



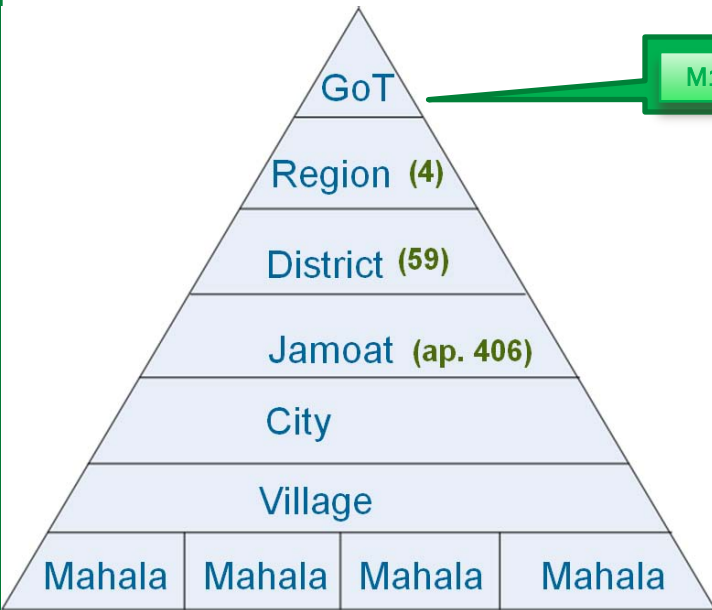
RENEWABLE ENERGY CHALLENGES IN TAJIKISTAN



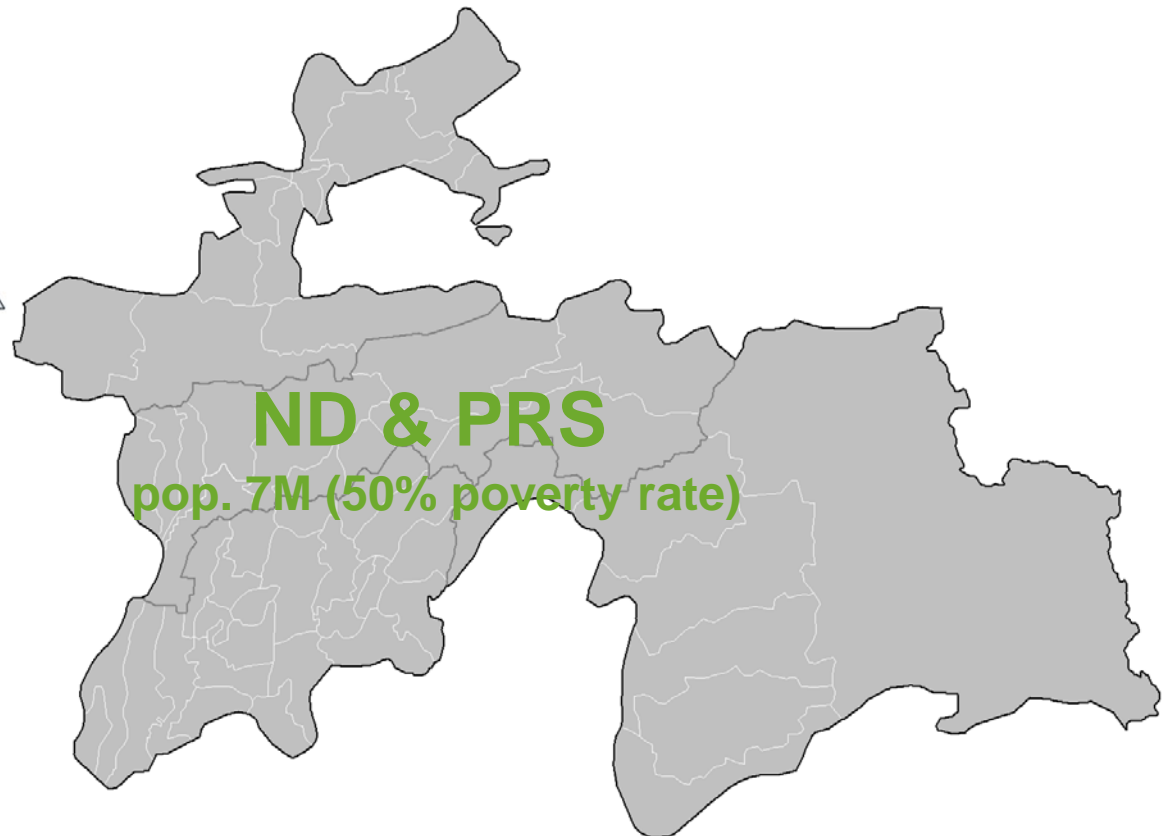
Tajikistan is located in the middle of Central Asia and borders with China, Afghanistan, Uzbekistan and Kyrgyzstan



Context:



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It is estimated that from 0.5 to over 1 million people out of Tajikistan's total population of 7.1 million lack access to an adequate energy supply.

Today over 95% of Tajikistan's power generation capacity is based on large hydro power plants, with strong seasonal variations in power production, being the lowest during winter (October – April/May), when the demand is at the highest.



TAJIKISTAN RENEWABLE ENERGY RESOURCES

SOLAR ENERGY:

Resources of Solar Energy Sources can be assessed by the following dimensions in Tajikistan:

- *Gross Potential - 1 822 894 MW*
- *Technical Potential - 1493,7 MW*
- *Economic Rational Potential - 545,2 MW*



WIND ENERGY:

Resources of Wind Energy Sources can be assessed by the following dimensions in Tajikistan:

- *Gross Potential - 62214,6 MW*
- *Technical Potential – 3852,7 MW*
- *Economic Rational Potential - 1926,35 MW*



THERMAL WATER ENERGY:

Resources of Geothermal Sources can be assessed by the following dimensions in Tajikistan:

- *Gross Potential - 17,2 MW*
- *Technical Potential - 17,2 MW*
- *Economic Rational Potential - 17,2 MW*



HYDROPOWER ENERGY:

Resources of Hydropower Sources can be assessed by the following dimensions in Tajikistan:

- *Gross Potential – 60167 MW*
- *Technical Potential – 32476 MW*
- *Economic Rational Potential - 32476 MW*



FRAMEWORK DOCUMENTS ON STREAMLINING RENEWABLE ENERGY USE IN TAJIKISTAN:

- Programme on the Small Renewable Energy Development (1997);
- State Ecological Program for 1998-2008 (1997);
- National Action Plan for Climate Change Mitigation (2003);
- The Report and Action Plan on Building National Capacity to Implement Commitments of the Republic of Tajikistan on Global Environmental Conventions (2005);
- Poverty Reduction Strategy (PRS) of the Government of the Republic of Tajikistan (2007);
- Report “Investing in Sustainable Development: Millennium Development Goals (MDG) Needs Assessment” (2005).



SIGNIFICANT BARRIERS TO WIDESPREAD UTILIZATION OF RENEWABLE ENERGY RESOURCES EXIST IN TAJIKISTAN, NAMELY:

✘ *Institutional and regulatory barriers:*

- The prevailing institutional and regulatory framework in the energy sector is not adequately taking into account the peculiarities of renewable energy.
- No legislative mechanisms in place which would effectively promote the utilization of renewable sources of energy and attract investments in this sector.



✘ *Technical barriers:*

- Very limited technical know-how in rural areas available on how to properly build, operate and maintain renewable energy systems.
- While manufacturing facilities with most of the required equipment and machinery are available in Tajikistan, there is a lack of technical and institutional capacities for the local manufacturing and repair of renewable energy systems and the required quality assurance.



✘ *Market barriers:*

- No market for renewable energy and of experience, awareness and information related to the actual potential and possible applications of renewable energy systems in rural communities in Tajikistan;
- Weak functioning supply chains for renewable energy systems in place which would ensure broad availability of such systems and better service support for end-users;
- A lack of awareness on the potential and peculiarities of productive applications of electricity generated based on renewable sources of energy. Due to the largely absent productive applications of energy generated with renewable energy systems the financial and economic viability of these systems is often not satisfactory.



STRATEGIC DIMENSIONS:



1. To enhance stakeholders' technical know-how and institutional strength of stakeholders to efficiently deploy renewable energy technology, and enhanced legislative and regulatory framework for renewable energy development.

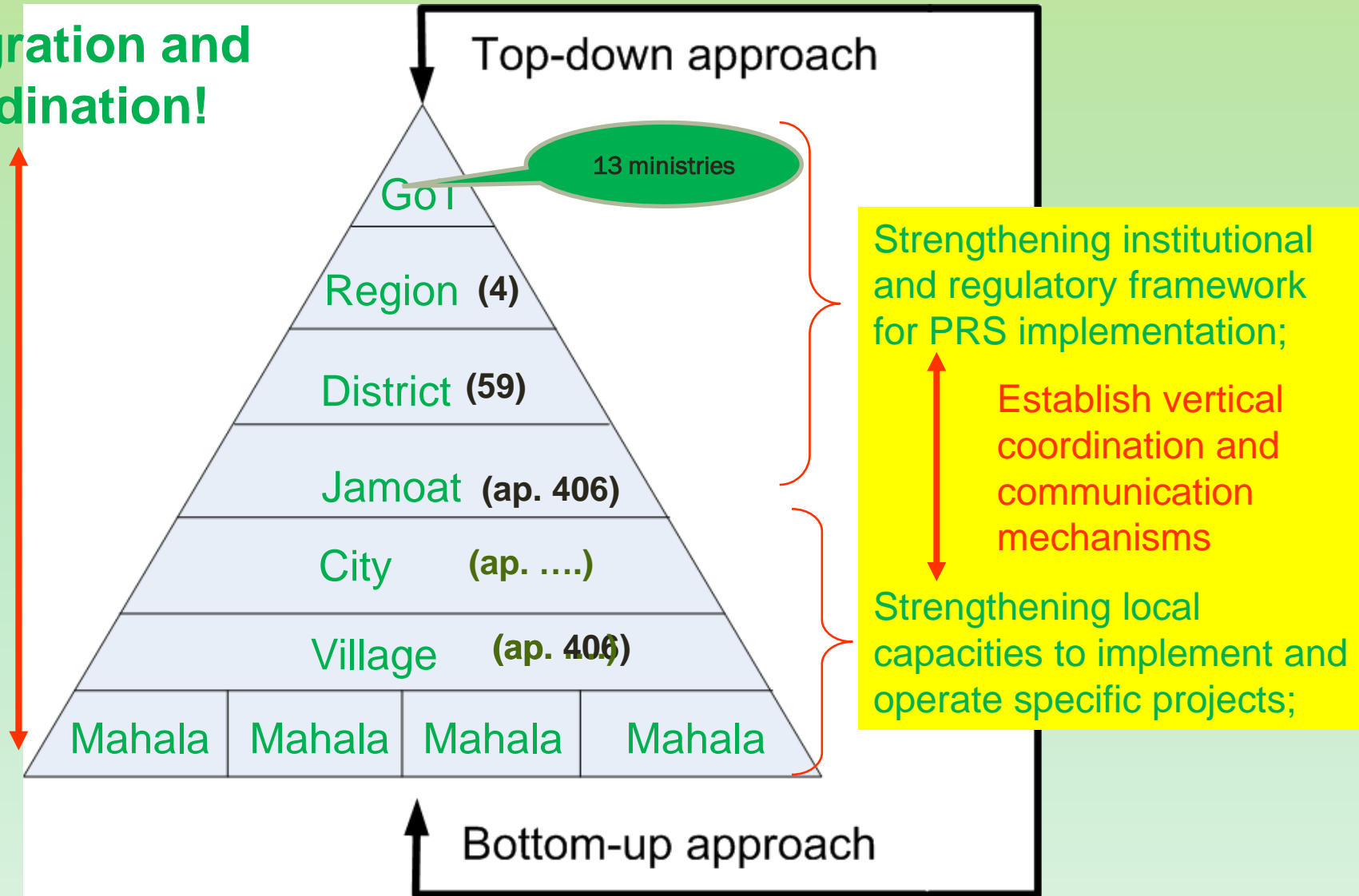
- *Propose policies, legislation and regulations that further enhance the environment and the market conditions for renewable energy development, and support implementation of these policies, legislation and regulations;*
- *Advice central and local governmental institutions, legislative bodies and other stakeholders concerned on energy sector restructuring issues that provide incentives and improve the market conditions for renewable energy development in Tajikistan.*
- *Identify players and stakeholders in the field of renewable energy development in Tajikistan, and develop modules for capacity building and training measures specifically designed according to the needs of the different groups of players and stakeholders.*



- *Enhance capacity of local authorities and other key stakeholders to develop local renewable energy resources, including trainings to relevant authorities to provide one-stop-shop services and advice (technical, legal and financial) to potential investors throughout the project cycle;*
- *Enhance or develop capacity of local organizations, primarily private firms and NGOs to participate in a functioning supply chain for renewable energy systems. This includes the capacity to plan, design, deliver, install, service and repair renewable energy systems, as well as the capacity for planning, lifecycle costing, quality assurance, procurement, marketing, etc.;*
- *Develop or enhance capacity of local workshops and industries to manufacture and repair selected parts of renewable energy systems;*



Integration and coordination!



2. To increase awareness and information uptake on renewable energy opportunities among stakeholders and increased public awareness of improving energy efficiency and conservation.

- Increase awareness among institutions and decision-makers on the potentials and limitations of renewable energy development;*
- Increase public awareness on the implications of the burning of local biomass resources and the environmental degradation on the one hand, and the importance of the development of renewable energy resources on the other hand;*



STRATEGIC DIMENSIONS

- *Increase public awareness on applications of renewable energy services;*
- *Enhance public awareness on improving efficient use of energy and conservation, such as using more energy-efficient systems of heating, ventilation and lighting, and proper building insulation;*
- *Compile and disseminate lessons learnt, experiences, and best practices related to the development of renewable energy projects.*



3. To implement pilot renewable energy projects in prioritized areas to promote a sustainable energy sector

- *Conduct technical feasibility study to assess the type and scope of pilot projects that should be undertaken and the most suitable geographic locations for implementation. The feasibility study will also assess local capacity for income generation and tariff rates for cost-recovery, and*
- *Following the feasibility study, implement at least 30 pilot renewable energy projects demonstrating the viability of different technologies, delivery models, financing mechanisms, operation models, etc., in selected communities.*





**LOOKING FORWARD
TO SEEING YOU IN
TAJIKISTAN!**