Future of water in agriculture in the Balkans: Irrigation & Drainage (Eco)system Approach

2021 Danube Water Conference

Droughts and climate change: An increasing threat, is the Danube Region prepared?

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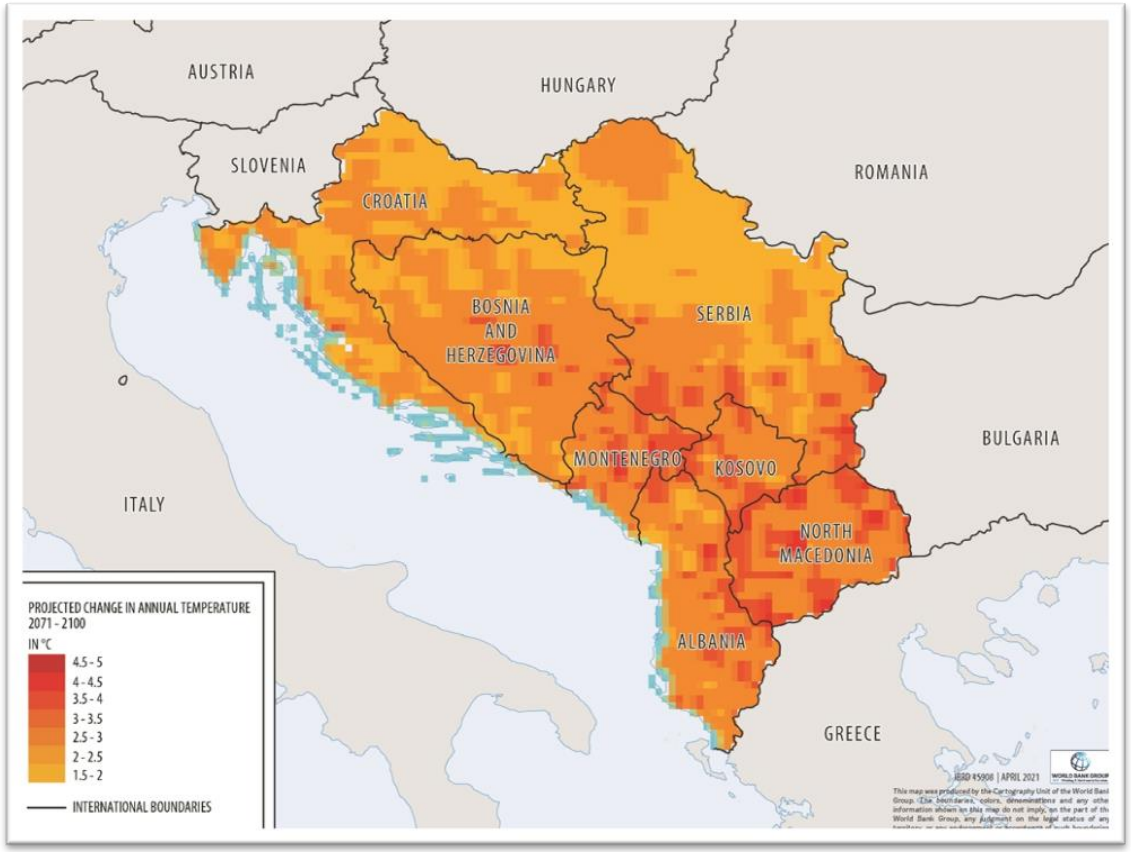
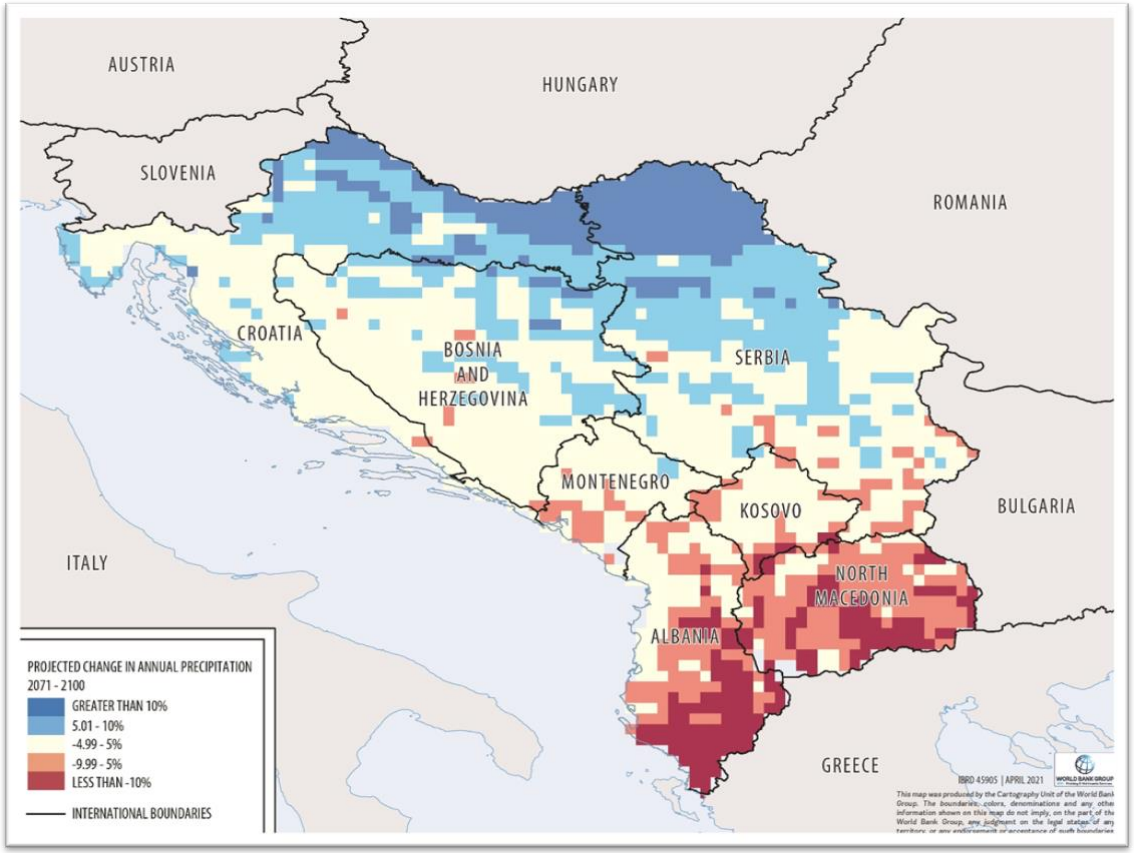
Climate change in the Balkans: projected changes in temperature & precipitation (2071-2100)





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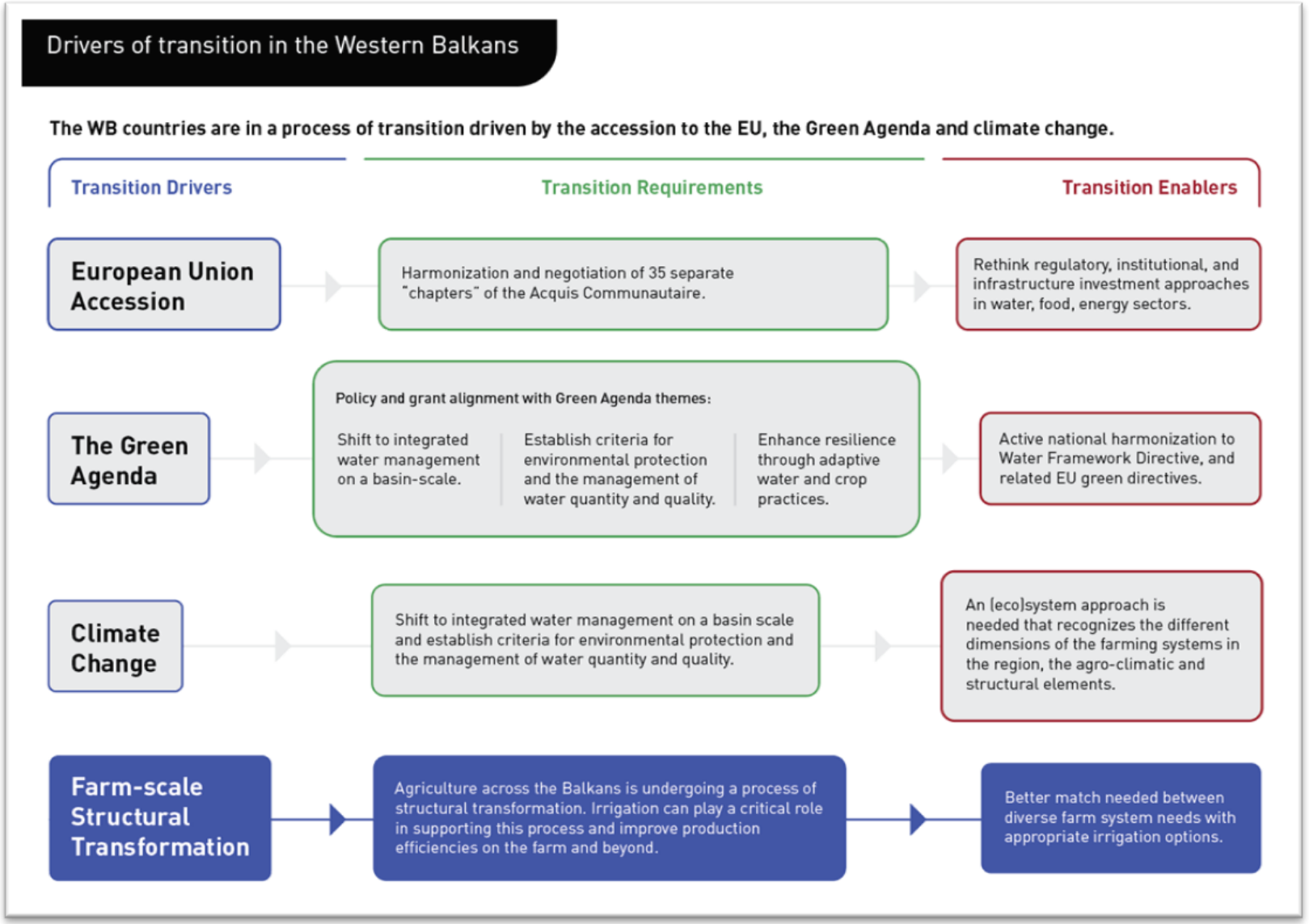
What are the factors driving transition & transformation of the I&D sector in the Balkans?



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Why is a rethink needed for the irrigation & drainage sector in the Balkans?

- Economies in transition
- Total irrigated area declining (historic low)
- Drainage systems underdeveloped
- Modern irrigation & drainage services critical to:

✓ Manage risks from climate change

✓ Increase crop productivity & diversification

✓ Enable Balkans to compete in EU markets

Wide diversity in importance of agriculture + irrigation

	Area	Population	Agriculture share of GDP	Arable land	Irrigated land	Share of irrigated land to total arable land
Albania	28,750 km^2	2,850,000	23%	696,000 ha	175,900 ha	25%
Bosnia and Herzegovina	**51,209 km^2**	**3,790,000**	**3.3 %**	**1,246,000 ha**	**8,100 ha**	**0.7%**
Croatia	**56,000 km^2**	**4,100,000**	**3.7 %**	**1,537,000 ha**	**18,800 ha**	**1.2%**
Kosovo	10,908 km^2	1,850,000	10.5 %	185,000 ha	15,000 ha	8%
Montenegro	13,812 km^2	630,000	8.0 %	517,000 ha	2,300 ha	0.4%
North Macedonia	25,713 km^2	2,080,000	2.9 %	667,000 ha	73,600 ha	11%
Serbia	**78,361 km^2**	**7,060,000**	**7.5 %**	**3,294,000 ha**	**105,000 ha**	**3%**
Total	264,806 km^2	22,360,000		8,157,000 ha	398,700 ha	5%

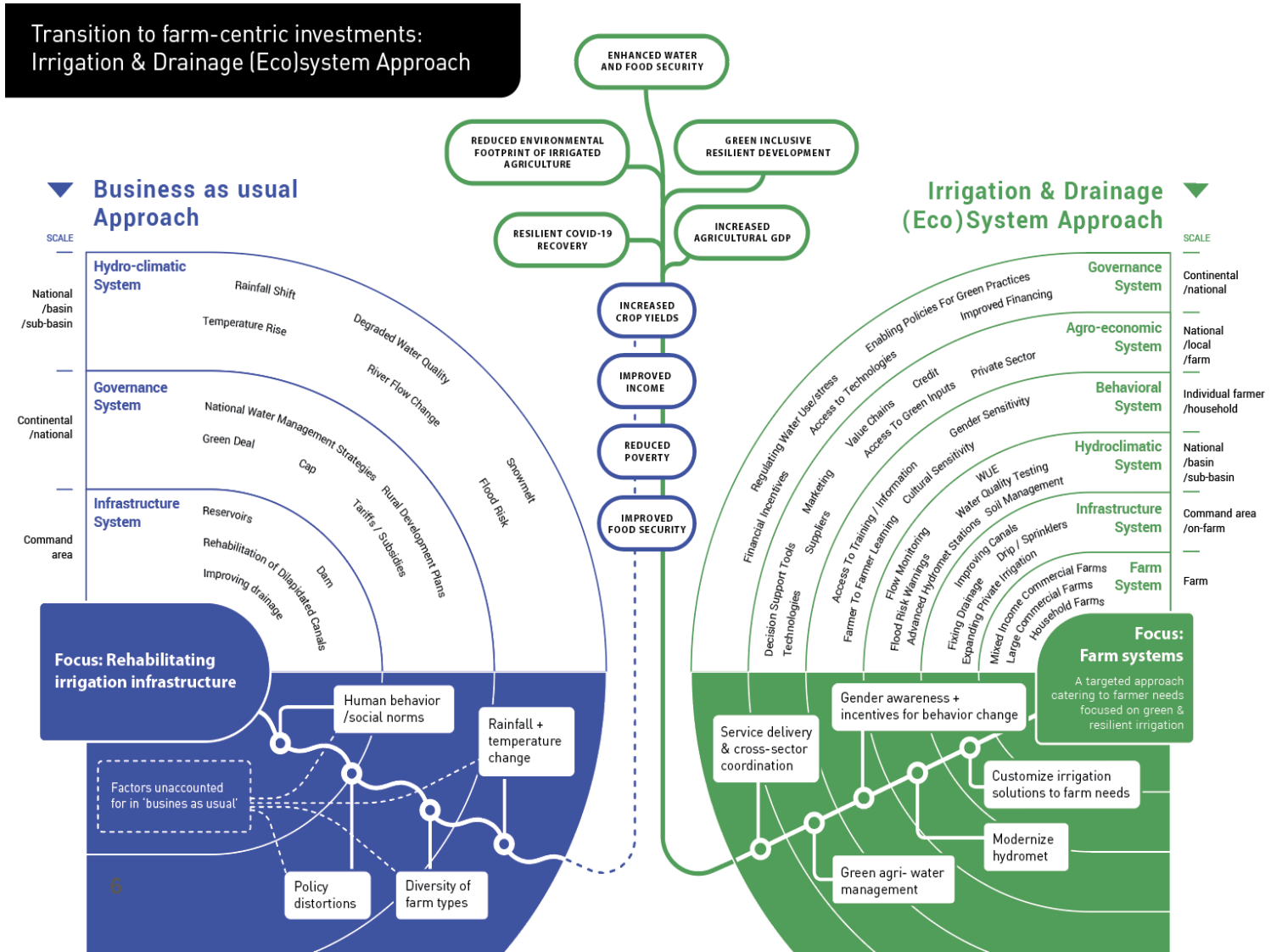
Dominant farm & irrigation typologies in the Balkans

Agro-climatic zone	Relevant Balkan countries	Dominant farm typology	Dominant irrigation typology
Pannonian Plain	Continental Croatia, Vojvodina, Northern BiH	**Continental Croatia**: mixed-income and full-time commercial farms **Vojvodina**: full-time commercial farms	**Continental Croatia**: 71% private irrigation from groundwater + drip irrigation adoption; 11% surface irrigation from canals, 6% surface irrigation from private source **Vojvodina**: 47% private irrigation from groundwater sources + sprinkler/drip irrigation adoption; 42% surface irrigation from large-scale canal systems
Adriatic Coast	Adriatic Croatia, Albania, parts of Montenegro & BiH	**Albania**: small household farms **Adriatic Croatia**: full-time commercial farms **Montenegro**: mixed-income and full-time commercial farms	**Albania**: 73% surface irrigation from public irrigation schemes + sprinkler adoption **Adriatic Croatia**: 44% surface irrigation from large-scale canal systems + drip irrigation adoption; 29% private irrigation from groundwater sources **Montenegro**: 37% private irrigation from groundwater sources + sprinkler irrigation adoption; 34% surface water irrigation from canal irrigation systems
Hills	Central Serbia, parts of BiH	**Central Serbia**: mixed-income commercial farms & small household farms	**Central Serbia**: 55% private irrigation from groundwater sources + drip irrigation adoption; 31% surface water irrigation from canal systems
Isolated plains	Kosovo, North Macedonia	**Kosovo**: mixed-income commercial farms & full-time commercial farms **North Macedonia**: small household farms & mixed income commercial farms	**Kosovo**: 48% private irrigation from groundwater & 35% surface irrigation from large-scale canal systems

Core constraints to enhancing irrigated agriculture for drought management in the Balkans

- Irrigation service delivery does not align to diverse farm needs
- Limited accuracy & timeliness of hydrometeorological & agrometeorological services
- Limited knowledge of crop water requirements & soil water status
- Farmers are unaware of their crop-water footprint
- Weak focus on environmental regulations
- Legacy of malfunctioning I&D infrastructure
- Fragmented & uncoordinated policy mechanisms for water/agri/rural development
- Weak market integration for irrigated crops & farm types
- Limited focus on green farm advisory practices for small producers
- Poor uptake of irrigation services by small & mixed income farms
- Small farms have limited access to land & credit markets + low investments in on-farm irrigation

Enabling Green, Climate Resilient, Sustainable, and Inclusive Agricultural Transformation in the Western Balkans – the Irrigation & Drainage (Eco)system Approach



Definition

- **Irrigation and drainage is inherently part of a complex socio-technical-ecological system** influenced and affected by weather and climatic, agroecological, socioeconomic, technological, governance and policy, and human behavioral factors.
- These **(eco)systems play a powerful role in influencing outcomes from investments in irrigation, drainage**, and agriculture and need to be considered in designing and prioritizing interventions.
- The **approach is a redefined I&D investment framework** for identifying, designing, prioritizing, sequencing, implementing, and monitoring irrigation to address agriculture water management constraints for diverse farm types and contexts.
- The **approach is oriented towards supporting governments in meeting the triple objectives of green, inclusive, and climate resilient irrigation** and agricultural growth.

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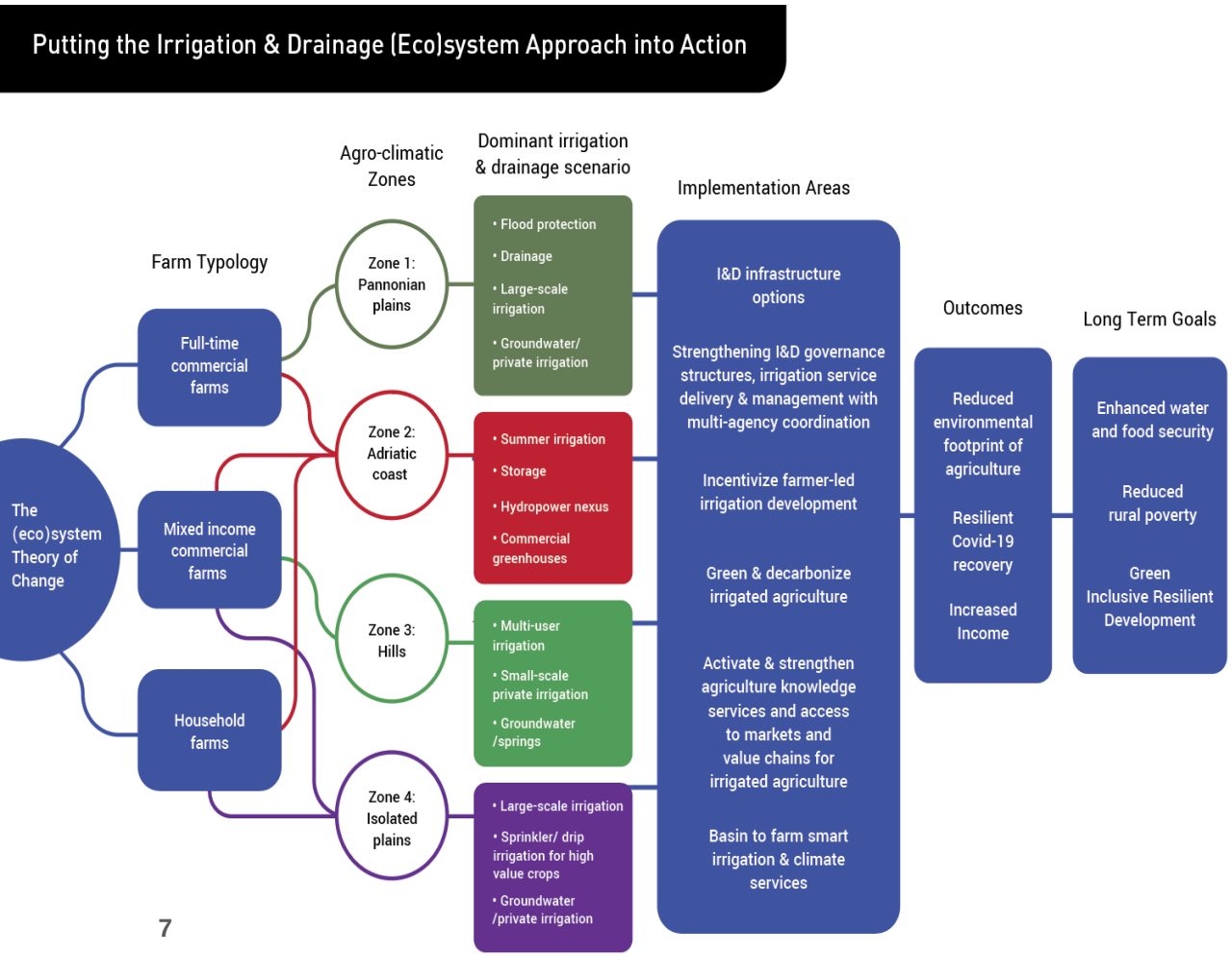
Implementation options for I&D (Eco)System Approach

Generic Theory of Change



Implementation areas

- **Implementation area 1**: strengthening I&D governance structures, service delivery & multi-agency coordination
- **Implementation area 2**: Green & decarbonize irrigated agriculture
- **Implementation area 3**: Incentivize FLID
- **Implementation area 4**: Activate & strengthen agriculture knowledge services, access to markets & value chains
- **Implementation area 5**: Customized infrastructure solutions for collective & bulk irrigation water supply schemes
- **Implementation area 6**: Invest in basin to farm-centric SMART irrigation & climate digital services

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Implementation area 2: Green & decarbonize irrigated agriculture

Catalyze nature-based solutions

Incentivize drought-resistant crop varieties

Consider circular economy

Controlled drainage for soil health

Promote climate-smart agriculture water practices

Invest in small-scale storage

Thank you

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