



AI-assisted policy making and action planning
for the mitigation of injustices
in the region of Thessaly



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Karditsa

Scenario: Fair and Sustainable Agricultural Transition in Karditsa

1. Water Governance Reform

Problem: Unequal water access, depleted aquifers, outdated open networks, lack of electrification, informal distribution practices.

Policy Actions:

- Complete the **transition to closed underground irrigation networks** (YDOR 2 program), using gravity-based pressure to minimize energy use.
- Introduce **smart water meters** and a digital scheduling platform accessible by all TOEB members, ensuring transparency and fairness.
- Launch a **Water Justice Pact** with farmers' associations, binding the TOEB to clear rules for equitable water sharing.
- Create a **regional Water Ombudsman office** to address disputes between irrigators.

Expected Outcome: Reduced water loss, fair distribution, lower irrigation costs, trust restored between producers and TOEB.

2. Energy Autonomy & Electrification

Problem: Overdependence on diesel pumps, rising electricity costs, blocked access to PV projects.

Policy Actions:

- Subsidize **collective photovoltaic parks for TOEBs** dedicated to irrigation, with guaranteed priority access to the grid.
- Provide **grants for electrification of boreholes and pumping stations**, eliminating the dependency on diesel.
- Introduce **net-metering with storage incentives** so surplus PV energy in non-irrigation months offsets grid costs.

Expected Outcome: Lower energy costs, reduced fossil fuel dependence, strengthened TOEB financial health.

3. Seed & Biodiversity Strategy

Problem: Cotton varietal “panspermia,” loss of biodiversity, unequal competition with third countries.

Policy Actions:

- Establish a **Regional Cotton Breeding & Seed Bank** in Karditsa, focusing on both high-yield and biodiversity-preserving varieties.
- Incentivize **collaborative seed contracts** (farmers + ELGO-Dimitra + cooperatives) with royalties returned to local producers.
- Promote **IPM (Integrated Pest Management)** and low-residue alternatives, with compensation schemes for producers affected by EU bans on active substances.

Expected Outcome: Competitive, resilient cotton sector with local control over seeds, better access to export markets, preservation of genetic diversity.

4. Market & Value Chain Justice

Problem: Farmers excluded from cotton valuation, lack of recognition by ginners, poor incentives for quality.

Policy Actions:

- Mandate **transparent quality-based cotton pricing**, requiring ginners to disclose quality differentials and pay premiums for superior production.
- Establish **regional quality certification labels** (“Thessalian Cotton Excellence”) co-managed by farmers and local chambers.
- Support **organic grain and cotton marketing hubs**, ensuring organic products are sold as such, not as conventional.

Expected Outcome: Farmers rewarded for quality, increased export competitiveness, strengthened local agri-food identity.

5. Institutional Renewal & Participation

Problem: Lack of impartial counseling, exclusion from Interprofessional Cotton Organization decisions, state withdrawal from training.

Policy Actions:

- Reinstate **public Agricultural Advisory Services** in Karditsa with agronomists embedded in local TOEB offices.
- Guarantee **democratic representation of small producers** in the Interprofessional Cotton Organization (DOV), monitored by the Ministry.
- Launch **farmer-to-farmer knowledge networks** for organic and regenerative farming, supported by EU CAP funds.

Expected Outcome: Empowered farmers, impartial advice available, greater trust in institutions, stronger participation in policy design.

6. Social Equity & Recognition

Problem: Non-recognition of geographical specificities, organic crop zoning gaps, Roma community pressures.

Policy Actions:

- Introduce **zoning for organic farming** in fragmented areas to protect against contamination.
- Create **differentiated subsidy schemes** for hilly vs. irrigated vs. flood-prone parcels, recognizing real geographic constraints.
- Support **Roma community integration programs** (vocational training in irrigation, crop handling, cooperative membership) to reduce tensions with local TOEBs.

Expected Outcome: Recognition of local diversity, stronger social cohesion, more equitable subsidy distribution.

Final Note

The scenario requires **multi-level governance**:

- **Local (TOEB + farmers):** Transparency, participation, and innovation.
- **Regional (Thessaly Region):** Funding infrastructure, mediating competing interests.
- **National (Ministry of Agriculture):** Legal reforms, subsidy redesign, institutional guarantees.
- **EU level:** Flexibility in pesticide regulation, biodiversity support, targeted CAP measures.

This approach does not only remove injustices but turns Karditsa into a **pilot region for sustainable, equitable agricultural transformation in Thessaly**.

5-Year Action Plan: Removing Agricultural Injustices in Karditsa

Year 1 – Foundations & Immediate Relief

Goals: Transparency, urgent cost relief, institutional reactivation.

Actions:

1. Water Network Pilot Modernization

- Begin pilot conversion of open irrigation channels into closed underground network in two TOEB areas (e.g., Sofades & Palamas).
- **Responsible:** TOEBs, Region of Thessaly, Ministry of Agriculture.

2. Energy Cost Mitigation

- Emergency subsidies for diesel pump fuel & electricity costs.
- Kick-off licensing for **collective PV parks** dedicated to TOEB irrigation.
- **Responsible:** Ministry of Energy, RAE, TOEB.

3. Institutional Renewal

- Reinstall **public agricultural advisory offices** in Karditsa (1 office per municipality).
- Recruit agronomists through CAP-funded contracts.
- **Responsible:** Ministry of Agriculture, ELGO-Dimitra.

4. Social Cohesion Program

- Launch Roma inclusion pilot: vocational training in irrigation & crop-handling.
- **Responsible:** Ministry of Social Cohesion, Municipalities.

Milestone: First transparent TOEB water scheduling system online; 100 farmers receive impartial agronomic advice.

Year 2 – Scaling Infrastructure & Knowledge

Goals: Wider reach, farmer empowerment, recognition policies.

Actions:

1. Water Expansion

- Extend closed irrigation networks to 40% of Karditsa farmland.
- Install **digital water meters** in pilot areas.

2. Energy Autonomy

- Build **2 collective PV parks (2 MW each)** for irrigation, directly owned by TOEBs.
- Launch **net-metering with storage pilot** in 3 cooperatives.

3. Cotton & Seed Strategy

- Establish **Regional Cotton Breeding & Seed Bank** in Karditsa.
- Begin testing of **quality-based pricing** in partnership with ginners.

4. Market Fairness

- Create **“Thessalian Cotton Excellence”** label with certification protocols.
- Pilot **organic grain hub** for traceable organic products.

Milestone: 20% energy savings for participating TOEBs; first labeled cotton bales sold with quality premium.

Year 3 – Recognition & Participation

Goals: Farmers’ voices institutionalized, subsidies adapted, geographic fairness.

Actions:

1. Institutional Participation

- Guarantee **smallholder representation** in Interprofessional Cotton Organization (DOV).
- Farmers’ advisory councils formed in each municipality.

2. Differentiated Subsidies

- Introduce **zonal subsidy scheme**:
 - Higher compensations for hilly/flood-prone areas.
 - CAP-linked incentives for regenerative practices.

3. Training & Knowledge

- Farmer-to-farmer networks operational (mentorship in organic, IPM, regenerative cotton).
- Annual **Agro-Justice Forum** in Karditsa bringing together farmers, TOEBs, ginners, state.

Milestone: Farmers’ councils formally influence subsidy design; 500 farmers trained in new practices.

Year 4 – Consolidation & Scaling

Goals: Full coverage of infrastructure, sustainable practices mainstreamed.

Actions:

1. Water & Energy

- 80% farmland covered by closed irrigation networks.
- TOEBs achieve **50% energy autonomy** through PV.

2. Market Integration

- Expand cotton quality certification to 70% of Karditsa production.
- Organic grain & cotton hubs achieve export contracts.

3. Biodiversity Protection

- Regional seed bank operational, distributing certified local cotton and grain varieties.
- Launch **Climate-Resilient Variety Fund** for risk management.

Milestone: Farmers report 20–30% reduced irrigation costs; quality-certified cotton exports to Italy & Germany.

Year 5 – Full Implementation & Evaluation

Goals: Justice institutionalized, Karditsa as pilot model for Thessaly.

Actions:

1. Universal Access

- 100% of TOEB farmland on closed irrigation networks.
- All TOEBs operating collective PV parks with net-metering.

2. Fair Markets

- Transparent cotton pricing mandatory by law nationwide.
- PDO/PGI promotion campaigns for Karditsa organic cotton & cereals.

3. Evaluation & Scaling

- Independent **Justice Audit** on distributive, recognition, and procedural fairness.
- Scenario scaled to Larissa, Trikala, and Magnesia.

Milestone: Karditsa internationally recognized as a **pilot region of fair agricultural transition**, inspiring CAP reforms.

Expected Outcome by Year 5:

- Irrigation costs reduced by 40%.
- Farmers receive price premiums for quality cotton & organic cereals.
- TOEBs financially stable through PV autonomy.
- Subsidies tailored to geographic realities.
- Farmers fully integrated into decision-making.
- Karditsa positioned as a **European model for agricultural justice**.

Larissa

Scenario: Towards Fair and Sustainable Agriculture in Larissa Prefecture

1. Water & Energy Equity

Problems:

- Unequal access to irrigation water (Karla vs. Pinios vs. borehole systems).
- High costs of pumping water (electricity/diesel).
- Weak TOEB capacity to maintain and expand networks.

Policy Actions:

- **Full transition to closed irrigation networks** with digital water meters, prioritizing areas relying on boreholes.
- Subsidize **collective photovoltaic (PV) parks** owned by TOEBs for irrigation energy autonomy.
- Establish a **transparent water allocation platform**, publicly accessible, showing usage quotas and costs.
- Launch **state-backed training program for TOEB management** to improve financial and organizational efficiency.

Expected Outcome: Reduced irrigation costs, fairer distribution of water, strengthened TOEB governance.

2. Seed, Cotton & Crop Fairness

Problems:

- Heavy dependence on certified cotton seed from private companies.
- Price inequalities due to cotton being sold as seed, not ginned fiber.
- EU pesticide bans raising costs while third-country competitors remain exempt.

Policy Actions:

- Establish **Larissa Cotton Innovation Hub** with ELGO-Dimitra: local seed improvement, pest-resilient varieties, climate-adapted research.
- Mandate **quality-based cotton pricing**: ginners required to disclose ginning yield and pay premiums for superior fiber.

- Create **“Thessalian Cotton Quality Label”** to differentiate local cotton in export markets.
- Negotiate with the EU for **transition support schemes** (CAP eco-schemes) to offset costs of pesticide bans, especially for cotton and cereals.

Expected Outcome: Farmers gain control over seeds, fairer cotton pricing, competitiveness restored against imports.

3. Market & Value Chain Justice

Problems:

- Unequal bargaining power between small producers and traders.
- Weak branding of local cereals, pulses, and cotton.
- Small farmers excluded from economies of scale.

Policy Actions:

- Establish **regional cooperatives for marketing and export** of cotton, cereals, and legumes, with guaranteed state start-up capital.
- Support **local branding schemes** (“Larissa Wheat Excellence”, “PDO Cotton of Thessaly”) with EU recognition.
- Encourage **collective storage and ginning infrastructure** to give farmers more negotiation power.
- Create a **minimum price mechanism** for cereals linked to production costs, triggered in times of market crisis.

Expected Outcome: Farmers capture more of the value chain, cooperative power balances oligopolistic traders.

4. Recognition & Social Equity

Problems:

- Farmers’ experiential knowledge ignored in decision-making.
- Geographical and relief differences not reflected in subsidies.
- Lack of recognition for sustainable and quality-oriented producers.

Policy Actions:

- Introduce **zonal subsidy schemes**: extra support for disadvantaged and semi-mountainous zones in Larissa prefecture.

- Form **Farmer Advisory Councils** in every municipality to feed local knowledge into CAP implementation.
- Recognize and reward **quality farmers** with financial incentives for PDO/PGI participation, organic conversion, and regenerative practices.

Expected Outcome: Farmers’ knowledge institutionalized, subsidies reflect geography, sustainable practices rewarded.

5. Procedural Justice & Governance

Problems:

- Lack of impartial agricultural counseling, dependence on private agronomists.
- Farmers excluded from cotton interprofessional body decisions.
- Weak transparency in TOEB financial management.

Policy Actions:

- Reinstate **public agricultural advisory services** with agronomists placed in TOEB offices.
- Legally guarantee **small farmer representation** in the Interprofessional Cotton Organization.
- Introduce **annual “Larissa Agri-Forum”** to bring farmers, TOEBs, researchers, and ministries together.
- Strengthen **anti-fraud mechanisms** in organic certification and subsidy distribution, to restore farmer trust.

Expected Outcome: Fairer representation, reliable advisory system, transparent subsidy use.

Final Vision

By coordinating reforms across water-energy systems, crop/seed policies, markets, recognition, and procedural fairness, **Larissa prefecture becomes the flagship region of Thessaly** where:

- Irrigation costs fall by 30–40% thanks to PV and closed networks.
- Cotton farmers are rewarded for quality, not just volume.
- Cereals and legumes gain PDO/PGI identity, strengthening exports.
- Farmers’ knowledge is valued in subsidy and crop policy decisions.
- TOEBs operate transparently, with financial health restored.

Larissa thus transforms from a hotspot of systemic injustices into a European pilot of agricultural fairness, sustainability, and competitiveness.

5-Year Action Plan: Larissa Prefecture

Pillars (what we're fixing)

1. **Water & Energy Equity** (closed networks, fair allocation, cheaper pumping)
2. **Seeds, Cotton & Crop Protection** (local capacity, quality-based pricing, IPM)
3. **Markets & Value Chains** (co-ops, storage, branding, price floors in crises)
4. **Governance & Advisory** (public agronomy, TOEB capacity, transparency)
5. **Recognition & Social Equity** (zonal subsidies, smallholder voice, inclusion)

Year 1 — Foundations & Quick Relief

Goals: cut immediate costs, create transparency, start governance fixes.

- **P1 | Water & Energy**
 - Map all irrigation assets; publish **Larissa Water Atlas** (open/closed lines, boreholes, pressures, losses).
 - Start **two pilot conversions** to closed underground networks in high-loss zones.
 - Launch **transparent water allocation portal** (quotas, schedules, meter snapshots).
 - **Owners:** Region of Thessaly, TOEBs, Ministry of Agriculture & Energy.
 - **KPI:** baseline non-revenue water (%), baseline kWh/acre; 2 pilots live.
- **P2 | Seeds/Cotton/Protection**
 - Set up **Larissa Cotton Innovation Hub** (with ELGO-Dimitra & Univ. partners).
 - Draft **quality-based pricing protocol** with ginneries; agree on pilots and lab methods.
 - **KPI:** MoU signed; 3 ginneries in pilot.
- **P3 | Markets**
 - Incorporate a **Larissa Export Cooperative** (cotton/cereals/legumes) with state seed capital.
 - **KPI:** legal entity formed; 1 shared storage/conditioning site leased.
- **P4 | Governance & Advisory**

- Reopen **public agricultural advisory desks** (one per municipality) co-located with TOEBs.
- Launch **TOEB CFO-lite** program (cashflow templates, arrears plans, tariff policy).
- **KPI:** 6 desks staffed; 100 farmers advised; 4 TOEBs publish audited snapshots.
- **P5 | Recognition**
 - Adopt **zonal map** for semi-mountainous, flood-risk, and borehole-dependent parcels.
 - **KPI:** map ratified; subsidy differentiation proposal drafted.

Funding hints: CAP TA, ERDF for network pilots, national recovery funds for meters/SCADA, small technical assistance grants for TOEB audits.

Year 2 — Build & Scale

Goals: expand infrastructure, make price fairness real, lower energy costs.

- **P1 | Water & Energy**
 - Convert to closed networks reaching **30–40%** of irrigated area; install smart meters on all pilot laterals.
 - Commission **two 2–3 MW TOEB-owned PV parks** (net-metering with storage where feasible).
 - **KPI:** –10% average kWh/acre in pilot zones; NRW down 8–10%.
- **P2 | Seeds/Cotton/Protection**
 - Start **field trials** (drought/heat-tolerant seed lines; IPM packages).
 - Run **quality-based pricing pilots** (publish ginning yield & fiber properties per batch).
 - **KPI:** 15% of cotton under quality pilot; average premium ≥3–5%.
- **P3 | Markets**
 - Launch **“Thessalian Cotton Quality” pre-label** and a **“Larissa Wheat Excellence”** project brief.
 - Fit out **shared storage & pre-gin conditioning** for cooperative leverage.
 - **KPI:** 30k tons contracted via co-op; ±2 pp better basis vs. previous season.
- **P4 | Governance & Advisory**
 - Train **100 TOEB staff/board members** (tariffs, debt restructuring, leakage control).

- **KPI:** 6 TOEBs publish annual plans; advisory desks hit 600 farmer consults.
- **P5 | Recognition**
 - Pilot **zonal top-ups** in subsidies (flood-risk & semi-mountainous); start **Farmer Advisory Councils**.
 - **KPI:** 3 councils formed; 1st feedback integrated into CAP local rules.

Year 3 — Normalize & Lock-In

Goals: make new practices the baseline; embed participation; expand energy autonomy.

- **P1 | Water & Energy**
 - Closed networks reach **60%** coverage; full **SCADA** on pressure zones; leak response SLAs.
 - Commission **two more PV parks**; aggregate smallholder PV via co-op virtual net-metering.
 - **KPI:** –20% kWh/acre; NRW –18–20%; irrigation tariff variance –25%.
- **P2 | Seeds/Cotton/Protection**
 - Scale quality pricing to **≥40%** of cotton; roll out **IPM kits** (monitoring + training + biocontrol).
 - **KPI:** pesticide doses/acre –15% (pilot); quality premium median ≥6–8%.
- **P3 | Markets**
 - Launch **export label** for cotton; pre-contracts with 2 EU spinners.
 - Trigger **minimum price safety net** for cereals in stress years (cost-indexed).
 - **KPI:** 50k tons under labeled contracts; crisis tool operational.
- **P4 | Governance & Advisory**
 - Mandate **smallholder seats** in the cotton interprofessional; annual **Larissa Agri-Forum**.
 - **KPI:** interprofessional bylaws amended; 1,500 farmers trained cumulatively.
- **P5 | Recognition**
 - Convert pilots to **permanent zonal subsidies**; create **Quality Farmer Awards** (cash + market access).
 - **KPI:** 25% of farms benefit from zonal top-ups; award cohort launched.

Year 4 — Consolidate & Compete

Goals: near-universal coverage; strong export identity; resilient finances.

- **P1 | Water & Energy**
 - Closed networks **≥80%**; dynamic pressure management; night-irrigation incentives.
 - PV + storage portfolio covers **≥50%** TOEB electricity; seasonal arbitrage pays down arrears.
 - **KPI:** NRW –25%+; average irrigation bill –30–35% vs. Y1.
- **P2 | Seeds/Cotton/Protection**
 - Quality pricing **≥70%** of cotton; seed hub releases **2 locally adapted lines**.
 - **KPI:** export lots achieve premium vs. global index; input costs stabilized.
- **P3 | Markets**
 - **Co-op export desk** active; shared logistics to ports; branded cereals/legumes in 2 retail chains.
 - **KPI:** 20% of volume sold via co-op; margin uplift **≥2–3 pp**.
- **P4 | Governance & Advisory**
 - **Performance-based TOEB grants** linked to leakage, arrears, service levels.
 - **KPI:** 80% TOEBs hit gold metrics; public dashboards updated quarterly.
- **P5 | Recognition**
 - Scale **inclusion programs** (seasonal labor legalization pathways, training, housing standards).
 - **KPI:** documented labor shortages –25%; compliance audits passed.

Year 5 — Institutionalize & Export the Model

Goals: universalization, legal codification, independent audit, regional roll-out.

- **P1 | Water & Energy**
 - **~100%** closed network coverage; province-wide SCADA; drought/flood playbooks.
 - PV portfolio covers **≥70%** irrigation energy; surplus offsets TOEB communal loads in off-season.
 - **KPI:** irrigation cost –40% vs. Y1; NRW **≤20%**.

- **P2 | Seeds/Cotton/Protection**
 - **Quality-based pricing mandated** by regional/national rule; IPM standard in cotton & cereals.
 - **KPI:** 90% of cotton under quality contracts; pesticide risk indicators trending down.
- **P3 | Markets**
 - **Protected regional marks** recognized; multi-year export MOUs; crisis price tool embedded.
 - **KPI:** 30% of volume via co-op/export desk; average farm gate price volatility –30%.
- **P4 | Governance & Advisory**
 - **Independent Justice Audit** (distributive/recognition/procedural) published; continuous improvement plan.
 - **KPI:** farmer trust index +20 points; TOEB financial health “green” across the board.
- **P5 | Recognition**
 - **Zonal subsidies codified**; smallholder representation entrenched in law/bylaws.
 - **KPI:** retention of small farms +10%; documented participation in councils >60%.

Cross-cutting KPIs (track every year)

- **Avg. irrigation cost per acre** (€, and kWh/acre)
- **Non-revenue water** (%)
- Share of cotton under **quality-based pricing** (%) and **premium** (€/kg)
- **Pesticide risk indicator** proxy (treatments/acre; switch to IPM)
- **% volume sold via co-op/label**
- **TOEB arrears** and days cash on hand
- **Farmer satisfaction/trust** (annual survey)
- **Labor availability** metrics (positions filled, days to fill)

Governance & Risk Controls

- **Delivery Unit** in the Region to unblock permits, grid connections, procurement.
- **Quarterly dashboards**; publish and review with Farmer Advisory Councils.

- **Independent engineering supervision** for networks/PV; anti-fraud checks for subsidies & organic claims.
- **Contingencies:** drought year re-phasing, grid saturation workaround (storage-first & staggered connections), inflation buffers in contracts.

Magnesia

Scenario: Fair and Resilient Agriculture in Magnesia Prefecture

1. Water & Irrigation Justice

Problems: high irrigation costs in Almyros; absence of irrigation in South Pelion; unequal access to Lake Karla network (Velesino); aquifer depletion.

Policy Actions:

- Expand **Lake Karla closed irrigation network** to cover Velesino–Stefanovikio–Rizomilos fully, reducing borehole dependence.
- Launch **South Pelion Water Equity Program:** small-scale collective cisterns, rainwater harvesting, drip irrigation subsidies for mountainous areas.
- Introduce **geographically differentiated irrigation tariffs** to reflect terrain and access constraints.
- Ensure **priority access for TOEBs** to photovoltaic (PV) projects for irrigation energy autonomy.

Expected Outcome: Lower irrigation costs, fairer access, stronger resilience against drought.

2. Seed, Crop Protection & Competitiveness

Problems: certified seed costs unviable in Almyros wheat; EU bans raise costs while imports use cheaper banned chemicals.

Policy Actions:

- Create a **Magnesia Wheat Adaptation Fund:** subsidize certified seed purchases in low-yield zones (Almyros).
- Support **public breeding programs** for wheat and local legumes to reduce dependency on multinationals.
- Introduce **Compensation Mechanism for EU Bans:** subsidies or tax relief when farmers must adopt costlier but safer products.
- Negotiate with EU for **“Fair Import Standards”** (mirror clauses) so third-country products follow the same plant protection rules.

Expected Outcome: Level playing field with imports; improved local seed viability; safer but affordable crop protection.

3. Market & Value Chain Justice

Problems: cotton quality ignored by ginneries; PDO products (Pelion olives/apples) underused; small producers excluded from branding due to high costs; oligopolistic traders dominate.

Policy Actions:

- Enforce **quality-based cotton pricing** with independent grading labs in Volos and Almyros.
- Revitalize **PDO Pelion products**: integrate PDO into subsidy bonuses, export campaigns, and retail promotion.
- Create **Collective Standardization Units** for small producers (olive oil, apples) with state start-up capital.
- Enforce **anti-adulteration rules** with strict penalties for blending/mislabeling olive oil.
- Establish **Pelion Farmers' Export Desk** to bypass oligopolistic traders.

Expected Outcome: Producers rewarded for quality, stronger PDO identity, higher farmer share in final value.

4. Recognition Justice

Problems: mountainous farmers treated as lowland; surplus value of Pelion olives/apples invisible; empirical knowledge ignored; migrant workers treated as expendable.

Policy Actions:

- Introduce **terrain-differentiated subsidies** for mountainous/semi-mountainous olive groves (Pelion, SW Magnesia).
- Launch **Pelion Quality Recognition Campaign** in domestic and EU markets.
- Institutionalize **Farmers' Advisory Councils** with equal representation of professional producers (not just landowners).
- Reform labor policy: extend **seasonal work permits to 6–9 months** and create pathways for semi-permanent partnerships.
- Set up **Participatory Knowledge Platforms** where local empirical know-how feeds into policy and university research.

Expected Outcome: Mountain and small farmers recognized and supported; labor stabilized; knowledge valued.

5. Procedural Justice & Governance

Problems: absent impartial advisory services; unreliable organic certification; weak dacus control; exclusion from consultations; ELGA compensation failures.

Policy Actions:

- Reinstall **public agronomy advisory service** in Magnesia (state agronomists in TOEB offices and cooperatives).
- Reform **organic certification controls** with independent third-party audits and digital traceability.
- Create a **State–Farmer Co-managed Dacus Program**, with drones/traps and farmer involvement in monitoring.
- Democratize representation: **active farmers prioritized** in cooperatives and PDO committees (reduce influence of absentee landowners).
- Overhaul **ELGA insurance model**: include fruitlessness and extreme climate events in compensation, with faster payouts.

Expected Outcome: Restored trust in institutions, effective pest control, fairer compensation, meaningful farmer participation.

Final Vision

With these reforms, Magnesia can become a **model prefecture of agricultural fairness**, where:

- Irrigation costs fall and access is equitable across plains and mountains.
- Certified seed use is viable without penalizing low-yield farmers.
- PDO labels for Pelion olives/apples gain real value in markets.
- Farmers’ local knowledge and mountainous conditions are institutionally recognized.
- Advisory, insurance, and pest control services are impartial, effective, and participatory.

Magnesia moves from systemic disadvantage to a **pilot of mountain–plain agricultural coexistence**, blending modern innovation with recognition of local particularities.

5-Year Action Plan: Magnesia Prefecture

Pillars (what we’re fixing)

1. **Water & Energy Equity** (Karla coverage, South Pelion water access, borehole dependence, high pumping costs)
2. **Seeds & Crop Protection** (Almyros wheat certified seed economics; EU active-substance withdrawals)
3. **Markets & Value Chains** (quality-based cotton pricing, PDO underuse, standardization access, adulteration)
4. **Recognition & Social Equity** (mountain terrain, local know-how, labor permits, consumer literacy)
5. **Governance & Procedural Justice** (public advisory services, reliable organics control, effective dacus program, fair ELGA)

Year 1 — Foundations & Quick Relief

Goals: immediate cost relief, transparency, restart institutions.

- **P1 | Water & Energy**
 - Publish **Magnesia Water Map** (Karla reach, boreholes, deficits; priority: Velestino–Stefanovikio–Rizomilos). Start two **closed-network pilot segments** tied to Karla; emergency repair of Daniel-damaged lines in Zagora corridors. **Owners:** Region, TOEB Karla, Municipalities, Min. Agriculture.
 - Design **South Pelion Water Equity** micro-infrastructure (communal cisterns, rain harvesting, pressure-compensated drip) where irrigation is absent. **Owners:** Region, Municipalities, TOEBs.
- **P2 | Seeds & Protection**
 - Launch **Almyros Wheat Adaptation voucher** to co-fund certified seed where yields make the mandate uneconomic. **Owners:** Min. Agriculture, Region.
 - Start **IPM field schools** to transition off withdrawn actives (grains/cotton/olives). **Owners:** ELGO-Dimitra, Advisory Service.
- **P3 | Markets**
 - Set up **independent cotton grading desk** (Volos/Almyros) for pilot **quality-based pricing** with 2 ginneries. **Owners:** Region, Interprofessional, Labs.
 - Feasibility for **shared standardization hub** (olive oil/small packs) for Pelion & SW Magnesia co-ops. **Owners:** Region, Co-ops.
- **P4 | Recognition**
 - Approve **terrain-differentiated subsidy map** (mountain/semi-mountain Pelion & SW Magnesia). **Owners:** Region, Min. Agriculture.

- Draft **seasonal labor reform memo** (6–9 month permits) and a **consumer literacy plan** on PDO/quality. **Owners:** Region, Min. Labor, Chambers.
- **P5 | Governance**
 - Reopen **Public Agronomy Desks** in Volos, Almyros, South Pelion, Zagora (co-located with TOEB/co-ops).
 - Redesign **organic controls** (randomized audits + traceability) and **reboot dacus program** planning with trap grids and farmer co-monitoring. **Owners:** Region DAOK, Min. Agriculture.

Milestones Y1: 2 Karla pilot laterals energized; 4 agronomy desks staffed; cotton quality pilot contracted; dacus plan & budget approved.
KPIs: baseline irrigation kWh/acre; % non-revenue water; # farmers served by desks; # lots sold with quality grade.

Year 2 — Build & Scale

- **P1:** Extend closed network to **30–40%** of target farms tied to Karla; commission **1 TOEB PV park** for irrigation energy. Start South Pelion cisterns in 3 villages.
- **P2:** Fund **certified-seed vouchers** for Almyros wheat; deploy **IPM kits** (monitoring + biocontrol) in olives/cotton; publish “mirror-clause” position on imports.
- **P3:** Open **Shared Standardization Unit** (olive oil/small packs); pilot strict **anti-adulteration enforcement** sweep in Volos market; expand **cotton quality pricing** to ≥20% of volume.
- **P4:** Begin **PDO Pelion activation** (retail promotion + subsidy bonus); launch **consumer literacy** campaign; municipal **Farmer Councils** formed (priority to active producers).
- **P5:** **Dacus execution** (traps, timely sprays) with public dashboard; start **ELGA fast-track** for Daniel-type events/fruitlessness.

Milestones Y2: PV park live; 1st PDO promo run; 500 farms in IPM; standardization hub ships first small packs.
KPIs: irrigation cost –10%; cotton quality premium ≥3–5%; % PDO-labeled SKUs in retail; dacus trap capture trend ↓.

Year 3 — Normalize & Lock-in

- **P1:** Closed networks ≥**60%** coverage in Karla zone; add **2nd PV park**; micro-networks (cistern + drip) in 6 South Pelion clusters.
- **P2:** Certified-seed support targeted by yield data; IPM becomes default in co-ops; negotiate **compensation for withdrawn actives** (voucher/tax credit).

- **P3: Quality-based cotton** reaches **≥40%**; anti-adulteration penalties publicized; co-op **export desk** operational (olive oil/apples).
- **P4: Terrain top-ups** embedded in CAP local rules; producer-led **knowledge platform** with universities (recognizing empirical know-how).
- **P5: Organic control** reliability audit; **ELGA** pays within 90 days for covered events.

Milestones Y3: 60% Karla coverage; export desk signs 2 EU buyers; ELGA 90-day SLA live.
KPIs: irrigation kWh/acre –20%; % cotton by grade; organic audit pass-rate; ELGA payout days median.

Year 4 — Consolidate & Compete

- **P1:** Closed networks **≥80%**; SCADA pressure management; PV portfolio covers **≥50%** irrigation energy. South Pelion villages achieve season-secure water via cistern grids.
- **P2: Local wheat & legume lines** released with co-op seed contracts; IPM cost/share stabilized.
- **P3:** PDO Pelion (olives/apples) featured in national promotions; **standardization hub** adds 2nd line; **quality cotton** **≥70%**.
- **P4: Labor pathways** (6–9-month permits) enacted; consumer literacy expands to schools/tourism.
- **P5: Dacus service level** tied to funding; publish **Justice & Performance Dashboard** (water, markets, compensation).

Milestones Y4: irrigation bills –30–35%; PDO SKUs in 3 retail chains; graded cotton exports to 2 new markets.
KPIs: non-revenue water ≤25%; % PV share of irrigation energy; PDO price uplift vs. baseline.

Year 5 — Institutionalize & Export the Model

- **P1:** ~100% closed-network coverage in Karla zone; PV covers **≥70%** irrigation energy; drought/flood playbooks active.
- **P2: Mirror-standard** import compliance advocated nationally; permanent **Almyros seed adjustment** (only where yields justify).
- **P3: Quality-based cotton mandatory** in contracts; PDO integrated with targeted aid; anti-adulteration enforcement routine.
- **P4: Recognition codified** (terrain top-ups; advisory councils with active-producer quorum).

- **P5:** Independent **Justice Audit** published (distributive/recognition/procedural) and replication plan for Thessaly.

End-State KPIs: irrigation cost –40% vs. Y1; quality-graded cotton ≥90%; PDO price premium ≥10–15%; ELGA median payout ≤60 days; farmer trust index +20 pts.

Governance, Owners & Funding (cross-cutting)

- **Delivery Unit (Region of Thessaly):** unblock permits, grid connections, procurement; run quarterly dashboards and public reviews with **Farmer Councils**.
- **Owners:** Region & DAOK; TOEB Karla & local TOEBs; ELGO-Dimitra; Interprofessional Cotton; Co-ops (Pelion, Zagora, SW Magnesia); Ministries (Agriculture, Energy, Labor).
- **Funding mix:** CAP/EAFRD, ERDF, national recovery funds, co-op equity for standardization, TOEB PV via net-metering/storage schemes.

Trikala

Scenario: “Fair Water, Fair Markets, Fair Voice” for Trikala

1) Water & Energy Equity

Problems to fix: Summer water scarcity from over-drawn aquifers; heavy dependence on deep boreholes; high electricity share in irrigation costs; flood-prone zones (e.g., Zarko/Farkadona); uneven progress toward closed networks.

Actions:

- **Close & Pressurize Networks:** Complete the underground/closed network rollout (pump inverters, pressure zoning) where boreholes dominate; prioritize Megala Kalyvia and Farkadona laterals that still rely on reels/opens.
- **TOEB Energy Autonomy:** Fast-track TOEB-owned PV parks with storage for irrigation (net-metering/energy sharing), paired with **ag electricity tariff reform** for irrigator associations.
- **Aquifer Relief & Flood Playbooks:** Annual managed aquifer recharge where feasible; flood retention works and operational playbooks for Zarko so crop choices are not de-facto constrained by torrents.
Expected outcome: –30–40% irrigation energy cost; stabilized water availability; fewer flood-loss seasons; less conflict over allocation.

2) Land & Spatial Justice

Problems to fix: Small/fragmented holdings undermine economies of scale; PV parks competing with **high-productivity land**; **land access/rents** destabilized.

Actions:

- **Micro-Consolidation & Shared Services:** Incentivize parcel pooling (leasing co-ops, block farming), shared machinery pools, and co-managed on-farm infrastructure to simulate scale for smallholders.
- **Protect Productive Soils:** Enforce spatial rules that keep utility-scale PV **off** prime irrigable land; steer RES to marginal sites; require decommissioning & soil restoration guarantees.
Expected outcome: Lower per-acre costs; preserved agricultural base; fairer land rents for active farmers.

3) Market & Value-Chain Fairness (Cotton, Cereals)

Problems to fix: Cotton sold as **seed** rather than ginned fiber excludes farmers from quality valuation; **ginner incentives** favor **volume** over **quality**.

Actions:

- **Quality-Based Cotton Pricing:** Independent grading (length/strength/color, ginning yield) and premiums; phased move to contract terms that reference fiber metrics, not only seed weight.
- **Farm-Level Logistics:** Support modular storage/lot segregation to avoid mixing and enable parcel-level **quality attribution**.
Expected outcome: Producers capture the value of superior fiber; gradual shift away from practices (e.g., stripper harvesters) that depress quality.

4) Seeds, Plant Protection & Competitiveness

Problems to fix: Rising pest/disease pressure and **higher plant-protection costs**; reduced efficacy after active-substance withdrawals; seed purity issues in domestic seed production for certain crops.

Actions:

- **IPM at Scale:** Region-funded integrated pest management (monitoring networks, biocontrol, decision tools) to cut doses and boost efficacy; public–private demo plots.
- **Bridging Support:** Temporary vouchers/tax credits when EU withdrawals force costlier alternatives; strengthen official supervision of seed production to reduce mixing/impurity.
Expected outcome: Lower risk and cost per hectare; better yield stability; restored trust in certified seeds.

5) Energy-Grid Access & Storage

Problems to fix: Farmers/TOEBs **blocked from small PV** for irrigation due to network saturation; loss of the former connection priority.

Actions:

- **Priority Windows for Irrigation PV:** Dedicated capacity slots for TOEB/self-production with **mandatory storage** to ease grid constraints; seasonal surplus used to amortize TOEB debts.

Expected outcome: Predictable connections; declining arrears; resilience to price spikes.

6) Recognition & Participation (Procedural Justice)

Problems to fix: **Impartial advisory gap** after retreat of state agronomy; top-down crop-restructuring proposals ignore sunk investments and farmer knowledge.

Actions:

- **Rebuild Public Advisory Service:** Place state agronomists in TOEB offices/co-ops; publish neutral guidance on fertilization, irrigation, and IPM; field days in every municipality.
- **Farmer Voice in Policy:** Permanent **Farmer Advisory Councils** per municipality; require impact notes that account for existing machinery investments before any restructuring push.

Expected outcome: Trust restored; policies reflect field reality; smoother transitions with compensation where required.

7) Climate Resilience & Insurance

Problems to fix: Fruitlessness/extreme weather under-covered by ELGA; slow or inadequate payouts; flood-exposed areas locked into riskier crop sets.

Actions:

- **Modernize ELGA:** Add parametric triggers for heat/flood; 60–90-day payout SLA; premium credits for on-farm prevention (drainage, raised controls).

Expected outcome: Income volatility reduced; credible safety net encourages efficient risk management.

Governance Model to Deliver It

- **Regional Delivery Unit (Trikala):** unblock permits, grid connections, procure IPM and metering; publish quarterly dashboards (water kWh/acre, non-revenue water, cotton quality share, advisory reach).
- **Owners:** Region & DAOK; TOEBs (Megala Kalyvia, Zarkos/Farkadona); ELGO-Dimitra; ginners/interprofessional cotton; farmer co-ops; Ministries (Agriculture, Energy).

- **Funding mix:** CAP/EAFRD for networks & advisory; ERDF/Recovery for PV+storage and flood works; co-op equity for storage/segregation; national lines for ELGA reform.

What success looks like in Trikala (3–5 years)

- **Water & energy:** closed networks + inverter control; PV covers ≥ 50 –70% irrigation energy; kWh/acre –20–40%.
- **Markets:** ≥ 50 % of cotton sold with quality-grade premiums; parcel-level segregation standard.
- **Farms:** smallholders plug into machinery pools; less land loss to utility PV; seed purity complaints trending down.
- **Institutions:** public advisory desks active in every municipality; ELGA payouts within 60–90 days; farmer councils embedded in decisions.

5-Year Action Plan: Trikala Prefecture

Pillars (what we're fixing)

1. **Water & Energy Equity** — deep-borehole dependence, summer scarcity, flood-prone zones, incomplete closed networks, high electricity burden.
2. **Land & Spatial Justice** — fragmented plots, loss of high-productivity land to PV, volatile rents.
3. **Markets & Value Chains** — cotton sold as seed (no quality valuation), lack of parcel-level segregation.
4. **Seeds & Plant Protection** — rising pest pressure, costly alternatives after active withdrawals, seed purity issues.
5. **Recognition & Procedural Justice** — state advisory retreat, top-down restructuring ignoring sunk investments and geography, blocked access to irrigation PV.
6. **Climate & Insurance** — under-coverage by ELGA; flood/heat shocks.

Year 1 — Map, Stabilize, Restart

- **P1 | Water & Energy.** Publish **Trikala Water & Energy Atlas** (borehole depths, losses, reels vs. closed lines). Start **two closed-network pilots** with pump **inverters** in Megala Kalyvia & Zarko; emergency flood playbooks for Farkadona laterals. Prepare TOEB-owned **PV+storage** designs.

- **P2 | Land.** Freeze new utility-scale PV on **high-productivity land**; set restoration bonds and map marginal sites for RES. Launch **machinery rings** and shared services to simulate scale for smallholders.
- **P3 | Markets.** Stand up an **independent cotton grading desk** (ginning yield + fiber metrics) and draft pilot contracts referencing quality, not only seed weight. Procure **modular on-farm storage** to stop quality mixing.
- **P4 | Seeds & Protection.** Kick off **IPM field schools** and monitoring network; plan targeted **seed-purity supervision** with strengthened official controls.
- **P5 | Recognition & Process.** Reopen **public agronomy desks** in TOEB offices; create **Farmer Advisory Councils** in each municipality; publish impact template that accounts for sunk machinery before any restructuring.
- **P6 | Insurance.** Start ELGA reform design: parametric triggers (heat/flood) and **90-day payout SLA**.

Milestones: 2 pilots energized; grading desk operating; 4 agronomy desks staffed.
KPIs baseline: kWh/acre, non-revenue water, % cotton sold with a grade, advisory reach.

Year 2 — Build & De-risk

- **P1.** Convert to closed networks for **30–40%** of target laterals; commission first **TOEB PV+storage**; managed aquifer recharge pilots; flood retention works near Zarko.
- **P2.** Launch **parcel-pooling leases** (block farming) with smallholder guarantees; enforce PV siting away from prime irrigable soils.
- **P3.** Expand **quality-based cotton** to $\geq 20\%$ of volume; roll out **lot segregation** SOPs at farm/co-op level.
- **P4.** Voucher/tax-credit **bridge** for costlier plant-protection alternatives after EU withdrawals; begin targeted inspections to improve **seed purity**.
- **P5.** Formalize **Farmer Councils** into CAP local rules feedback; publish quarterly dashboards.
- **P6.** Pilot **parametric ELGA** payouts on flood pockets; mid-season advances.

Milestones: PV park live; ≥ 200 farms on IPM; 1st quality-premium contracts signed.
KPIs: irrigation cost -10% ; NRW $-8-10\%$; premium $\geq 3-5\%$.

Year 3 — Normalize & Scale

- **P1.** Closed networks $\geq 60\%$; SCADA pressure zoning; second PV park; aquifer pressure trending down.

- **P2.** 1,000-ha pooled via leases; machinery-ring utilization >70%.
- **P3. Quality cotton ≥40%;** storage/segregation standard across co-ops; training to phase out stripper-biased practices.
- **P4.** IPM becomes default; official **seed supervision** cycle completed; complaints on seed purity trending down.
- **P5.** Public agronomy reaches 1,200 farmers; restructuring proposals must include **sunk-investment offsets**.
- **P6.** ELGA **90-day SLA** in force with parametric pilots.

KPIs: kWh/acre –20%; % graded cotton; advisory satisfaction; ELGA payout days median.

Year 4 — Consolidate & Compete

- **P1.** Closed networks **≥80%**; PV portfolio covers **≥50%** irrigation energy; flood buffers operational.
- **P2.** Parcel-pooling expands; rent volatility moderates; high-productivity land preserved.
- **P3. Quality cotton ≥70%** of volume; premiums normalized; export contracts referencing fiber metrics.
- **P4.** IPM cost/share stabilized; plant-protection costs/ha down vs. Y1; seed complaints rare.
- **P5.** Farmer Councils co-author annual CAP adaptations; public advisory embedded.
- **P6.** ELGA parametric products rolled out for heat/flood across risk zones.

KPIs: irrigation bill –30–35%; NRW ≤25%; premium vs. baseline +€; % land under pooling.

Year 5 — Codify & Replicate

- **P1.** **~100%** closed-network coverage on priority laterals; PV covers **≥70%** irrigation energy; drought/flood playbooks codified.
- **P2.** Spatial rules for PV on farmland enacted permanently; pooling program permanent.
- **P3. Quality-based cotton** contract terms become standard; farm-level segregation universal.
- **P4.** Seed supervision institutionalized; IPM network funded recurrently.
- **P5.** Advisory & Farmer Councils embedded in law; impact-assessment w/ sunk-investment rule mandatory.

- **P6. Independent Justice Audit** (distributive/recognition/procedural) published; replication plan for remaining Thessaly areas.

End-State KPIs: irrigation cost -40% vs. Y1; graded cotton ≥90%; ELGA median payout ≤60–90 days; farmer trust index +20 points.

Delivery & Funding

- **Delivery Unit (Region of Thessaly – Trikala):** unblock permits and grid connections; run dashboards (water, energy, markets, insurance). **Owners:** Region/DAOK; TOEBs (Megala Kalyvia, Zarko/Farkadona); ELGO-Dimitra; ginners/interprofessional cotton; farmer co-ops; Ministries (Agriculture, Energy). **Funding:** CAP/EAFRD, ERDF/Recovery for networks & PV+storage, co-op equity for storage/segregation, national lines for ELGA modernization.

Thessaly

Here's a **Thessaly-wide scenario** that integrates (and scales) the prefecture plans you approved for **Karditsa, Larissa, Magnesia, and Trikala**, focusing on the **common injustices** and turning them into one coordinated regional program.

Thessaly Scenario: “One Water, One Market, One Voice”

A. What's common across prefectures (and must be solved once, region-wide)

- **Water & energy inequities:** deep borehole dependence, high electricity share in irrigation costs, and uneven access to modern **closed/pressurized networks** (especially where open lines/reels remain).
- **Grid access barriers** for small PV/self-production by TOEBs and farmers (saturated network; loss of connection priority), keeping irrigation bills high.
- **Market power & pricing gaps:** cotton sold as *seed* rather than ginned fiber → farmers can't capture **quality premiums**; weak recognition/bonuses for PDO/quality products; costly/limited access to standardization for small producers.
- **Seed & plant-protection headwinds:** higher costs as EU withdrawals force costlier alternatives; pockets of **seed purity**/certification economics that don't fit local yields.
- **Advisory & participation deficits:** retreat of impartial public agronomy; farmer voice missing in policy and interprofessional decisions.
- **Insurance & climate risk:** slow/insufficient compensation for fruitlessness, floods, heat; flood-exposed laterals lock crop choices.

- **Recognition gaps:** mountainous/semi-mountainous zones (e.g., Pelion) face higher costs with little terrain-based support; consumer literacy and PDO under-use depress value.

B. Regional programs (built once, applied everywhere)

1) One-Thessaly Water & Energy Transition

Goal: universalize affordable, reliable irrigation.
Measures:

- Complete **closed underground networks** with **inverters/SCADA pressure zoning** across all TOEBs; prioritize borehole-dependent and flood-prone laterals.
- **TOEB-owned PV + storage** portfolio with dedicated grid connection windows for *irrigation self-production*; seasonal surplus offsets TOEB arrears.
- **Managed aquifer recharge & flood-retention works** where relevant (e.g., Zarko corridors).
- For **water-poor mountain zones** (e.g., South Pelion): communal cisterns, rainwater harvesting, and pressure-compensated drip micro-networks.
Justice effect: lower kWh/acre and fair access regardless of terrain; fewer forced crop changes due to floods/droughts.

2) Quality-First Markets & Value Chains

Goal: pay farmers for what they *produce*, not what's convenient to buy.
Measures:

- Regionally fund **independent cotton grading labs** (fiber length/strength/color + ginning yield) and require **quality-based contracts**; co-finance farm-level **lot segregation/storage** to stop quality mixing.
- Build **shared standardization hubs** (olive oil, fruit) for small producers; embed PDOs (e.g., Pelion) into **retail/export campaigns** and targeted subsidy bonuses; run **anti-adulteration sweeps** with real penalties.
Justice effect: quality premiums flow to farms; smallholders access branding/exports; fraud no longer undercuts honest producers.

3) Seeds, IPM & Competitiveness

Goal: safe crops, sane costs, locally adapted seed.
Measures:

- Thessaly-wide **IPM network** (monitoring, decision tools, biocontrol demo plots).
- **Bridge support** (vouchers/tax credits) when EU withdrawals force costlier alternatives; tighter **official supervision** for domestic seed production to reduce impurity.

- Targeted **certified-seed economics** where yields are lower (e.g., **Almyros wheat**), so compliance doesn't penalize specific zones.
Justice effect: lower risk/cost per hectare; certification rules fit local realities.

4) Recognition & Procedural Justice

Goal: farmers have voice, advice, and terrain-fair support.

Measures:

- Rebuild **public agronomy desks** (co-located with TOEBs/co-ops), staffed and measured on farmer reach.
- Farmer Advisory Councils** in every municipality feed CAP local rules; active producers prioritized over absentee owners.
- Terrain-differentiated top-ups** for mountainous/semi-mountainous parcels; **consumer literacy** on PDO/quality in schools and retail.
Justice effect: rules reflect geography and know-how; sustained demand for quality.

5) Climate Insurance that Works

Goal: credible safety net, faster payouts.

Measures:

- ELGA modernization:** parametric triggers (heat/flood), 60–90-day payout SLA, premium credits for prevention (drainage/retention).
Justice effect: income volatility drops; rational investments in resilience are rewarded.

C. Regional delivery model

- Thessaly Delivery Unit (TDU)** in the Region: unblocks permits & grid connections; procures SCADA/IPM; runs **quarterly public dashboards** (kWh/acre, non-revenue water, % cotton under quality contracts, advisory reach, ELGA payout time).
- Owners:** Region/DAOK; all TOEBs (Karla, Megala Kalyvia, Zarko/Farkadona, etc.); ELGO-Dimitra; cotton interprofessional & ginneries; co-ops (Pelion/Zagora/SW Magnesia and plains); Ministries (Agriculture, Energy, Labor).
- Funding mix:** CAP/EAFRD (networks/advisory), ERDF/Recovery (PV+storage, flood works, labs, hubs), co-op equity (storage/branding), national lines (ELGA reform).

D. Phased outcomes (region-wide targets, aligned to your prefecture plans)

By Year 2

- Closed networks cover **30–40%** of remaining priority laterals; first **TOEB PV+storage** live; grading labs operational; 500+ farms in IPM; 4+ public advisory desks per prefecture.

By Year 3

- Closed networks **≥60%**; second PV tranche; **quality-based cotton ≥40%** of volume; PDO/standardization hubs shipping; ELGA 90-day SLA in force.

By Year 4

- Non-revenue water **≤25%**; PV covers **≥50%** irrigation energy; PDO price uplift visible; plant-protection cost/ha down vs. baseline; terrain top-ups embedded in CAP local rules.

By Year 5

- Priority laterals **~100%** closed/pressurized; PV covers **≥70%** irrigation energy; **quality cotton ≥90%**; ELGA median payout **≤60–90 days**; farmer trust index **+20 points** region-wide.

Why this works for all of Thessaly

It standardizes the **infrastructure fixes** (closed networks + PV/storage), the **market rules** (independent grading, quality-based contracts, anti-adulteration), the **knowledge & voice** (public advisory + farmer councils), and the **risk system** (parametric ELGA) — while **respecting local differences** (Pelion mountain costs, Almyros wheat economics, flood corridors in Trikala). That's how we convert four prefecture plans into **one coherent regional justice program**.