



World Bank Group

COUNTRY CLIMATE AND DEVELOPMENT REPORT

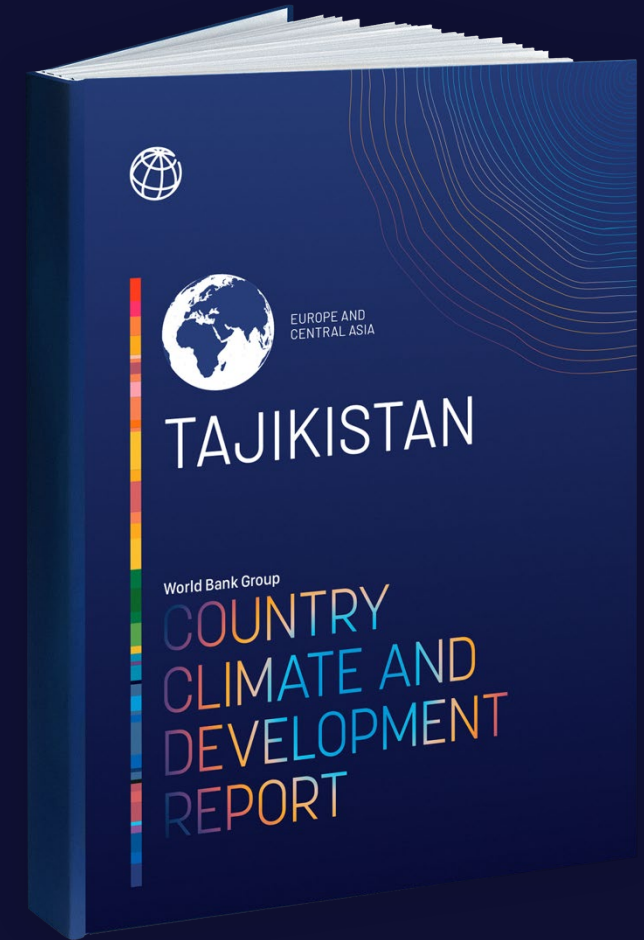


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November 2024

Tajikistan Country Climate and Development Report (CCDR)

- New World Bank core diagnostic prepared in collaboration with the Committee on Environmental Protection of the Republic of Tajikistan.
- Investigates how climate impacts and global decarbonization will shape Tajikistan's development trajectory.
- Identifies priority areas to strengthen climate resilience and deepen decarbonization to improve development outcomes.
- Provides recommendations aligned with:
 - The National Development Strategy to 2030 (NDS 2030)
 - The Green Economy Development Strategy in the Republic of Tajikistan for 2023-2037 (GEDS 2023-2037).





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Key messages



Key messages

- Tajikistan must urgently rejuvenate its growth model and diversify its economy.
- Climate change could reduce GDP by 5–6% by mid-century and push an additional 100,000 people into poverty.
- Adaptation can improve water and energy security, connectivity, and agricultural productivity.
- A low-carbon development path could boost economic growth by up to 6% by 2050, improving energy security, exports, and jobs while enhancing air quality and road safety.
- To enhance climate resilience, accelerate low-carbon development, and ensure an inclusive green transition, Tajikistan will need to implement a broad spectrum of structural and climate reforms.
- Transformational development will require taking full advantage of all sources of finance, internal and external.



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Urgent need for economic diversification: Government response



Tajikistan's Growth at a Crossroads: Economic Challenges, Labor Market Pressures and Natural Capital Depletion

- Tajikistan has experienced robust economic growth and reduced poverty over the past 20 years, but its growth model has reached its limits.
- The existing growth model has failed to create enough jobs to absorb the growing labor force, driving out-migration.
- Growth has depleted natural capital, constraining future growth potential, negatively affecting quality of life, and damaging human capital.



Photo Credit: @valerim. www.freepik.com

Driving the Green Transition Forward



Photo Credit: Andrey X.

- Tajikistan’s strategy for sustainable development focuses on strengthening its ability to withstand environmental and economic challenges while moving towards a resilient, low-carbon economy.
- National Development Strategy 2016–30 aims to bolster energy and food security, improve connectivity, and expand productive employment to improve living standards.
- The Green Economy Development Strategy 2023–37 has been adopted, and National Adaptation Plan is under development attesting to the Government’s resolve to act.

- The ambitious development scenario carries investment needs of **\$34 billion** in **2025–30** and an additional **\$45 billion** in **2031–50**
- A complementary reform program is needed to bring significant economic benefits for the country, diversify economy and mobilize private finance



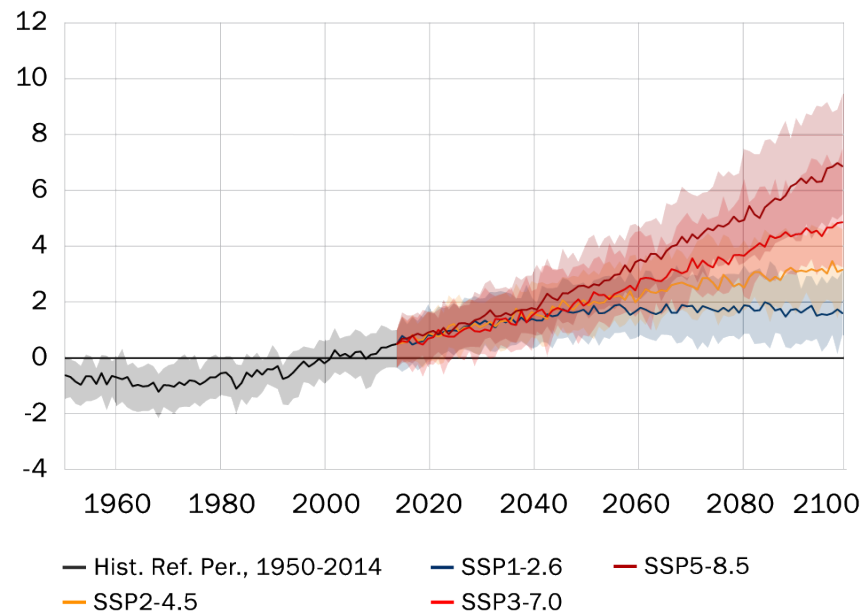
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Climate change is a threat to economic growth and poverty reduction. Climate resilience requires adapting water, energy, and agriculture sectors

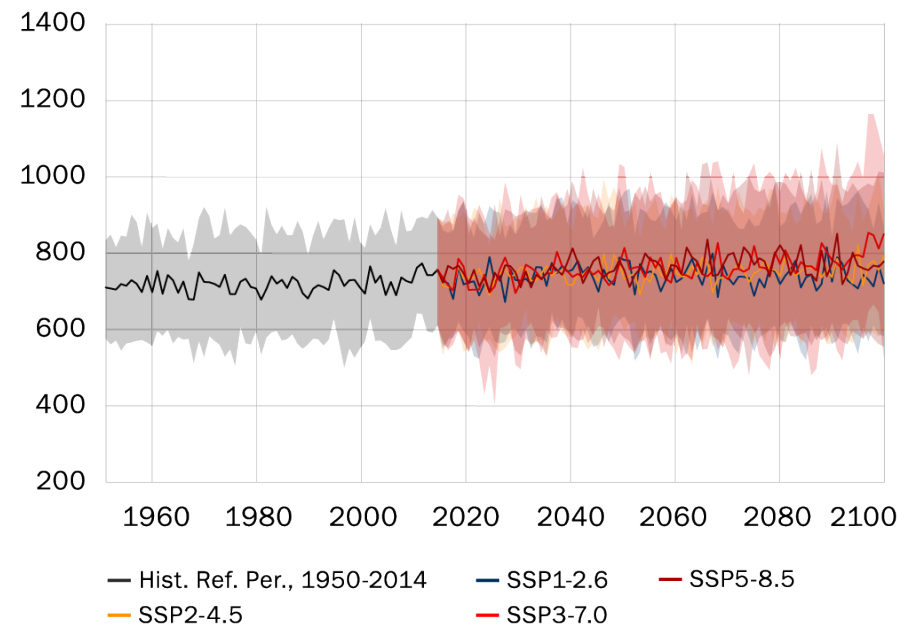
Climate change is making it harder for Tajikistan to meet its development aspirations

- Climate-driven changes in temperature and precipitation patterns, and glacier melting are increasing river flow variability, threatening Tajikistan's energy and water systems.
- Shifts in runoff are reducing water availability for agriculture and complicating international water agreements, with 2024 already seeing record-low water levels at Nurek HPP.

Average mean surface temperature by climate scenario by 2100



Projected precipitation by climate scenario by 2100

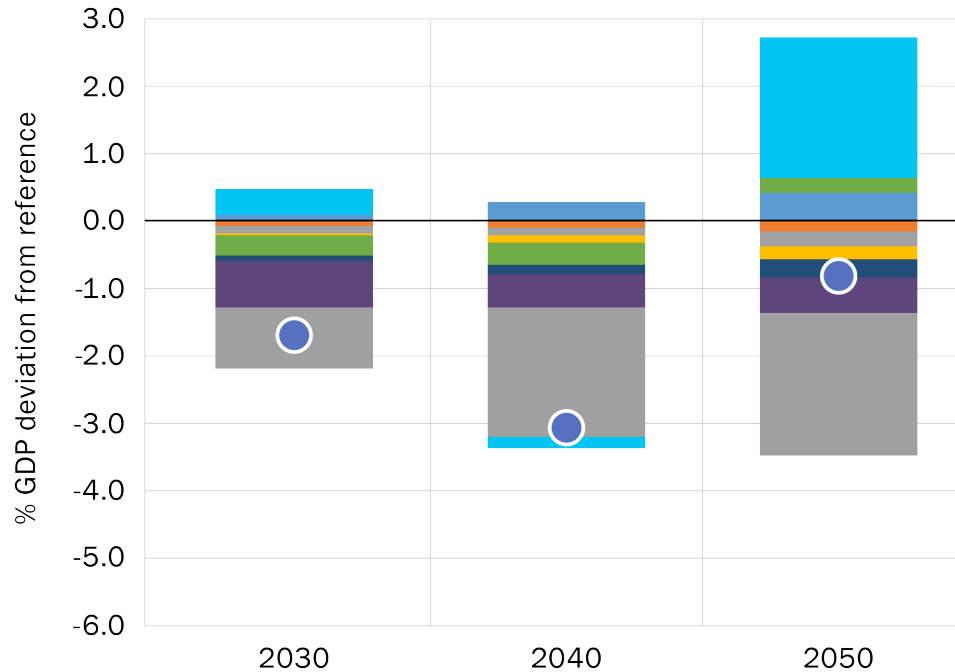


Source: Original elaboration.

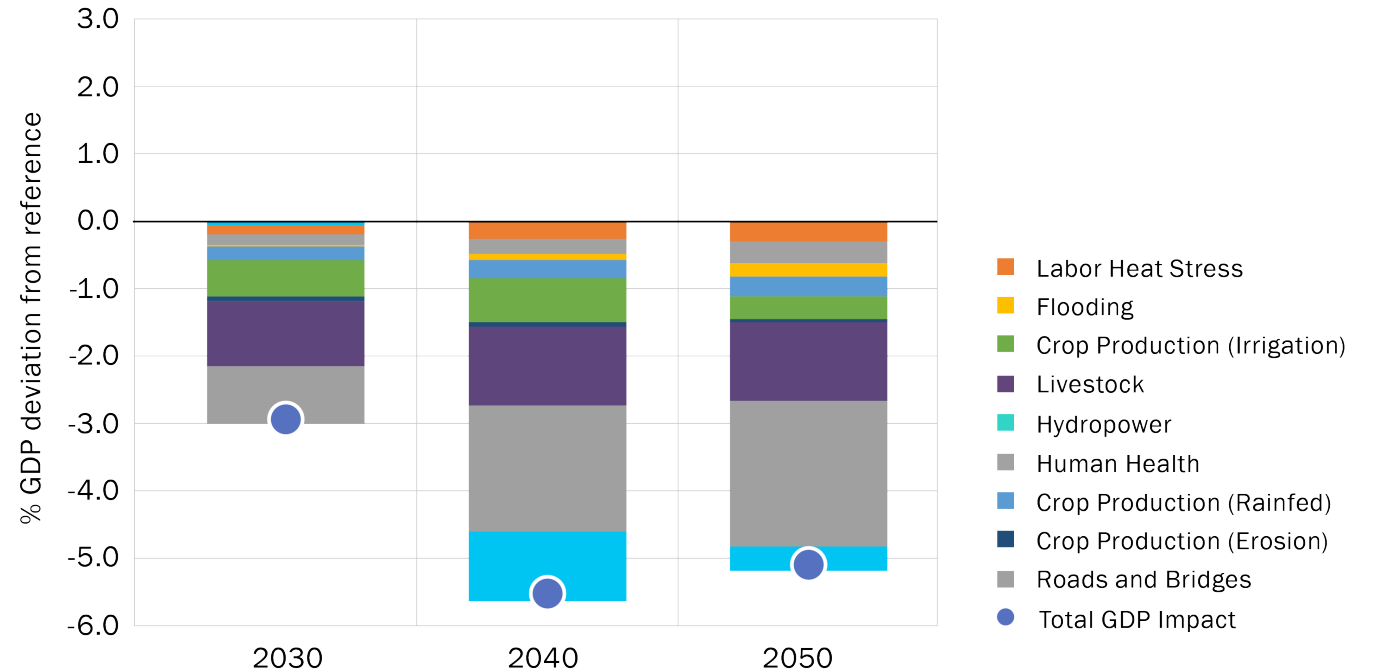
Climate threatens GDP growth and poverty reduction

Climate Change could reduce GDP per capita by 5–6% by mid-century and push additional 100,000 people into poverty by 2030

Climate damages under wet/warm scenario
(percentage change from Reference Scenario)



Climate damages under dry/hot scenario
(percentage change from Reference Scenario)



Source: Original elaboration.

Building Climate Resilience: Water and Infrastructure Adaptation

- Adaptation could reduce GDP loss from 5–6% to 2–3.8%, while cutting flood impacts on infrastructure, livestock, and productivity significantly.
- Adaptation investment can focus on water, hydropower, transport, agriculture, and land using Nature-Based Solutions (NBSs)
- The water sector can adapt to increased variability while balancing demands and improving efficiency
- National adaptation plan and energy and water strategies, along with a comprehensive Law on Climate Actions will be a basis for further adaptation actions.



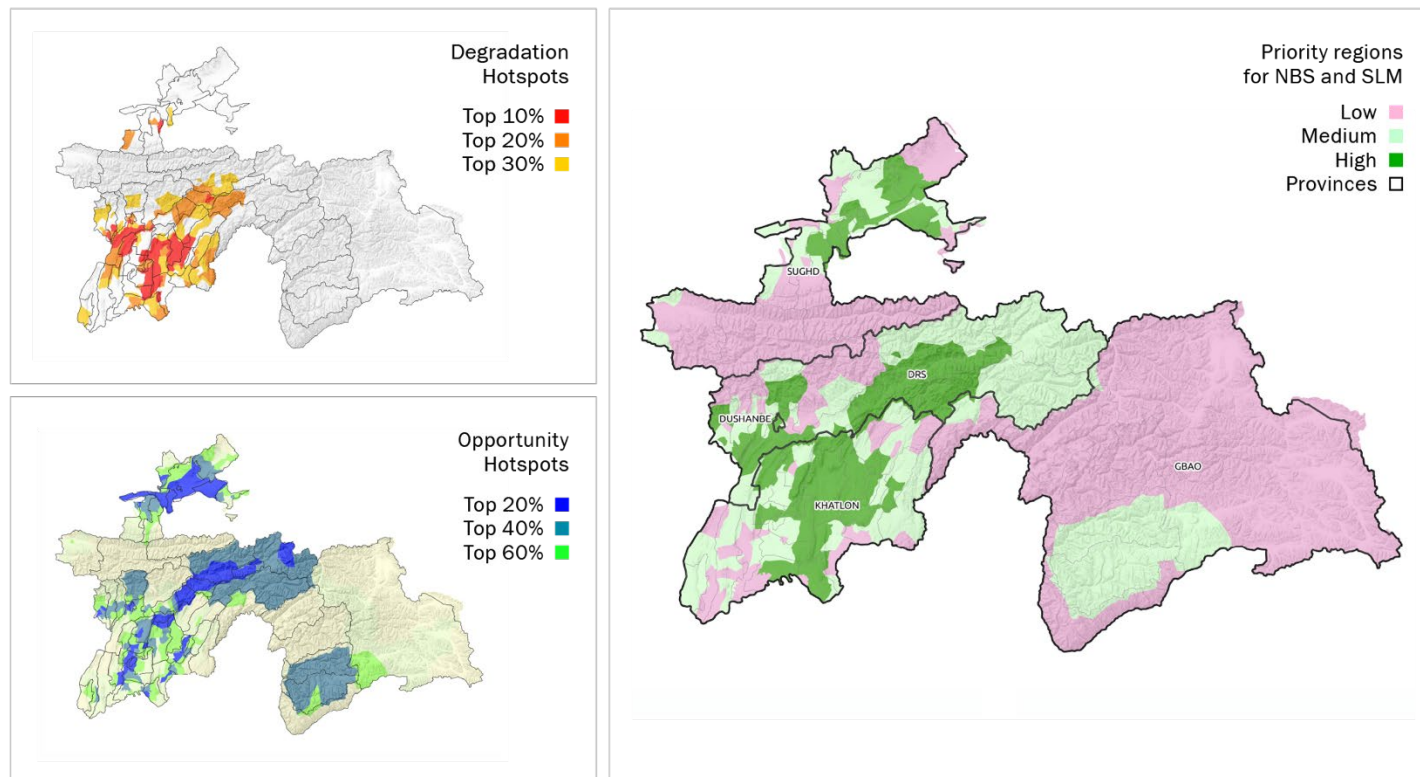
Photo Credit: Lukas Bischoff, Shutterstock.com

Unlocking economic benefits through resilient landscapes restoration

Investments in resilient landscapes have high economic returns and are crucial for managing natural resources.

- NBS can restore degraded land, improve agricultural productivity, and reduce emissions.
- Restoration targets 2/3 of severely degraded land, while sequestering 360,000 Mt CO₂ annually in 2035–50.
- Climate Smart Livestock will increase productivity and reduce methane emissions by 30%.

Priority areas for resilient landscape restoration in Tajikistan

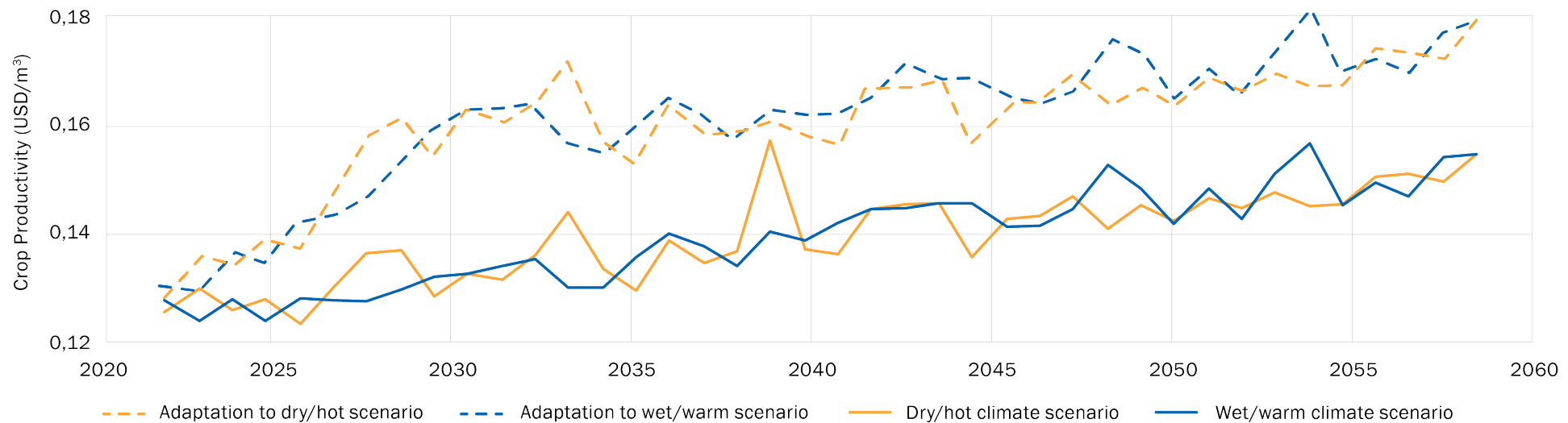


Source: Original elaboration.

Advancing climate-smart agriculture and resilient infrastructure for sustainable growth

- Climate-Smart Agriculture (CSA) builds climate resilience, supports food security, and opens new economic opportunities.
- Resilient infrastructure investments should prioritize high-traffic corridors using green or grey solutions.

The productivity of irrigated agriculture increases with adaptation by 15%



Source: Original elaboration.



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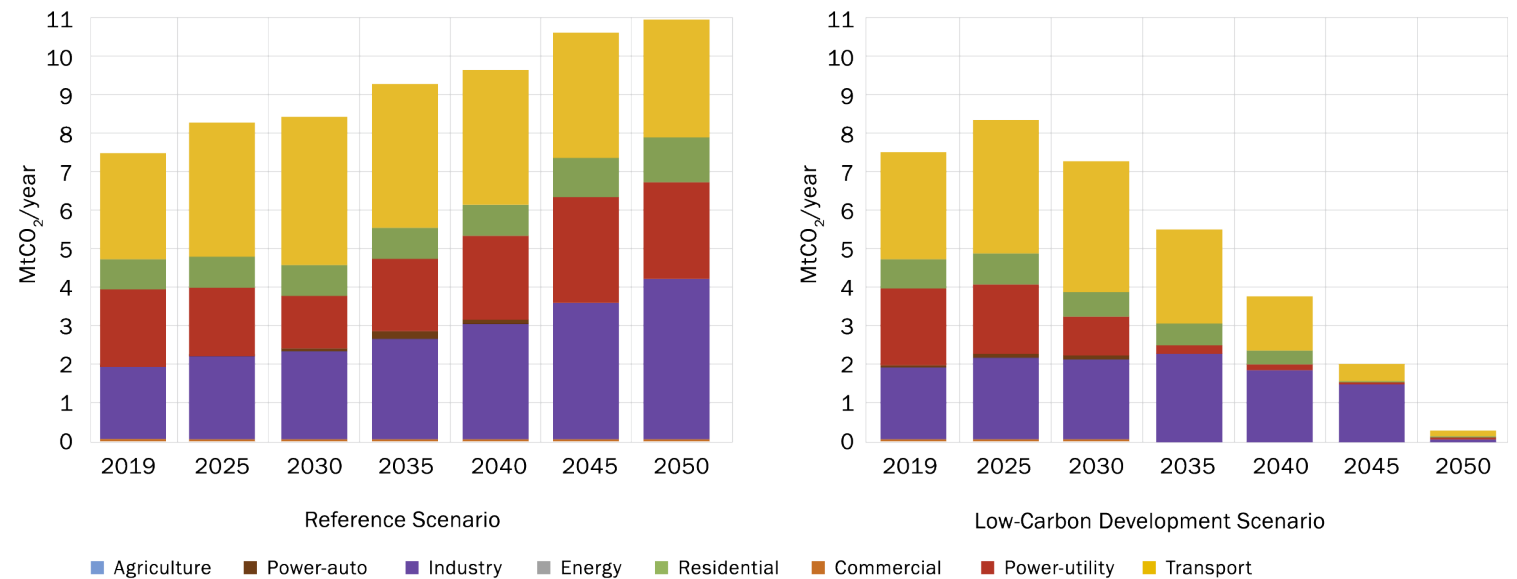
Economic gains through low-carbon development



Low-carbon energy by 2050 is a big challenge but possible building on the success of the clean power sector

- The Government is aiming for a green economy with net-zero emissions in the power sector by 2037
- Both Reference and Low-Carbon Development scenarios achieve the NDC in 2030.
- Without change of trends (left), the power sector already has low emissions, but emissions in buildings, industry, and transport are set to rise.
- The Low-Carbon Growth Scenario (right) can bring the building sector, transport and industry emissions to a decline with benefits following “carbon border adjustment mechanism” CBAM.

Projected energy system emissions by sector under the Reference and Low-Carbon Development Scenarios, 2019–50 (MtCO₂)

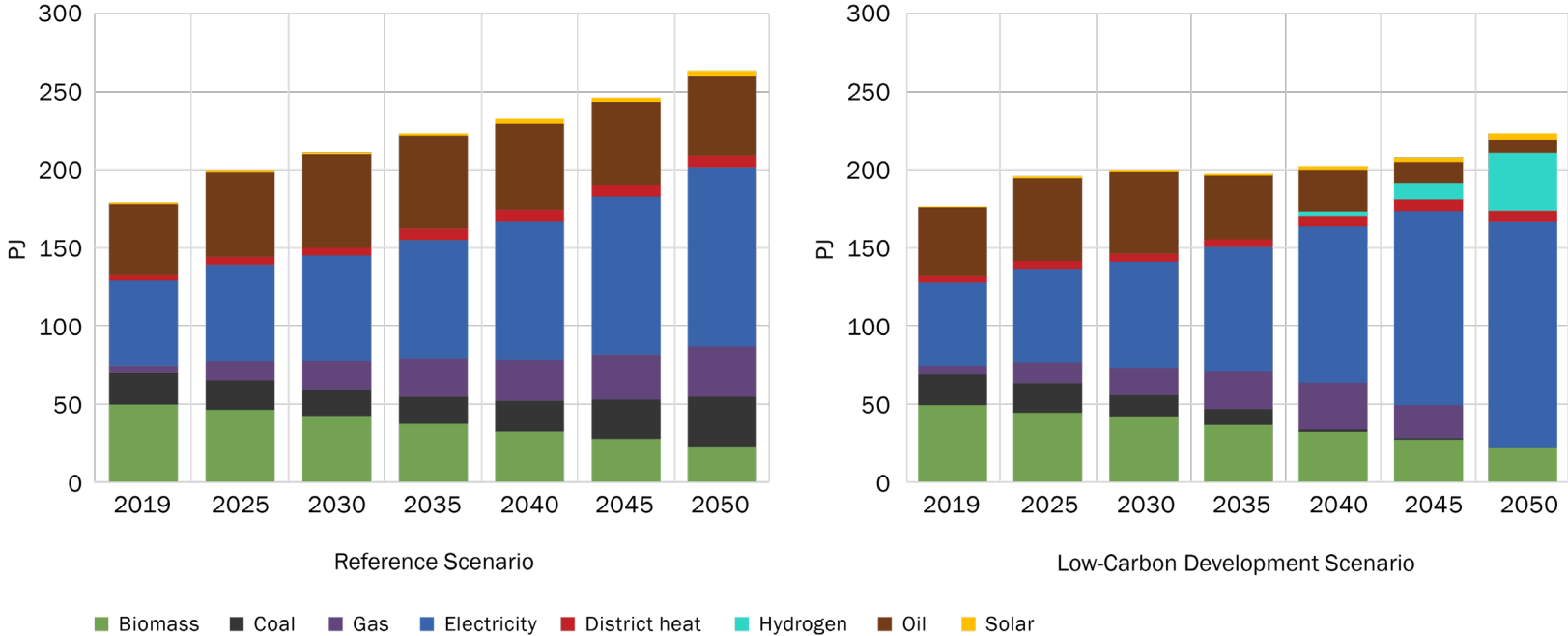


Source: Original elaboration.

Low-carbon energy mix is remarkably different in 2050 with significantly better energy security indicators

- In the Low-Carbon Development Scenario, domestic renewables can provide 93% of energy by 2050 (53% in Reference).
- Energy efficiency reduces demand by 15% by 2050.
- Green hydrogen is only cost-effective under low-carbon policies.

Projected final energy consumption by fuel under the Reference and Low-Carbon Development scenarios, by sector, 2019–50 (PJ)

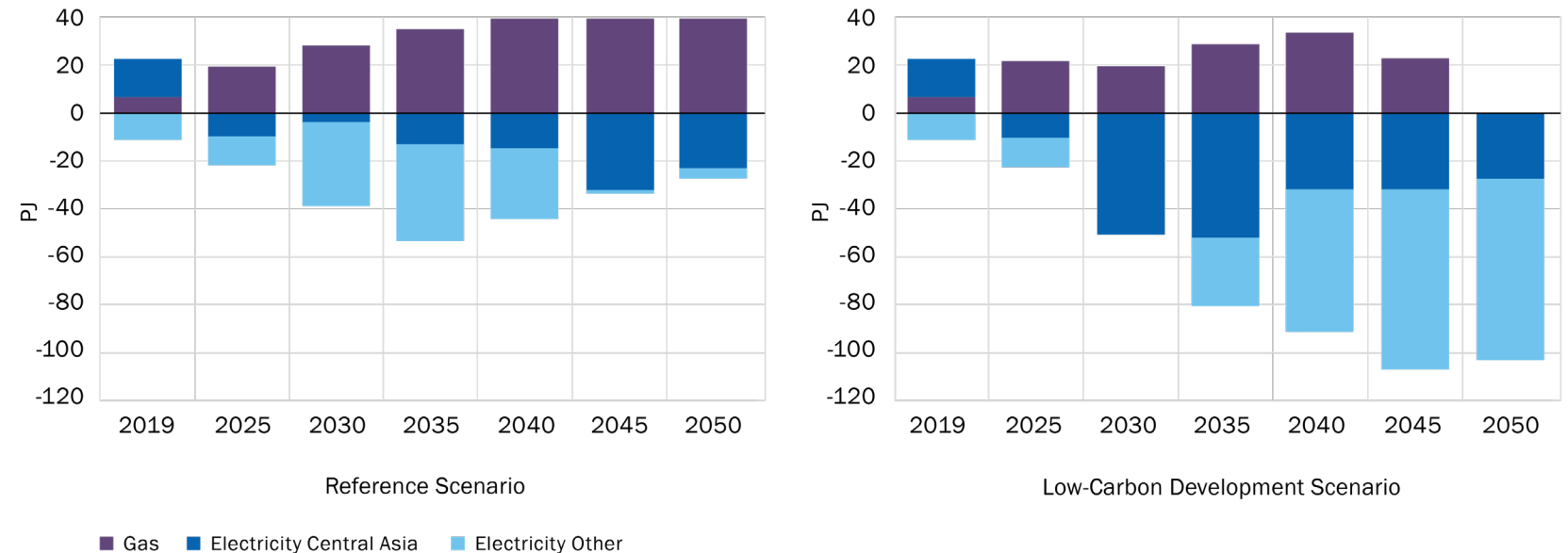


Source: Original analysis.
 Note: Renewables for power (hydro, solar) are included in grid electricity.

A larger power sector is paving the way for significantly more exports in a low-carbon Tajikistan

- Tajikistan can **export** much more **electricity** under the Low-Carbon Development scenario with \$16.7 billion export revenues by 2050.
- This scenario also limits **gas imports**.
- New market platforms and further interconnectivity are essential steps to reap these benefits.

Projected gas and electricity net imports (+) and net exports (-) under the Reference and Low-Carbon Development scenarios, 2019–50 (PJ)

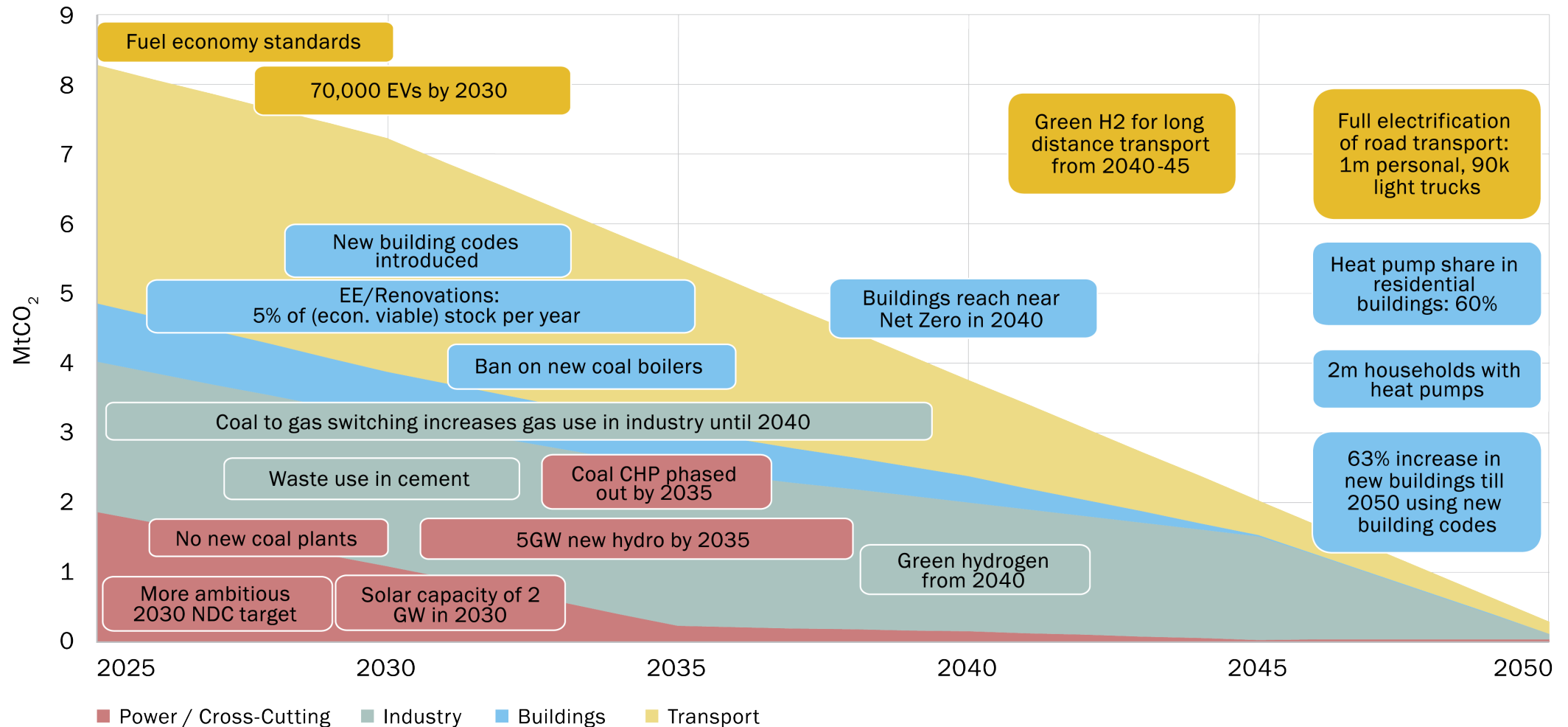


Source: Original compilation.

Note: 'Electricity Central Asia' is the electricity traded among countries in Central Asia: Uzbekistan, Kazakhstan, and the Kyrgyz Republic. 'Electricity Other' is the electricity traded with Afghanistan (for example, through CASA 1000). Gas is sourced via Uzbekistan.

Towards a low-carbon energy future

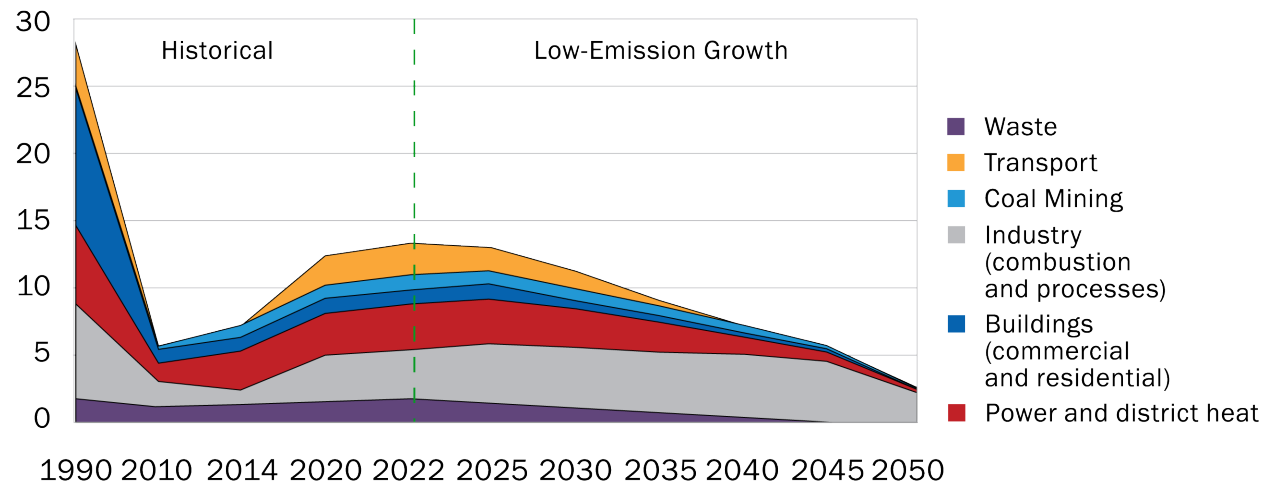
Emission trajectories per sector with corresponding key milestones toward a net zero 2050 energy system, 2025–50 (MtCO₂)



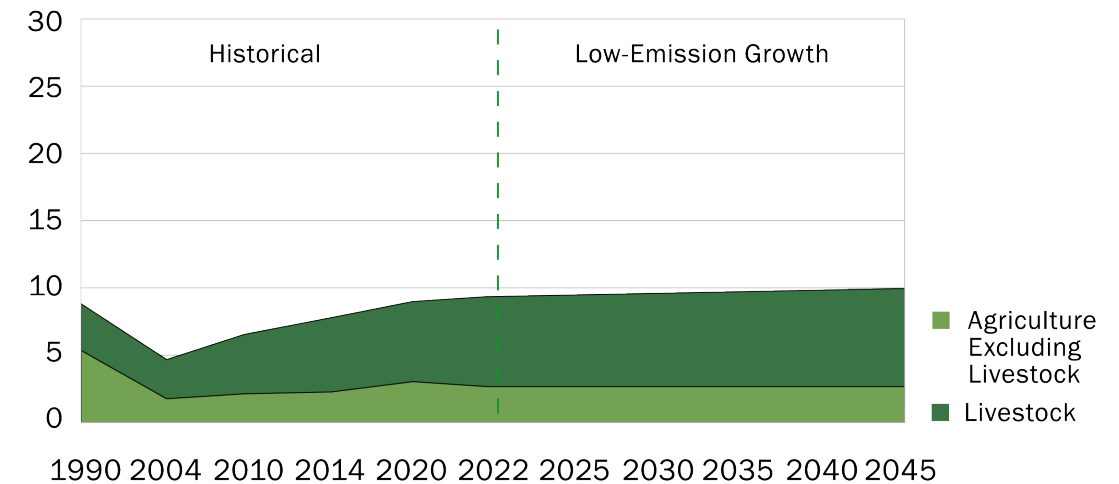
But agricultural emissions do not have a pathway to net zero

- Energy sector and waste emissions (60% of total emissions) could achieve net zero by 2050, except remaining industrial process emissions
- Agriculture emissions (40%) could even increase by 2050, due to livestock growth.
- Climate-smart livestock practices can reduce emissions and boost productivity. Improved feed, pasture, and herd management could reduce methane emissions by 30% without affecting protein production.

Historical and projected emissions by sector (excluding agriculture), 1990–2050 (MtCO₂eq)



Historical and projected agricultural emissions in Tajikistan, 1990–2050 (MtCO₂eq)

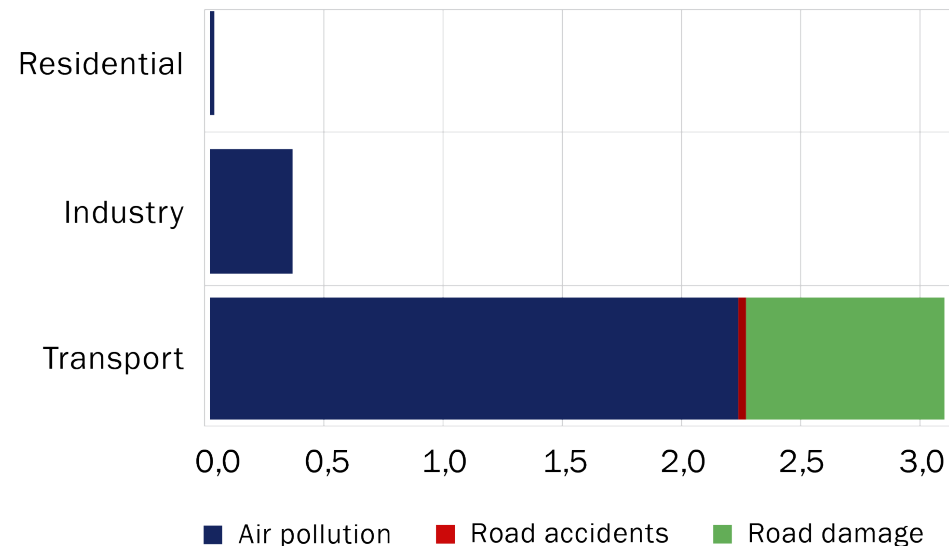


Source: Original elaboration.

Economic transformation and co-benefits of the low-carbon transition

- The low-carbon transition can drive economic transformation with minimal negative GDP impact by the 2030s.
- Co-benefits from the Low-Carbon Development Scenario could exceed \$3.5 billion by 2050, including health and safety improvements.

Co-benefits of Low Carbon Development Scenario by 2050 in Real 2023 \$ Billions



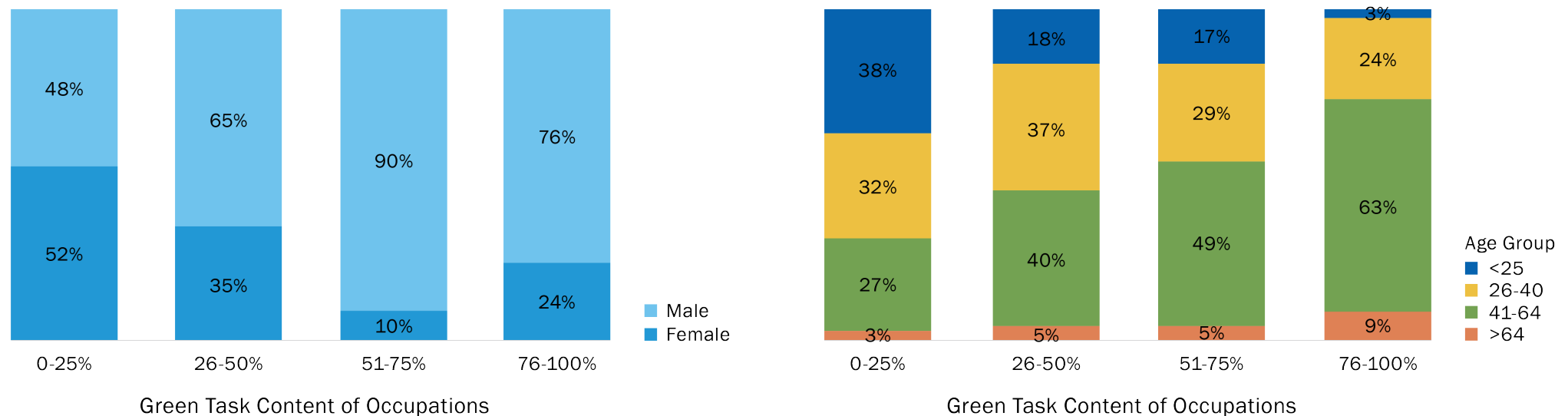
Source: Original compilation based on the Climate Policy Assessment Tool and Energy model.

Note: Calculations assume absence of advancements in implementing emission standards. Flows modeled until 2050 at a discount rate of 6 percent.

Investment in renewable energy and energy efficiency can create new jobs

- Geothermal energy has high job creation potential (2.3 jobs per one job lost), while climate-smart mining offers economic diversification through critical mineral extraction.
- Digitalization and renewable energy (solar panels on rooftops) can generate more than 65,000 new jobs by 2025, but reskilling is needed to support workers transitioning from agriculture.
- Women and younger generations will need to be engaged through stronger leadership roles in local decision-making bodies, vocational training and reskilling to respond to the increased demand for green occupations.

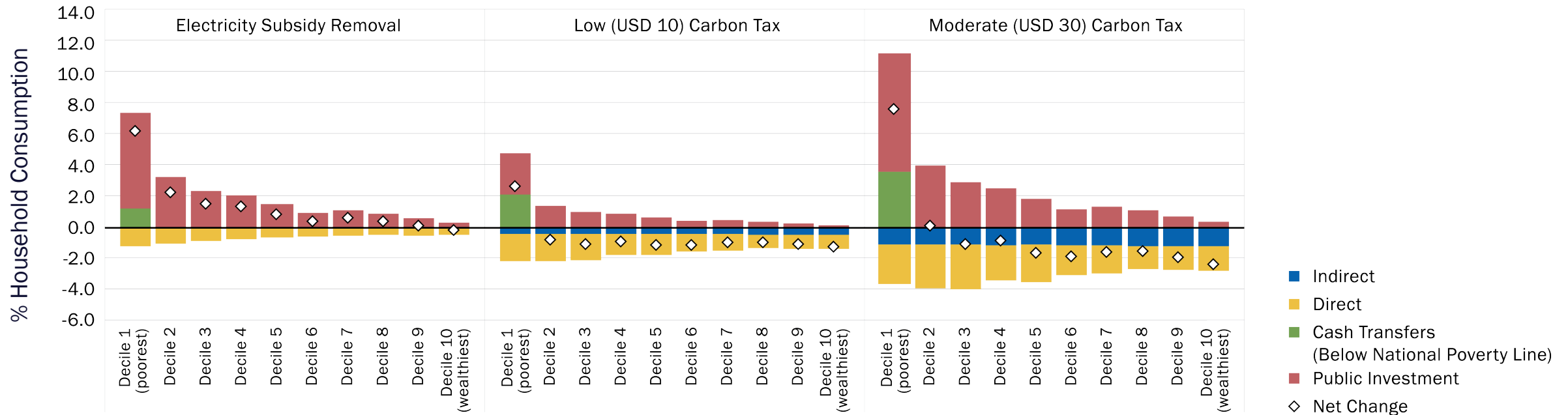
Green jobs by gender and age group



Source: Original elaboration.

Low-carbon growth and targeted support of the poorest

- A low-carbon tax and subsidy removal could generate revenue to support a resilient low-carbon transition and offset costs for the poorest households (losses from the higher costs of electricity, coal, and liquefied petroleum gas) and fund disaster recovery and infrastructure.
- The poorest households could see increase in consumption despite initial losses from higher energy costs. Direct cash transfer could be complemented with better infrastructure access (electricity, information and communication technology, public transportation, sanitation, and water)



Source: Original elaboration.



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Tajikistan will need to take full advantage of all funding sources, both domestic and external

Financing Needs for Mitigation and Adaptation

Scenario	Total discounted investment needs 2025–2030 (US\$ Billion)	Total discounted investment needs 2031–2050 (US\$ Billion)	In % of Present Value (PV) GDP 2025–2030	In % of Present Value (PV) GDP 2031–2050
Reference Scenario	33.6	45.2	29.4	13.9
Low-Carbon Development Scenario	34.7	53.9	30.3	16.6
Investment for Mitigation (Net Increase from Low Carbon Development to Reference)	1.0	8.7	0.9	2.7
Investment for Adaptation	2.0	5.4	1.7	1.7
Combined Investment for Mitigation and Adaptation	3.0	14.1	2.6	4.3

Public investments in resilient infrastructure can cover 30% of low-carbon development scenario needs and 70% of the total adaptation needs. The rest is expected to come from the private sector.

- US\$**9.7** billion needed for mitigation (the Low-Carbon Development Scenario)
- US\$**7.4** billion is needed for Adaptation

Leveraging carbon tax and private investment for a green transition



- Carbon tax can help finance public investments in adaptation and mitigation while encouraging the private sector's decarbonization.



- Tajikistan's private sector could drive green transition, but institutional reforms are crucial to unlock private capital.



- Tajikistan's financial needs for transformational development exceed its domestic capacity and it will need to take full advantage of all sources of finance, including IFIs and global climate funds.



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Recommendations: Enhancing resilience through structural and climate reforms



Green transition relies on structural reforms that drive economic development and attract private investment

Key reforms include:

- Improving the business environment by upholding the rule of law, enhancing investor protection, and opening up the critical sectors for better competition.
- Strengthening the SOE sector governance and resolving energy system issues are essential for better public service delivery and industrialization.
- Strengthening education, healthcare, and social protection systems is crucial for developing human capital and equipping the workforce with the necessary skills.



Photo Credit: Leonid Andronov

Policy Recommendations



Policy Package A

Stronger Institutions for Better Adaptation, Resilience, and Mitigation: Integrating climate into planning, establishing carbon accounting, and enhancing financial preparedness for climate risks



Policy Package B

Just and Inclusive Climate Strategies: Ensuring equitable resource use, enhancing resilience through reskilling and livelihood programs, and empowering communities for climate action



Policy Package C

Mobilizing Climate Finance & Enabling Investment: Strengthening data capacity, assessing climate risks, and promoting green financial instruments for sustainable growth



Policy Package D

Adaptation at the Water-Energy-Food Nexus: Modernizing water systems, restoring lands with NBS, and enhancing disaster preparedness for sustainable and resilient development



Policy Package E

Accelerating Resilient and Low-Carbon Development: Expanding renewable energy, improving energy efficiency, and advancing sustainable transport for a cleaner, more secure future



Thank you!

[Link to the report in English](#)



[Link to the report in Russian](#)

