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EUROPEAN COOPERATION
IN SCIENCE & TECHNOLOGY

Exercise 3: Building resilience for sustainable food production and rural development in the permacrisis age

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FutureMed
TRANSDISCIPLINARY NETWORK

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Climate Change impacts on agriculture and food

- Food security: Crop response-yield variability
- Rising food prices
- Increased vulnerability of farmers
- Rural migration (youth)
- Income fluctuations

Q: *Have you observed any changes in climate elements in your region in the last 10 years?*

Sarıcakaya Eskisehir Türkiye

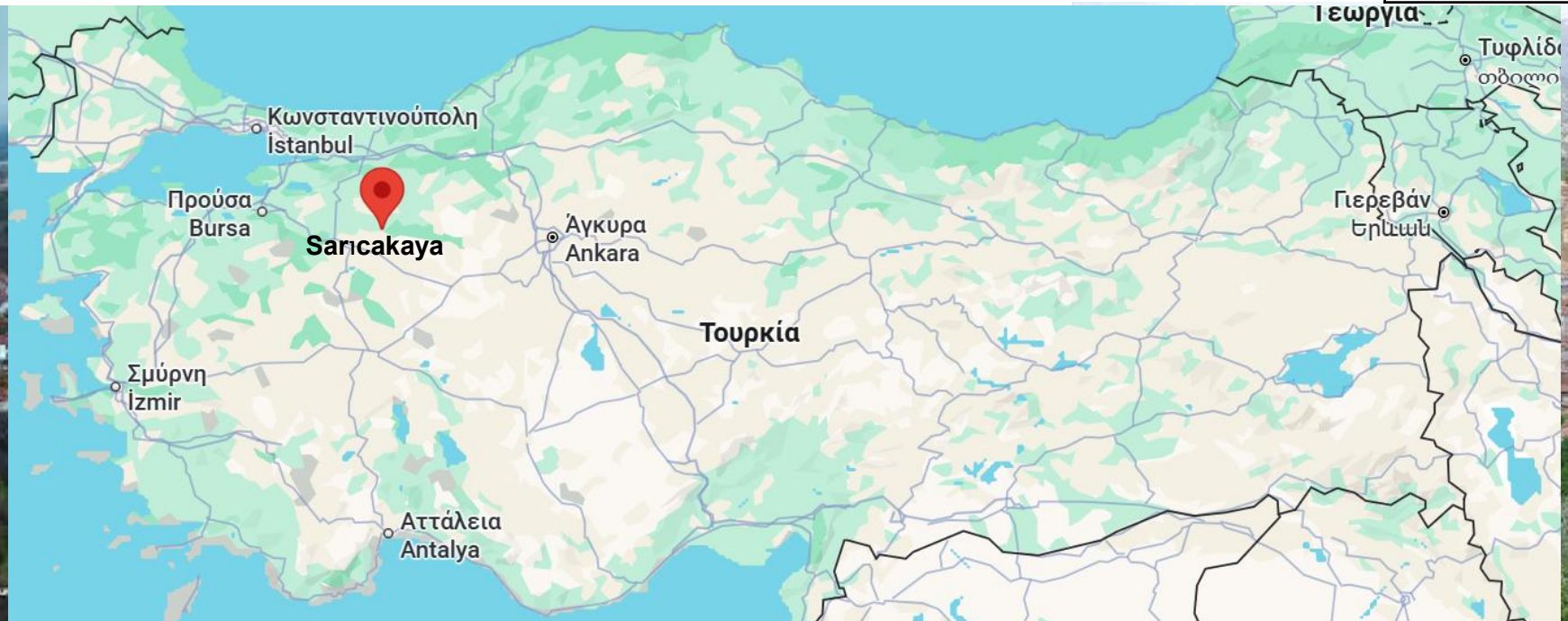
A:Yes (100%)

STUDY AREA – Sarıcakaya Eskisehir Türkiye

Sarıcakaya is a municipality and district of Eskisehir Province, Türkiye (45 km away from Eskisehir).

- The district located in the valley has a mediterranean microclimate *"the Mediterranean of Central Anatolia"*
- Agricultural production activities are carried out along the whole year
- The livelihood of the region is based on agriculture.
- The altitude in the region varies between 180-230 meters.

Coordinates	40°02′N 30°31′E
Area	382 km²
Elevation	252 m
Population	4,621 (2022)



Main agricultural products

- Covered and open field agriculture is carried out in 2342 hectares in the region (TUIK 2022).

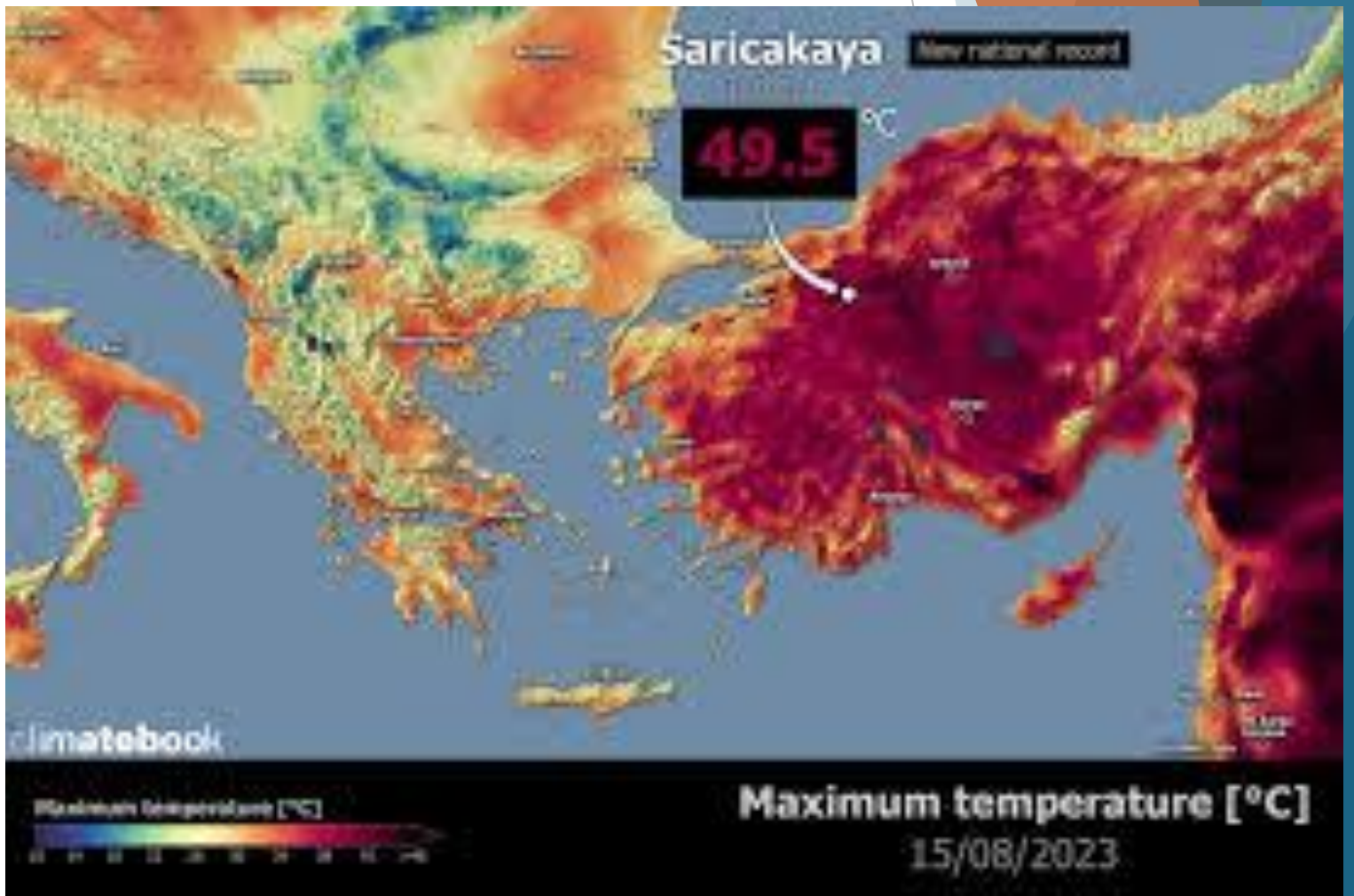
- **40 vegetables**, mainly: *tomatoes, cucumbers, eggplant, zucchini, beans, arugula, lettuce, parsley, pomegranates and olives are grown.*

MAIN CHALLENGES REGARDING CLIMATE CHANGE

On 15 August 2023, there was a temperature of **49.5 °C** (121.1 °F) recorded in Sarıcakaya, setting the record for the **highest temperature ever recorded in Turkey**.

Extreme weather

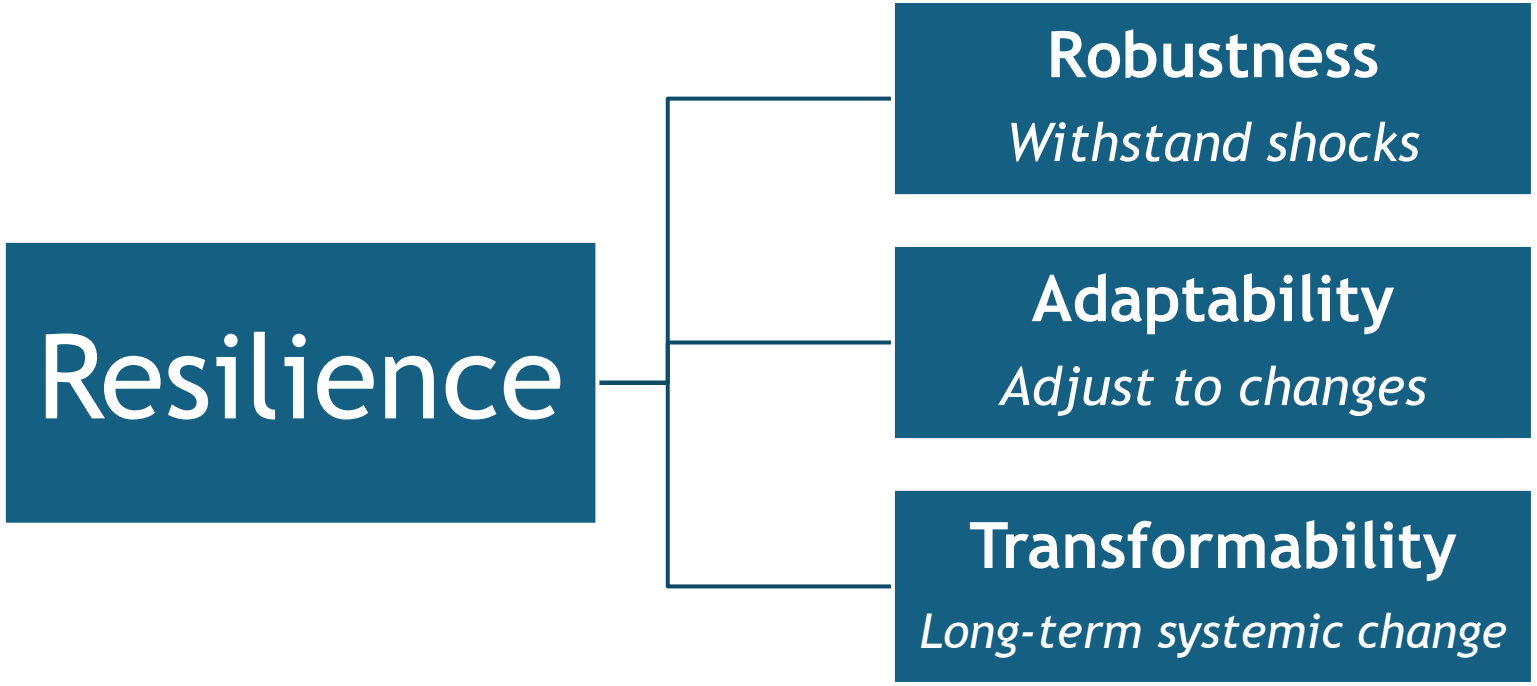
- High temperature
- Drought
- Scarce groundwater resources



CONCEPTUAL FRAMEWORK

Dimensions of resilience

(key actions, stakeholders, and expected outputs)



ROBUSTNESS

Actions to be taken	Responsible Stakeholders	Expected Outputs
1. Soil analysis and use of organic manure.	*Farmers, Public Institute of MAF*	• Improved soil • Reduced use of fertilizers
2. Crop insurance: Protect farmers against climate risks.	*Farmers, Insurance companies, Ministry of Agriculture and Forestry*	• Protect farmers against climate change impact
3. Early warning system: Inform farmers about drought and frost.	*Government, Farmers*	• Farmers less vulnerable to crop shocks
4. Cooperatives: Strengthen farmer cooperation.	*Cooperatives*	• Resilient cooperative networks
5. Local markets: Sell products at better prices at local level	*Municipality, Agricultural Chamber*	• Increased resilience

ADAPTABILITY

Actions to be taken	Responsible Stakeholders	Expected Outputs
1. Resilient crop varieties for extreme weather/drought.	*University, Public Institute, Municipality Research Institution*	• Reduce the yield losses
2. Use of renewable energy.	*Farmers, Municipality, Government*	• Reduce the cost of production • Save energy
3. Storage facilities to keep product to sale in long term.	*Agricultural Chamber and Cooperatives*	• Increase the income
4. Social media and e-marketing.	*Municipality, Cooperative*	• Promote local food
5. Climate Smart Method (No-Tillage).	*Farmers*	• Reduce GHG emission
6. Water management strategies.	*Farmers, Municipality*	• Save Water

TRANSFORMABILITY

Actions to be taken	Responsible Stakeholders	Expected Outputs
1. Up-to-date information about climate change and weather conditions.	*Farmers, Institution*	• Increase in resilience
2. Extension and training services.	*Farmers, Agricultural Chamber, Research Institutions*	• More educated and conscious farmers
3. Diversification of income sources (hand-craft, value added products, **eco-tourism**).	*Farmers, Municipality, Citizens*	• Increase in income and resilience
4. Geographical indications products (traditional product).	*Municipality, Government, Agricultural Chamber*	• Increase in resilience
5. Waste management strategies.	*Municipality, Government*	• Decreased pollution • Reduce GHG emissions
6. Use of local knowledge and best practices: *yeast is used to increase yield in cucumber and tomato production.*	*Farmers*	• Reduction in input use and GHG emission

CONCLUSION

- ✓ Resilience plays an important role in dealing with Climate Change
- ✓ Resilience is multi-dimensional
- ✓ Farmers are the most vulnerable actors in the agrifood sector
- ✓ Local knowledge and policy support are crucial
- ✓ Education and cooperative mechanisms are strategic tools

“Resilience is not about bouncing back to the past, but bouncing forward to a better future” *(Judith RODIN)*

Thank you!

Teşekkür ederim!

Ευχαριστώ!

Faleminderıt!

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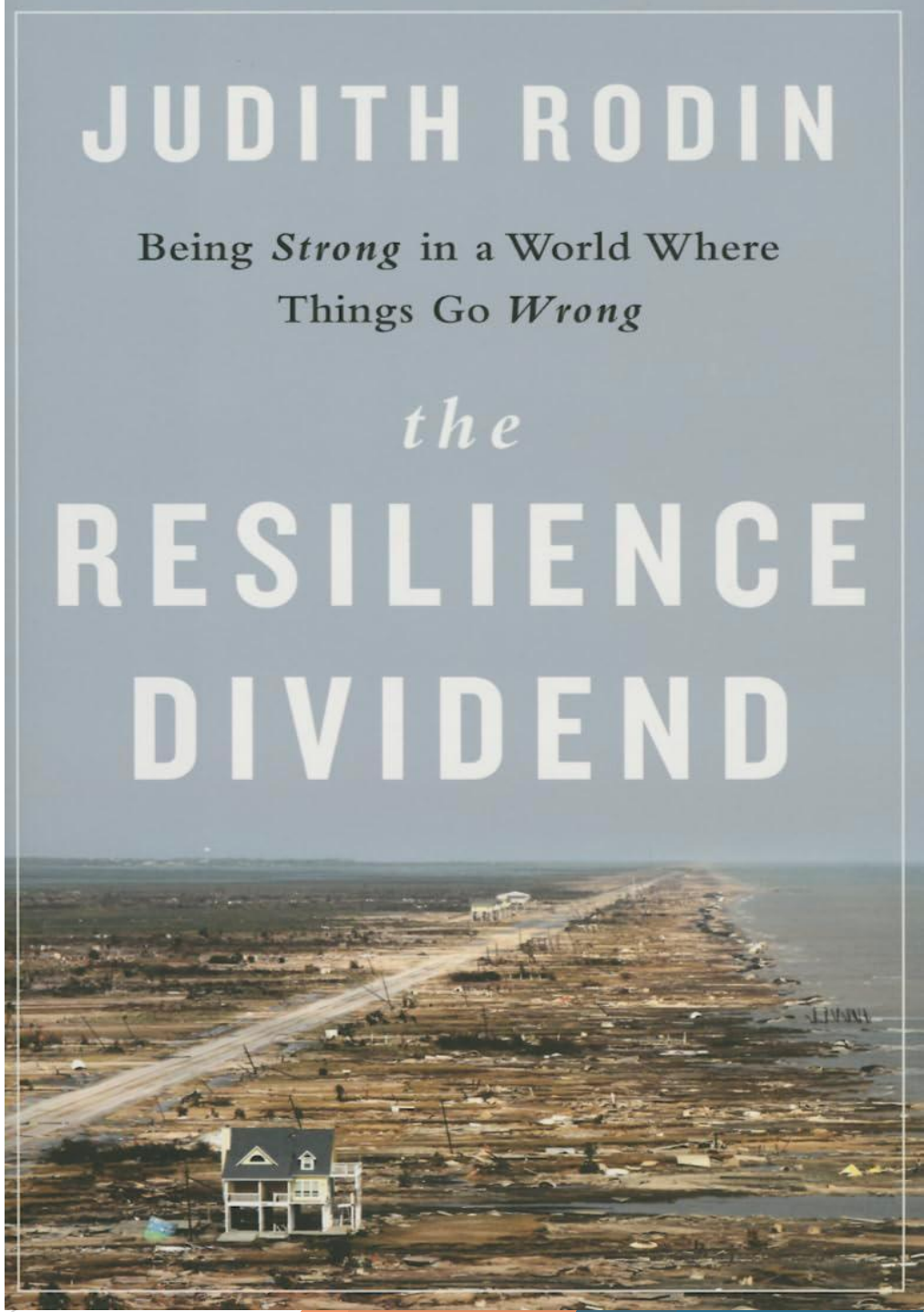


ASSESSING CLIMATE RISKS AND ADAPTATION PATHWAYS IN ALBANIA
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Introduction
Climate Risks & Physical Drivers
Sectoral Vulnerabilities
Adaptation Pathways
Future Directions