



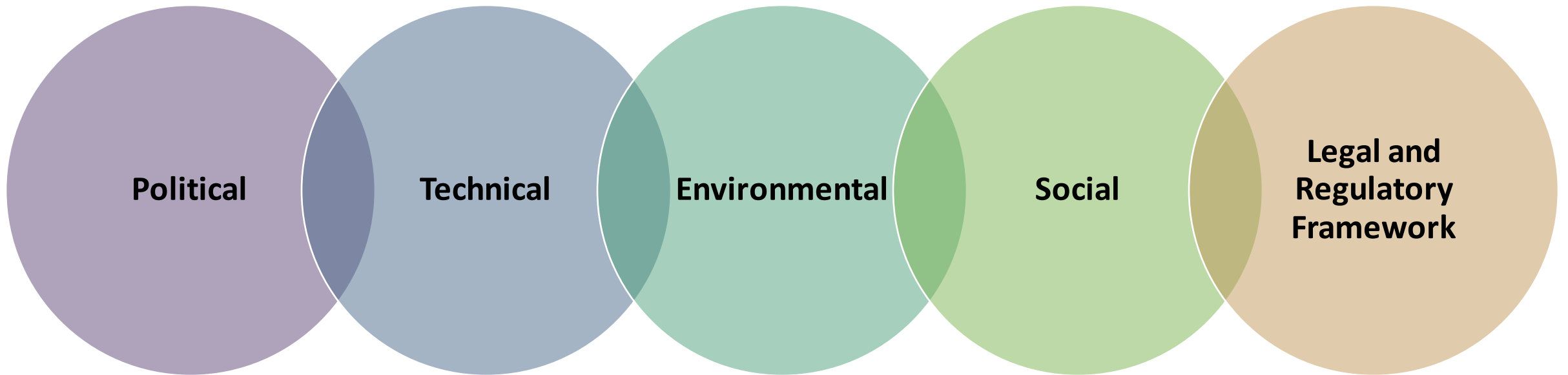
PROJECT PREPARATION FACILITY

Risks in Sustainable Energy Project Development

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Risk categories



An aerial photograph showing a solar farm in the foreground with rows of blue solar panels mounted on wooden beams. To the left, there is a paved road and two parallel railroad tracks. The background consists of a field with green and yellow vegetation, and a line of trees with some autumn-colored foliage.

Risks related to site

- Site selection
- Land acquisition/ownership models
- Environmental clearance
- NIMBY

Resource Risks

- Variability
- Climate dependent
- Longer term quality data required in resource assessments for some RE projects
- Large investments required before confirming viability of resource





Offtake risks

- Critical: economic and executable agreements by the project parties, and that it is ultimately confirmed by written contract
- Time lag to establish agreements, eg PPAs
- Transmission and grid interconnection, relating to the direct and ancillary infrastructure. (lack of studies)
- Agreements not being grandfathered
- Need for curtailment based on merit order

Permitting

- Dependent on strong development of **Site, Resource, Offtake**
- Lengthy processes with high hurdles for permitting
- Insufficient capacity and experience within state permitting bodies
- Insufficient legal and regulatory framework to support permitting





Technology risk

- Vulnerability of supply chains for rare earth elements used in RE and EE technologies
- Degradation factors for some technologies
- Intermittency
- Technology costs
- Resilience to environmental conditions
- Quality of components and lower performance compared to nameplate (EE)



Risk associated with project Team

- An assembly of a fully qualified team is required
- Expertise in business, technical, financial, legal, and operational aspects of the project, required
- Lack of highly qualified experts in all areas of expertise
- Proven experience and capability are key elements to most investment decisions by qualified investors

Capital Risks



- Capital requirements do not begin at construction but are engaged at incremental points along the development process
- All other elements must be in place, Site, Resource, Off-take, Permits, Technology, and Team
- Capital refers to both the predevelopment and development stages, and then in a financial closing that includes the financing required through construction and initial operations
- Financial institutions lack full capacity to assess RE&EE projects
- Regulatory framework must support financial frameworks
- Insurance schemes for RE & EE not widely available





Natural Hazards

Energy Efficiency Project Risks

- Lack of information
- Uncertainty in Energy Prices
- Regulatory and contract risks
- Enforcing contracts
- Access to capital
- Credit and budget constraints, which also imply short-term payback requirements
- Additional infrastructural investments required to support EE installations



Thank You

For additional information

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