



# ARMENIA

Armenia's Horticulture Sector Climate Adaptation Investment Plan (CAIP) was developed in 2024–2025. The plan outlines investment packages and financial models to deliver climate-resilient solutions across the horticulture value chain, from production to processing and marketing. It aims to implement Armenia's National Adaptation Plan (NAP) and Agriculture Development Strategy priorities, supporting rural incomes, food security, and export competitiveness in the face of climate risks.

## KEY FACTS

- SECTOR**  
Agriculture (horticulture)
- GEOGRAPHIC SCOPE**  
National, with focus on climate-vulnerable regions (Armavir and Ararat)
- FOCAL MINISTRY**  
Ministry of Economy, with involvement of Ministry of Finance and Ministry of Environment
- SCOPE OF CAIP**  
Entire horticulture value chain—climate-smart production, processing, and marketing
- TOTAL FUNDING NEED**  
**US\$150 million–\$190 million** (adaptation needs in agriculture)

## WHAT WE'VE LEARNED

- Adopt a value-chain approach:** Investments must cover the entire horticulture chain to build resilience at a system level.
- Harness climate risk analytics:** Losses from droughts, hail, frost, and floods are already high (\$30m–\$60m annually) and expected agriculture productivity loss due to water stress could reach \$363m by 2050 (WB). Risk-informed planning is essential to prioritize water efficiency, hail protection, and crop resilience.
- Embed adaptation in national planning systems:** Linking with ADS 2020–2030, NDC, and NAP ensures adaptation is part of Armenia's budget and policy frameworks, not a stand-alone program.
- Use economic evidence to prioritize investments:** Cost-benefit analysis shows high returns (B/C 2.38 and EIRR 30.5% for intensive orchards; B/C 2.16 and EIRR 27.2% for irrigation). This justifies public spending and helps crowd in private finance.
- Leverage finance matchmaking:** \$150m–\$190m for adaptation needs in agriculture by 2050 and \$1 billion for water management and irrigation, but current flows are only ~\$6.5m/year. Blended finance models that enable commercial banks to provide value chain financing are required. Venture capital and angel investment can be explored to finance innovative adaptation technologies.
- Strengthen enabling environment:** Policies (irrigation incentives, CSA taxonomy), institutions (Ministry of Economy capacity), services (extension, weather, R&D), and finance reforms (green bonds, credit lines) all need to advance together.

### NATIONAL ADAPTATION PLAN PRIORITIES

#### 1 Investment Planning Context

- Analyzed ADS 2020–2030, NDC, NAP, climate finance flows, and intensive horticulture and drip irrigation subsidy programs
- Considered Intensive Horticulture Development Program and irrigation subsidies
- Adopted a value-chain approach (production, processing, marketing) (Ministry of Economy)

#### OUTPUT

- Horticulture identified as one of the adaptation priorities within agriculture sector
- Alignment with ADS and national policy frameworks achieved
- Institutional coordination around Ministry of Economy established

#### 2 Climate Risk and Adaptation Analytics

- Collected data on weather and climate losses (droughts, hail, frost, floods)
- Analyzed projections of water scarcity, heatwaves, shifting rainfall, pests/diseases
- Assessed vulnerability of perennial crops due to long investment cycles
- Reviewed adaptation options (water management, hail nets, R&D for resilient varieties, early warning)

#### OUTPUT

- Estimated annual agricultural losses: AMD 15–30bln (\$30m–\$60m) from hazards such as hail, frost, etc.
- Expected agriculture productivity loss due to water stress could reach \$363m by 2050
- Projected higher risks in Armavir and Ararat regions
- Prioritized climate-smart measures: drip irrigation (50–70% water saving), hail nets, windbreaks, early warning systems, and resilient crop varieties

#### 3 Climate Economic Analysis

- Conducted cost-benefit analysis of intensive orchards and smart irrigation
- Assessed fiscal leverage and public-private co-financing impacts

### ADAPTATION INVESTMENT PLAN

#### OUTPUT

- Policy actions: irrigation efficiency and hail net subsidies
- Institutional strengthening for Ministry of Economy to lead CAIP
- Co-financing mechanism for private extension services
- R&D support for resilient grape and apricot varieties
- Improved early warning for frost and hail
- Extension of green bond framework to agriculture

#### 5 Enabling Environment

- Identified policy gaps, institutional capacity needs, and systemic barriers
- Reviewed extension services, R&D capacity, and weather/climate services
- Explored financial sector reforms to incentivize green lending

#### OUTPUT

- Agriculture adaptation needs:** \$150m–\$190m vs ~\$6.5m/year flows
- Financing models:** Blended finance to support commercial green lending
- Financing Instruments:** Commercial loans, State budget, Debt (Green Bonds)

#### 4 Finance Matchmaking

- Compared adaptation investment needs with current finance flows
- Applied finance matchmaking framework to identify financing models
- Engaged domestic banks, IFIs, and agribusinesses

#### OUTPUT

- Intensive horticulture:** B/C = 2.38; EIRR = 30.5%
- Smart irrigation:** B/C = 2.16; EIRR = 27.2% (RCP 4.5 scenario)
- 8,300 ha intensive orchards and 11,100 ha smart irrigation established during the 5 years
- \$105m public financing leveraged \$499m private finance

## INVESTMENT PACKAGES

### CLIMATE-SMART PRODUCTION

- Agriculture Research and Development**
- Climate-responsive extension services**
- Weather and Climate Services**
- Climate-Smart Technologies for Resilient Horticulture**

### CLIMATE-SMART PROCESSING

- Climate-Smart Logistic Hubs**

### CLIMATE-SMART MARKETING

- Resilient Standards and Certification**
- Digital Measurement, Reporting and Verification (MRV)**

