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RESEARCH REPORT PREVIEW

Promoting a Climate-Resilient Agriculture Sector

Against Climate Change in OIC Member Countries

COMCEC Agricultural Working Group — 26th Meeting | 22 April 2026

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BACKGROUND & RATIONALE

PROBLEM

- Agriculture is a critical pillar of GDP and employment across OIC member states
- Climate change is intensifying: rising temperatures, shifting rainfall, extreme weather conditions
- Small-scale producers face greatest exposure to climate shocks
- 24% of OIC population lives in extreme/moderate food insecure conditions
- OIC countries show above-average warming: +2.01°C in 2024
- OIC lags global leaders by ~20–25 points on the Environmental Performance Index (EPI)

STUDY OBJECTIVES

- Strengthen climate resilience of the agricultural sector in OIC member countries
- Examine links between climate risk analysis, agricultural planning, and incentive frameworks
- Develop policy recommendations to build adaptation capacity of OIC members
- Provide COMCEC with evidence-based strategic guidance on Climate Resilient Agriculture
- Establish a sustainable agricultural policy framework aligned with SDG 13-Climate Action

REPORT STRUCTURE — 4 CORE SECTIONS

1

Conceptual Framework, Methodology & Global Best Practices

- Climate risk analysis
- Climate - sensitive planning
- Incentive Mechanisms

2

Climate Risk & Agricultural Resilience in OIC Countries

- OIC agriculture profile
- Risk profiles by cluster
- Institutional frameworks
- Comparative assessment

3

Case Country Experiences & Transferable Practices

- Field visits:
  - Uzbekistan
  - Morocco
- Desk Review:
  - OIC Member -Türkiye & Saudi Arabia
  - Non-OIC: Australia & Netherlands
- Institutional structures
- Transferable models

4

Policy Recommendations & Strategic Roadmap

- Policy framework & roadmap for Climate Resilient Agriculture in OIC member states
- Focus areas:
  - Resilience building
  - Scalable Innovation
  - Integrated Governance
  - Institutional Coordination

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SECTION

01

Conceptual Framework, Methodology & Global Best Practices

Climate–agriculture nexus | Analytical model | Global trends | Research methodology

SECTION 1 — CONCEPTUAL FRAMEWORK & ANALYTICAL MODEL

Climate Risk Analysis

Integration of extreme climate events and slow-onset changes into agricultural decision-making. Use of early warning systems and climate projections.

Climate-Sensitive Planning

Designing agricultural strategies and investment decisions to reflect evolving climate uncertainty. Institutional coordination and governance capacity.

Incentive Mechanisms

Financial, regulatory and institutional tools that reinforce risk-reducing practices. Mechanisms aligning climate risk with strategic planning goals.

Together, these three pillars form a comprehensive climate resilience framework for the OIC agricultural sector.

SECTION 1 — GLOBAL PRACTICES & MIXED-METHOD APPROACH

KEY TOPICS IN GLOBAL PRACTICES REVIEW

- Climate change impacts on global food security dimensions
- Drought, flooding, heat stress, desertification & rainfall variability risks
- Transition to climate-sensitive planning and decision frameworks
- Incentive mechanisms for agri-business and smallholder farmers
- Digital monitoring infrastructure and early warning systems
- Water–Food–Energy Nexus: cross-sectoral coordination
- Climate finance: insurance, climate funds, and subsidies

MIXED-METHOD APPROACH

01 **Desk Research**

Global & regional academic literature, EPI index, FAO/WB/OECD datasets, national adaptation plans

02 **Quantitative & Qualitative Data**

OIC member country surveys + in-depth stakeholder interviews

03 **Comparative Case Study**

Analysis of selected OIC and non-OIC countries; identification of transferable models

04 **Field Visits**

On-site research, interviews and consultations in 2 OIC member countries

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SECTION

02

Climate Risk & Agricultural Resilience in OIC Countries

Agriculture profile | Risk clusters | Institutional frameworks | Comparative assessment

SECTION 2 — OIC AGRICULTURE SECTOR & CLIMATE RISK PROFILES

OIC AGRICULTURE SECTOR OVERVIEW

57	OIC Member States with diverse economic & climate conditions
+2.01°C	Average OIC temperature rise in 2024 — above global average (+1.96°C)
24% of OIC population	477 million people facing severe / moderate food insecurity
~20–25pts	OIC gap behind the globe on the Environmental Performance Index

KEY CLIMATE RISKS

Drought & Water Scarcity

Primary risk across most OIC geography; irrigation dependency is critical

Flooding & Extreme Weather

Increasing frequency and severity; infrastructure damage and crop losses

Heat Stress & Desertification

Above-average OIC warming (+2.01°C); threatening arable land and yields

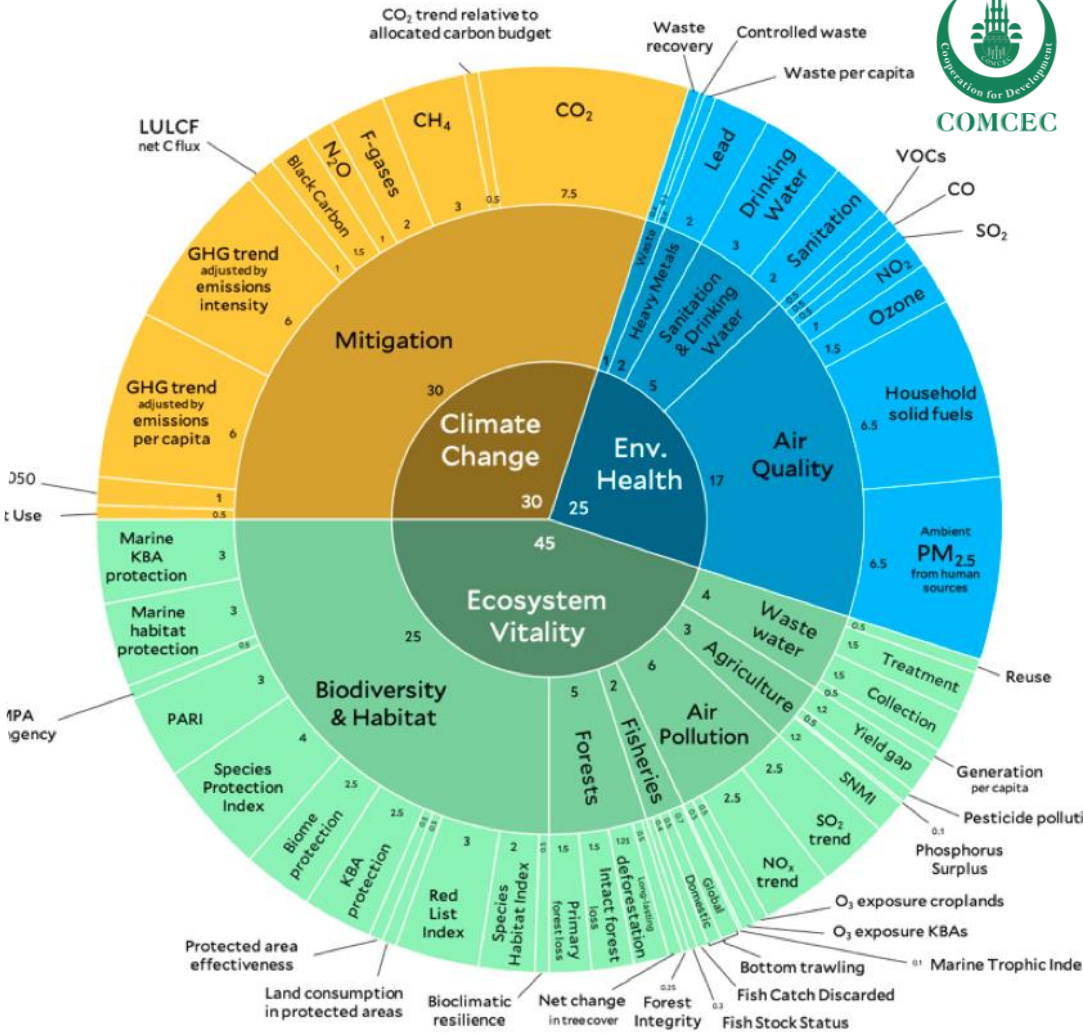
Rainfall Variability

Seasonal and irregular rainfall disrupting production forecasts and planning cycles

The Environmental Performance Index

The Environmental Performance Index (EPI), a biennial report produced by the Yale Center for Environmental Law & Policy and the Columbia University Center for International Earth Science Information Network, serves as a preeminent quantitative framework for benchmarking national sustainability efforts globally.

The framework organizes 58 indicators into 11 issue categories and three policy objectives, with weights shown at each level as a percentage of the total score.



Rank	Country	Score	10y Δ
1	Estonia	75,7	17,6
2	Luxembourg	75,1	4,2
3	Germany	74,5	4,6
4	Finland	73,8	8,3
5	United Kingdom	72,6	2,1
6	Sweden	70,3	1,6
7	Norway	69,9	3,7
8	Austria	68,9	- 0,3
9	Switzerland	67,8	2,0
10	Denmark	67,7	1,8
11	Greece	67,3	8,4
12	France	67,0	1,7
13	Malta	66,9	7,9
13	Netherlands	66,9	5,0
15	Belgium	66,8	5,5
16	Ireland	65,8	2,6
17	Czech Republic	65,5	0,9
18	Slovakia	65,1	- 1,4
19	Iceland	64,3	3,8
20	Poland	64,2	2,5
21	Lithuania	64,1	5,7
22	Spain	64,0	1,5
23	Australia	63,1	5,4
24	Slovenia	62,4	- 1,2
25	Croatia	62,3	3,0
26	Portugal	61,9	2,5
27	Japan	61,4	4,6
28	Canada	61,1	3,5
29	Italy	60,3	4,0
30	Latvia	60,2	2,6
31	Hungary	59,8	- 2,3
32	Belarus	58,2	10,2
33	New Zealand	57,3	0,7
33	Romania	57,3	- 2,6
35	United States of America	57,2	0,3
36	Suriname	56,9	9,6
37	Bulgaria	56,2	- 1,5

Rank	Country	Score	10y Δ
38	Bahamas	55,9	3,1
39	Antigua and Barbuda	55,6	1,0
40	Costa Rica	55,5	2,1
41	Ukraine	54,6	8,3
42	Snt Vncnt the Grenadines	54,2	2,0
43	Cyprus	53,9	0,8
44	Gabon	53,3	5,5
44	Venezuela	53,3	1,8
46	Barbados	53,1	3,3
47	Brazil	53,0	6,6
47	Singapore	53,0	3,8
49	Panama	52,9	5,1
50	Cuba	52,5	2,5
50	Trinidad and Tobago	52,5	3,0
52	Albania	52,2	5,5
53	United Arab Emirates	51,6	9,2
53	Zimbabwe	51,6	7,7
55	Ecuador	51,3	7,4
55	Oman	51,3	11,0
57	Saint Lucia	51,1	2,6
58	South Korea	50,6	5,3
59	North Macedonia	50,3	2,3
60	Taiwan	50,1	0,3
61	Timor-Leste	49,9	13,7
62	Serbia	49,8	- 4,8
63	Colombia	49,7	4,5
64	Chile	49,6	3,9
65	Dominica	49,3	- 0,6
66	Botswana	49,2	1,3
67	Guyana	49,0	2,0
68	Jamaica	48,5	1,5
69	Brunei Darussalam	48,3	0,5
70	Israel	48,0	0,4
71	Seychelles	47,9	- 4,6
72	Kazakhstan	47,8	5,5
73	Dominican Republic	47,7	- 1,3
73	Montenegro	47,7	1,3

Rank	Country	Score	10y Δ
75	Belize	47,4	1,1
75	Nicaragua	47,4	0,4
77	Georgia	47,3	6,3
77	Jordan	47,3	9,0
77	Mauritius	47,3	4,1
80	Samoa	47,1	4,7
81	Argentina	47,0	1,4
82	Qatar	46,8	6,1
83	Russia	46,7	0,8
83	Zambia	46,7	4,7
85	Peru	46,5	3,8
86	Moldova	46,1	2,7
87	Bosnia Herzegovina	46,0	5,4
87	Fiji	46,0	- 2,9
89	Grenada	45,8	1,7
90	Thailand	45,7	5,2
91	Bolivia	45,3	4,1
91	Tunisia	45,3	0,7
93	Vanuatu	45,0	11,8
94	Armenia	44,9	1,5
95	Kuwait	44,4	- 2,7
96	Kiribati	44,3	- 1,1
97	Mexico	44,2	2,7
98	Uruguay	44,1	3,0
99	Namibia	44,0	1,5
100	Senegal	43,8	3,6
101	Egypt	43,7	4,5
102	Tanzania	43,6	4,3
103	Bhutan	43,3	6,8
104	Cote d'Ivoire	42,9	5,0
105	Kyrgyzstan	42,8	13,7
106	South Africa	42,7	5,0
107	Uzbekistan	42,6	- 0,5
108	Marshall Islands	42,5	1,8
108	Saudi Arabia	42,5	8,3
110	Burkina Faso	42,2	- 0,1
110	Solomon Islands	42,2	1,9

Rank	Country	Score	10y Δ
112	Guinea-Bissau	42,0	- 0,4
113	Iran	41,8	0,7
114	Algeria	41,7	2,6
114	Equatorial Guinea	41,7	- 3,4
116	El Salvador	41,6	- 5,0
116	Republic of Congo	41,6	1,3
118	Malaysia	41,0	7,0
119	Micronesia	40,8	- 0,5
120	Turkmenistan	40,6	4,9
121	Azerbaijan	40,5	0,7
122	Tonga	40,4	- 6,9
123	Honduras	40,2	2,7
124	Angola	40,1	7,7
125	Niger	40,0	6,9
126	Lebanon	39,9	6,4
126	Sierra Leone	39,9	4,0
128	Dem. Rep. Congo	39,5	6,0
128	Morocco	39,5	2,9
128	Paraguay	39,5	0,8
131	Sudan	39,1	3,4
132	Central African Rep.	39,0	- 5,8
132	Mozambique	39,0	3,8
134	Sri Lanka	38,8	1,0
135	Eswatini	38,7	- 1,7
136	Cameroon	38,6	0,6
137	Comoros	38,2	- 6,4
138	Maldives	38,1	4,9
139	Cabo Verde	38,0	- 1,0
140	Nigeria	37,9	2,5
141	Benin	37,8	- 0,7
142	Gambia	37,6	0,2
143	Mongolia	37,2	5,7
143	Türkiye	37,2	2,5
145	Ghana	36,9	1,7
145	Kenya	36,9	2,1
145	Lesotho	36,9	1,4
145	Papua New Guinea	36,9	- 6,9

Rank	Country	Score	10y Δ
149	Guinea	36,5	- 3,2
150	Haiti	36,4	7,5
151	Ethiopia	36,3	4,0
152	Sao Tome Principe	36,2	0,2
153	Chad	35,9	1,2
154	Uganda	35,8	4,9
155	Togo	35,7	- 1,8
156	China	35,4	7,4
157	Bahrain	35,3	- 1,2
158	Malawi	35,1	- 6,3
159	Mauritania	34,6	- 3,6
160	Mali	34,5	- 3,4
161	Liberia	34,3	1,3
162	Rwanda	33,9	- 0,7
163	Indonesia	33,6	5,9
164	Burundi	33,5	0,2
165	Nepal	33,1	0,7
166	Guatemala	32,5	- 3,6
167	Djibouti	32,3	- 0,1
167	Tajikistan	32,3	- 4,9
169	Philippines	32,1	- 0,9
170	Cambodia	31,2	0,4
171	Afghanistan	31,0	13,7
172	Iraq	30,3	5,1
173	Madagascar	30,1	0,2
174	Eritrea	29,0	- 2,0
175	Bangladesh	28,1	2,4
176	India	27,6	4,7
177	Myanmar	27,1	- 2,7
178	Laos	26,3	1,1
179	Pakistan	25,5	- 4,0

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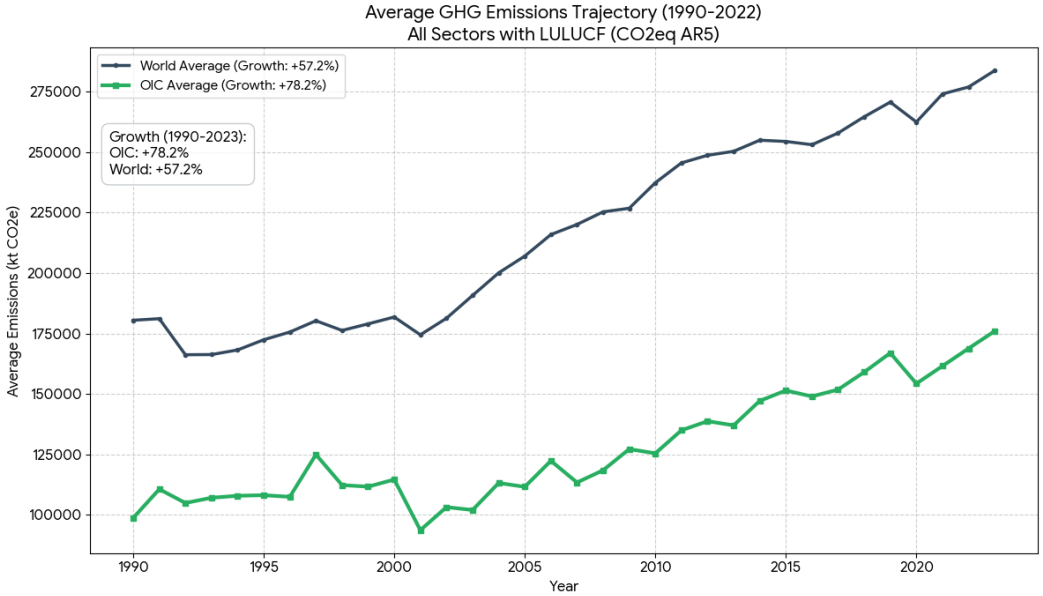
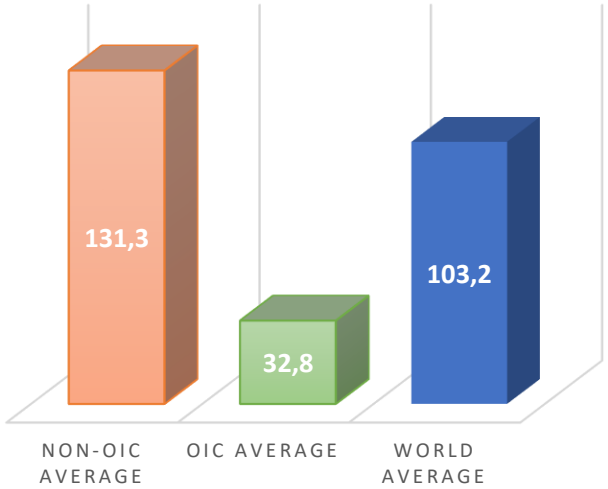
SECTION 2 — OIC COUNTRIES: ENVIRONMENTAL PERFORMANCE INDEX (EPI 2024)

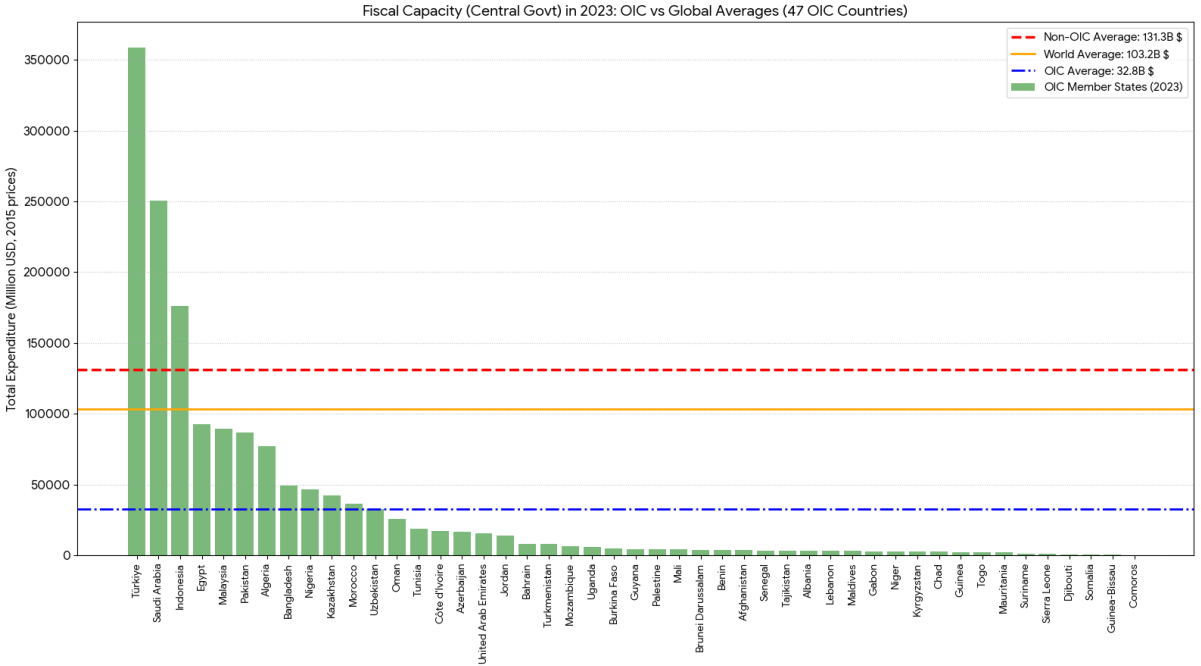
Cluster 1 **High Performance**	**Climate:** Strong renewable infrastructure; Suriname & Gabon are net carbon sinks **Environment:** Universal clean water & sanitation; advanced solid waste management **Ecosystem:** High biodiversity protection & marine ecosystem management	*Suriname, Gabon, Albania, UAE, Oman, Jordan, Qatar, Kazakhstan, Guyana, Brunei, Bahrain, Kuwait, Malaysia, Maldives, Saudi Arabia, Tajikistan*
Cluster 2 **Mid Performance**	**Climate:** Transitioning under industrial pressure; fossil fuel reliance strains targets **Environment:** PM2.5 challenges from rapid urbanisation and vehicle emissions **Ecosystem:** Protected areas expanding, but agriculture strains water & soil health	*Tunisia, Egypt, Türkiye, Côte d'Ivoire, Kyrgyzstan, Uzbekistan, Morocco, Algeria, Senegal, Burkina Faso, Azerbaijan, Cameroon, Comoros, Gambia, Indonesia, Iran, Lebanon, Mozambique, Sudan*
Cluster 3 **Low Performance**	**Climate:** High coal/biomass dependency; climate-vulnerable but limited finance & tech capacity **Environment:** Critical gaps in safe drinking water & sanitation infrastructure **Ecosystem:** Habitat loss under agricultural conversion pressure; poor land governance	*Pakistan, Bangladesh, Iraq, Afghanistan, Djibouti, Chad, Mali, Mauritania, Togo, Uganda, Guinea, Benin, Nigeria, Niger, Sierra Leone*



Rank	Member State	Total Emissions (kt CO2eq) 2023	Share of OIC Total (%)
1	Indonesia	1,847,879	21.1%
2	Iran	1,003,671	11.5%
3	Saudi Arabia	922,743	10.5%
4	Türkiye	573,080	6.5%
5	Pakistan	484,849	5.5%
6	Nigeria	436,087	5.0%
7	Malaysia	414,733	4.7%
8	Egypt	368,74	4.2%
9	Iraq	356,058	4.1%
10	Algeria	285,034	3.3%

Government Expenditure in Agriculture, 2023 in billion dollars





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SECTION

03

Case Country Experiences & Transferable Practices

Uzbekistan | Morocco | Australia | Netherlands | Transferable models

SECTION 3 — Planned Field Visits

UZ **Uzbekistan** OIC Member	*UNDP & Adaptation Fund: Strengthening Climate Resilience of Agricultural Communities in Arid Regions* • Aral Sea Region - Targeted Regional Resilience • ~1 million people reached • Climate-resilient practices for small-scale (dehkan) farmers • Drought risk monitoring & early warning • Soil & moisture conservation measures	**KEY LESSON** **Community-based adaptation model for arid zones** **Self-reliance of small communities is key for success**
MA **Morocco** OIC Member	*World Bank: Agriculture & Food Systems Transformation Programme - 2024* • 120,000 farmers • New generation of agricultural middle class, young agri-entrepreneurs, agri-organizations, support mechanisms • Consolidated agricultural value chains, green-techs, eco-efficiency • Improved climate resilience and risk management in rainfed agriculture • Strengthened Food Safety, Food Quality and Nutrition Security	**KEY LESSON** **Conservation Agriculture,** **Scalable hot/dry climate adaptation program, including social dimensions & value chain**

Non-OIC Reference

SECTION 3 — CASE COUNTRY ANALYSIS 2 OIC & 2 NON-OIC

TR

Türkiye

OIC Member

Türkiye: Institutional Depth and Financial Resilience

- Agricultural Insurance Pool – TARSIM
- Digital Extension Services – mobile platforms to provide real time climate data
- Inclusive Support for Smallholders
- Modern Irrigation and Dam Management

KEY LESSON

Institutionalization of Risk Financing

SA

Saudi Arabia

OIC Member

Saudi Arabia: Tech-Driven Adaptation in Hyper-Arid Zones

- Saudi Green Initiative, Vision 2030 and Strategic Food Security
- Advanced Agri-Tech Implementation: hydroponic and vertical farming
- Data-Driven Precision Agriculture: Utilizing satellite imagery, AI, and IoT sensor

KEY LESSON

Decoupling Growth from Environmental Constraints

Australia & Netherlands

Non-OIC Reference

Australia: Drought early warning & agricultural insurance models
Netherlands: Precision agriculture & water management technologies

- Agricultural data systems and early warning
- Innovative financing instruments
- Public–private partnership models
- Best practices transferable to OIC

KEY LESSON

Technology & policy transfer reference framework

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SECTION

04

Policy Recommendations & Strategic Roadmap

OIC-specific policy framework | Implementation priorities | Short, medium & long-term actions

SECTION 4 — POLICY RECOMMENDATIONS: FOCUS AREAS

Strengthening Climate Risk Analysis

- Integrate climate projections into agricultural decision-making
- Establish or strengthen national early warning & monitoring systems

Institutional Coordination

- Effective coordination across agriculture, environment & development ministries
- OIC-wide knowledge sharing and policy learning mechanisms

Climate-Sensitive Agricultural Policies

- Align national agricultural strategies with climate risk profiles
- Develop targeted support tools for smallholder producers

Risk Management & Insurance

- Scale up agricultural insurance programmes
- Design safety nets covering climate-induced production losses

Climate-Smart Agriculture Practices

- Promote soil health, water efficiency & low-emission technologies
- Scale cost-effective practices applicable at smallholder level

Capacity Building & Knowledge Sharing

- Establish platforms for technology & knowledge transfer within OIC
- Build academia–public–private partnership models

TARGET AUDIENCE & EXPECTED OUTPUTS

TARGET AUDIENCE

- Public institutions and policymakers responsible for agriculture, rural development and environment
- OIC and affiliated international and regional organisations
- Civil society organisations active in agriculture and rural development
- Academic researchers in agriculture, climate change and sustainable development
- International donors financing agricultural development and climate adaptation projects

EXPECTED OUTPUTS

01 Research Report
Comprehensive analytical report in 4 sections with executive summary

02 Policy Recommendations
Actionable and scalable policy recommendations for OIC member states

03 Strategic Roadmap
Implementation plan covering short, medium and long-term priorities

04 Case Studies
In-depth analyses on Uzbekistan, Morocco and global examples

05 Presentation & Policy Brief
PowerPoint presentation and short policy note for COMCEC meetings

Thank You

We welcome your questions and feedback

IMPORTANT!
We kindly ask your valuable contributions for this study by filling out this survey:
https://forms.gle/N5ikwpfPEjWpmLeQA