 780.4	163.7	1.7%
2012	10 176.9	164.5	1.6%
2013	10 120.9	66.0	0.7%
2014	11 661.7	80.3	0.7%
2015	12 609.9	149.6	1.2%

SOURCE: ARMSTATBANK DATABASE.

The research topics financed by the budget are very different, and at this point it is not clear whether they are based on farmers' needs or are solely in the interests of researchers. Most of the funds allocated to agriculture-related research or scientific institutions were under the budget line "Maintenance and development of scientific and scientific-technical infrastructure," and only 12 percent was for targeted research work.

At the same time, the United Nations Economic Commission for Europe (UNECE, 2014) report[34] on "Innovation Performance Review of Armenia" suggests that there are considerable mismatches in supply and demand for research and development in Armenia, where demand, on average, is higher than supply, and "the economy is experiencing 'supply deficit' in terms of R&D."[35] According to the Global Competitiveness Report 2016–17, Armenia ranks 100th among 138 countries on the quality of scientific research institutions.

Hence, it can be stated that although there is a need for research and development works, this sector is weakly linked to the needs of the national economy and, in general, the research and development market in Armenia is not well-developed. Because of difficulties with information flow, it is difficult for farmers, especially smallholders and research-and-development institutions to "find" each other. When it comes to matching interests and needs, research financing is usually an obstacle.

[34] Note that the report discusses the general state in Armenia, not only in agriculture.

[35] UNECE. 2014. Innovation Performance Review of Armenia. Page 47.

3.3 Environmental and nature development/climate change

Armenia is the most mountainous and the smallest of the South Caucasian republics, covering a total area of about 29 800 square kilometres. Over 76 percent of its territory is located between 1 000 m and 2 500 m above sea level, with an average altitude of 1 800 m. Despite the country's small size, its relief is complex and fragmented, with a variety of natural and climatic conditions[36] that correspondingly lead to diverse agro-economic natural zones (Tumanyan, 2006), ranging from semi-desert to alpine.

In general, the climate is rather dry, with annual average precipitations of 592 mm. Average air temperature varies from -8 °C in high mountainous regions (2 500 m above sea level and higher) to 12–14 °C in low valleys. Armenia is characterized by a high number of sunshine hours – from 2 000 to 2 800 hours annually, on average, depending on the site – and with an average irradiation of 1 750 kWh per square metre (Sargsyan, 2009). The sunshine duration has supported the significant development and advancement of greenhouse farms during the past decade. As of July 2016, there were 1 221 ha of greenhouses, mainly in the Kotayk, Ararat and Armavir regions. Greenhouses vary by size and mainly specialize in vegetable and flower production. The largest greenhouses mostly belong to commercial farms (1.02 ha on average), yet 98 percent of all greenhouse areas in Armenia are managed by family farms.

The country's river network is fairly dense, with around 9 500 small- and middle-sized rivers, of which 215 are longer than 10 km. Though the total length of rivers is around 13 000 km, the majority of rivers do not have permanent flow and dry up in summertime.

The river network varies significantly across different locations (0–2.5 km/km^2). The average annual flow of surface waters totals 6.8 billion cubic meters, while ground water resources are estimated about 4.0 billion cubic meters. In 2013, the total intake from water sources amounted to 2.955 million cubic meters, of which 2.081 million cubic meters was actually used. Around 88 percent of the water was used for irrigation, fisheries and forestry, with 8 percent for manufacturing and 4 percent for drinking and domestic needs.

As of January 2017, the drinking water supply in most of the country[37] is organized by a utility company owned by Veolia Group, with a unified flat price of AMD 180 (roughly USD 0.37) per cubic meter. Irrigation is organized either by the water users associations, which cover around 95 percent of the irrigated land (The World Bank, 2013) and set their own water prices,[38] or by the community itself (and, in this case, it is usually free of charge). Some farmers own their own wells, and in this case, they

[36] Almost all types of climatic patterns can be observed in Armenia. The country's climate ranges from arid subtropical to cold, high mountainous.

[37] In some communities (560 villages, as of 2011) the water supply is managed by Community Water Supply Services. (ADB, 2011, "Armenia Water Supply and Sanitation")

[38] The costs of irrigation water delivered by different WUAs is different, but the farmers all over Armenia who use WUA services pay the same rate, which is defined by the Republic of Armenia Public Service Regulatory Commission. Currently, the rates are AMD 11.52 per cubic meter for irrigation water delivered through a pump station and AMD 1.01 for water delivered through a gravity system. To be able to cover their costs, WUAs receive subsidies from the Government of Armenia.

pay only for electricity. Here, it should be noted that as of June 2015, in total 208 200 ha are under irrigation, yet at the same time, according to the National Statistical Service only 48.7 percent of the cultivated land of family farms was more than 75-percent irrigated in 2015 (NSS, 2016e). Under the Soviet Union, the area of fully irrigated lands was around 273 400 hectares.[39]

According to the Land Balance of Armenia as of 2015, forest lands comprise 11.2 percent of the total territory (334 200 hectares, of which 289 300 hectares (86.6 percent) is covered by forests), while in 2005 they were 13.4 percent.[40] During the 1990s, due to the energy crisis, forests served as an energy source for the local population, and massive illegal logging was practised throughout the country. According to Ministry of Nature Protection, from 1992 to 1999 around 6 million cubic meters of forest was logged. Nowadays, illegal forest logging is insignificant, and the only significant risks for the forest ecosystem in Armenia are represented by mining[41] and forest fires.

The forests of Armenia are rich in wild fruits, berries and edible greens, and people are allowed to collect all available non-timber forest resources for their own consumption, free of charge, based on forest-usage cards. Thus, nowadays, in line with their being recreational zones, forests also serve as sources of food and additional income for villagers living in nearby communities.

Forests are distributed unevenly throughout the country, with main concentrations in the north and south. The state owns 99 percent of the forests, yet individuals have the right to establish and own their own forests.

Armenia does not possess fuel resources, and it satisfies its demand for fuel through imports. Its own primary energy resources are hydro and nuclear energy, which cover around 36 percent of the country's total energy consumption. Over 50 percent of the total energy consumed in Armenia comes from natural gas, which is mostly imported from the Russian Federation, with around 15 percent coming from the Islamic Republic of Iran.

Electrical energy is produced in thermal, hydro and nuclear power plants. As of 2017, the rate was set at AMD 44.98 per kWh (USD 0.09), with a night rate of AMD 34.98 (USD 0.07), for households that use electricity of lower than 0.38 kW voltage.

As of 2010, the level of gasification was more than 96 percent. As of January 2017, the price of gas has decreased by around 5 percent, lowering the rate for 10 cubic meters of gas to AMD 139 (USD 0.29) for households consuming less than 10 000 cubic metres per month. Lower rates are set for gas consumed by greenhouses and by canneries, beverage and dairy processing entities.[42]

Currently for heating purposes, in urban areas mainly appliances based on natural gas and electricity are used. Yet because of high prices for electricity and gas, many rural households prefer biomass (mainly manure-based) consumption for heating purposes.

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[39] Analytical article on the website of the Armenian Ecological Front, available at: http://www.armecofront.net/lrahos/hayastani-jrery/

[40] A 2004 report by OSCE states that the coverage of forests in Armenia decreased from 13 percent in the 1990s to around 8 percent at the time of the development of this report (OSCE, UNDP, 2004)

[41] For more information on the conflict of mining and environment in Armenia, please see the report of the Armenian Environmental Network on Teghut forest and Copper mine, available at: http://www.armenia-environment.org/wp-content/uploads/2012/07/General-Teghut-Factsheet.pdf, as well as the website of the Environmental Justice Atlas, available at: https://ejatlas.org/conflict/no-to-amulsar-gold-mine, on Amulsar gold mine.

[42] From 1 November to 31 March, the rate for consumed gas for greenhouses is calculated by multiplying the AMD/USD exchange rate by 212.

According to the Ministry of Nature Protection (2015), the territory of Armenia is characterized by high seismic activity and intensive exogenous processes, which contribute to occurrences of landslides and erosion. In addition, almost 80 percent of the land in Armenia shows notable desertification features and has suffered various levels of degradation as a result of irrational use.

According to the same source, because of natural factors and as a result of some anthropogenic factors, erosion is present in almost all types of lands in Armenia. Some of these anthropogenic factors are absence of systematic cultivation and crop rotation and logging of forests and shelterbelts. A decline in the stock of organic carbon (humus) has been recorded in all soils except in the mountain grasslands.

Here, it should be noted that the small sizes of the plots owned by family farms trigger this process, as land is usually not left fallow to rest and recover. As a consequence, soil structure is worsened and fertility is reduced. In addition, because of the disproportional distribution of land among communities and regions, in some communities, due to a lack of land available for cultivation, smallholders are cultivating steep slopes and lands with cut relief and that are at risk of flooding. This leads to increased land degradation and intensification of soil landslide events.

Another issue in Armenia is soil salinization, which is particularly worrisome in the Ararat valley. During the Soviet era, around 5 400 hectares of saline soils were ameliorated, but nowadays, due to the high costs of drainage system maintenance, the salinization of the soil in Ararat valley is a serious issue. According to national reports, there are about 30 000 hectares of salinized soils in Armavir and Ararat regions (REC-Caucasus, 2016).

The issue is more worrisome if we take into account that the majority of the gross agricultural output (around 13 percent) is produced in Ararat valley, which is one of the most arid regions in the country, with an annual precipitation of 200 mm to 250 mm.[43]

Because of climate change, problems related to land quality, water availability and the occurrence of natural disasters will continue to worsen. In recent decades, climate change has significantly increased the frequency and magnitude (intensity) of hazardous hydro-meteorological phenomena in Armenia. Almost every year, Armenia is affected by adverse weather phenomena such as drought, hail, early frost, spring floods and landslides. According to Ministry of Nature Protection estimates, the damage from extreme weather events amounted to AMD 72.71 billion (about USD 177 million[44]) during 2009–2013. According to the Third National Communication to the United Nations Framework Convention on Climate Change (UNFCCC) (MNP, 2015), different regions in Armenia will suffer from different events and with different intensity. The likelihood of occurrence of droughts, frosts and hail are the biggest in the Ararat, Kotayk and Vayots Dzor regions (see Table 19).

[43] The average precipitation during summer does not exceed 32–36 mm.

[44] The average exchange rate of the Central Bank of Armenia for 2013.

Table 19. Vulnerability of regions in Armenia to extreme weather events

Marz (region)	Riskiness (events per square meter)	Hazardous hydro-meteorological phenomena
Shirak	1.5–3	Drought, flooding, hail, snowstorm, fog, strong wind
Lori	< 1.5	Flooding, hail, snow avalanche, fog
Tavush	1.5–3	Flooding, hail, fog
Aragatsotn	1.5–3	Drought, flooding, frost, snowstorm, avalanche, hail
Kotayk	3 >	Drought, flooding, frost, snowstorm, strong wind, fog, hail
Gegharkunik	< 1.5	Drought, avalanche, hail, snowstorm, strong wind, fog
Armavir	3 >	Drought, frost, hail
Ararat	1.5–3	Drought, flooding, frost, hail, fog
Vayots Dzor	3 >	Drought, flooding, hail, frost, snowstorm, avalanche
Syunik	< 1.5	Drought, flooding, frost, snowstorm, fog

SOURCE: MNP, 2015

At the same time, it should be noted that preventive and mitigation measures against climatic shocks are uncommon and not widespread, and their accessibility to the average farmer seems unrealistic. Thus, agriculture as a whole – and small family farms in particular, as they are more likely to be poor and less resilient to challenges – will be highly sensitive to climate change.

Already, significant increases in temperature are being recorded. The annual average temperature in the periods of 1935–1996, 1935–2007, and 1935–2014 has significantly increased – 0.4 °C, 0.85 °C, and 1.1 °C, respectively (MNP, 2015). A downward tendency of precipitation also has been observed: The annual average precipitation has decreased by 6 percent for the period of 1935–1996 and by about 10 percent for the period of 1935–2012.

The impact of climate change in Armenia will persist in the form of increased temperature, reduced precipitation, and increased frequency and intensity of extreme weather events, and these negative effects will impact crop production, animal husbandry and forestry.

The National Communication of the Republic of Armenia to the UNFCCC forecasts the following major negative consequences for agriculture in Armenia as a result of climate change:

- upward shift in agro-climatic zones;
- reduced crop yield;
- reduction of fertility and deterioration of agricultural land;
- increased negative impact of extreme weather events;
- expansion of irrigated lands and the need for additional irrigation water; and
- more intensive degradation of land, including natural grazing land.

It is expected that these consequences will reduce the head of the livestock by 30 percent and dairy cattle production by 28–33 percent, and that it will result in a decrease in the overall productivity of plant cultivation by 8–14 percent (9–13 percent for cereals, 7–14 percent for vegetables, 8–10 percent for potatoes and 5–8 percent for fruits).

3.4 Rural areas: population and economy

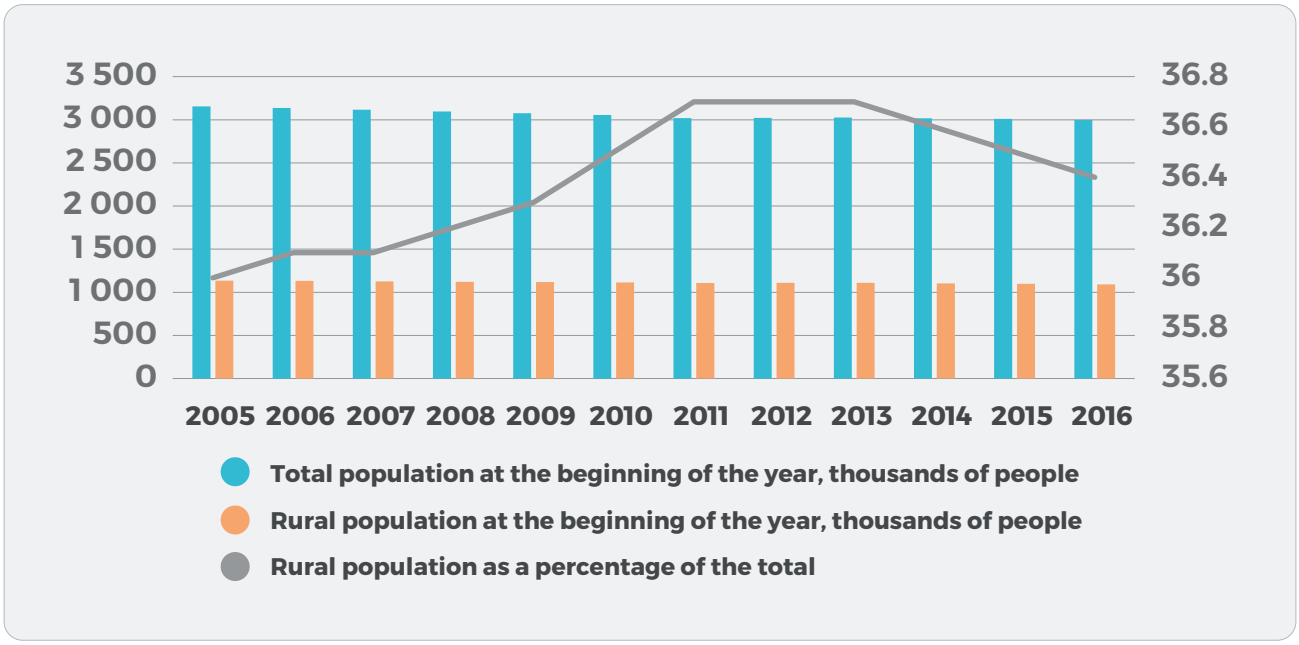
DEMOGRAPHIC TRENDS IN RURAL ARMENIA

Since independence in 1991, the population of Armenia has recorded a significant decline. From 3.5 million in 1990, the population steadily dropped until reaching 2.9 million in 2016. Rural population numbers during the same period recorded substantial fluctuations, ranging from 1.08 million in 1994 up to 1.15 million in 2001, followed by a somewhat steady decline to 1.09 million in 2016. In 2016, women were 50.5 percent of the rural population and 56.2 percent of the urban population. According to recent demographic data from the National Statistical Service, the population of Armenia is aging (NSS, 2016c), with more than 13 percent of people 60 years old or older (see Figure 11).

Given the decline in the overall population, the share of rural population was increasing, reaching 36.4 percent in 2016, up from 31.2 percent in 1990. However, no major shift in the share of rural population was recorded during 2005–2016; the numbers show a steady growth of 0.1 percentage points annually to 2011 and, starting in 2014, an annual decline of 0.1 percentage points.

Changes in population numbers are related both to migration, due to economic hardships after independence, and to the declining rate of natural growth of the population. Until 2012, the natural growth rate was always higher for the rural population than for the urban, while since 2012 the natural growth rate of the urban population has been higher.

Figure 11. Rural population trends, 2005–2016



SOURCE: ARMSTATBANK DATABASE.

The age distribution of the rural population by region, as of January 2015, is presented in Table 20. The majority of the rural population, around 59 percent, live in four regions: Ararat, Armavir, Gegharkunik

and Kotayk. At the same time, the most densely populated regions are again Armavir (215 persons per square km), Ararat (124) and Kotayk (122).

The age dependency ratio for Armenia at the beginning of 2016 was 48.3 percent, with 49.9 percent among the rural population and 44.9 percent among the urban population.[45] However, there are significant differences in the age dependency ratio of the urban population by region. The ratio is significantly higher for rural areas in the Tavush (55 percent), Lori (52 percent) and Syunik (50 percent) regions. This means that in these regions there is more pressure on the working-age population. It should be noted that the share of people 15 years old and younger is around 20 percent of the rural population in all regions, while the share of the population who are 63 years old and older is greater – around 14–16 percent in the mentioned regions, compared to 9–11 percent in all other regions.

Table 20. Age structure in rural Armenia (de jure), as of January 2015

	Age						Total	Age dependency (%)
	0–15	15–34	35–44	45–54	55–62	63+		
Aragatsotn	20 966	35 110	11 844	14 567	8 620	10 329	**101 436**	45
Ararat	37 203	64 034	21 386	25 818	18 003	19 682	**186 126**	44
Armavir	36 055	64 317	21 712	26 404	16 564	16 955	**182 007**	41
Gegharkunik	33 807	58 084	19 670	23 007	13 103	15 123	**162 794**	43
Lori	19 111	30 045	10 061	13 089	8 619	12 764	**93 689**	52
Kotayk	23 502	39 893	13 531	16 688	10 951	11 960	**116 525**	44
Shirak	21 301	36 222	11 441	15 216	8 860	9 844	**102 884**	43
Syunik	8 992	14 824	5 635	6 109	3 894	6 312	**45 766**	50
Vayots Dzor	6 138	11 275	3 456	4 881	3 167	4 399	**33 316**	46
Tavush	14 519	22 358	8 667	9 434	6 738	11 425	**73 141**	55
Total rural population	**221 594**	**376 162**	**127 403**	**155 213**	**98 519**	**118 793**	**1 097 684**	
% of total rural	20	34	12	14	9	11		45

SOURCE: NSS (2015B)

In 2015, life expectancy was recorded as lower in rural areas than in urban (NSS, 2016d), but it should be noted that this is a new trend. From 1989 to 2008, life expectancy in urban areas was lower than or equal to that in urban areas.

MIGRATION AND ITS IMPACT ON FAMILY FARMS

According to the United Nations, as of 2015, 937 000 people born in Armenia lived abroad.[46] Around 700 000 of these migrations took place between 1988 and 1994, when migration was a survival strategy as a result of a devastating earthquake, war, and political and economic shocks (RAU, 2013). In later years, migration processes become more stabilized, involving mostly work-related migration, with

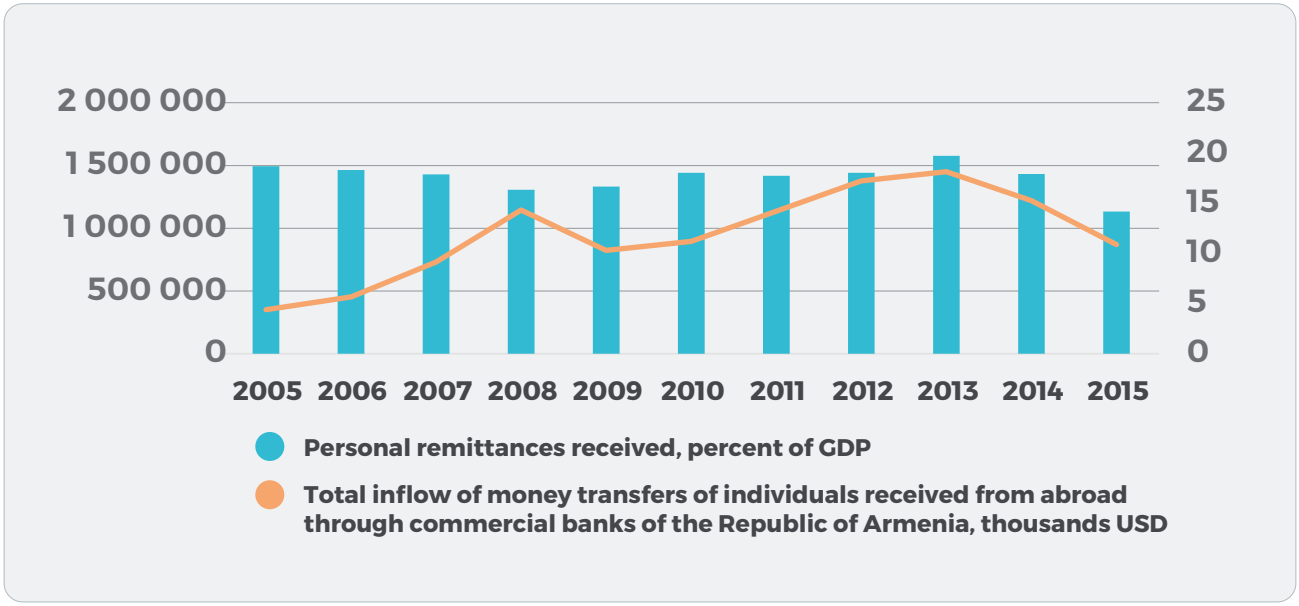
[45] According to Republic of Armenia legislation, retirement age starts at 63. So, here, the demographic dependency ratio is calculated using the sum of the population aged between 0 and 14 and 63 and older, divided by the working-age population (ages 15 to 62).

[46] Population division of the United Nations Department of Economic and Social Affairs, International Migrant Stock database, 2015

out-migration of working-age men. This trend continues into the present, with a higher number of seasonal work migrants being from rural areas. For the periods 2007–2013 and 2012–2015, the average annual net migration from rural areas was correspondingly -15 000 and -18 600 people (RAU, 2015).

Given the high number of work migrants, the volume of remittances is significant in the national economy. According to the World Bank, remittances were around 14.2 percent of the gross domestic product in 2015 (see Figure 12). At the same time, according to the Central Bank of Armenia, during the period of 2005–2015, on average, the net inflow of money transfers received by individuals through commercial banks was around USD 950 million (CBA, 2017a). Unfortunately, there is no differentiation of how much of the remittances go to the agricultural sector. However, according to data gathered in an International Organization for Migration survey from 2014, 65.6 percent of all rural households that have had migrants after 2007 or during the survey have received financial support from the migrant members of their households. According to the same report database, 7.9 percent of the total surveyed households at the time of the survey have had members that were on a migration trip abroad for more than three months. Of that number, 47.7 percent were from rural households (IOM, 2014).

Figure 12. Remittances and net monetary transfers, 2005–2015



SOURCES: THE WORLD BANK (2017B), CBA (2017A).

Among the most common reasons for leaving are the possibility of higher earnings, the chance to earn money for households, unemployment, and uncertainty of the future (RAU, 2013, 2015). However, it should be noted that besides the economic reasons, there can also be a tradition of leaving for work. As the International Labour Organization (2010) report highlights, "in some villages from which many men have been continuously leaving to work abroad over a long period of time, labour migration has become a traditional way of providing for families, and many young men from these villages do not make serious efforts to find a job in Armenia; they just leave to work abroad, as their fathers or uncles did before them."

According to the National Statistical Service (2015f) Integrated Living Condition Survey findings, the average annual estimated number of household members older than 15 who, during the period of 2012–2015, were involved in migration processes for three months and more and had not returned as

of 2015, is around 22 000. Differentiated data on rural vs. urban migration is not available.

During 2012–2015, 11.0 percent of these migrants were involved in internal migration (Yerevan/other regions); 10.5 percent were in Artsakh, and 78.5 percent migrated to other countries, with the overwhelming majority (89.3 percent) migrating to the Russian Federation (NSS, 2016h). At the same time, it should be noted that, according to a 2015 study on migration (RAU, 2015), the financial effects of migration are short-term, and, in most cases, the money earned by migrant workers is not sufficient for providing solutions to the core problems of the households. Thus, families have become continuously dependent on migration possibilities.

As was mentioned, it is mostly men who are involved in migration, and this triggers a change in gender roles as women take on additional roles and responsibilities, especially in rural communities. Seasonal work migration usually coincides with the period of agricultural work, so women remain responsible not only for the household and family but also for the whole agricultural production and sales. In addition, the migration of men can also bring additional risks for women. These can be the worsen financial situation of the family, because of the unsuccessful work arrangements of migrants, the possibility that men will form a new family and won't come back and will not continue to support family left at home, as well as the higher probability of obtaining sexually transmitted diseases (BSC, 2014, FAO, 2017b).

RURAL LABOUR MARKET

While discussing age and demographics in rural Armenia, it is also interesting to see the economic activity indicator of the rural population. According to Population Census 2011 (NSS, 2016h), the economic activity rate and employment rate are higher in rural areas, while unemployment is traditionally lower. At the same time, economic activity and employment rates are higher for men living in rural areas than for women – 71.7 percent vs. 60 percent – for all age groups except for the group of people between 15 and 19 years old, meaning that girls are getting involved in work earlier.

According to the Women and Men of Armenia publication (NSS, 2016c), in 2015, 54 percent of those involved in agriculture were women, and at the same time, 40 percent of employed women and 31 percent of employed men worked in agriculture.

It should be noted that in rural areas, informal employment widely prevails, making up 75 percent of total employment[47] (NSS, 2016d). The rate of informal employment in agriculture is almost universal, at around 99 percent in 2015. A great majority (68 percent[48]) of the employed rural population are involved in agriculture. The other sectors of employment in rural areas are processing, public institutions, trade and, in some cases, agritourism. Only 32 percent of employed rural people are engaged in jobs outside of agriculture, and 16 percent of those are involved in the public sector.

However, it should be noted that in rural communities, the share of household income from agriculture-related sources is continuously decreasing. In 2015, it was 25.6 percent of the gross (per capita) household income, on average, as compared to 38.8 percent in 2008 (NSS, 2016e). The share of consumption of own-food production has decreased to a greater extent, from 21.2 percent in 2008 to

[47] Total employment involves both primary and secondary (additional) jobs.

[48] From the clarification of NSS received on 13 February 2018 as a reply to official information request.

11.6 percent in 2015. At the same time, the shares of paid work and self-employment have increased. On one hand, this trend indicates a strengthened market orientation and higher purchasing power of rural households, and on the other hand, it signals a tendency among rural residents to leave own agricultural activities and shift to paid work, either agricultural or non-agricultural.

The greatest income source in 2015 was paid work (37.6 percent), followed by public transfers (16.8 percent), such as pensions and social assistance payments. The high share of public transfers can be attributed to the aging population of the countryside.[49] At the same time, farm income remains the key source of income for households in the first quintile in rural areas, followed by social transfers (39 percent and 23 percent in 2015, respectively). The study of income sources by consumption quintiles shows that the lower quintiles of the rural population derive a smaller portion of their income from paid work and a higher portion of their income from the farm. This highlights the importance of agriculture for poor rural households (small family farms) (NSS, 2016e).

The share of remittances from relatives abroad increased from 6.6 percent in 2008 to 7.7 percent in 2015 (see Table 21). The average monthly per capita nominal income in rural households from each source is presented in Annex 6.2, Table A1.9.

Table 21. Sources of household income in rural communities, 2008–2015, percent

	2008	2009	2010	2011	2012	2013	2014	2015
Wage earnings	**29.6**	**26.5**	**29.1**	**27**	**29.3**	**27.9**	**32.4**	**37.6**
Self-employment	4.1	3.2	4	3.9	3.1	4.9	6.1	7.3
Agriculture related, including:	**38.8**	**35.6**	**29.4**	**32.4**	**30.8**	**30.9**	**28.5**	**25.6**
Sales of agricultural products and livestock	*17.6*	*16.8*	*10.4*	*14.8*	*15.4*	*15.3*	*14.8*	*14*
Consumption of own production food	*21.2*	*18.8*	*19*	*17.6*	*15.4*	*15.6*	*13.7*	*11.6*
Income on property	0	0.1	0	0	0	0.2	0.1	0
Public pensions and benefits	**17.3**	**20.7**	**20**	**19.3**	**17.6**	**16.4**	**16.2**	**16.8**
Transfers, including:	7.3	7.1	9.3	11.1	10.2	11.1	9.8	7.9
From relatives residing in Armenia	*0.7*	*0.6*	*0.6*	*0.5*	*0.4*	*0.4*	*0.3*	*0.2*
Remittances	*6.6*	*6.5*	*8.7*	*10.6*	*9.8*	*10.7*	*9.6*	*7.7*
Other income	2.1	6.2	7.7	5.8	8.5	8	6.4	4.5
Non-food products and services free of charge	0.8	0.6	0.5	0.5	0.5	0.6	0.5	0.3
Total income	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

SOURCES: NSS (2016E) AND THE SAME PUBLICATION FOR THE PERIOD OF 2009 TO 2015.

Men involved in agriculture, whether formally or informally, work more hours than women (NSS, 2016d): 44 hours for women and 46 hours for men in formal employment, and 23 hours for women and 30 hours for men in informal employment (NSS, 2016c). Women work mostly as unpaid family workers and combine that with unpaid domestic and care work. Every day of the week, rural women spend 6 hours and 6 minutes on unpaid and domestic care work, compared to 2 hours and 37 minutes spent by men (NSS, 2016c).

[49] As of January 2015, 11 percent of the rural population were older than 63.

According to 2015 data, agriculture is the only sector in Armenia in which women are paid close to what men are paid. In 2015, on average, women in Armenia received only 66.5 percent of men's earnings, but in agriculture, on average, women receive 94.9 percent of men's nominal wages.

There is a division of roles between men and women involved in agriculture. Considering that 54 percent of all those working in agriculture are women, the involvement of women is quite significant, especially on family farms. The role of women in Armenian agriculture is especially significant in the daily care of plants and animals, the milking of animals and the processing of agricultural products, whereas men play important roles in the transportation of products, accessing markets, negotiating prices, and in activities related to the treatment of plants and animals. Women are responsible only for small sales, involving low volumes. Harvesting and seeding works usually involve the whole family (BSC, 2013).

In summation, men tend to be present in tasks that are capital-intensive or that require physical strength, technical knowledge and skills, mobility, the use of machinery, and access to providers, markets and large income. Women, on the other hand, are mostly involved in labour-intensive work (FAO, 2017b). Because men are socially perceived as managers of the farm and women are regarded as family helpers and housekeepers, women have limited access to information, advisory services, knowledge, and innovation, which directly affects women's economic opportunities. (FAO, 2017b)

Forty percent of rural youth – those between 15 and 29 years old, according to the National Statistical Service (2016d) definition – are employed, compared to 33 percent of urban youth. The highest share of employment is recorded in the 25–29 age group (56.2 percent), followed by 41.7 percent among those between 20 and 24 years old, and 20 percent among those between 15 and 19 years old. In 2015, the primary sector of the economy in which rural youth were involved was agriculture, at 55 percent. That was followed by services (33 percent), industry (7 percent) and construction (5 percent) (NSS, 2016d). Unfortunately, no gender-disaggregated data on rural youth is available.

Unemployment among rural youth (16.8 percent in 2015) is lower than among urban youth (36.0 percent in 2015). At the same time, long-term youth unemployment is more persistent in rural areas. In 2015, 33.8 percent of youth were unemployed for more than two years, while in urban areas that figure was only 18.1 percent. At the same time, 46 percent of unemployed rural youth have had vocational or higher education. Thus, the problem of low availability of non-agricultural jobs in rural areas, on one hand, and the presence of quality education that will be able to educate the skilled labour force demanded in the market, on the other hand, negatively impact rural youth and their opportunities of obtaining jobs according to their qualifications.

RURAL POVERTY

Poverty in Armenia is a major issue. While there has been significant improvement in the poverty rate since 2005, when it was at 40.1 percent, it is still a serious concern, as almost one-third of the total population (29.8 percent) are poor, as of 2015. According to the National Statistical Service, the poor are defined as those whose consumption per adult equivalent is below the upper national poverty line, and the very poor are defined as those whose consumption per adult equivalent is below the lower national poverty line. The extremely poor, or the undernourished, are defined as those whose consumption per adult equivalent is below the food (extreme) poverty line. In 2015, the upper poverty line was AMD 41 698, or USD 87.2 per month (NSS, 2016e).

The poverty rate in rural areas in 2015 was 30.4 percent, of which 10.3 percentage points were very poor and 1.7 percentage points were extremely poor. 38.5 percent of the poor population of Armenia were residing in rural communities (see Table 22). Unfortunately, there is no gender-disaggregated data on poverty in rural areas, but it should be noted that, on average, there are no significant differences in the rate of poverty among women and men (29.5 percent vs. 30.1 percent, respectively, in 2015) (NSS, 2016e).

At the same time, it should be noted that woman-headed households are more likely to be poor than man-headed households (32.1 percent vs. 28.9 percent in 2015), and within woman-households, those with children younger than 6 are exposed to a higher risk of poverty compared to the national average (NSS, 2016e). This is *inter alia*, a reflection of the limited economic opportunities for women in comparison with those for men.

Table 22. Basic poverty indicators of Armenia, 2008 and 2015, %

	2008			2015					
	Extremely poor	**Very poor**	**Poor**	**Extremely poor**	**Very poor**	**Poor**	**% in poor population**	**Poverty gap**	**Poverty severity**
Urban	1.9	13	27.6	2.2	10.4	29.4	61.5	4.7	1.3
Yerevan	*1.1*	*8.1*	*20.1*	*2*	*8.3*	*25*	*27.4*	*3.9*	*1.1*
Other urban	*2.8*	*18.2*	*35.8*	*2.4*	*12.8*	*34.4*	*34.1*	*5.5*	*1.5*
Rural	1.2	11.9	27.5	1.7	10.3	30.4	38.5	4.9	1.3
Total	**1.6**	**12.6**	**27.6**	**2**	**10.4**	**29.8**	**100**	**4.7**	**1.3**

NOTE: BECAUSE OF METHODOLOGICAL IMPROVEMENT THAT TOOK PLACE IN 2009, NO EQUIVALENT DATA IS AVAILABLE FOR 2005 RURAL/URBAN RATES OF POVERTY.
SOURCE: NSS (2016E).

According to the National Statistical Service (NSS, 2016e) the poverty rate is higher among households that are deprived of land or own only a small piece of land, have limited access to irrigation, lack or have very limited access to agricultural machinery or production capacities, and have limited sources of financing. In 2015, the highest poverty rate was recorded among the rural households who had no land; these comprised 10.2 percent of the poor population living in rural communities. In addition, it is natural that extremely poor and poor households have fewer opportunities to acquire or rent agricultural machinery, so fewer opportunities to gain better earnings from farming. Among households in possession of agricultural machinery in 2015, 88.7 percent were non-poor, and 11.3 percent were poor. Extremely poor households owning agricultural machinery were not recorded.

As was mentioned above in Section 3.2.4, accessibility of financial resources is a big problem for smallholders and family farms, and it should be noted that it is especially problematic for poor households. In 2015, some 16 percent of surveyed rural households received loans or borrowed funds for engaging in agricultural activity; however, the poor and extreme poor made up only just over 20 percent of them (NSS, 2016e). Moreover, a lack of funding was mentioned as the key reason for not cultivating agricultural land in the first quintile of the rural population.

Poverty rates vary considerably across different regions. This situation is mostly conditioned by geographical differences, such as climatic conditions for agriculture, whether the region is on the border, and the level of infrastructure development, as well as by the share of urban population in a given region (IMF, 2017). In particular, in 2015, the poverty rate in the Shirak (45.3 percent), Lori

(36.2 percent), Kotayk (35.9 percent), Tavush (35.3 percent) and Gegharkunik (32.1 percent) regions was higher than the country average (NSS, 2016e). It should be noted that the Shirak region has not only the highest rate of poor, but also the highest rate of extremely poor, who compose 3.9 percent of its population.

Most of the households in Armenia (91.2 percent in 2015) own their home, yet there is no rural/urban distribution. Overall, 91.3 percent of rural households live in houses, 6.9 percent in apartments and 1.8 percent in temporary dwellings (NSS, 2016e). As of 2015 data, rural households had more living space per household member than urban ones. However, in terms of the availability of necessary amenities, urban housing was in a much better situation than rural housing. Only 9.9 percent of rural households reported having an in-house (functional) kitchen, cold water supply, flush toilet and bathtub, whereas in urban communities, such households made up 90.1 percent (NSS, 2016e). According to the results of the Armenia Demographic and Health Survey (NSS, 2017c), 51.7 percent of the surveyed women[50] in rural areas were owners and/or co-owners of houses, and 31.5 percent were owners and/or co-owners of land. According to the same source, 75.3 percent of the men surveyed in rural areas were owners and/or co-owners of houses, and 64 percent were owners and/or co-owners of land.

In addition to monetary poverty, the multidimensionality of poverty and its non-material forms should be also mentioned. People in rural areas are deprived because of inadequate access to healthcare, education and other basic infrastructure and social services. Moreover, if in some cases, inadequate access is conditioned by physical distance and availability of such services, in other cases it is limited due to low level of household income.

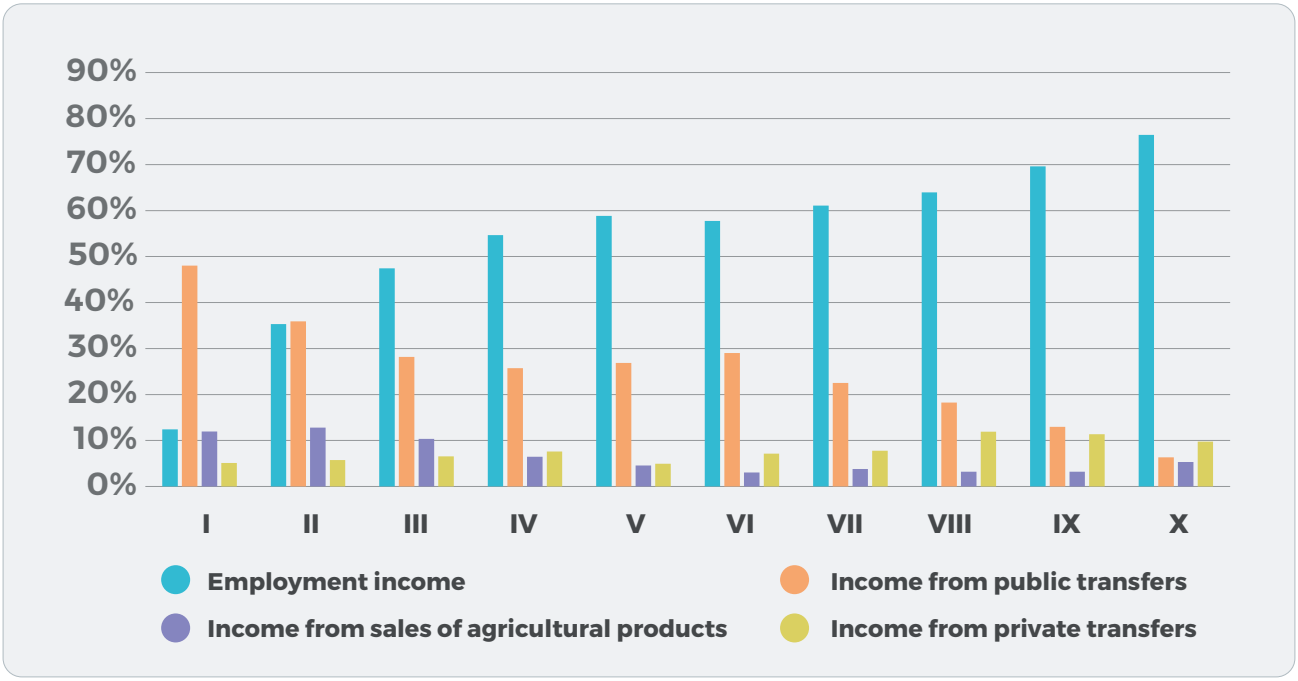
POVERTY AND INCOME

The two main components of household monetary income in Armenia are employment income and public transfers, such as pensions, benefits and scholarships. At the same time, while discussing the income generation opportunities among the poor population, it is interesting to note that the poor are less likely to have income from employment and are largely dependent on social assistance provided by the state. According to the National Statistical Service (NSS, 2016e), public transfers are a key source of monetary income for households in the first decile group (48 percent in 2015), while the share of this source of income for households in the tenth decile group (6.4 percent in 2015) is very small. At the same time, in monetary terms the volume of public transfers received by the households in the richest decile group is twice as high as what the households in the poorest decile group receive.

The importance of employment as a source of income gradually increases while moving from the poorest deciles of the population to the richest ones. In 2015, the income from hired employment comprised 12 percent of the gross monetary income of the first decile group and 76 percent of the tenth decile group. The opposite trend is noticeable in relation to the importance of income received from sales of agricultural products – for the first decile group, the income from sales of agricultural products in 2015 comprised 12 percent of their gross monetary income; for the tenth decile, that figure was 5 percent. At the same time, in real terms, the amount of money generated from the sales of agricultural products by the tenth decile is more than seven times higher than what is generated by the first decile group (NSS, 2016e).

[50] Women surveyed in the scope of Armenian Demographic and Social Survey were between 15 and 49 years old.

Figure 13. Main sources of monetary income in Armenia in 2015 by decile groups



SOURCE: NSS (2016E)

In addition, the poor do not benefit much from the private transfers received from relatives living in Armenia or abroad. In 2015, the share of private transfers in the structure of household monetary income in the lower decile groups was about 5–6 percent, yet for the households in the richest decile groups, it was 10 percent or slightly higher.

SOCIAL PROTECTION

The main legal documents regulating the social protection system in Armenia are the Law on State Pensions (RANA, 2010), the Law on State Benefits (RANA, 2013), and the Law on Social Assistance (RANA, 2014c).

Due to limited state funds, the social protection system in Armenia is more focused on supporting the most vulnerable populations rather than ensuring the welfare of the entire population. Structural changes are currently taking place, and a new system of Integrated Social Services is being introduced throughout the country. Under this concept, the Territorial Centres for Complex Social Services are being gradually developed as one-stop-shops offering comprehensive social service packages, which are provided based on applications by individuals and assessments of their needs. Until 2020, it is planned to have 50 to 55 such centres in the country.

The Territorial Centres for Complex Social Services host the territorial agency rendering social services, the territorial department of state social security service, the territorial public employment agency, and the medical-social expertise department. The main goal of such centres is the complex enlargement of capacities and opportunities of poor and socially vulnerable populations, mostly by provision of social services and by assistance in realization of their education, health, housing and other needs, as well as in their inclusion in the labour market.

The overall state policy entails (a) targeted provision of social assistance to the vulnerable and targeted social groups of the population, (b) ensuring decent old-age, and (c) targeted social support for improving the demographic situation (GoA, 2014).

Social transfers in Armenia include pensions and monetary social assistance. The largest constituent in social transfers is pensions, which include retirement and military pensions. Pensions are an important source of income for the population, especially as far as pensioners are concerned, who often have it as their only source of income. Therefore, the general welfare of the population pertaining to this group is dependent on the amount of pension (NSS, 2016e). Since 2014, pensions have been received by those who have employment records of at least ten years, and the minimum amount of pension is AMD 24 000 (around USD 50) per month. Pensions are paid to all eligible individuals, irrespective of their poverty status.

As for monetary social assistance, according to the Law on State Benefits, there are ten types of benefits financed from the state budget: a family benefit, a social benefit, an emergency benefit, a lump-sum benefit at childbirth, a child-care leave benefit (until the child reaches the age of 2), a maternity benefit, an old-age benefit, [51] a disability benefit, a survivor benefit, and a funeral benefit.

The family benefit is the largest monetary social assistance program in Armenia; 12.2 percent of Armenia's households received transfers through the family benefit program in 2015. It is the largest in terms of population coverage as well as of the funds allocated from the state budget. It has rather good targeting, since 75.7 percent of all beneficiaries, receiving 77.4 percent of funds allocated to the program, belong to the two bottom consumption quintiles (NSS, 2016e). A family has the right to receive the family benefit if it has members younger than 18, is registered in the family social assessment system, and its unit of insufficiency is higher than the limit set by the Government of Armenia for a given year. Families in a similar condition but without family members of younger than 18 are entitled to social benefits. The base amount of family benefit and social benefit is AMD 18 000 (USD 37.3 [52]) per month, with additions per each family member younger than 18 of AMD 5 500 to AMD 8 000 (USD 11.40 to USD 16.58), depending on the level of poverty, number of children in the family and the family's place of residence (GoA, 2018b).

Notwithstanding the positive performance in terms of the coverage of the family benefit system, there is still a need for further improvement of program targeting, since some 47 percent of the poorest 20 percent of the population are not covered by monetary assistance programs.

Taking into account the worsening demographic situation, the Government gives special importance to childbirth and child-care benefits. The lump-sum benefit at childbirth, on average, is AMD 50 000 (USD 104) for the first and second child and AMD 430 000 (USD 891) for the third and subsequent children. The monthly child-care benefit for children up to 2 years old is AMD 18 000 (USD 37.3). Vouchers for free delivery care have been in use since 2008, and state certificates for free child health care have been in use since 2011.

Although expenditures on social transfers from the state budget increase every year, they still remain at a rather limited level as a share of the gross domestic product (7.8 percent, or around USD 814.6 million in 2015). Nonetheless, social transfers considerably contribute to the reduction of poverty. If

[51] Those who don't have employment records or who worked less than ten years.

[52] The average exchange rate of the Central Bank of Armenia for 2017.

payments of social transfers were to be terminated and households were not able to compensate for this loss from other sources, the poverty rate would significantly increase for the whole population. Particularly, the total poverty rate would increase from 29.8 percent to 43.7 percent (NSS, 2016e).

At the same time, it should be noted that given the uncertain economic situation, beneficiaries of social transfers often fear moving out of the programme and therefore are not getting involved in activities that can potentially improve their livelihoods. Especially in rural areas, cases were reported where beneficiaries refused to participate in productive inclusion projects, given the instability of income generation and the fear of not being able to requalify for assistance within the social transfer system.

Looking across the types of communities, social transfers were an important source of income, especially for urban households outside Yerevan for which in 2015 social transfers accounted for 17.4 percent of the average monthly income. For rural households, they made up 13.3 percent of the average monthly income (NSS, 2016e).

There are some other benefits that people belonging to certain population segments are entitled to, such as tuition-free or partially reimbursed education for socially disadvantaged or disabled people who have gained at least an entry-level score for admission exams, or low-interest-rate mortgage loans for young families, including single parents .

At the same time, it is worth mentioning that as of January 2014, there is no unemployment allowance in Armenia .

SOCIAL SERVICES IN RURAL AREAS

The availability of preschool facilities varies across the country. In 2015, there were 717 preschool facilities in Armenia, with the majority of them (219) in the capital, Yerevan. The accessibility of preschool facilities also varies among different rural communities. According to Integrated Living Conditions Survey (NSS, 2015b) data, 41 percent of rural residents reported that the nearest preschool facility was within 1 km; meanwhile, 26 percent of all households responded that the nearest preschool facility was more than 4 km away.

According to the same source, 64 percent of survey respondents in rural communities reported that the secondary school was within 1 km. Meanwhile, 4.8 percent of households mentioned that the school was more than 4 km away, including 1.1 percent of households that reported that the distance to the closest secondary school (high school) was more than 10 km.

Primary healthcare in Armenia is provided free-of-charge to the entire population, and there are annual state healthcare programs that provide access to key outpatient and inpatient services, medicines or medical supplies for particular segments of the population,[53] either free-of-charge or with preferential terms.

[53] People with disabilities, veterans of war, people under civil service and their families, children under 7 years old, women in reproductive age during pregnancy, childbirth and postnatal periods, children without parents, in single-parent households and those living in extended families, beneficiaries involved in family allowance system, etc.

Primary healthcare is typically provided by a network of urban polyclinics, healthcare centres, rural ambulatory facilities and "feldsher"[54] health posts; however, not all communities have access to any establishment of these networks, and thus the accessibility of healthcare for rural communities is an issue. In 2015, for 51.6 percent of rural households, the nearest pharmacy was further than 4 km from their residence.

RURAL INFRASTRUCTURE

Only 92.5 percent of rural households have access to a centralized water supply, and this indicator has improved only by 0.1 percentage points since 2008. However, the share of rural households with 24-hour water supply has increased from 40.9 percent in 2008 to 51.1 percent in 2015, and the share of households with access to water for less than five hours, comprising 21.6 percent in 2015, has dropped. However, access to a centralized water supply system has not necessarily amounted to appropriate water supply services. For instance, in 2015, 1.8 percent of households in rural communities had water supply for just two weeks in a month, and 4.4 percent had access to water for just three weeks within a month (NSS, 2016e).

Contrary to the improvements in water supply, in 2015 79.6 percent of rural households did not have access to a sewage system. Another problem in rural communities is garbage disposal. According to the 2015 Integrated Living Conditions Survey, only 66.7 percent of urban communities had any kind of garbage collection system. Garbage was burned in 24.1 percent of communities and buried in 7.5 percent.

The quality of roads and the availability of inter-community public transportation in rural Armenia is another issue that significantly hinders the economic opportunities of rural dwellers and their access to other services not available in the community. In addition, there are communities in high altitudes that easily get isolated in case of heavy snow, when transport communication gets challenging.

Nearly all households in rural areas reported having a mobile phone (97 percent), and 55.3 percent of them had a household member who uses the Internet (NSS, 2016e). No sex-disaggregated data on this indicator is available.

Regarding heating, 0.8 percent of rural households do not have heat in their dwellings. Among those who do heat their dwellings, 71.2 percent reported using wood as a heating option, while 14.4 percent reported natural gas and 13.3 percent reported other, which most probably is manure (NSS, 2016e).

[54] Paramedical practitioners who provide advisory, diagnostic, curative and preventive medical services more limited in scope and complexity than those carried out by medical doctors. They work autonomously or with limited supervision of medical doctors and perform clinical, therapeutic and surgical procedures for treating and preventing diseases, injuries, and other physical or mental impairments common to specific communities.

4. Current political priorities and policies affecting smallholders and family farms

4.1 Sector- and focus-area-specific political priorities for agriculture and rural development

4.1.1 National policy related to smallholders

In 2014, the Government of Armenia adopted the Prospective Development Strategic Programme (PDSP) for 2014–2025 (GoA, 2014). This is the country's main socio-economic development strategy and the basis for medium-term, sectoral and other programme documents. The PDSP announced agriculture and rural development as one of five priority sectors for the country's development during the covered ten years, and the following visions of rural and agricultural development perspectives were highlighted:

- development of commercial agricultural organizations, cooperatives and family farms integrated with market infrastructures through application of intensive technologies;
- ensuring stable food security of the population and meeting the demand of the agro-processing sector for agricultural raw materials through a realistic combination of food security interests and the comparative advantage of external trade of agriculture and food products;
- increase of gross product in agriculture due to an increase in labour productivity, comparative reduction of the number of people employed in agriculture, and use of part of the surplus workforce in the field of agricultural service provision and in non-agricultural fields through trainings;
- processing of a considerable amount of produced agricultural raw materials at small and medium-sized enterprise production units;
- domination of high-value-added agricultural production in the plant cultivation and animal husbandry intra-branch structure; and
- high level of food security of the country's population, ensuring self-sustainability for basic foodstuffs and a reduction of rural poverty and migration.

Considering that 99 percent of agricultural producers are family farms, with 89 percent being smallholders holding up to 3 ha of land, it can be stated that all the development perspectives included in the national policies related to agriculture basically target smallholders and family farms.

The PDSP recognizes that for the development of agriculture, it is critical to increase the productivity of the sector and create non-agricultural employment opportunities in rural areas, which will, in turn, bring balanced regional development. The creation of jobs in rural areas is mostly envisioned through creation of non-agricultural employment in agricultural production chains, involving mainly marketing and the supply of inputs. Here, it should be noted that, according to the United Nations in Armenia, the gender perspective is well-addressed in the current strategy (UNCT in Armenia, 2017).

Following the implementation logic of the PDSP, various national direct policies and strategic documents have been adopted or continued to support the objectives of the strategy.

Currently, the primary national strategy on agriculture is the Rural and Agricultural Sustainable Development (RASD) Strategy 2010–2020 (GoA, 2010a), which came to replace the Strategy on

Sustainable Agricultural Development of 2006. The strategy was developed after the financial crisis of 2008, and that fact is reflected in the overall objective of this strategy, which reads as "overcome the impact of the economic and financial crisis and contribute to the modernization and competitiveness of the agricultural industry through developing anti-crisis mechanisms." RASD is directed at the alleviation of rural poverty and the reduction of migration among the working-age rural population.

Some of the objectives of RASD that directly address the needs of smallholders are:

- development of agricultural cooperatives;
- improved food safety and security;
- increased competitiveness of local agricultural production;
- increased land-use efficiency;
- introduction of agro-technical advanced technologies;
- expansion of the production of high-value crops;
- implementation of plant protection and quarantine activities;
- support for the development of livestock commercial organizations;
- establishment of small facilities of feed production;
- development of contractual relations with processing enterprises;
- enhanced level of agro-machinery;
- development of the rural social infrastructure;
- mitigation of agricultural risks;
- improvement of agricultural lending; and
- improvement of the scientific-educational consulting system in the agricultural sector.

To support the achievement of these objectives, the Government of Armenia implements targeted programmes financed either by state resources or through the assistance of the international donor community. For instance, the programmes on subsidized diesel fuel, crop seeds, fertilizers and agricultural machinery mentioned earlier are implemented as linked measures to support RASD implementation.

Following the need to align the post-crisis strategy to the new needs of the sector, a new version of RASD was developed for the period 2015–2025. However, it has not yet been approved (Lines, 2017). This new version is a gender-mainstreamed document and is in line with the Gender Policy Concept Paper (GoA, 2010b) adopted by the Government of Armenia in 2010, which defines the primary directions and general strategy of the state policy in relation to men and women and refers to the equal enjoyment of rights and opportunities by all citizens in all spheres of social life, regardless of their sex. So, RASD 2015–2025 highlights the importance of ensuring the principle of gender equality in agricultural development through the provision of equal opportunities for men and women.

In May 2011, the Republic of Armenia Food Security Concept Paper (RA President, 2011) was adopted. The mission of the concept paper is to ensure physical and economic access, for all groups of the population, to food that meets health standards, as well as to create preconditions to resisting unfavourable changes in foreign markets and the negative effects of potential emergency situations.

Following the concept paper, in November 2011, the Strategy on Development of Food Safety System in the Republic of Armenia (GoA, 2011c) was adopted, seeking to bring Armenia's food system in line with relevant European Union legislative and institutional requirements. The aim of this strategy is to minimize the administrative burden on Armenia's farming community and agribusiness operators by

updating regulations and obsolete standards.

The constraint of excessive land fragmentation and small average farm size, which leads to low productivity of the agricultural sector, was addressed in 2011 when the Concept Paper and its Action Plan on Consolidation of Peasant Farms in RA (GoA, 2011a) was adopted. Farm enlargement and consolidation can be achieved in three general ways: (i) through various forms of cooperation to benefit from advantages of the economies of scale in procurement, technology adoption and marketing, (ii) land consolidation as an instrument for the adjustment of property structure and use rights through a coordinated and facilitated reallocation of land parcels; and (iii) as a result of a well-functioning land market. In addition, the paper also mentions the importance of supporting small farms as a policy of mitigating social tensions. There are implementation milestones until 2020 set in the paper, with a total budget of around AMD 2 billion (around USD 5.4 million [55]).

Farm consolidation is very important, as it should contribute to more productive farming because of a higher level of specialization and economies of scale. However, it should be noted that not much has been done since 2011. [56] For example, according to the Action Plan of the Concept Paper, there should have been a pilot project implemented during 2013–2014 with a budget of AMD 25 million (around USD 67 000), but no project has been implemented.

In 2011, another document important for livelihoods in rural areas was launched. This Concept Paper on Community Amalgamation and Establishment of Inter-Community Unions (GoA, 2011d), in contrast to the one mentioned above, is actively being implemented. The process is supported by multiple donors, such as the European Union, the United States Agency for International Development, BMZ/GIZ, the Swiss Agency for Development and Cooperation, and the United Nations Development Programme. It is believed that the amalgamation will result in savings and will improve the capacities and performance of local self-governance bodies, in addition to solving problems related to human resource limitations and creating more opportunities for territorial development. The first pilot projects were implemented in 2015–2016, with 140 communities consolidated into 18 clusters. By the end of 2018, it is expected to have around 200 consolidated communities.

At the same time, in addition to the positive aspects, it should be noted that there are number of risks and negative consequences from the already-implemented pilot projects that frighten villagers. If not responded to properly, this might cause internal migration from amalgamated communities to new centres, and the abandonment of many villages. Some of the negative results were the closures of schools in some small communities, reductions in non-agricultural employment as a result of the closure of community councils, increased difficulties for villagers in accessing new community administrations, and problems with the equal distribution of resources.

From the national legislation, the Law on Agricultural Cooperatives (RANA, 2015) is probably the one with the most important practical implications for smallholders. The law was the first attempt to formalize informal involvement in agriculture and to familiarize farmers with the idea of institutional organization of agricultural production, marketing and processing. Though currently there are certain issues related to the taxing regulations of the agricultural cooperatives, the Government prioritizes their development as a tool for improved productivity and efficient use of resources.

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[55] The average exchange rate of the Central Bank of Armenia for 2011.

[56] It should be noted that under the Five-year Government Programme 2017–2022, under the chapter of Cadastre, for each year during 2018–2022 five land consolidation projects are envisioned, yet it is not known if the principles set in the concept paper will be relevant.

In line with everything mentioned above, the Government of Armenia pays special attention to the development and strengthening of bordering communities affected by military actions. In 2014, a law on Tax Exemption of Activities Carried Out at Bordering Communities (RANA, 2014b) was adopted. According to the law, businesses operating in the 34 rural communities included in the list do not pay any taxes. In addition, in these communities, 100 percent of land and property taxes and 50 percent of gas, electricity and irrigation water expenses are subsidized. This law is very important for promoting the development of off-farm businesses.

Overall, agriculture-related national policies in Armenia reflect the needs, constraints and challenges of the agricultural sector and, to some extent, of smallholders and family farms. However, they are written in a vague manner, with no definite measurable indicators and milestones for implementation and for the monitoring of progress achieved. Another problem related to the policies – including strategies, concept papers and programming documents – is that frequently there are no sufficient funds allocated to the identified activities, while at the same time the non-transparent and non-efficient use of funds is also an issue, such as in case of subsidized fertilizers.[57]

Most of the policies are characterized as ad hoc and not targeted to overall national interests but rather to solve numerous problems. At the same time, the socio-cultural factors that exist among villagers and frequently inhibit their development – such as established gender roles and inadequate access to education and other social services – are neglected by the national policy, and only economic factors are considered (Gabrielyan, 2012). The coherent vision of the village is missing from the strategies, where both socio-cultural and economic components should be involved.

Other than national legislation, it is also worth mentioning that Armenia is a part of the United Nations Convention on the Elimination of All Forms of Discrimination against Women (CEDAW), where Article 14 is specifically related to rural women. In relation to this, in 2016 the CEDAW Committee assessed Armenia's performance and noted that Armenia "has taken economic empowerment measures for rural women, supporting cooperatives and making credit and grant programmes available in rural environments." However, it was also noted that "there is a lack of social, health and economic infrastructure in rural environments, as well as there is a concentration of rural women in the informal sector." Moreover, the Committee was concerned that rural women are particularly affected by the labour migration of their partners, which exposes them to higher risks of economic distress and high HIV-infection rates. (CEDAW, 2016a)

4.1.2 Donor-funded policies related to smallholders

Funds for agriculture and rural development in Armenia come from various directions, but direct policy support comes mainly from European Union funds. The following are the main donors working in the rural and agriculture development sector of Armenia, along with their funded programmes and policies.

The **World Bank** is probably the biggest source of funds for agriculture and rural development. Its funding includes both grants and loans. The biggest projects of the World Bank in this field, to which it has contributed USD 62.67 million, target improvements in the productivity and sustainability of

[57] Referring to the case in which the supplier of state subsidized fertilizers was chosen in a non-transparent manner and was charging a higher price than its competitors who were not part of the subsidization scheme (SCPEC, 2016).

pasture and livestock systems; increases in marketed production volume of selected livestock and high value agri-food value chains; rehabilitation of irrigation systems, including conversion of pump-based systems to gravity or lowering the operational costs of non-convertible pump-based systems; and capacity building of water users associations.

Of particular interest is the *Agriculture Policy Monitoring and Evaluation Capacity Building Project* of the Japanese Policy and Human Resource Development (PHRD) trust fund technical assistance grants programme, provided through the World Bank. The project aims to strengthen monitoring and evaluation capacity and systems as elements of evidence-based agriculture policy analysis and formulation. In the framework of this project, the Ministry of Agriculture will receive USD 1.8 million in grant support during 2017–2019.

Funding from the **Eurasian Development Bank** and its Eurasian Fund for Stabilization and Development (EFSD) is directed at improving irrigation infrastructure. A loan of USD 40 million was approved in 2015 to finance Irrigation System Modernisation project in Armenia that will result in expansion of irrigated area by 10,443 ha and annual electricity savings of around USD 1.26 million. In addition, in 2015 the Council of the EFSD endorsed the preliminary application and concept of the Construction of Mastara Reservoir[58] investment project with a proposed loan of USD 25.2 million. For this project, a grant from the World Bank of USD 670 000 was approved to cover the costs of feasibility studies and training for the staff of the Government of Armenia Project Water Sector Implementing Unit.

The Infrastructure and Rural Finance Support Programme of the **International Fund for Agricultural Development** is a six-year programme launched in 2014 with total budget of USD 52.8 million. The programme is designed to generate income growth and sustainable employment opportunities by strengthening agricultural production systems and linkages to value chains for cash crops. It is expected that 13 200 households will benefit from this intervention. Among the programme's components are rural finance and water infrastructure.

The programme's infrastructure component will cover the seven regions of Shirak, Lori, Tavush, Gegharkunik, Vayots Dzor, Syunik and Aragatsotn, while the rural finance component will be countrywide. The main target group comprises poor farmers and rural households, particularly vulnerable households headed solely by women or young people.

For the period of 2012–2020, the priority sector for the **Austrian Development Agency** in Armenia is agriculture. During 2012-2016, the funding directed to Armenian agriculture amounts to around EUR 7.3 million (USD 7.9 million). Operating projects mainly target value chains and cooperative development, livestock development, and organic agriculture. Funds also were allocated for the first agricultural census and its pilot.

The **European Union** provides a large range of financial and technical assistance to Armenia in the form of grants, contracts and budget support. A significant share of European Union funding is directed to agriculture and rural development. As of 2017, there are two big EU-funded projects: the European Neighbourhood Programme for Agriculture and Rural Development (ENPARD) and the Organic Agriculture Support Initiative, with a total budget of EUR 27.8 million, of which EUR 20 million (USD

[58] The command area of the proposed Mastara Reservoir is located in one of the water-shortage areas in the Ararat Plain. Mastara will provide additional supplies into the Armavir irrigation system.

30.1 million and USD 21.7 million correspondingly) is budget support to the Government of Armenia in the framework of ENPARD.

Overall, the EU-funded projects implemented in the agriculture and rural development sectors aim to:

- boost the performance of agriculture-related institutions, including increasing the efficiency of relevant public and private institutions;
- support the organization of farmers' associations, cooperatives and business-oriented farmers' groups;
- enhance agriculture statistics and information systems, including a national agricultural census; and
- increase the capacities of local organic production.

The Agricultural Alliance of Armenia is a volunteer multi-stakeholder platform established in 2011 by a group of local and international organizations working in the field of agriculture and rural development in Armenia. The main objective of the Alliance is to voice the problems and lobby the interests of the Alliance members' beneficiaries (mostly smallholders) in order to include them in policy-makers' agendas.

Through monthly meetings, platform members share the needs, development constraints and challenges of the farmers/communities they work with, and through joint activities and projects, they work on their solutions.

In 2013 and 2017, memorandums of understanding were signed between the Agricultural Alliance of Armenia and the Ministry of Agriculture, which considerably increased the contribution of the Alliance to the alleviation of agricultural problems through participating in a policy dialogue with the Ministry of Agriculture.

The role of the Alliance is important in terms of providing links between the problems in the field and the policies of the state. At the same time, Agricultural Alliance is not a fully representative body for all family farms in Armenia and the activities of the Alliance are scoped by the organizational interests of its members and their geography of work. *(See Annex 6.2.)*

The **United States Agency for International Development (USAID)**, in line with other U.S. governmental agencies, has long been among the important donors of Armenian agriculture and rural development since Armenia's independence. Nowadays, there is less funding, but the implemented projects are still valuable.

The Partnership for Rural Prosperity programme, launched in 2013, promotes rural economic development in Armenia. The programme helps rural communities identify local economic growth opportunities and expand employment prospects for women, youth and vulnerable groups. It also facilitates infrastructure upgrades and improves access to finance and markets.

Another programme launched in 2013 is the Advanced Rural Development Initiative, which aims to develop competitive rural value chains in 48 rural communities in the Syunik, Shirak and Lori regions. The goal of the initiative is to increase incomes and improve livelihoods in the beneficiary communities. In addition to these programmes, USAID also provided technical assistance for implementation of the first agricultural census.

4.1.3 FAO Country Programming Framework

FAO interventions directly related to smallholders are not many in Armenia. All of the programmes implemented during 2014–2017 had sub-sectoral emphasis and were aimed at improving agricultural statistics, boosting food safety and security, or preventing and controlling animal diseases, among other things. However, in some of the implemented projects, there are/were specific activities whose impact would spill over to smallholders.

In the framework of the European Union-financed ENPARD, FAO's involvement is focused in three main directions: institutional and capacity development of stakeholders, access to available and affordable food, and a general agricultural census. At the same time, there are planned activities that, as supplements, will positively impact smallholders. Some of these include:

- technical support for the development of selected value chains;
- awareness-raising campaigns for cooperatives and farmer organizations;
- support to the Ministry of Agriculture for the development of legislative changes aimed at preventing land abandonment and inappropriate use, as well as support for the implementation of land consolidation; and
- support in enhancing the overall national agriculture legislation.

The FAO pilot project on farm consolidation included the Nor Erznka community of the Kotayk region, where 60 percent of the community landowners took part in the project on a voluntary basis. The project had been implemented during two years and the following mechanisms were used to reduce fragmentation: *exchange, purchase, sale or donation of land parcels between landowners*; *exchange of private land with community land*; and *purchase or lease of community land bordering the private land.*

As a result of the project, 162 land parcels of 92 owners had been consolidated into 67 parcels. The average number of parcels owned in the community reduced from three to two, and the average farm size increased from 1.25 ha to 2.5 ha. *(See Annex 6.2.)*

A "Technical and institutional support to veterinary services in Armenia" project was implemented during 2013–2016. Through the project, veterinarians and other stakeholders gained up-to-date knowledge on modern methodologies for controlling brucellosis in animals. In addition, vaccination campaigns in 109 communities in the Syunik region were implemented, and a new National Brucellosis Control Strategy was produced and enacted, including assistance with outbreaks of the disease in Armenia. As a result, smallholders gained capacities to manage and eventually eradicate brucellosis, and government and veterinary officials learned crucial techniques – amid a real health crisis – for stemming the spread of the disease and dealing with its effects.

Another project that has had an impact on smallholders was "Support for abattoir development in Armenia." This project, funded by the Government of Greece, was aimed at enabling institutions related to the meat industry (both private and public) to effectively improve the safety and quality of meat and meat products. As a result, five slaughterhouses were established in four *marzes* (regions) of Armenia to demonstrate and foster safe and hygienic meat production.

The project was a significant contribution to the sustainable development of the Armenian meat sector, facilitating meat and meat product inspections and providing an alternative to backyard slaughter, which is a common facilitator of the spread of diseases through meat products.

Apart from national projects, FAO is also involved in Armenia through Regional Initiatives, such as the one in the framework of which the current study has been developed. The Regional Initiative on Empowering Smallholders and Family Farms for Improved Rural Livelihood and Poverty Reduction was launched in 2014 and is building on the legacy of the International Year of Family Farming in 2014. In Armenia, the Regional Initiative is specifically focused on promoting alternative use of water resources; on promoting conservation agriculture and organic agriculture and pest control methods; on improving capacities on animal genetic resources; on developing capacity for designing and implementing school food and nutrition programmes, and more.

In the framework of the regional project Strengthening Food Security and Nutrition in Caucasus and Central Asia Countries, FAO is supporting the Government of Armenia by working with the Ministry of Agriculture and the Ministry of Labour and Social Affairs in developing a vision on the pathways out of poverty for recipients of family benefits in rural areas; this includes a gradual and sustainable approach to supporting productive inclusion and improvement in food security and nutrition.

The pilot intervention "Social protection PLUS" proposes to complement the existing and currently active cash transfers provided by the Ministry of Labour and Social Affairs under the family benefit scheme with a menu of options of productive interventions, including the provision of inputs (such as seedlings, poultry and cattle) as well as assets and trainings, based on the household's livelihood profile and opportunities in the selected region. In addition, these options will be accompanied by a range of nutrition-sensitive interventions, such as awareness of and education on food, nutrition and agriculture.

4.2 Preconditions for comprehensive policymaking for smallholders and family farms

As was discussed earlier in this report, a number of policies are directed at rural and agricultural development, and all of them are to some extent related to smallholders and family farms. Yet, there is no definition of "smallholders" and "family farms," and this legislative gap does not allow the policies to be more specific and, if required, to offer differentiated policy measures for targeting the needs of different actors in the agricultural sector. Nowadays, smallholders and family farms are viewed as a collective mass of people who live in villages and own any type of agricultural productive resources.

The basic characteristics of all the discussed policies is that their objectives are too general. There is low understanding among stakeholders, especially among family farms, of what specifically is done in terms of achieving the set objectives. There are no participatory policy-development mechanisms that will ensure that the issues faced by farmers are properly reflected in policy design, nor are there measures to address women's economic empowerment and gender equality, which is important for improved productivity and sustainability of family farms and smallholders. Communication mechanisms for reporting on achievements and challenges are not established.

At the same time, effective implementation of government policies is threatened by the scarcity of financial resources and by non-transparent implementation mechanisms, as well as by weak institutional and technical capacities at the middle and lower levels of the national and regional public administration bodies that are responsible for direct implementation. Moreover, monitoring of implementation usually takes a technical character, primarily focusing on quantitative output data. Qualitative data on assessments of implementation and evaluations of results and impacts are not reported or collected, though steps have been taken to establish a monitoring and evaluation system in the Ministry of Agriculture.

Another interesting thing to note is that some objectives set in strategic papers are not realistic, and their achievement is questionable because of existing socio-economic constraints. This is especially true in the case of policy papers on food safety, where local producers' capability to change is not taken into account.

In other examples, policies remain only on paper for years, and even administrative measures are not undertaken to facilitate the implementation of given policies. In particular, this refers to the problem of small-scale and fragmented farms, which has been on the Government's agenda since 2011, when the Concept Paper and its Action Plan on Consolidation of Peasant Farms in the Republic of Armenia was adopted. Yet, due to a lack of available funding (Hartvigsen, 2015) and, partially, because of a lack of common vision with policymakers about the approach to be pursued (consolidation vs. cooperation), no steps towards a national land consolidation programme have been initiated in Armenia since the FAO pilot project in Nor Erznka finished in 2006.

Existing strategic and programming documents do not provide coordinated and comprehensive solutions to the constraints faced by farmers and are rather targeted at the elimination of the effects that the given constraints create. For instance, the programme on subsidized interest rates for agricultural loans is strongly welcomed by farmers, but at the same time the programme has its weaknesses. The programme has a short-term objective of providing affordable access to cash for farmers to support or improve their production. Yet the reason that farmers are constrained by cash, costing them 50 percent per year, is that their agricultural activities do not provide enough return to secure their living and repay the loan. Thus, a single programme of loan subsidization cannot solve all the constraints that serve to keeping farming returns low.

Because most of the problems that hinder the development of agriculture and smallholders are structural, national policy should be based on projects that bring structural change and gradual improvement of all the components linked to certain problems on all levels. A global vision for the development of the sector during the upcoming 15 to 20 years should guide all the policies initiated by the state.

At the same time, it should be noted that during recent years, financial support projects from the Government of Armenia directed to the field are quite impressive in their scale; they are not directed to smallholders, but rather the opposite – they push agricultural production towards bigger producers. The implementation of suggested modern technologies (drip irrigation, greenhouses, nets for hail protection) are very capital-intensive and with long payback periods. Smallholders do not have enough capital to invest in the suggested technologies with the available credit terms. The good agricultural machinery costs around AMD 20 million (roughly USD 41 000), and the 20-percent down payment requested by the bank is AMD 4 million (USD 8 300) – a big sum for a farmer to have in cash. Another problem is the minimal amount of subsidized loans; for a smallholder, AMD 3 million (around USD 6 200) is too much for the organization of yearly production. Yet, the inability to take a smaller loan with a subsidized interest rate diminishes the economic situations of many smallholders.

In all of the discussed polices, little attention is given to such important sectors as education and science. At the given conditions, when 99 percent of agricultural producers are family farms (and of which 60 percent have less than 1 ha), it is obvious that the sector itself cannot generate a sound demand for cost-effective innovation or for more efficient production technologies. Yet the Government policy should be responsive towards these needs and address the quality fulfilment of farmers' constraints. The development of efficient farming tools, inputs and technologies, adapted to local conditions, should be encouraged – taking into account the comparative advantages of the country.

5. Conclusions and recommendations

5.1 Conclusions

5.1.1 Role and weight in the economy of smallholders and family farms

The role of family farms for the agriculture of Armenia, as well as for the economy as a whole, is very important.

There are 360 611 family farms in Armenia (25 percent headed by women), and these farms own, in total, around 513 000 ha of land, with an average holding size of 1.48 ha. Family farms are involved in all sub-sectors of agriculture – plant growing, wild collection, animal husbandry and fish farming. More than 99.5 percent of plant growing produce and around 92 percent of animal husbandry products are produced by family farms. In total, they produce more than 97 percent of gross agricultural output. Family farms have significant contribution to the creation of the national gross domestic product and to agrifood exports.

During 2005–2015, agriculture on average comprised around 18 percent of the national gross domestic product (GDP), and each year after 2010 contributed significantly to GDP growth. At the same time, during recent years, around one-fifth of Armenian exports are agrifood.

The agricultural sector also is an important employment source. During 2005–2015, on average, around 41.5 percent of the employed population were involved in this sector.

Despite their small sizes, family farms provide employment to unskilled workers and ensure demand for many small businesses, such as inputs shops, agricultural machinery and transportation services, etc. The produce of family farms are raw materials for most of the export-oriented processing companies, and thus they also contribute to generation of foreign currency earnings.

Moreover, family farms and smallholders are a guarantee for food security at the household and national levels, and with the enlargement of agricultural holdings, this role of smallholders and family farms will further increase. Improved farm structures will result in increased production efficiency and profitability of farms, and thereby in an improved availability of food and a decreased dependence on imports.

5.1.2 Needs, challenges and constraints

The needs, challenges and constraints of Armenian family farms are largely intertwined with each other. In many cases, there is a circular connection between them, and it is difficult to assess which of them is the primary cause of the others and whether government policies can provide solutions.

To help provide a comprehensive understanding, Diagram 2 shows the main chain of restricting constraints, unfulfilled needs and challenges that hinder development of not only family farms in Armenia but of rural areas of Armenia in general. Here, it should be noted that the separation of needs, challenges and constraints is conditional, as depending on context, these categories can be used

interchangeably for the description of the same matter.[59]

Diagram 2. Constraints, needs and challenges of Armenian family farms

SOURCE: AUTHOR'S ELABORATION.

Regarding the **needs** of smallholders and family farms, the most striking issues are the low profitability of agriculture and the limited number of non-agricultural job opportunities. In 2015, 68 percent of employment in rural communities was agricultural, while the share of agriculture-related income sources was only 25.6 percent (see Table 21). Moreover, in 2015 only 70 percent of rural households with land or livestock reported income from their agricultural activities.

Other needs of smallholders and family farms in Armenia are access to social services and rural infrastructure, and improved livelihoods for both women and men.

While there are social services and infrastructure available in rural areas, their coverage and quality, along with the level of access to them, are still issues for many rural dwellers. These include insufficient access to vital infrastructures such as drinking water, sanitation and landfills, as well as the availability of village entertainment and socio-cultural events, functioning kindergartens, playgrounds and sports grounds, easy access to public transportation and well-maintained roads, etc. Social life in rural areas is limited to funerals, weddings and occasional interaction near shops or village councils. In addition to this, during 2008–2015, on average, the poverty in rural areas was 32.1 percent. In 2015, the poverty in rural areas was 30.4 percent, meaning that, on average, the income of approximately every third rural resident was less than AMD 41 698 (USD 87.2) per month.

[59] For instance, there is a need of knowledge on production technologies, yet the absence of this knowledge is a constraint for the farmers, and, at the same time, it is challenging for farmers to work with scarce knowledge.

These unfulfilled needs lead to multiple **challenges**, such as reduced involvement in farming; land abandonment; poverty; increased migration; limited investments in agriculture, personal and rural development; deterioration of quality of life in rural communities; refusal of the young rural generation to work in agriculture; the out-migration of the young from villages; decreased child birth; aging rural population; and an increasing gap between livelihoods in rural and urban areas. Other important challenges for smallholders and family farms are climate change and competition.

In 2015, the unprofitability of agriculture had the highest share among the reasons why family farms do not cultivate their lands (NSS, 2016e), and nowadays, many landowners prefer to become wage-earner workers on the lands of fellow villagers. Earning from AMD 2 500 to AMD 5 000 (around USD 5.2–10.5) per day during the season often is a better choice than cultivation of own land. The reasons can be various, including that in the current state of agricultural and economic development, being a wage earner provides a more secured living than can the cultivation of own land. As was mentioned, around 30 percent of the rural population is poor, of which 55.5 percent are women and 44.5 percent are men (NSS, 2016e). Here, it is worth mentioning that when a certain type of agricultural produce is the main source of living for the whole family, and there are no non-agricultural incomes in the family to secure against agricultural risks, the existing uncertainties associated with agricultural production and marketing in many cases can lead smallholders to economic collapse and poverty.

It is also worth mentioning about women who are left behind by migrant-husbands. As was mentioned, women often have limited access to agricultural inputs information, advisory services, knowledge, and innovation, and thus left-behind-women may find it difficult to continue agricultural activities at the full potential of the available resources and instead, they may choose to become a wage-earner.

Low income generation from farming and a limited number of off-farm job opportunities imply endangered livelihoods and a need to look for better lives outside the village, thus stimulating migration. Migration is seen as the most natural choice to improve one's financial situation, but in reality, work migration from Armenia, which is male-dominated, itself usually does not provide enough means to make fundamental improvements in living conditions and secure long-term incomes for families. Thus, the livelihood level in general of those left behind does not change, and migration often takes on a continuous character.

Additionally, not all migrations are successful, and the wellbeing of the families of migrants sometimes is worse than of families without migrants. Due to migration, women often become more vulnerable, as they are taking on roles that traditionally have been filled by men. Migration also reduces the availability of the workforce in villages and increases the cost of hired labour.

Regarding migration, it should also be noted that besides migration abroad, internal migration also occurs. In this case, it is less likely that the migrant will come back to live in the village. These migrants are usually youth who leave for studies and, after finishing them, are not ready to return to the community, or they are youth who feel constrained by the scale of non-agricultural jobs in parallel with less-than-full-time engagement in agriculture, where earnings are not secured. The situation can worsen as the population ages, as in this case the parents become vulnerable and dependent for their children's assistance, and the village remains without working hands. Farming becomes a hobby.

At the same time, the challenge of the climate change is expected to become more severe in upcoming years. Already, smallholders feel its impact on agriculture, such as colder winters and warmer summers that change established farming practices and, in some locations, require additional production costs.

In addition, the frequency and intensity of hazardous hydro-meteorological phenomena, such as drought, hail, early frost, spring floods and landslides, are increasing. The scarcity of financial resources of smallholders and the small sizes of operated farms limit their opportunity to invest in resilient agricultural practices (while also making such investment uneconomical) and, as a consequence, the increasing impacts of climate change over time will be more severe for them than for others.

As was mentioned, Armenia is a net importer of agrifood products, and thus smallholders are often competing with imported fresh produce. Fresh agricultural produce in Armenia is rarely labelled, and since imported fruits and vegetables are sold on the same spots, consumers often assume that all the produce sold in the market are locally grown. At the same time, due to the already-mentioned higher unit costs, local agricultural produce is, in many cases, not competitive with imported produce in terms of price, especially if the imports come from heavily subsidized countries such as Turkey. So, the limited information available to the consumers, combined with the not-well-formulated market demand for local produce, jeopardizes marketing and thus hinders local production.

The **constraints** that prevent smallholders and family farms fulfilling their needs and realizing their full potential for economic, social and environmental development can be categorized as structural constraints, production-related constraints, financial and technological constraints, and constraints related to production resources.

The most important structural constraints of smallholders and family farms in Armenia are farm fragmentation, irrigation and mechanization.

As was mentioned, the post-independence land reform in Armenia resulted in an inefficient farm structure dominated by small and, at the same time, fragmented farms. Ninety-nine percent of all farms in Armenia are family farms, and 89 percent of those have less than 3 ha of land. On average, each farm has 1.48 ha of land divided into three different plots. At the same time, 33 percent of the total land managed by family farms is in more than six plots. This type of farm structure has many negative consequences. In particular, it hampers the introduction of efficient production technologies, such as drip irrigation, mechanization or crop rotation. It also reduces farm earnings, which in its turn limits agricultural development – making it uneconomical and unattractive and, consequently, leading to land abandonment (FAO, 2017a). Already, around 33 percent of lands managed by family farms are not used.

Despite significant improvement in irrigation systems since the beginning of 1990s, the water supply is still not reliable, and during drought years some farmers don't get water for weeks. According to the National Statistical Service (2016e), only 48.7 percent of family farms' cultivated land was irrigated between 75 percent and 100 percent in 2015. In addition, 55.2 percent of family farms reported that they have received irrigation water in sufficient quantities and on time, and 13.2 percent reported that they have neither received water in sufficient quantities nor on time.

The water users who depend on irrigation infrastructure are members of regional water users associations, but their participation in governance is very limited, and users often find themselves too weak to raise their voices in cases of inaccuracies during water measurements and unequal treatment during water distribution. Women face a double burden in raising their voices within water users associations because of male-dominated networks. The sense of being cheated and having no power to resist is common among water users.

On-time availability of agricultural mechanization – especially tractors, combines and cultivators – is a serious challenge for smallholders. It hinders the optimal organization of production and can result in yield reduction and loss. Similar to the case of water users associations, the operators of agricultural machinery have significant power over smallholders, who have no alternative but to readily accept even low-quality jobs. At the same time, rental fees, even though they vary across locations, are not seen as obstacles by farmers.

The most important product-related constraint of smallholders and family farms is their inability to cooperate and coordinate their efforts. Farmers' organizations are weak and non-functioning, and thus producers do not benefit from the improved market position that these organizations can provide. As a result, due to small volumes of production and unsteady supply, smallholders have the weakest position in the value chains and almost always are price-takers. The participation of farmers in the value chains is spontaneous, and contract farming exists predominantly in brandy industry.

Another important product constraint to note is price volatility, which is a serious challenge for local producers. In line with the impact of climatic hazards, other causes of price volatility are the inability of farmers to make correct decisions based on market trends and weather conditions and the volume of external trade of food produce. As a result, smallholders experience a high level of income uncertainty and an inability to plan investments and future spending. With regard to investing, it should also be noted that farmers are conservative and cautious in their investments. Especially when the farming does not provide sufficient returns, no investment goes to farming.

In line with this, farmers' access to agricultural insurance is non-existent. This imposes many secondary results, such as higher interest rates and collateral requirements for agricultural lending, increased social vulnerability for those who do not have diversified income sources and rely on agriculture, and lessened attractiveness of the sector for both external investors and the farmers themselves. Fortunately, a few government programmes have been initiated that provide agricultural loans with subsidized interest rates, thus stimulating agricultural investments.

In line with the climate change challenges mentioned above, it is also worth mentioning that the quality of land resources is another serious constraint for farming. Almost all types of land are vulnerable to soil erosion, and around 80 percent of lands show desertification features and suffer from different levels of degradation. At the same time, there are around 30 000 ha of salinized soils in the Ararat and Armavir regions that have the most productive natural climatic conditions for farming. An additional threat is the decline in the stock of organic humus, which has been recorded in all soil types, excluding mountain grasslands.

Another development constraint is the quality of inputs, meaning that farmers don't get the best value for their money. Mechanisms are not in place for ensuring the quality of imported and sold fertilizers and other agrochemicals, and the quality control mechanisms for seeds are not functioning well. Even the quality of nitric fertilizers and seeds distributed through the state subsidy programmes have been questioned by the farmers.

As a technological constraint experienced by Armenian smallholders, there are the vague links between farmers' challenges and the scientific and academic research implemented in the country. The research is not applicable and does not generate additional value and income for producers. In addition, the routes of dissemination of valuable research results are not well-developed. However, it should also be

noted that total allocations to science, and especially to agricultural research, is miserably low – only AMD 149 million (around USD 311 000) in 2015.

At the same time, the access of smallholders to practical, easy-to-reach consulting on such topics as agribusiness, exports, sales contracts and taxation issues, training on production technologies, marketing, new crop varieties, etc. is a constraint, both in terms of the quality and availability of the consulting. The only sources for farmer education and technology transfer are agriculture development projects, which are limited to the scope of their activities, and the limited number of consultants of the Agriculture Development Foundation (formerly of the ten Marz Agricultural Support Centres), who are also constrained by limited technical and financial capacities.

Knowledge transfer is more problematic, as the pool of quality agricultural experts is limited, and there is no young generation that would complement it. The quality of graduates from agricultural educational institutions does not correspond to the market demand for them. Their studies are highly non-practical and are based on old theories. The literature used during education is outdated, with the newest manuals being ten to 15 years old. Thus, to fill the gaps, progressive farmers use Internet or foreign literature. However, this has its hidden costs, as the sources accessible to them are mostly foreign – mainly Russian – and are not based on the natural climatic conditions of Armenia. As a result, they might employ improper technologies and get unsatisfactory results.

Other factors worth discussing in the context of smallholders' challenges, constraints and needs are the low level of government spending on agriculture and the non-efficient and negligent local governance.

Actual spending from the state budget on agriculture, including forestry and irrigation, for 2016 was roughly USD 101 million, with roughly USD 56.4 million only on agriculture. Compared with the total number of farms or area of agricultural lands, it can be seen that this is only USD 28 per hectare and USD 163 per farm. The volume of funds allocated to farmer support projects was approximately USD 19.4 million, or 0.6 percent of the total state budget.

Some of the constraints of smallholders are aggravated due to non-efficient and negligent local governance. The role of community heads is very important in the adequate and timely dissemination of information, support for local development, alleviation of socio-economic burdens, and timely responses to village problems.

5.1.3 State of play of policy

A review of the national policy documents on agriculture has shown that the Government is committed to the development of the agricultural sector, and for this purpose several strategic documents and policy papers were developed and adopted.

The documents highlight the major directions of agriculture and rural development, yet they do not provide coordinated and comprehensive solutions to the constraints faced by farmers and are more targeted towards short-term solutions. The implementation of the strategies is lacking in terms of their efficiency, effectiveness and availability of mechanisms.

To encourage agricultural production, some producer support projects are implemented in the sector, such as subsidization of agricultural credit and agricultural machinery leasing interest rates,

subsidization of the supply of fertilizers and diesel fuel, provision of seed, and support for introduction of modern production technologies. The support projects have had a positive impact. However, some of them are restrictive towards smallholders, such as setting a minimum amount for subsidized loans or defining the minimal area of land for participating farmers.

With the appointment of a new prime minister in September 2016,[60] a shift of agricultural policies towards being more business-oriented and less social is recognized.

5.2 Recommendations

5.2.1 Policy recommendations

REGULATORY FRAMEWORK FORMATION AND ENHANCEMENT

The existence of an overall regulatory framework for the agricultural sector is very important, especially in terms of establishing the general directions of the state policy for ensuring sustainable agriculture development and conservation of the country's production potential and increasing the effectiveness and relevance of support measures directed to the sector. At the current stage of development of agriculture in Armenia, the regulatory framework should contribute to the formation of a viable and income-generating agricultural sector that is environmentally, economically and socially sustainable. Important components of the framework should be (a) definition, responsibilities and rights of agricultural producers, including a definition of smallholders and family farms; (b) support mechanisms (financial and non-financial) to which each of the defined set of producers would be entitled; and (c) the role of the state and its institutions – including scientific, educational, consulting and development, and social support bodies – in the implementation of that policy.

The development of the regulatory framework and the differentiation of agricultural producers will provide a basis for the introduction of segregated and specific policy and support mechanisms, targeting the constraints and challenges faced by producers of different scales and types, including women and youth. In addition, the recognition of smallholders and family farms as a separate category of agricultural producers that contribute in major ways to the country's agricultural production – and are important for maintaining the level of the country's food security and have distinct roles in preserving agrobiodiversity and cultural heritage – will create non-material value for smallholders and family farms (and in particular for youth), motivating them continue their farming.

[60] During the finalization of the current report, a political change took place in Armenia, and since May 2018, there is a new Government in Armenia, which came to power as a result of Velvet Non-Violent Revolution. Currently, the policy of the Ministry of Agriculture is more social and populistic, where family farms and smallholders are favoured. The new Government is working on amendments of the electoral code, after which new elections are foreseen. Thus, the policy of the current Government should not be expected to be long-term.

Given the existing technical constraints on accessing the actual level of earnings and use of labour by family farms, it is more relevant to define smallholders based on their size and expected economic returns related to the size and type of production in which they are involved. This means that in different *marzes* (regions), farms of different sizes will be considered as smallholders, as due to different climatic conditions and specializations, farms of the same size in different regions generate different levels of farm income. It is recommended that the maximum threshold of the expected economic return for smallholders be set at double the minimum annual salary established in the country. This is justified taking into account that there are at least two people involved in the family farm who otherwise would have been involved in a paid job with at least a minimum salary.

Furthermore, taking into account that gender-based inequalities limit women's access to land, financial resources, agricultural inputs, markets, information and extension services, it is essential that gender mainstreaming be systematically implemented throughout agricultural policies and regulations so that the particular needs of both women and men, including the young and elderly, are all fully pictured and addressed.

During the FAO and European Institute for Gender Equality high-level Conference *Promoting socially inclusive rural development in Europe and Central Asia: Action for the 2030 Agenda*, Armenia committed to the Joint Call for Action (FAO, 2017c), which included a set of recommendations for ministries of agriculture, FAO and civil society organizations on rural women's economic empowerment. Following the recommendations will have a positive impact on the sustainability and productivity of smallholders.

In line with this, it is very important to strengthen the existing regulatory framework and ensure enforcement of existing regulations, as development of an effective and quality regulatory framework enables easy transformation of agriculture (Divanbeigi *et al.*, 2015). In this context, it is essential to improve the existing law and regulations on seeds and include the requirements on post-control tests of certified seeds and an obligation for plant breeders to ensure the traceability of their plant reproductive material. Another important legislative amendment is required for fertilizers. In particular, to improve the quality of fertilizers, it is recommended that registration of fertilizers be introduced.

In addition to all mentioned above, it should also be noted that in Armenia, the Ministry of Agriculture is not the only state institution that contributes to agriculture and rural development. There are different stakeholders outside of the control of the Ministry of Agriculture whose activities directly or indirectly affect agriculture and rural development, including smallholders and family farms. Thus, it is very important to increase and ensure synergy and coherence between policies and projects implemented in particular by the Ministry of Agriculture, the Ministry of Territorial Administration and Development, the Ministry of Economic Development and Investments, the Ministry of Education and Science, and the Ministry of Labour and Social Affairs. It also is important to increase cooperation and collaboration among the Ministry of Agriculture and the State Committee of the Real Estate Cadastre, the National Statistical Service, and the State Water Committee under the Ministry of Energy Infrastructures and Natural Resources. It is suggested that regular roundtables be organized and that other mechanisms be used that will foster cooperation and the easy sharing of information.

IMPROVED FARM STRUCTURES

Improved farm structures will have multiple positive results, including reduction of abandoned lands, increased agricultural productivity, increased competitiveness, and increased income from farming.

In line with the FAO Policy Note on Land Abandonment, it is recommended that the regulatory framework be improved through the introduction of a land consolidation instrument and that land market development of both ownership and use rights be stimulated.

The introduction of land consolidation will reduce the structural problem of land fragmentation on an ownership level through the reallocation of land parcels. The other suggested instrument, the mediation of leases, will reduce land use fragmentation through the facilitation of the transfer of land use rights from "passive landowners" to active farmers.

Taking into account the positive experience from the pilot project implemented by FAO during 2004–2006, the State Committee of the Real Estate Cadastre, in cooperation with the Ministry of Agriculture, can already now initiate the development of corresponding legislation. Once the legislation is in place, it will be important to test the instruments in pilot projects before scaling up to a national programme, in line with the Voluntary Guidelines on the Responsible Governance of Tenure (VGGT). It is also important to develop specific measures to ensure women's effective access to ownership and control over land, in line with the VGGT, Sustainable Development Goal target 5.a, and article 14 of the Convention on the Elimination of all forms of Discrimination Against Women. At the moment of the finalization of this report, GIZ and FAO were exploring areas of collaboration to support the Government of Armenia in this regard.

Collaboration between the Ministry of Agriculture and the SCREC will be essential for this recommendation.

ENHANCEMENT OF EXTENSION SERVICES

Improved information, knowledge and skills dissemination to smallholders and family farmers is a key for agricultural development. Enhancement of the existing extension service system is recommended, both in quality and in quantity (coverage).

It is recommended that the Ministry of Agriculture's Agricultural Development Foundation, which is now facilitating the works of public advisory services, introduce new solutions for ensuring the high coverage and efficiency of provided services, such as (a) establishment of mechanisms for knowledge and technology transfer, including regularly updated websites and TV programmes, and publication of brochures on cultivation and watering technologies of different crops; (b) facilitation of connectivity between farmers' needs and research through regular data collection from the field and enhanced cooperation with scientific centres and research institutions; (c) a switch to practical on-field trainings and technology transfer through the establishment of demonstration sites, in cooperation with the scientific centres and higher educational institutions in different regions. The compulsory component of follow-ups should be included in the latter, to help farmers with adaptation.

Mechanisms should be in place to ensure that the services provided by the extension services are equally available for both men and women involved in farming. The involvement of young farmers and the provision of separate trainings for them could become another important direction of work of advisory services, as youth can more easily grasp knowledge and are more likely to take risks in terms of implementing new production technologies and changing established practices.

CLIMATE CHANGE MITIGATION AND ADAPTATION

Investments in climate change mitigation and adaptation measures are highly recommended due to observed consequences for agriculture in the country. The measures include investments in improved water management and conservation technologies, including construction of water reservoirs, reduction of conveyance losses, use of hail protection systems, use of improved soil management practices, and increased application of renewable energy resources, especially in greenhouses. They also include investing in applied research on farming adaptation measures for each agro-climatic zone in the country, such as development of varieties and breeds more resilient to the specific impacts of climate change expected in a given zone.

Taking into account that availability of irrigation water is one of the key constraints in the sector, it is more specifically recommended that irrigation water be made available through transparent procedures of the water users associations (WUAs), where these associations will ensure appropriate cooperation with water users regarding on-time provision of water, as well as on measurement and reporting of the volume of water use. In this regard, an important step would be to educate the water-users about the work of WUAs, about the rights and obligations of the WUA representatives and water users, and about the importance of the participation of WUA members in the management of the associations. Awareness-raising activities on these topics can be included in the annual work plans of public advisory services, and they can be organized by private advisory services.

In order to increase the efficiency of the WUAs, it is of a high priority to provide the member water users with access to easy-to-use, reliable procedures for reporting cases of negligence or inaccuracies during the provision of services by WUAs. In particular, it is recommended that the exemplary form of the irrigation water supply agreement, established by Government of Armenia decree (GoA, 2002), be amended by including provisions on granting to water users the right to disagree with the actual amount of supplied water reported by WUA representatives and by defining procedures for alternative measurements of supplied water and conflict resolution. In addition, in order to increase the understanding of water users about irrigation water supply and the liabilities of involved parties, it is recommended that the format of the exemplary form of the irrigation water supply agreement be changed to a simpler and easier-to-read format.

An important niche area for climate change mitigation is the promotion of green jobs, especially among youth. These jobs support environmentally friendly enterprise development as an alternative to traditional practices in agriculture and service provision. Green jobs include those that save energy, produce less carbon emissions, or whose core business functions are specialized green products or services.

INVESTMENT SUPPORT

Increased mechanization, improved productivity, improved standards of production (including food safety, hygiene and animal welfare), and increased competitiveness are important for agriculture in Armenia. Investment support is recommended, specifically targeting smallholders and family farms, small-scale agri-processors and agricultural service providers. Investment support also is recommended for diversification into non-agricultural activities. The experiences of existing investment support facilities should be considered, including donor investment support programmes (for example the Organic Agriculture Support Initiative of the European Union/Austrian Development Agency), where the applicants received specific support for starting or advancing their existing agribusinesses.

Investment support can also be a tool for introducing national minimum standards in agriculture and for formalizing the sector. Rural youth, women and marginalized groups should be encouraged to apply for such support.

It is recommended that the Ministry of Agriculture initiate and administer such a support programme and include it into its medium-term expenditure programme. The possibility of increasing the size and coverage of the programme, through leveraging it with the help of international institutions and development agencies working in Armenia, should be explored. In addition, it is suggested that the possibility be studied of cooperation with the Ministry of Diaspora in attracting diaspora representatives to fund some of these investment support programs.

REGIONAL SPECIALIZATION

After the break-up of planned economy and land privatization, farmers became responsible for organizing their own production, and yet even now the production decisions of smallholders and family farms are not economically justified, which translates to a low bargaining power, a high level of income uncertainty and which risks their future spending and investment in agriculture.

In Karinj farms are mostly involved in animal husbandry and fodder cultivation. An additional sources of income are herbs and berries growing in nearby forests.

Through a project implemented in Karinj by a local agriculture support organization, a berry production was offered to a family, which was involved in potato growing for years. Berries were ideal for the climatic conditions of Karinj and traditionally had a high price, but were not been cultivated by locals. However, for the family it was very risky replacing potatoes - a stable source of food during a year, with berries.

The approach undertaken by the organization that involved practical, on-field consulting and a financial responsibility of poor outcomes, helped the family to make a decision. Nowadays, the family owns not only an orchard of berries, but also a nursery. From the sales of seedlings alone, the family has an income of around AMD 2 million (USD 4 184) annually.

Pilot demonstration sites with high-value crops suitable for the given climatic conditions would be the best tool for technology transfer in the target community, and they would be an assurance for farmers to start production of high-value crops. *(See Annex 6.2.)*

In line with consulting and education support, a regional specialization in terms of establishment of a list of agricultural production and relevant production technologies for different agro-climatic zones would be essential for increasing returns from farming and for increasing the productivity of smallholders and family farms. The comparative advantages of certain agricultural practices – including introduction of new varieties, breeds or non-traditional crops in certain locations – is unquestionable, and the intervention of public bodies in the form of supporting these kinds of practices (including the provision of access to necessary inputs and technologies, production techniques, know-how and ongoing consulting on treatment, pest control, watering and harvesting during the transition stage) is very important.

Regional specialization can be a programme integrated into state policy, and it should be developed by the Ministry of Agriculture in close cooperation with the Ministry of Territorial Administration and Development and the Ministry of Economic Development and Investments,

with the full involvement of research and development institutions and academia, to identify the most optimal regional specialization by taking into account climatic risks and irrigation possibilities. This could be paired with the activities mentioned above related to increasing resilience towards the expected impact of climate change and by investing in climate change mitigation and adaptation measures.

Keeping in mind the importance of maintaining food security in the country and the risks associated with specialization that is too narrow, the regional specialization, in this context, should not be seen as a one-product specialization but rather as a tool (a) to redistribute the production of different agricultural products among farmers in different regions, based on scientific justifications, and (b) to increase the production potential of the country by improving the efficiency of use of its natural production resources. In addition, the developed policy should focus on limited but diverse products to ensure not only regional specialization but farm diversification options for the farmers as well.

Another possibility that the regional specialization could provide is creation of preconditions for achieving institutional economies of scale.

INSURANCE

The possibilities of the gradual introduction of agricultural insurance should remain in the agricultural development agenda of Armenia. It is suggested that several pilot projects be initiated on different agricultural crop/animal sub-sectors in different regions in order to test the feasibility of the project terms, assess participating farmers' satisfaction, and, based on the results, design optimal insurance terms and conditions for further introduction countrywide.

Around the time of the finalization of this report, the Government of Armenia announced that with financial assistance and a budgetary support loan from the German development bank KfW, it is going to implement an agriculture insurance pilot programme. For the success of the programme, it is important to include components of farmer education and the raising of awareness about insurance, as well as to test different options of insurance terms and insured events/products in different locations, as suggested above.

DIVERSIFICATION OF EMPLOYMENT OPPORTUNITIES

Agriculture is a major employer in Armenia. However, enlargement of farms and increased use of mechanization may lead to reduction of employment in agriculture and a need for alternative jobs in rural areas. Thus, rural development is inevitably connected to agricultural development, and the development of both sectors should proceed in parallel. Moreover, there could be cases in which rural and community development will foster a shift from economically non-viable and subsistence agriculture to other opportunities that become available as a result of new developments.

Village Kalavan is a pioneer in rural economic development in Armenia through employment diversification.

In order to improve the economic situation in the small village where the only income sources were migrant earnings and agriculture, representatives of local youth initiated a promotion of adventure tourism. Soon the village gained recognition among international travellers, and nowadays it is experiencing an economic boom.

Moreover, the inflow of people to Kalavan also created an inflow of information and new knowledge, which served as a source of new ideas for smallholders in Kalavan for turning agriculture into a profitable business, which it had never before been in this community.

Another important impact of the initiative is that the youth of the village are actively involved in every new development taking place. It became interesting for them to live there and be responsible for their own futures. *(See Annex 6.2.)*

It is recommended that the creation of non-agricultural jobs be supported in rural areas, including through attracting foreign direct investments and/or through the establishment of public-private partnerships in food, textile and manufacturing industries. Investment support is also recommended to newly established small and medium-sized enterprises that will create a certain number of off-farm jobs. In addressing these challenges, it is crucial that interventions are considered that target job creation for rural youth, not only in agricultural production but also in its associated value chains (packaging, transport, storage, etc). A better variety of employment opportunities would provide youth with an anchor to stay in rural areas and curb their need to migrate to urban areas or further afar. Moreover, considerations for youth agricultural cooperatives, or associations, can also be deliberated. In this regard, cooperation among the Ministry of Agriculture, the Ministry of Territorial Administration and Development, and the Ministry of Economic Development and Investment, as well as with Business Armenia,[61] is required. The role of youth can also be important in creating jobs related to tourism, agritourism, and promotion of social life, such as setting up entertainment facilities in rural areas.

FACILITATION OF COOPERATIVE STRUCTURES

Although cooperative structures can provide many possibilities for farmers, especially for smallholders, these structures are not very common among Armenian farmers. Moreover, taking into account the current state of development of these organizations and the challenges they face, they are not expected to grow if nothing changes in national legislation.

[61] a foundation under the Government of Armenia for attracting investment

In order to promote cooperative structures among agricultural producers and to enhance their natural development, it is recommended that amendments be made in the tax code and that it be harmonized with the Law on Agricultural Cooperatives, in particular to reflect the concepts of cooperative surplus and cooperative income that are included in the law. In addition, it is suggested that agricultural cooperatives be provided benefits in the form of tax reduction or elimination, at least for the upcoming ten years. Nowadays, when agricultural cooperatives are still grass-root-level organizations fighting with internal self-determination and dealing with business orientation, the members of agricultural cooperatives, because of the taxation of cooperatives, often face higher liabilities then individual farmers. Yet, depending on the size and type of cooperative, the benefits received by members could be negligible and not cover the higher liabilities. So, supporting cooperative formation and development through reducing the tax burden is suggested.

At the same time, along with provision of benefits, a system of cooperative audits should be introduced, ensuring that only pure cooperative structures work and that there are no fake cooperatives that are formed to receive the tax benefits for which cooperatives will be eligible. The cooperation of the Ministry of Agriculture and the State Tax Service is essential at this point. Training of Tax Service representatives on cooperative principles and missions can increase the effectiveness of collaboration in this field.

ADVANCING RURAL WOMEN'S ECONOMIC EMPOWERMENT

In line with the joint call for action published as a result of the FAO High-Level Conference on Promoting socially inclusive rural development in Europe and Central Asia: Action for the 2030 agenda, as well as taking into account the obligations of the Armenian Government on implementing its commitments in relation to Article 14 of the Convention on the Elimination of all forms of Discrimination Against Women (CEDAW), on rural women, and the commitment of the country on advancing on the Sustainable Development Goal framework, it is recommended that close attention be paid to the problems of women in agriculture in Armenia. Advancing women's economic empowerment in agriculture and in rural areas is necessary not only for achieving human rights, but also for more competitive and more sustainable agricultural production. Particular attention needs to be paid on equal de facto access to ownership and control over land, on improved women's access to other agricultural resources, decision-making, information, finance, mobility and public services, and on institutional capacity development on gender issues.

More specifically in this regard, it is recommended[62] that:

- CEDAW recommendation No. 34 on the rights of rural women be used for all policy, programmatic and project work coordinated by the Ministry of Agriculture;
- stakeholders who represent the interests of women farmers and women living in rural areas be included in the formulation of policies, national action plans and national strategies;
- advocacy campaigns be designed and implemented in rural areas and in the national media to establish a more accurate and positive depiction of the role and profile of rural women;
- it be ensured that rural advisory services take a proactive approach to encourage women to benefit from their services and to inform them about their rights;

[62] Specific recommendations presented under *Advancing rural women's economic empowerment* are summarizing the ones reflected in the FAO publication *Gender, agriculture and rural development in Armenia* (FAO, 2017b)

- the availability of sex-disaggregated data be improved in the statistical reports and analysis of the National Statistical Service, as well as in monitoring and evaluation reports prepared by the Ministry of Agriculture and the State Committee of the Real Estate Cadastre; and
- the number of kindergartens in rural areas be increased.

AGRICULTURE VALUE CHAIN FINANCING

Taking into account the challenges of smallholders in access to agricultural loans, and given the high costs of agricultural financing, it is suggested that, in addition to the agricultural loan interest rate subsidization programmes implemented by the Government of Armenia, agricultural value chain financing programmes be initiated that target existing sectors with high export potential, such as cheese, dried fruits, etc., or that focus on identification of a new prospective sector and work on the development of a new value chain. This programme can strengthen smallholders by improving their market integration and increasing their competitiveness, and it can contribute to regional development.

Value chain finance is both a set of financial instruments that are utilized to expand and improve financial services to meet the needs of those involved in the value chain and a set of non-financial support mechanisms such as improved knowledge, technical or marketing assistance, etc. (Miller and Jones, 2010). The experience of FAO and the International Fund for Agricultural Development can help to develop sustainable and high-impact agriculture value chain finance models in Armenia, which further can be coordinated by the Ministry of Agriculture.

The involvement of local financial institutions in the scheme, especially those with long-term close relationships with farmers, such as Farm Credit Armenia or CARD Agrocredit, will be an asset for the programmes. The main implementor of the project can become a local non-governmental organization working in rural development or the Agriculture Development Foundation under the Ministry of Agriculture.

LINKING SOCIAL PROTECTION TO PRODUCTIVE ACTIVITIES

Social protection can support the most vulnerable farmers in increasing their productive capacity and reducing poverty. Social protection, in the form of cash transfers or public works, can lift liquidity constraints and support poor households in better managing risks, helping them be able to invest more into their productive activities. This is particularly relevant, as one of the main reasons given by poor households for not cultivating land in Armenia was the lack of resources. Furthermore, the poorest households have comparatively less access to credit and loans (NSS, 2016e).

International experience compiled by FAO (Veras Soares *et al.*, 2017) has shown that having access to a regular cash transfer can support greater access to credit, increase investment in productive assets and inputs, and more efficiently allocate labour between farm and non-farm activities. Thus, linking social protection programmes in rural areas to agricultural/productive programmes can support increased access to technology, knowledge, inputs and factors of production. Such linkages can help poor households increase their agricultural production and income and move out of poverty and food insecurity.

Closer cooperation between the Ministry of Agriculture and the Ministry of Labour and Social Affairs in terms of designing joint productive inclusion programmes can improve the situation. It

is recommended that the programmes specifically target poor family farms involved in government monetary social assistance programmes and provide a safety against early withdrawal of beneficiary families from those programmes, when such a withdrawal could put a family under the risk of returning to poverty and food insecurity.

Other recommendations for consideration include:

- The creation of a conducive environment for the development of micro-scale processors in terms of facilitation of the regulatory framework.
- The promotion of small- and medium-scale exporters as a tool for regulating short-term excess of local production through information dissemination on export procedures and required paperwork.
- The promotion of forward contracts to be used by major processors through reduced tax burdens and farmer payments done mandatorily through banks. This will not only increase the transparency of the processing sector but will enable farmers to have registered financial inflows, providing more security for the financial institutions to finance them.
- Increased transparency of state support programmes and accountability of community level implementers through online publication of regular reports on implementation status and achievements for each state support programme on the websites of the communities. In addition to this, through the engagement and support of the international donor community, it is recommended that impact assessment mechanisms for the policies implemented in the sector be introduced; this would highly increase the accountability and efficiency of state policies.
- The financing of agriculture-related scientific research directed to the alleviation of farming constraints through the state procurement mechanisms.
- Bridging the inequalities between urban and rural living standards through the development of social infrastructures in rural areas, such as kindergartens, community centres for youth and the elderly, sports facilities, and art studios, as well as the rehabilitation of roads and transport infrastructures.
- Investing in agrifood information collection and management systems, which are key to facilitating international trade and improving food safety and traceability.
- Increasing the number of wholesale farmers' markets.

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6. Annex

6.1 Case studies

6.1.1 Raspberries in Ashotavan

1. THE PROBLEM DESCRIPTION

Access to knowledge and skills on modern cultivation technologies and possibilities is a big challenge for smallholder family farms in Armenia. Moreover, if the information is available, not many will be interested in its application because of various reasons, such as having limited resources to implement whatever technology or method is being introduced, having no guarantee that there will be practical and on-time consulting available to them during cultivation, and being uncertain about whether the application of the novelty will be economically beneficial for them.

Ashotavan is a small community in Syunik *marz* (region) in the south of Armenia. It is 220 km from the capital, Yerevan, and is situated on slopes of alpine mountains on an elevation of 1 750 m above sea level. The main branch of agriculture here is animal husbandry, bee breeding and cultivation of cereal crops. Because the community doesn't have many irrigated lands, the fruits and vegetables, including berries, are mainly grown in the yards of villagers and used for local consumption.

2. OBJECTIVES AND ACTIONS

In 2014, within the framework of World Vision's Economic Development programme, the possibility of expanding the cultivation of raspberries was noticed in the community. At that time, almost every family had raspberry bushes growing in their yards, and the surplus of raspberries that were not used in the households was successfully marketed to occasional buyers and served as a source of additional income.

The approach used by World Vision's Local Value Chain Development project incorporated (a) the formation of groups, including building trust and cooperation among members; (b) the provision of trainings on cost-effective agriculture and innovative cultivation methods of raspberries, based on the trellis-wire system; (c) consulting on financial literacy, marketing and negotiations skills; and (d) opportunities to meet and negotiate with customers.

Particular attention was given to the formation of a group. It took nearly a year to turn a group of people into a team of cooperating producers, trusting each other and believing that standing united would create value for them. Previous projects in the nearby communities involved the provision of heavy assets, but after the end of those projects, the assets were not effectively used –either because the group owning the asset was not able to organize a joint/shared use, or because the asset went under the control of a few people from the group, while the rest didn't feel ownership of it. So, the formation of a group with its values, joint mission and rules of conduct was a priority this time.

Nowadays, as a result of the technical assistance, a group of ten women is active in Ashotavan.

3. RESULTS AND IMPACTS

Shortly after group-building and an extensive period of trainings, the group achieved important results.

The new methods of cultivation significantly improved the quality and more than doubled the quantity of the raspberries produced in the community. Thanks to this and to the team attitude they adopted, the group was able to negotiate a better price and build a continuous relationship with a processing factory, which buys the produce right in the village. Currently, the price paid by the factory to the group is around AMD 900 (USD 1.88) per kg of raspberry, instead of the AMD 600 (USD 1.26) received by the farmers previously.

This success became a catalyst of change for Ashotavan and nearby communities. The raspberry became a brand of the village, and now not only the families of the ten-person group are involved in professional cultivation of raspberries, but many others are involved as well. Similar producer groups were formed in Ashotavan and in its neighbouring four villages, and nowadays the group from Ashotavan is coaching these new groups on how to organize a cost-efficient cultivation and how to deal with the market. They even donate raspberry seedlings to those who want to start their own raspberry farm.

According to World Vision, in 2016, 120 raspberry producers from Ashotavan and nearby communities ensured around USD 50 000 additional income.

It is also worth mentioning that this good example not only showed to the villagers that there are possibilities to get considerable returns from farming, but it also gave them hope that new and good things can happen in a small village, with small efforts.

Since 2015, a raspberry festival has been co-organized in Ashotavan by the raspberry producers' groups. The festival annually attracts many visitors from all over Armenia, and in 2017 was even included in the Calendar of Armenian Festivals and Events prepared by the Smithsonian Institution. Another success of the group is a EUR 30 000 grant received from the Organic Agriculture Support Initiative project implemented by the Austrian Development Agency for the development of organic raspberry production in the community.

4. LESSONS LEARNED, CONCLUSIONS AND RECOMMENDATIONS

The provision of market-driven impulses and practical, continuous training to local producers on skills and knowledge required for the quality cultivation of demanded produce was a powerful tool used during this project. Not less important was the ability to truly unite the members of the group and to help them drop the individualistic mindset and instead act for the benefit of the group, ensuring for them stable demand and high sales prices.

An important lesson was that without the provision of heavy assets, using instead only the development of soft skills (e.g. negotiation skills and understanding of the market), it became possible to unite the group and to ensure increased income as a result.

There is no doubt that after the end of the project the group and the value chain in which they have become involved will continue to work and provide income for the farmers.

5. CONTACTS/REFERENCES

https://www.facebook.com/VictoriaRaspberryGroup/

6.1.2 Challenges of cooperation and cooperative legislation

1. THE PROBLEM DESCRIPTION

Armenia is a small, landlocked, mountainous country in the South Caucasus, with 68 percent of its territory being agricultural land. It was a part of the former Soviet Union, where collective farms and state farms were the main units responsible for agricultural production. After independence in 1991, a privatization policy was exercised, as a result of which peasants chose individual farming and dissolution of state and collective farms.

Currently, there are more than 317 000 active family farms operating in Armenia, characterized by low productivity, small production volumes and inconsistent quality, all of which result in low income due to weak market positioning, weak sales and planning difficulties. These are problems that can be solved through cooperative and other farmer organizations, yet at the same time these types of organizations are not widespread.

2. OBJECTIVES AND ACTIONS

The problems associated with low levels of participation and formation of cooperative structures are various, including low understanding of cooperative principles, legacy of socialistic past, and legislative concerns. Before 2015, cooperatives in the agriculture sector were formed in accordance with the Law on Consumer Cooperatives and Civil Code, where the relationships in the processes of the formation, activity and dissolution of cooperatives were not regulated and were not in compliance with internationally recognized concepts and principles of cooperatives.

So, to support the active formation of agricultural cooperatives and solve the issues arising from small-scale farming, in 2015 – with the support of many organizations involved in the field, including FAO – the Law on Agricultural Cooperatives was adopted. For the first time in Armenia, through this law, the Government has taken on the obligations to assist in the creation and development of cooperatives and to strengthen their economic viability.

3. RESULTS AND IMPACTS

The law was strongly welcomed and soon resulted in the establishment of agricultural cooperatives.

Yet, because of unharmonized tax legislation, the operation of agricultural cooperatives has been hindered. In particular, cooperative surplus is not recognized by tax authorities. So, while a farmer might not pay any taxes in the case of individual production and sales of agricultural produce, when

it comes to cooperative sales, 20 percent of value-added tax should be paid. As a result, most of the cooperatives established under the Law on Agricultural Cooperatives have officially stopped their operations.

4. LESSONS LEARNED, CONCLUSIONS AND RECOMMENDATIONS

Being that they are grass-roots organizations with small numbers of members, the economic gains from cooperative operations are not expected to be big enough to cover tax expenses and at the same time provide economic justification to members. Cooperatives are still in the process of establishment and self-recognition, and thus they have many challenges, such as combating the socio-cultural difficulties associated with group formation, operation and governance; search of partners and markets; maintenance of member loyalty, etc.

Supportive and protective policy measures are keys for the development and strengthening of cooperatives. Legislative reforms are an ongoing process, and legislation should respond to the needs of current development challenges.

5. CONTACTS/REFERENCES

www.minagro.am

6.1.3 The dream of Kalavan

1. THE PROBLEM DESCRIPTION

The small village of Kalavan, with only 120 inhabitants, is situated in Geghrkunik marz (region), 140 km from Yerevan and 110 km from its regional administration. Inhabitants are mostly former refugees from Azerbaijan who came to the village after 1988. At that time, the village was bigger, with around 300 inhabitants. The main employment opportunities here were animal husbandry and vegetable cultivation, both of which do not provide significant economic gain due to poor infrastructure for accessing markets and to the small quantities of produce. The main income source are remittances of migrant workers from the Russian Federation.

The village is 1 600 m above sea level and has Early Bronze Age necropolis and Stone Age (upper Palaeolithic) open-air sites in the surroundings. There are two archaeological monuments – Kalavan 1, which dates back to the 14th millennium BCE, and Kalavan 2, which is more than 34 000 years old.

With its very poor infrastructure – destructed roads, no natural gas system, lack of a grocery shop, etc. – the village was a place with no hope and no future, with most of the inhabitants having the intention of eventually moving.

2. OBJECTIVES AND ACTIONS

In 2013, a young man from Kalavan, Robert Ghukasyan, worried about the devastation of the village, came up with the idea of turning all of the challenges and weak sides of the community into opportunities and competitive advantages, to make Kalavan a place where people would want to live and where people would have an opportunity to earn additional income from activities other than agriculture.

The proximity of an archaeological site was a good opportunity for turning Kalavan into an attractive adventure tourist destination, with minimal financial means and efforts. The first thing Robert did was build a stone-age shelter, where visitors could experience the life of ancient humans, making fire on their own, gathering food from forests, etc.

The cornerstone of the initiative was to use the available human potential of the village. According to Robert, the highest value that the village has is the people, who despite not being well-educated, have abundant knowledge, such as about the herbs growing in the nearby forests, about the animals living there, and about the recipes of traditional local food. This information and skills, which are taken for granted in the countryside, are not accessible to others, and thus the villagers are a true asset to the society.

It is also important to note that no financing was used in the initial stage, and no external support was used.

3. RESULTS AND IMPACTS

In a very short time, the shelter of ancient humans in Kalavan became known, and during the first year, it attracted 200 tourists. It was a real miracle for the "forgotten" village on the top of the mountains. Gradually, the village became popular, and currently it is estimated that annually as many as 10 000 tourists visit the place. Villagers are actively involved in providing rides to and from the village on their old Soviet cars, providing hiking tours that tell about the herbs growing in the forests, or organizing bird-watching events. Others have turned their houses into guest houses.

The development of tourism in a devasted village not only was a source of off-farm jobs, but it also was a source of important social change – it became attractive to be from Kalavan, and nowadays, people no more think about leaving the village. Moreover, Robert's initiative inspired many successful individuals from the city to buy houses in Kalavan and to have their input in the development of the community.

The inflow of people to Kalavan also created an inflow of information and new knowledge. Because of economic hardships and difficulties of sales, smallholders were using agro-chemicals only in rare cases, so smallholders learned about the opportunity to turn their farming into organic farming. With a little technical support for writing project proposals, nowadays three grant projects financed by the Organic Agriculture Support Initiative of the Austrian Development Agency are implemented in the community. With this support, the villagers of Kalavan have a dream and vision to turn the community into an eco-village and certify all the lands as suitable for organic farming.

Another important impact of the initiative is that the youth of the village are actively involved in every new development taking place. It became interesting for them to live there and be responsible for their own futures.

4. LESSONS LEARNED, CONCLUSIONS AND RECOMMENDATIONS

The initiative, which was taken with the aim of improving the economic situation of the village and to create earnings that agriculture was not able to provide, in its turn created opportunities for the development of agriculture. The communication and information exchanges intensified as a result of tourist flows, which were a source of new ideas for the smallholders for turning agriculture into a profitable business, which it had never before been in this community.

The success of the village attracted the attention of many officials, including the prime minister Karen Karapetyan (2016-2018), who urged other communities to learn from this example and recommended that local authorities fully support the village. At the same time, the people of Kalavan are very cautious and don't want a big business to come to their community.

5. CONTACTS /REFERENCES

https://www.facebook.com/time.landfund/

robert_80kal@yahoo.com

6.1.4 Farm consolidation

1. THE PROBLEM DESCRIPTION

Small-scale farming comes with many constraints in terms of effective farm management and the availability of production resources and technologies. These, in turn, hinder increases in productivity and efficiency.

With the average landholding in Armenia 1.48 ha, another major problem that smallholders face is land fragmentation. According to the 2014 agricultural census, each household, on average, has three parcels of land, and according to some estimates these can be up to 15 km from each other. Moreover, around one-third of family farms have more than six land parcels. At the same time, 33 percent of the arable land belonging to family farms and commercial organizations is not cultivated.

These are the results of ineffective land reform, which was based on principles of fairness and social justice, meaning that each household equally received a parcel of each category of land that was available in the village during privatization.

2. OBJECTIVES AND ACTIONS

Since the beginning of the 2000s, the Government has recognized the issue, and from time to time different measures are undertaken to address the issue of land fragmentation. Among these, the following are of particular importance:

"Preparation and Implementation of Land Consolidation and Improved Land Management Schemes,"

pilot project from FAO that was implemented by SCREC; and

Concept Paper and its Action Plan on Consolidation of Peasant Farms in RA, adopted by the Government of Armenia in 2011.

The FAO pilot project was launched in 2004 and included the community of Nor Erznka in Kotayk *marz* (region), where 60 percent of the community landowners took part in the project on a voluntary basis. The project was implemented over two years, and the following mechanisms were used to reduce fragmentation: the exchange, purchase, sale or donation of land parcels between landowners; the exchange of private land with community land; and the purchase or lease of community land bordering the private land.

The concept paper highlights three main directions of land consolidation: (1) simple consolidation through sale, exchange, rent, etc., which is nearly the same as what was done by the pilot project; (2) a comprehensive consolidation, which implies the redistribution of land; and (3) a consolidation through agricultural cooperatives.

3. RESULTS AND IMPACTS

The results of both initiatives are quite different. As a result of the FAO pilot project, 162 land parcels from 92 owners were consolidated into 67 parcels, reducing the average number of parcels owned by each landholder in the community from three to two and increasing the average farm size from 1.25 ha to 2.5 ha. The average area of a parcel increased from 0.47 ha to 1.25 ha.

At the same time, the concept paper's impact has been limited. The activities included in the action plan of the paper have not been fully implemented; most importantly, the Strategy of Farm Consolidation envisioned by the concept paper is still not in place.

The only direction in which progress was achieved is increased support to the formation and development of agricultural cooperatives; however, taking into account the existing issues discussed in case on cooperatives, this will likely not have a considerable result.

4. LESSONS LEARNED, CONCLUSIONS AND RECOMMENDATIONS

Though the pilot project on land consolidation ensured positive results, and though the Government adopted the Concept paper and referred to the FAO pilot project calling for its implementation, as of now it has not been replicated in any other communities. No certain reasons for this are known, and the only explanation can be the fact that the financing of the agricultural sector is lacking. Since 2012, only around 2 percent of total state budget spending was directed towards the agricultural sector, including the fishery and forestry sectors.

The consolidation of farms and parcels owned by family farms is not an easy task; it will require a lot of community-level work with family farms, including practical consulting on the opportunities provided by farming on an enlarged plot, as well as administrative and financial resources to ensure efficient matching of lands, accurate measurements and preparation of legal documentation. However, its positive returns will be improved productivity and specialization, and as a result, better organization

of farm operations and improved farm earnings.

Given the current state of economic development of Armenia, the high rate of migration and the few off-farm job opportunities, it is essential to implement consolidation in a way that reduces to minimal the number of family farms that will completely leave agricultural production.

Both the pilot project and the policy paper are good tools that, with a little adaptation to the changed realities, could bring positive results.

5. CONTACTS/REFERENCES

n/a

6.1.5 Joint advocacy for rural development

THE PROBLEM DESCRIPTION

Agriculture is considered the priority sector for the development of Armenia, as it provides employment to almost one-third of the employed population and one-fifth of the total labour resources of the country. Over the past ten years (2005-2015), agriculture comprised around 20 percent of the national gross domestic product and usually had a significant contribution to its growth. As of 2016, 1.09 million people, around one-third of the Armenian population, were rural dwellers, and 68 percent of the jobs available to them were agricultural.

Yet, mechanisms were absent for voicing concerns and problems existing on a grassroots level and for including them in policy-makers' agendas, as well as for ensuring public accountability for any activities that are carried out.

OBJECTIVES AND ACTIONS

As a response to the above-mentioned issues, as well as for joint problem-solving in the agricultural sector, in 2011 a volunteer multi-stakeholder platform called the Agricultural Alliance of Armenia (AAA) was established. It unites 17 local and international organizations, including educational, consulting, credit organizations and development civil society organizations working in the field of agriculture and rural development.

Through regular monthly meetings, platform members share the needs, development constraints and challenges of the farmers/communities they work with. Through joint activities and projects, they work on solutions. The role of the AAA is important in terms of providing links between the problems in the field and the policies of the state.

RESULTS AND IMPACTS

In 2013, a memorandum of understanding was signed between the AAA and the Ministry of Agriculture, which considerably increased the contribution of AAA to the alleviation of agricultural problems through participating in a policy dialogue with the Ministry of Agriculture. For instance, AAA was involved in working for the development of the Rural and Agricultural Strategy 2015–2025. Another highlight of the AAA's work was the change in the agricultural credit-issuing mechanism, where an announcement published by the AAA provoked an important change, and now it is obligatory for the creditor to declare the actual interest rate of the loan.

In 2017, taking into account the appointment of new minister, the Ministry of Agriculture and AAA signed a new memorandum of understanding to restate their cooperation. According to the preliminary agreement, AAA will be involved in the monitoring and impact assessment of some Ministry of Agriculture projects. In addition, a joint working group will be created to research the legislative field of agriculture and submit proposals for improvement.

LESSONS LEARNED, CONCLUSIONS AND RECOMMENDATIONS

The AAA was initiated by Oxfam in Armenia in the framework of one of Oxfam's projects. Most of the activities were financed by Oxfam. In the beginning, it was hard to break the prejudice that the alliance belongs to Oxfam and other members were not ready to take their part of the leadership.

However, as time passed, members learned to use the platform for following their organizational mission and objectives and were ready to contribute to its sustainability, including financially. So nowadays, with the closeout of the Oxfam in Armenia office, the AAA continues its operations.

The functionality of the platform is ensured by its structure – a permanent coordinator, who ensures information flow and follow-up, and three co-chairs, who rotate their roles on a set basis.

At the same time, it should be noted, that Agricultural Alliance is not a fully representative body for all family farms in Armenia and the activities of the Alliance are scoped by the organizational interests of its members and their geography of work.

CONTACTS/REFERENCES

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6.1.6 Challenges of introduction of high-value crops

1. THE PROBLEM DESCRIPTION

Karinj is a village in Lori *marz* (region) of Armenia with around 600 inhabitants. It is situated at the foot of Chatindagh mountain at the elevation of 1 230 m above sea level. Winters are cold and summers are mild. The distance of the village from the capital, Yerevan, is 164 km.

The population is mostly involved in animal husbandry and cultivation of fodder, while vegetables and fruits are cultivated in backyards and are mainly used for household consumption. An additional source of income for families in Karinj are the herbs and berries growing in nearby forests.

2. OBJECTIVES AND ACTIONS

It was in 2010 when Green Lane, a local agricultural assistance organization, was implementing a project in the Lori region. The project objectives were to introduce high-value crops to subsistence-farming, low-income families and thus provide them opportunities for higher incomes. One of the beneficiary communities was Karinj, where the Harutyunyan family was selected to work with.

The introduced high-value crops were different berries – blackberries, raspberries, etc. These crops were ideal for the climatic conditions of Karinj, and they were traditionally high priced in the local market. Some of the varieties even had improved characteristics, such as thorn-less blackberry.

Yet, the family was hesitating. For years, they had been growing potatoes, a stable source of food during the whole season. Replacing them with berries was an enormous risk for them. The approach used by Green Lane was to make a deal with the family that if they planted berries but didn't receive at least a similar income as they would have expected from potatoes, the organization would cover their losses.

The family agreed. For several months Green Lane consultants were providing continuous on-farm practical and theoretical consulting to Harutyunyans on the specifics of berry cultivation in their region. And soon the family could enjoy the high-quality harvest of berries from their own field.

3. RESULTS AND IMPACTS

Nowadays, the Harutyunyans own not only an orchard of berries, but also a nursery. From the sales of seedlings alone, the family has an income of around AMD 2 million (USD 4 184) annually, which is a considerable amount for Armenia.

Moreover, the farm in Karinj is now a partner of Green Lane and supplies high-quality rootstocks for other projects implemented by the organization.

4. LESSONS LEARNED, CONCLUSIONS AND RECOMMENDATIONS

Every case of the provision of assets should be accompanied with targeted consulting, where a consultant can be ready to take the responsibility of poor outcomes. This approach would make it easier for the smallholder to trust the consultant to make a positive change and be fully devoted to the new endeavour. Practical consulting in each stage of production is critical for the cases when a change of production specialization is the goal.

Pilot demonstration sites with high-value crops suitable for the given climatic conditions would be the best tool for technology transfer in the target community, and they would be an assurance for farmers to start production of high-value crops.

5. CONTACTS/REFERENCE

www.greenlane.am

6.2 Tables

Table A1.1 Family farms by region and types of agricultural activities

	Distribution of rural population in Armenia	Family farms								
		Total number of farms, including those who were missing from the community during the census		of which: Farms with agricultural land, excluding those that were engaged only in cattle-breeding and/or fish farming and/or processing		Total number of holdings engaged in agriculture, excluding those that were missing from the communities during the census	of which: Only land cultivation	of which: Only cattle-breeding and/or poultry breeding	of which: Mixed agricultural activities	Distribution of missing family farms by region
Total number	**1 095 000**	**360 611**		**345 875**		**317 346**	**134 490**	**11 951**	**170 905**	
within total number			**100**		**96**		**88**	**37**	**3**	**47**	**12**
In to unit			**100**		**100**		**100**	**42**	**4**	**54**	
of which:										
Aragatsotn	9	31 795	9	30 919	9	28 687	9	12 810	699	15 178	10
Ararat	17	49 116	14	48 024	14	44 736	14	18 999	989	24 748	9
Armavir	17	41 960	12	39 491	11	39 046	12	17 471	2,352	19 223	7
Gegharkunik	15	53 639	15	53 356	15	45 501	14	16 677	207	28 617	15
Lori	9	37 646	10	35 712	10	30 619	10	11 087	1,611	17 921	19
Kotayk	11	37 764	10	36 211	10	34 011	11	18 175	1,292	14 544	10
Shirak	9	31 695	9	30 926	9	27 620	9	10 555	669	16 396	13
Syunik	4	21 361	6	20 251	6	19 989	6	9 369	727	9 893	6
Vayots Dzor	3	10 384	3	9 969	3	8 932	3	2 114	379	6 439	14
Tavush	7	35 978	10	33 755	10	28 932	9	10 843	1,345	16 744	20
Yerevan		9 273	3	7 262	2	9 273	3	6 390	1,681	1 202	0

NOTE: <?>

IN ORDER TO PROVIDE COMPARABILITY WITH CENSUS DATA, THE NUMBER OF THE RURAL POPULATION AS OF 1 OCTOBER 2014 IS CONSIDERED HERE.
SOURCES: NSS, 2016A, NSS, 2014

Table A1.2. Family farms and holdings by region

	Up to 0.5 ha		From 0.5 to 1 ha		From 1 to 2 ha		From 2 to 3 ha		From 3 to 5 ha		5 ha and more		Family farms	
	unit	ha	unit	ha	Unit	ha	unit	ha	unit	ha	unit	ha	Total farms	Total lands
Republic of Armenia, total	144 299	24 134	61 971	51 054	69 878	106 767	31 217	79 860	22 295	89 451	16 214	161 735	**345 875**	513 000
of which:														
Aragatsotn	8 763	2 259	6 100	5 077	7 102	11 456	3 672	9 899	2 925	12 062	2 358	20 726	30 919	61 479
Ararat	27 687	6 009	13 572	10 268	4 633	6 841	1 018	2 734	700	3 138	413	5 505	48 024	34 496
Armavir	16 531	3 506	10 022	9 246	8 684	14 461	2 282	7 616	1 289	8 096	682	14 022	39 491	56 947
Gegharkunik	15 007	2 413	8 404	6 525	15 897	23 317	7 091	17 014	4 520	16 443	2 437	24 521	53 356	90 233
Lori	14 651	1 873	4 567	3 937	7 330	11 684	3 999	10 411	2 791	10 716	2 375	21 210	35 712	59 831
Kotayk	18 941	2 900	6 057	5 857	5 925	9 804	2 834	7 538	1 570	6 748	884	10 996	36 211	43 843
Shirak	7 658	1 258	3 610	2 985	7 213	11 074	4 686	11 336	3 918	14 792	3 842	36 979	30 926	78 424
Syunik	9 510	815	1 122	819	2 699	3 870	2 001	4 972	2 571	10 187	2 348	20 084	20 251	40 747
Vayots Dzor	3 636	1 023	2 116	1 827	1 633	2 692	1 004	2 660	974	3 881	604	5 448	9 969	17 531
Tavush	14 795	1 848	6 262	4 430	8 762	11 564	2 627	5 674	1 037	3 388	271	2 243	33 755	29 147
Yerevan	7 120	230	137	83	2	2	3	7	0	0	0	0	7 262	322

SOURCE: NSS, 2016A (DATA AS OF NOVEMBER 2014)

Table A1.3. Agricultural specialization by region among family farms

	Republic of Armenia, total	of which:									
		Aragatsotn	Ararat	Armavir	Gegharkunik	Lori	Kotayk	Shirak	Syunik	Vayots Dzor	Tavush	Yerevan
Total area of crops, ha	**250 515**	**31 856**	**17 037**	**29 960**	**49 644**	**20 084**	**10 714**	**50 485**	**24 017**	**4 661**	**12 045**	**13**
of which:												
Grain crops, total	*137 952*	*17 910*	*5 826*	*6 782*	*31 379*	*8 759*	*7 747*	*33 795*	*15 658*	*2 097*	*7 997*	*2*
of which:												
winter wheat	80 115	7 060	4 776	5 838	15 969	6 980	3 408	19 600	9 860	923	5 701	1
spring barley	40 603	9 972	554	388	12 194	1 075	1 291	12 146	2 005	748	231	0
Leguminous crops, total	*858*	*3*	*21*	*72*	*28*	*69*	*89*	*15*	*228*	*12*	*320*	*0*
Potato, total	*21 527*	*1 257*	*490*	*978*	*9 179*	*3 844*	*408*	*3 343*	*736*	*79*	*1 213*	*0*
Vegetable crops, total	*16 319*	*293*	*4 080*	*7 021*	*965*	*841*	*458*	*1 332*	*388*	*173*	*761*	*6*
of which tomato:	3 510	39	1 623	1 552	21	29	46	28	38	30	101	2
Melon crops, total	*4 215*	*107*	*984*	*3 076*	*0*	*0*	*0*	*0*	*0*	*2*	*45*	*0*
Industrial crops, total	*2 396*	*25*	*234*	*1 181*	*0*	*169*	*13*	*42*	*0*	*15*	*716*	*0*
of which:												
tobacco	253	0	66	20	0	1	0	0	0	1	164	0
sunflower (oil and confectionery)	1 933	4	133	1 070	0	159	0	1	0	14	551	0
Forage crops, total	*66 026*	*12 227*	*5 047*	*10 067*	*8 091*	*6 395*	*1 980*	*11 953*	*7 005*	*2 280*	*979*	*1*
Flowers (except in greenhouses and hothouses), total	*134*	*32*	*45*	*18*	*1*	*5*	*15*	*4*	*1*	*1*	*10*	*2*
Greenhouses	*1,089*	*3*	*311*	*764*	*1*	*1*	*3*	*1*	*0*	*1*	*4*	*1*
of which vegetable crops:	976	1	231	736	0	0	2	0	0	1	3	1
Total area of all types of fallows, ha	**12 524**	**2 110**	**44**	**47**	**1 559**	**66**	**873**	**6 764**	**721**	**302**	**37**	**0**
Total area of perennial plantings, ha	**42 456**	**5 779**	**10 233**	**12 788**	**879**	**1 082**	**4 603**	**475**	**1 391**	**2 289**	**2 690**	**246**
of which:												
orchard (without nursery), total:	*27 765*	*4 109*	*5 816*	*7 004*	*872*	*990*	*4 150*	*467*	*1 326*	*1 479*	*1 358*	*192*
of which:												
apricot	9 293	1 379	2 793	3 743	10	5	809	7	25	430	4	87
apple	7 589	1 903	759	327	448	311	2 300	276	584	449	202	30

	Republic of Armenia, total	of which:										
		Aragatsotn	Ararat	Armavir	Gegharkunik	Lori	Kotayk	Shirak	Syunik	Vayots Dzor	Tavush	Yerevan
fruit nursery, total	*107*	*15*	*58*	*22*	*0*	*0*	*6*	*0*	*1*	*1*	*2*	*0*
berry field, total	*397*	*135*	*50*	*113*	*5*	*15*	*42*	*8*	*4*	*3*	*18*	*6*
vineyard (without nursery), total	*14 138*	*1 517*	*4 302*	*5 626*	*2*	*77*	*390*	*0*	*59*	*805*	*1 311*	*48*
grapevine nursery, total	*49*	*3*	*7*	*22*	*0*	*0*	*15*	*0*	*0*	*1*	*1*	*0*
ornamental tree nurseries, total	*15*	*0*	*1*	*10*	*0*	*0*	*1*	*0*	*0*	*1*	*2*	*0*
Total head of cattle, number	**757 612**	**94 869**	**53 742**	**65 434**	**138 230**	**86 125**	**61 686**	**119 478**	**67 737**	**25 793**	**40 012**	**4 506**
of which cows:	*343 135*	*43 773*	*21 662*	*23 338*	*68 011*	*41 242*	*27 662*	*53 204*	*32 160*	*10 725*	*17 789*	*3 569*
Total head of buffalos, number	**604**	**19**	**54**	**151**	**62**	**1**	**2**	**17**	**0**	**3**	**294**	**1**
Total head of pigs, number	**160 923**	**14 113**	**23 528**	**24 725**	**17 746**	**14 762**	**14 919**	**14 639**	**12 806**	**1 939**	**19 724**	**2 022**
Total head of sheep, number	**789 705**	**106 986**	**104 083**	**101 719**	**130 275**	**37 150**	**41 917**	**96 674**	**128 372**	**18 537**	**16 832**	**7 160**
Total head of goats, number	**34 866**	**4 262**	**4 628**	**850**	**3 473**	**2 485**	**3 811**	**4 032**	**3 513**	**5 933**	**1 796**	**83**
Total head of horses, number	**8 894**	**277**	**369**	**113**	**1 134**	**2 195**	**432**	**376**	**2 086**	**416**	**1 491**	**5**
Total head of donkeys, number	**1 769**	**134**	**99**	**101**	**176**	**245**	**60**	**97**	**301**	**97**	**457**	**2**
Total head of mules, number	**122**	**9**	**6**	**2**	**32**	**20**	**7**	**0**	**30**	**6**	**10**	**0**
Total number of rabbits, number	**51 137**	**1 525**	**5 919**	**5 811**	**3 042**	**7 408**	**7 390**	**4 363**	**3 824**	**3 329**	**7 651**	**875**
Total number of poultry, number	**2 730 686**	**205 444**	**438 888**	**418 320**	**405 536**	**223 216**	**213 470**	**265 319**	**161 981**	**88 076**	**278 906**	**31 530**
Total head of fur-bearing animals, number	**67**	**0**	**10**	**22**	**20**	**0**	**0**	**0**	**0**	**0**	**0**	**15**
Total number of beehives, number	**161 901**	**9 643**	**7 690**	**7 442**	**25 174**	**16 859**	**15 991**	**13 192**	**31 108**	**18 459**	**15 251**	**1 092**

SOURCE: NSS, 2016A

Table A1.4. Average annual labour resources and agricultural employment in Armenia in 2014–2015, thousands of people

	Labour resources		Employed persons		Employed in agriculture		% of employed in agriculture of labour resources		% of employed in agriculture of total employed	
	2014	2015	2014	2015	2014	2015	2014	2015	2014	2015
Total	**2 180.2**	**2 106.6**	**1 133.5**	**1 072.6**	**394.8**	**379**	**18%**	**18%**	**34.8%**	**35.3%**
Yerevan	705.1	684.7	308.8	293.8	2.7	0.7	0%	0%	0.9%	0.2%
Aragatsotn	95.6	87	64.2	51.4	27.7	21	29%	24%	43.1%	40.9%
Ararat	151.5	184.7	102.9	117.5	48	61.7	32%	33%	46.6%	52.5%
Armavir	194.7	209.7	115.9	128.4	69.3	85.4	36%	41%	59.8%	66.5%
Gegharkunik	159.2	140.7	91.5	76.1	60.4	45.2	38%	32%	66.0%	59.4%
Lori	208.4	195.1	114.5	96.7	56.6	41.4	27%	21%	49.4%	42.8%
Kotayk	210.9	201.6	96	96.2	19.8	26.6	9%	13%	20.6%	27.7%
Shirak	227	190.6	103.5	86.6	50.6	44.1	22%	23%	48.9%	50.9%
Syunik	92.4	80.6	54.1	46.4	19.6	15.6	21%	19%	36.2%	33.6%
Vayots Dzor	36.5	35	23.5	23.8	9.9	10.4	27%	30%	42.1%	43.7%
Tavush	98.9	96.9	58.7	55.7	30	26.8	30%	28%	51.1%	48.1%
Men	**956.7**	**940.2**	**589.4**	**562.3**	**174.6**	**174.6**	**18%**	**19%**	**29.6%**	**31.1%**
Women	**1 223.4**	**1 166.5**	**544.1**	**510.4**	**220.1**	**204.3**	**18%**	**18%**	**40.5%**	**40.0%**

SOURCE: NSS (2016D)

Table A1.5. Volume of output for the main agricultural products by family farms and commercial organizations, 2005–2015, thousands of tons

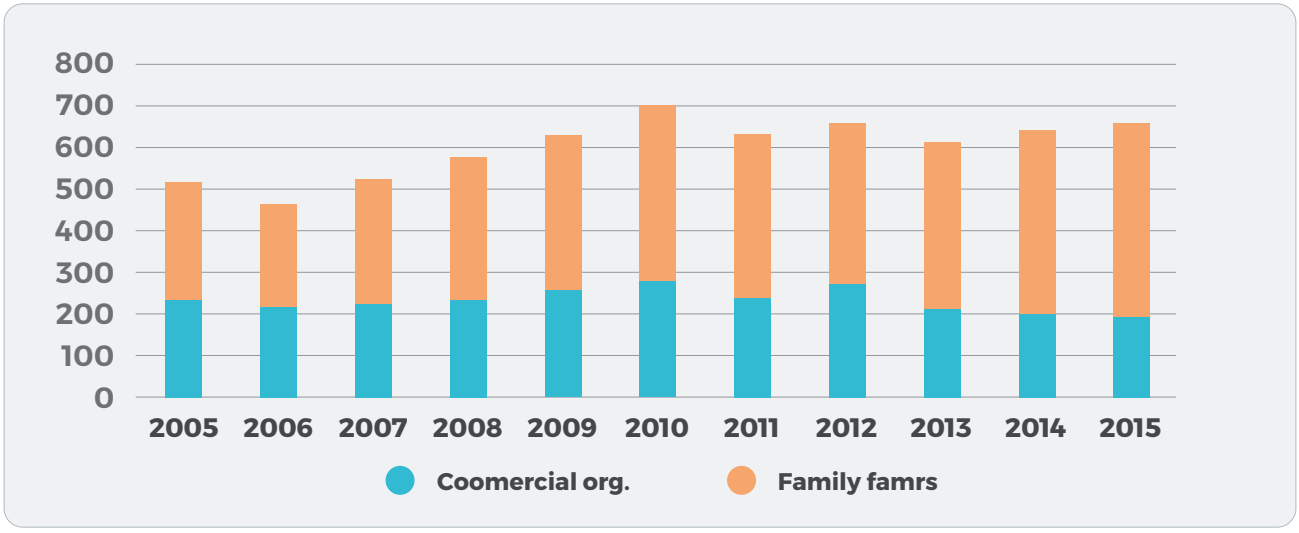
Category	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Production of main types of plant-growing output in Armenia											
Grains and leguminous	396.2	212.5	452.5	415.4	374.9	326.4	440.7	456.1	548.8	590.6	637.9
Potatoes	564.2	539.5	583.9	648.6	593.6	482	557.3	647.2	660.5	733.2	764.5
Vegetables	663.8	780	845.3	825.3	819.8	707.6	787.1	849	876	954.6	1031.5
Water melons	117.8	134.9	206.3	182.2	216.1	132.5	180.9	205.1	208.1	245.8	286.8
Fruit and berries	315.6	286	260.2	317.8	332.2	128.5	239.4	331.7	338.1	291	386.5
Grape	164.4	201.4	218.9	185.8	208.6	222.9	229.6	241.4	240.8	261.3	309.2
Production of main types of animal husbandry in Armenia											
Meat	56	66.8	69.7	70.9	70.7	69.5	71.7	73.9	83.4	93.1	100.4
beef and veal	*34.4*	*40.4*	*43.3*	*49.3*	*49.6*	*48*	*48.2*	*47.6*	*53.6*	*59*	*63.6*
mutton and goat	*7.6*	*7.2*	*7.3*	*7.4*	*8.9*	*8.2*	*8.4*	*8.5*	*9*	*9.1*	*9.8*
pork	*9.4*	*14.1*	*13.3*	*7.5*	*7.2*	*7.9*	*9.4*	*9.5*	*12.6*	*16.2*	*17.5*
poultry	*4.6*	*5.1*	*5.8*	*6.7*	*5*	*5.4*	*5.7*	*8.3*	*8.2*	*8.8*	*9.5*
Milk	594.6	620	641.2	661.9	615.7	600.9	601.5	618.2	657	700.4	728.6
Eggs	518.2	463.7	525.4	576.1	630.1	702.2	633.6	658.1	615.2	641.8	659.8
Wool	1306	1222	1277	1332	1307	1188	1230	1280	1426	1477	1571
Production of main types of plant-growing output by family farms											
Grains and leguminous	393.2	210.6	450.5	413.4	373	325.3	438.8	454	546.4	588.1	634.4
% within total grains and leguminous	*99.2%*	*99.1%*	*99.6%*	*99.5%*	*99.5%*	*99.7%*	*99.6%*	*99.5%*	*99.6%*	*99.6%*	*99.5%*
Potatoes	561.8	538.9	573	630.8	591.8	481.5	556.5	646	657.8	730.3	762.2
% within total potatoes	*99.6%*	*99.9%*	*98.1%*	*97.3%*	*99.7%*	*99.9%*	*99.9%*	*99.8%*	*99.6%*	*99.6%*	*99.7%*
Vegetables	663.5	780	844.8	824.8	818.2	707	786.4	847.7	875.2	953.3	1025.8
% within total vegetables	*100.0%*	*100.0%*	*99.9%*	*99.9%*	*99.8%*	*99.9%*	*99.9%*	*99.8%*	*99.9%*	*99.9%*	*99.4%*
Watermelons	117.8	134.9	205.7	180.2	210.8	132.3	180.6	204.9	208	245.8	286.7
% within total watermelons	*100.0%*	*100.0%*	*99.7%*	*98.9%*	*97.5%*	*99.8%*	*99.8%*	*99.9%*	*100.0%*	*100.0%*	*100.0%*
Fruit and berries	315.4	285.9	260.1	317.7	331.9	128.4	239.4	331.5	337.5	290.8	385.4
% within total fruit and berries	*99.9%*	*100.0%*	*100.0%*	*100.0%*	*99.9%*	*99.9%*	*100.0%*	*99.9%*	*99.8%*	*99.9%*	*99.7%*

Category	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Grapes	164.3	201.4	218.9	185.7	208	219.4	228	240.8	236.7	258.6	306.2
% within total grapes	*99.9%*	*100.0%*	*100.0%*	*99.9%*	*99.7%*	*98.4%*	*99.3%*	*99.8%*	*98.3%*	*99.0%*	*99.0%*
Production of main types of animal husbandry output by family farms											
Meat	52	63.5	64.4	65.1	66.4	65.2	66.2	67.2	77.5	85.8	93.5
% within total meat	*92.9%*	*95.1%*	*92.4%*	*91.8%*	*93.9%*	*93.8%*	*92.3%*	*90.9%*	*92.9%*	*92.2%*	*93.1%*
beef and veal	34.2	40.3	43	49.2	49.4	47.9	47.8	47.5	53.4	58.9	63.5
% within total beef and veal	*99.4%*	*99.8%*	*99.3%*	*99.8%*	*99.6%*	*99.8%*	*99.2%*	*99.8%*	*99.6%*	*99.8%*	*99.8%*
mutton and goat	7.6	7.2	7.2	7.4	8.9	8.2	8.1	8.4	9	9.1	9.8
% within total mutton and goat	*100.0%*	*100.0%*	*98.6%*	*100.0%*	*100.0%*	*100.0%*	*96.4%*	*98.8%*	*100.0%*	*100.0%*	*100.0%*
pork	9.3	14	13.2	7.4	7	7.8	9.1	9.3	12.5	15.9	17.2
% within total pork	*98.9%*	*99.3%*	*99.2%*	*98.7%*	*97.2%*	*98.7%*	*96.8%*	*97.9%*	*99.2%*	*98.1%*	*98.3%*
poultry	0.9	2	1	1.1	1.1	1.3	1.2	2	2.6	1.9	3
% within total poultry	*19.6%*	*39.2%*	*17.2%*	*16.4%*	*22.0%*	*24.1%*	*21.1%*	*24.1%*	*31.7%*	*21.6%*	*31.6%*
Milk	591.4	616.7	638.3	658.7	611.4	597.3	597.9	614.7	652.9	695.1	723
% within total milk	*99.5%*	*99.5%*	*99.5%*	*99.5%*	*99.3%*	*99.4%*	*99.4%*	*99.4%*	*99.4%*	*99.2%*	*99.2%*
Eggs	282	245.6	297.4	342.5	369.6	417.7	390.5	383.7	402.6	437.7	463.8
% within total eggs	*54.4%*	*53.0%*	*56.6%*	*59.5%*	*58.7%*	*59.5%*	*61.6%*	*58.3%*	*65.4%*	*68.2%*	*70.3%*
Wool	1 299	1 215	1 273	1 329	1 301	1 183	1 223	1 272	1 420	1 471	1 565
% within total wool	*99.5%*	*99.4%*	*99.7%*	*99.8%*	*99.5%*	*99.6%*	*99.4%*	*99.4%*	*99.6%*	*99.6%*	*99.6%*
Production of main types of plant-growing output by commercial organizations											
Grains and leguminous	3	1.9	2	2	1.9	1.1	1.9	2.1	2.4	2.5	3.5
% within total grains and leguminous	*0.8%*	*0.9%*	*0.4%*	*0.5%*	*0.5%*	*0.3%*	*0.4%*	*0.5%*	*0.4%*	*0.4%*	*0.5%*
Potatoes	2.4	0.6	10.9	17.8	1.8	0.5	0.8	1.2	2.7	2.9	2.3
% within total potatoes	*0.4%*	*0.1%*	*1.9%*	*2.7%*	*0.3%*	*0.1%*	*0.1%*	*0.2%*	*0.4%*	*0.4%*	*0.3%*
Vegetables	0.3	0	0.5	0.5	1.6	0.6	0.7	1.3	0.8	1.3	5.7
% within total vegetables	*0.0%*	*0.0%*	*0.1%*	*0.1%*	*0.2%*	*0.1%*	*0.1%*	*0.2%*	*0.1%*	*0.1%*	*0.6%*
Watermelons	0	0	0.6	2	5.3	0.2	0.3	0.2	0.1	0	0.1
% within total watermelons	*0.0%*	*0.0%*	*0.3%*	*1.1%*	*2.5%*	*0.2%*	*0.2%*	*0.1%*	*0.0%*	*0.0%*	*0.0%*
Fruit and berries	0.2	0.1	0.1	0.1	0.3	0.1	0	0.2	0.6	0.2	1.1

Category	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
% within total fruit and berries	*0.1%*	*0.0%*	*0.0%*	*0.0%*	*0.1%*	*0.1%*	*0.0%*	*0.1%*	*0.2%*	*0.1%*	*0.3%*
Grapes	0.1		0	0.1	0.6	3.5	1.6	0.6	4.1	2.7	3
% within total grapes	*0.1%*	*0.0%*	*0.0%*	*0.1%*	*0.3%*	*1.6%*	*0.7%*	*0.2%*	*1.7%*	*1.0%*	*1.0%*
Production of main types of animal husbandry output by commercial organizations											
Meat	4	3.3	5.3	5.8	4.3	4.3	5.5	6.7	5.9	7.3	6.9
% within total meat	*7.1%*	*4.9%*	*7.6%*	*8.2%*	*6.1%*	*6.2%*	*7.7%*	*9.1%*	*7.1%*	*7.8%*	*6.9%*
beef and veal	0.2	0.1	0.3	0.1	0.2	0.1	0.4	0.1	0.2	0.1	0.1
% within total beef and veal	*0.6%*	*0.2%*	*0.7%*	*0.2%*	*0.4%*	*0.2%*	*0.8%*	*0.2%*	*0.4%*	*0.2%*	*0.2%*
mutton and goat			0.1				0.3	0.1	0	0	0
% within total mutton and goat	*0.0%*	*0.0%*	*1.4%*	*0.0%*	*0.0%*	*0.0%*	*3.6%*	*1.2%*	*0.0%*	*0.0%*	*0.0%*
pork	0.1	0.1	0.1	0.1	0.2	0.1	0.3	0.2	0.1	0.3	0.3
% within total pork	*1.1%*	*0.7%*	*0.8%*	*1.3%*	*2.8%*	*1.3%*	*3.2%*	*2.1%*	*0.8%*	*1.9%*	*1.7%*
poultry	3.7	3.1	4.8	5.6	3.9	4.1	4.5	6.3	5.6	6.9	6.5
% within total poultry	80.4%	60.8%	82.8%	83.6%	78.0%	75.9%	78.9%	75.9%	68.3%	78.4%	68.4%
Milk	3.2	3.3	2.9	3.2	4.3	3.6	3.6	3.5	4.1	5.3	5.6
% within total milk	*0.5%*	*0.5%*	*0.5%*	*0.5%*	*0.7%*	*0.6%*	*0.6%*	*0.6%*	*0.6%*	*0.8%*	*0.8%*
Eggs	236.2	218.1	228	233.6	260.5	284.5	243.1	274.4	212.6	204.1	196
% within total eggs	*45.6%*	*47.0%*	*43.4%*	*40.5%*	*41.3%*	*40.5%*	*38.4%*	*41.7%*	*34.6%*	*31.8%*	*29.7%*
Wool	7	7	4	3	6	5	7	8	6	6	6
% within total wool	*0.5%*	*0.6%*	*0.3%*	*0.2%*	*0.5%*	*0.4%*	*0.6%*	*0.6%*	*0.4%*	*0.4%*	*0.4%*

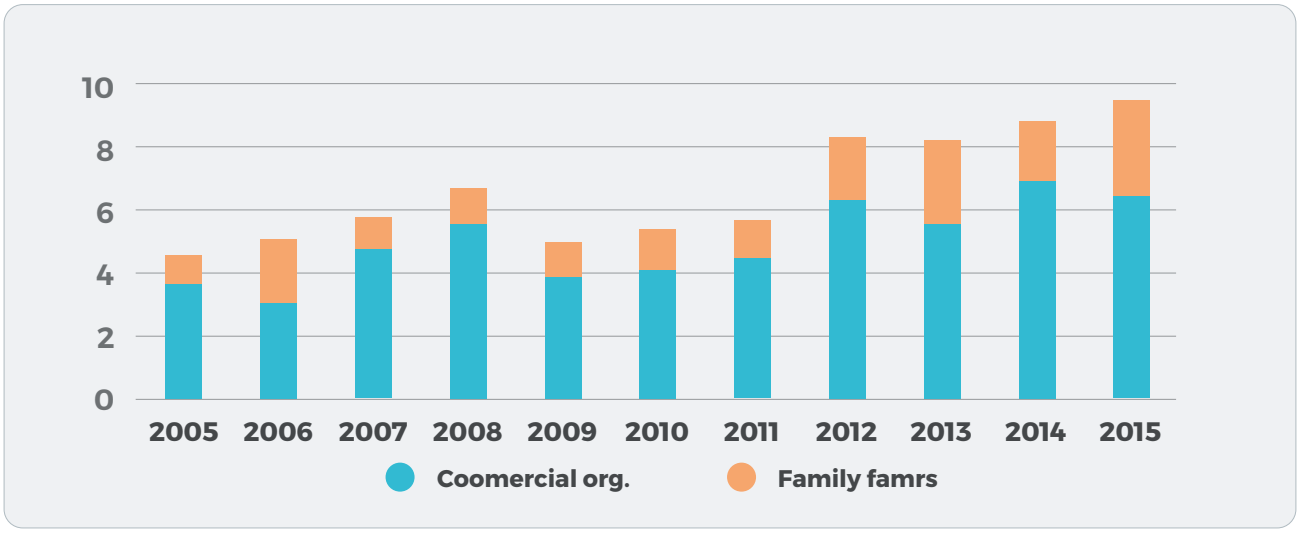
SOURCE: NSS, YEARBOOKS 2016, 2011, 2006

Figure A1.1. Production of eggs by family farms and commercial organizations, millions of pieces



SOURCE: NSS, YEARBOOKS (2016, 2012, 2009, 2007)

Figure A1.2. Production of poultry meat by family farms and commercial organizations, thousands of tons



SOURCE: NSS, YEARBOOKS (2016, 2012, 2009, 2007)

Table A1.6. Export statistics of Armenia for 2005–2015 and subdivisions of exported agrifood goods according to SITC (Rev 4) categories

	2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015	
	volume, th. tons	value, mln. USD	volume, th. tons	value, mln. USD	volume, th. tons	value, mln. USD	volume, th. tons	value, mln. USD	volume, th. tons	value, mln. USD	volume, th. tons	value, mln. USD	volume, th. tons	value, mln. USD	volume, th. tons	value, mln. USD	volume, th. tons	value, mln. USD	volume, th. tons	value, mln. USD	volume, th. tons	value, mln. USD
Total exports	**710.4**	**973.9**	**767.7**	**985.1**	**991.3**	**1 152.3**	**841.9**	**1 057.2**	**527.1**	**710.2**	**587.6**	**1 041.1**	**756.7**	**1 334.3**	**830.4**	**1 380.2**	**772.5**	**1 478.7**	**631.4**	**1 547.3**	**791.9**	**1 485.3**
Total without trade of physical persons	**696.4**	**960.6**	**753.3**	**965.2**	**978.6**	**1 121.2**	**825.5**	**1 043.2**	**510.0**	**696.3**	**573.6**	**1 021.7**	**743.6**	**1 311.4**	**818.5**	**1 367.7**	**740.9**	**1 451.5**	**593.3**	**1 522.5**	**777.0**	**1 475.3**
Agrifood exports	54.0	112.3	62.3	115.6	76.0	169.0	84.3	196.1	63.1	126.4	72.8	156.3	88.6	222.9	124.8	313.2	155.1	389.0	140.5	409.7	183.3	430.5
% within total exports	8%	12%	8%	12%	8%	15%	10%	19%	12%	18%	12%	15%	12%	17%	15%	23%	20%	26%	22%	26%	23%	29%
of which																						
Live animals other than animals of division 03	0.0	0.0	0.0	0.4	0.1	0.7	0.2	1.1	3.3	4.3	0.4	0.9	0.1	0.5	1.2	4.6	1.8	5.0	1.6	3.3	2.3	4.6
Meat and meat preparation	0.8	1.0	1.5	2.1	1.7	3.1	0.9	2.0	0.5	1.2	0.4	1.1	0.3	1.2	0.7	2.9	0.5	2.8	1.0	4.7	1.0	4.5
Dairy products and birds' eggs	3.1	4.1	1.6	2.6	0.9	1.9	0.9	2.7	0.8	1.9	0.8	2.3	0.6	2.5	1.2	3.2	2.2	7.6	2.6	9.1	9.4	24.2
Fish (not marine mammals), crustaceans, molluscs, aquatic invertebrates and preparations thereof	0.9	3.2	1.1	4.6	0.9	4.7	1.0	5.4	0.7	3.5	1.4	8.0	2.7	16.1	3.9	22.5	6.9	33.7	6.9	31.4	5.8	16.3
Cereals and cereal preparations	0.1	0.1	0.2	0.2	0.3	0.4	0.3	0.5	0.3	0.4	0.2	0.4	0.4	0.5	0.6	1.0	0.9	1.3	1.6	1.9	1.0	1.4
Vegetables and fruit	13.1	8.0	17.3	12.7	13.3	12.0	17.0	15.0	20.3	15.5	19.2	17.5	23.0	28.3	36.8	42.4	55.2	52.7	34.2	45.4	61.5	45.0
Sugars, sugar preparations and honey	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.1	2.2	1.6	3.5	3.0	0.6	0.9	1.2	1.3	0.6	1.1	14.9	7.5
Coffee, tea, cocoa, spices, and manufactures thereof	4.9	7.8	5.7	10.1	6.7	14.9	5.8	15.8	3.5	10.3	2.0	6.9	1.6	6.7	1.6	7.4	1.6	6.8	1.8	7.4	1.6	8.8
Feeding stuff for animals (not including unmilled cereals)	0.0	0.0	0.0	0.0	0.0	0.0	3.4	0.5	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.7	22.9
Miscellaneous edible products, preparations	0.0	0.2	0.0	0.4	0.2	0.8	0.0	0.4	0.1	0.5	0.1	0.5	0.2	0.9	0.4	1.4	0.3	1.3	0.5	1.6	0.9	1.1
Beverages	30.4	84.3	34.3	79.0	51.3	126.1	53.3	145.0	32.5	79.9	45.2	108.7	54.4	146.7	72.9	185.0	77.2	207.6	79.2	187.9	67.6	123.5
Tobacco and tobacco manufactures	0.5	3.5	0.5	3.4	0.6	4.2	1.6	7.8	1.2	8.6	0.8	8.3	1.8	16.3	4.8	41.9	7.3	69.1	10.6	115.9	16.6	170.7

SOURCE: NSS, 2016B AND THE SAME REPORTS FOR 2012, 2010, 2007

Table A1.7. Import statistics of Armenia for 2005–2015 and subdivisions of imported agrifood goods according to SITC (Rev 4) categories

	2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015	
	volume, th. tons	value, mln. USD	volume, th. tons	value, mln. USD	volume, th. tons	value, mln. USD	volume, th. tons	value, mln. USD	volume, th. tons	value, mln. USD	volume, th. tons	value, mln. USD	volume, th. tons	value, mln. USD	volume, th. tons	value, mln. USD	volume, th. tons	value, mln. USD	volume, th. tons	value, mln. USD	volume, th. tons	value, mln. USD
Total import	2 867.3	1 801.7	2 999.1	2 191.6	3 722.5	3 267.8	3 823.4	4 426.1	3 162.1	3 321.1	3 450.4	3 749.0	3 689.4	4 145.3	4 054.5	4 261.2	3 891.7	4 385.9	3 915.9	4 424.4	3 700.9	3 239.2
Total without trade of physical persons	2 826.7	1 725.4	2 962.9	2 092.1	3 676.2	3 052.6	3 763.4	4 116.1	3 132.8	3 192.0	3 419.9	3 624.0	3 647.7	3 973.9	4 008.0	4 076.3	3 831.8	4 168.6	3 847.6	4 182.3	3 666.9	3 139.3
Agri-food imports	668.2	281.2	623.0	308.9	890.3	492.5	787.8	684.2	742.6	553.9	812.0	617.8	849.5	715.8	904.5	744.0	811.9	777.4	803.3	742.8	843.1	787.2
% within total imports	*23%*	*16%*	*21%*	*14%*	*24%*	*15%*	*21%*	*15%*	*23%*	*17%*	*24%*	*16%*	*23%*	*17%*	*22%*	*17%*	*21%*	*18%*	*21%*	*17%*	*23%*	*24%*
of which																						
Live animals other than animals of division 03	0.1	1.3	0.1	1.5	0.2	2.0	0.6	5.4	0.5	3.7	0.3	2.6	0.4	3.3	0.5	4.1	1.0	7.2	0.6	5.8	0.7	5.0
Meat and meat preparation	32.2	30.3	25.2	25.9	42.0	43.8	69.9	94.5	50.8	72.6	53.7	74.0	62.3	94.7	57.0	91.6	52.6	93.2	51.9	89.4	48.6	67.1
Dairy products and birds' eggs	9.2	13.9	7.9	13.6	8.9	19.1	9.8	27.4	7.5	19.1	9.1	26.0	12.3	36.1	10.5	37.6	12.1	42.4	13.7	48.3	12.2	33.5
Fish (not marine mammals), crustaceans, molluscs, aquatic invertebrates and preparations thereof	6.8	3.1	1.8	2.3	1.7	2.7	3.5	7.6	3.8	7.2	2.6	5.0	3.6	6.6	3.6	6.4	3.0	5.9	2.8	6.2	2.7	5.5
Cereals and cereal preparations	396.4	67.9	396.1	75.1	565.2	127.3	419.1	147.1	456.0	129.0	450.4	126.6	475.3	142.4	552.0	176.0	462.4	169.3	418.2	151.3	423.5	121.2
Vegetables and fruit	34.8	20.7	44.3	31.6	60.2	52.7	52.1	68.1	45.9	56.2	62.3	70.9	75.4	87.3	61.4	70.9	59.5	68.0	73.8	75.4	62.1	53.0
Sugars, sugar preparations and honey	107.0	29.3	60.7	20.3	92.4	30.9	107.8	42.3	70.3	30.0	107.4	43.1	98.7	66.1	88.6	62.7	85.5	52.5	107.3	59.0	138.0	61.9
Coffee, tea, cocoa, spices, and manufactures thereof	19.0	30.8	17.9	37.2	21.8	59.3	25.3	86.1	21.8	69.5	22.5	72.6	22.8	82.0	22.0	80.5	23.6	83.8	22.5	79.3	30.4	182.9
Feeding stuff for animals (not including unmilled cereals)	34.6	10.7	29.4	10.3	39.1	15.3	32.4	20.1	32.0	20.1	40.0	24.2	39.5	29.9	45.6	35.8	43.9	39.5	41.1	36.4	51.7	87.9
Miscellaneous edible products, preparations	9.4	10.3	10.6	15.9	14.6	25.6	15.4	36.3	21.1	39.7	21.3	41.2	20.4	46.9	24.2	52.3	23.4	52.9	26.0	54.6	27.2	42.2
Beverages	13.4	14.8	22.5	20.6	36.8	40.1	46.1	62.4	28.1	41.4	36.7	51.5	32.3	45.7	32.0	51.6	31.3	55.8	35.0	55.1	33.0	44.8
Tobacco and tobacco manufactures	5.1	48.4	6.4	54.5	7.4	73.7	5.9	87.0	4.8	65.6	5.6	80.2	6.5	74.8	7.1	74.4	13.5	107.0	10.4	82.1	12.9	82.3

SOURCE: NSS, 2016B AND THE SAME REPORTS FOR 2012, 2010, 2007

Table A1.8. List of vocational educational institutions providing education in agricultural specializations

AGRICULTURAL VOCATIONAL EDUCATIONAL INSTITUTIONS	
1	**Agricultural College of Armenian National Agrarian University**
	Accounting
	Management
	Finance
	Transfer organization and management in transportation sector (by types of transport)
	Land construction
	Yeast production technology and winemaking
	Veterinary
	Environment preservation and efficient use of natural resources
	Biotechnology of protected ground
	Land improvement, use and protection of land and water resources
	Merchandising
	Land resource management
	Expertise of consumer goods quality
2	**Vanadzor branch of Armenian National Agrarian University**
	Accounting
	Transfer organization and management in transportation sector (by types of transport)
3	**Sisian branch of Armenian National Agrarian University**
	Management
	Transfer organization and management in transportation sector (by types of transport)
4	**Shirak branch of Armenian National Agrarian University**
	Jurisprudence
	Accounting
	Management
	Merchandising
	Transfer organization and management in transportation sector (by types of transport)
	Meat and meat products technology
	Expertise of consumer goods quality
5	**State Agricultural College of Vanadzor**
	Accounting
	Management
	Transfer organization and management in transportation sector (by types of transport)
	Construction and operation of buildings and facilities
	Agriculture economics
	Technical maintenance of agricultural activities (preliminary)
6	**State Agricultural College of Stepanavan after prof. A. Khalantaryan**
	Management
	Accounting
	Transfer organization and management in transportation sector (by types of transport)
	Veterinary

AGRICULTURAL VOCATIONAL EDUCATIONAL INSTITUTIONS	
	Milk and milk product technology
7	**State Agricultural College of Gavar after ac. A. Tamamshev**
	Management
	Finance
	Accounting
	Transfer organization and management in transportation sector (by types of transport)
	Veterinary
8	**State Agricultural College of Goris after prof. Kh. Yeritsyan**
	Management
	Accounting
	Veterinary
	Agricultural Mechanization
	Technical maintenance of agricultural activities (preliminary)
9	**State Agricultural College of Masis**
	Management
	Merchandising
	Transfer organization and management in transportation sector (by types of transport)
	Canned food and food concentrate technology
	Ichthyology and fish breeding
	Greenhouse farming
10	**State Agricultural College of Nor Geghi after ac. G. Aghajanyan**
	Management
	Transfer organization and management in transportation sector (by types of transport)
	Agricultural mechanization
	Beekeeping
NON-AGRICULTURAL VOCATIONAL EDUCATIONAL INSTITUTIONS TEACHING AGRICULTURAL SPECIALITIES	
1	**State College of Noyemberyan**
	Farming organization (preliminary)
2	**Gegharkunik Regional State College**
	Technical maintenance of agricultural activities (preliminary)
	Farming organization (preliminary)
3	**Armavir Regional State College**
	Agriculture economics
4	**State College of Sisian**
	Beekeeping
5	**Ararat Regional State College**
	Beekeeping
6	**State College of Spitak**
	Veterinary
7	**“Badeyan” State College of Vardenis**
	Farming organization (preliminary)

AGRICULTURAL VOCATIONAL EDUCATIONAL INSTITUTIONS	
	Butter, cheese and milk production technology (preliminary)
8	**Vayots Dzor Regional State College**
	Wine-making and juice production (preliminary)
	Culinary (preliminary)
9	**Maralik State Vocational School**
	Technical maintenance of agricultural activities
10	**Alaverdi State Vocational School**
	Technical maintenance of agricultural activities
11	**Sevan State Vocational School**
	Technical maintenance of agricultural activities
12	**Aragats State Vocational School**
	Technical maintenance of agricultural activities
13	**Ejmiatsin State Vocational School**
	Technical maintenance of agricultural activities
14	**Nairi State Vocational School**
	Farming organization (preliminary)
15	**Amasia State Vocational School**
	Butter, cheese and milk production technology (preliminary)

SOURCE: MOES. REPLY TO THE OFFICIAL INFORMATION REQUEST, SEPTEMBER 2017

Table A1.9. Average per capita monthly nominal income in rural households from each source, in USD

Types of income	2008	2009	2010	2011	2012	2013	2014	2015
1. Monetary income, including:	**67.8**	**60.5**	**64.6**	**70.8**	**80.6**	**84.9**	**93.0**	**88.1**
Wage employment	25.8	19.9	23.3	23.4	28.1	28.3	35.1	37.6
Self-employment	3.6	2.4	3.2	3.4	2.9	4.9	6.6	7.3
Sales of agricultural products and livestock	15.3	12.6	8.4	12.8	14.7	15.5	16.0	14.0
Income on property (rental income, interest, equity gain)	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0
Public pensions and benefits	15.1	15.6	16.0	16.7	16.9	16.6	17.6	16.8
Transfers, *of which:*	6.4	5.4	7.5	9.6	9.8	11.2	10.7	7.9
From relatives residing in Armenia	0.6	0.5	0.5	0.4	0.4	0.4	0.3	0.2
From relatives residing outside of Armenia	5.7	4.9	7.0	9.2	9.4	10.8	10.4	7.7
Other income	1.8	4.7	6.2	4.9	8.2	8.3	6.9	4.4
2. Non-monetary income, including:	**19.1**	**14.6**	**15.7**	**15.7**	**15.3**	**16.5**	**15.4**	**11.9**
Consumption of own production food	18.4	14.1	15.3	15.2	14.8	15.9	14.8	11.6
Non-food products and services free of charge	0.7	0.4	0.4	0.4	0.5	0.6	0.5	0.3
Total income	**87.0**	**75.1**	**80.3**	**86.4**	**95.9**	**101.4**	**108.3**	**100.0**

HOTE: AVERAGE ANNUAL EXCHANGE RATE ACCORDING TO CBA DATABASE
SOURCE: NSS, 2016E

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