A suite of tools to identify, analyze and deploy renewable energy projects in India
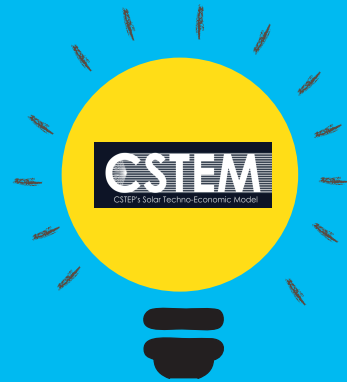
RE - ATLAS PLATFORM

CSTEP
CENTER FOR STUDY OF
SCIENCE, TECHNOLOGY & POLICY

CSTEP developed a platform-RE Atlas to primarily address India's energy infrastructure and usage. This is important since renewable resource availability is highly location-specific, as a result transmission and evacuation planning is very important.

RE - ATLAS PLATFORM

RESOURCE POTENTIAL
Resource Strength
(Solar Radiation, WPD)

LAND-USE CONSTRAINTS

ECONOMIC CONSTRAINTS

TRANSMISSION AND DISTRIBUTION INFRASTRUCTURE

TECHNOLOGY

Potential PV sites
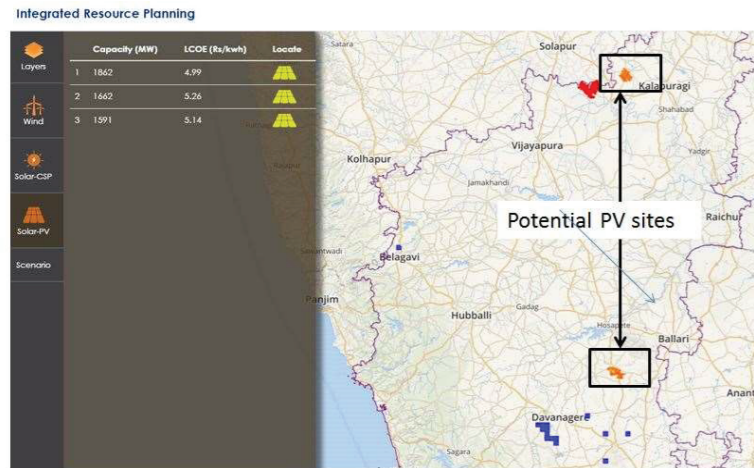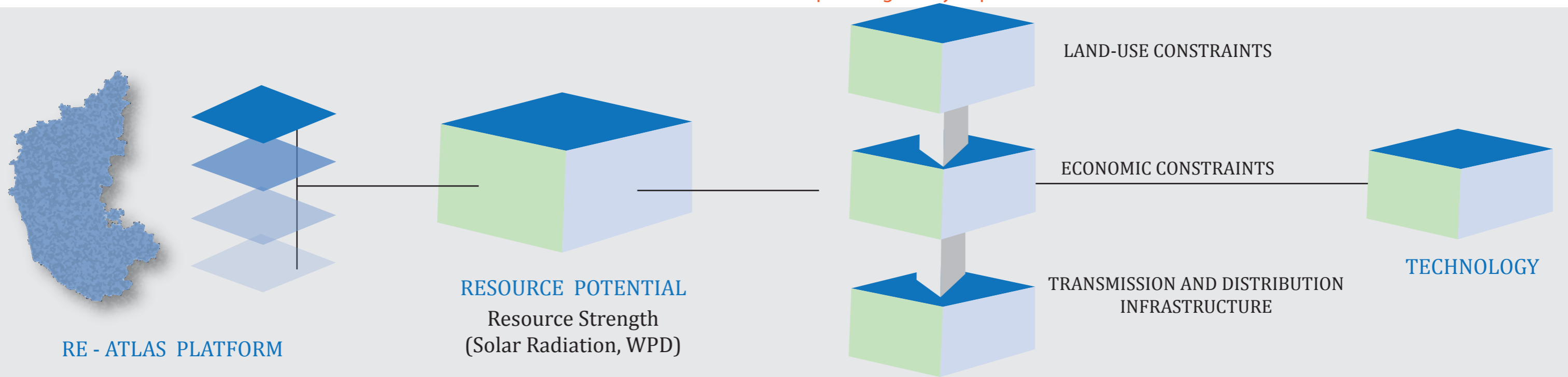
The Renewable Energy (RE) Atlas platform developed by CSTEP:

- Allows for preliminary visualisation and first-cut analysis of national and state level potentials
- Acts as a common interface for policymakers, policy researchers, academia and industry to discover sites/zones for deployment of RE
- Integrates with a separate financial module that allows economic assessments of RE deployment decisions
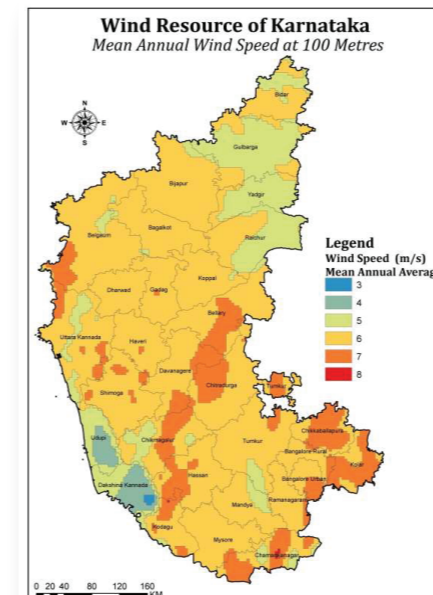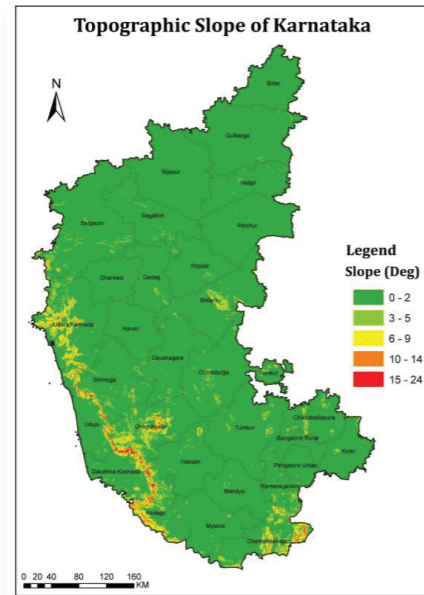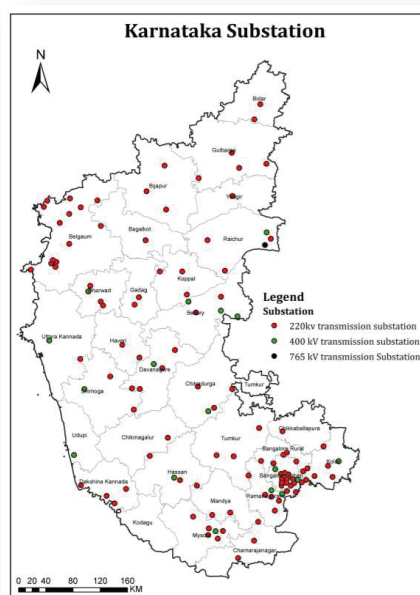
Advantages

- Updated with fresh data sets and new satellite images
- Allows end-users to choose required sites based on parameters
- Integrated with Solar PV techno-economics tool for cost calculations and detailed technical outputs

Benefits

- Aids Government in first-cut analysis and potential assessment of RE
- Aids developers in siting RE plants
- Provides a common interface for stakeholders to assess local information,
- Seeks alternatives and ascertains challenges without field visits and without purchasing proprietary information
- Helps the government in identifying synergies and in targeting resource-rich areas for creating energy economic zones.

Sample data analysis obtained from RE ATLAS

Karnataka Substation

Topographic Slope of Karnataka

Road Network in Karnataka

Wind Resource of Karnataka
Mean Annual Wind Speed at 100 Metres

Online user guide: http://darpan.cstep.in/reatlas/userguide.pdf

www.cstep.in

Send feedback and suggestions at: atlas@cstep.in

CSTEM
CSTEP's Solar Techno-Economic Model

CSTEP's Solar Techno-Economic Model (CSTEM) is a suite of tools which has following features and their stakeholders

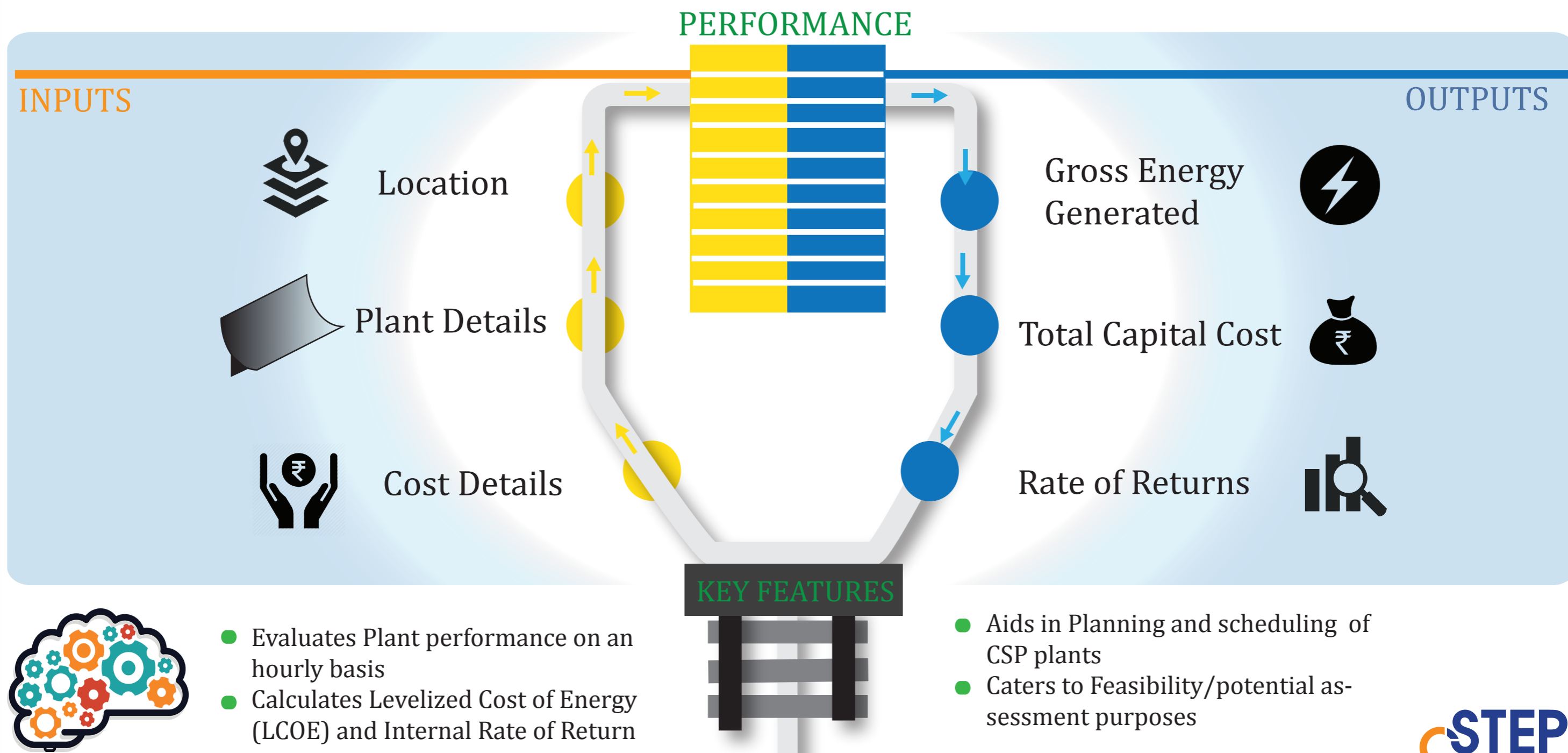Performance of Solar Power Plants

Risk Assessment

Sensitivity Analysis

Economic Viability

Policy Analysts and Investors

Technology Developers and Scientist

PERFORMANCE

INPUTS

Location

Plant Details

Cost Details

OUTPUTS

Gross Energy Generated

Total Capital Cost

Rate of Returns

KEY FEATURES

- Evaluates Plant performance on an hourly basis
- Calculates Levelized Cost of Energy (LCOE) and Internal Rate of Return

- Aids in Planning and scheduling of CSP plants
- Caters to Feasibility/potential assessment purposes

The current version is accessible at (http://www.seriius.org/modeling.html).

For more information visit: www.cstep.in

CSTEP
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CSTEM PV

CSTEM — CSTEP's Solar Techno-Economic Model

cSTEP — CENTER FOR STUDY OF SCIENCE, TECHNOLOGY & POLICY

| Location (Latitude, Longitude)	Irradiance Ambient, Temperature	Wind Speed	Technology Details (Module and Inverter)	De ratng/ Degradation effects	Financial Metrics

INPUTS

- The model is suitable only for utility scale plants
- The model has been designed only for fixed panel configuration at a constant tilt angle. 90 % of plants in the world are usually of fixed panel configuration
- The model developed considers a design for no shading conditions.

PROPOSED FRAMEWORK
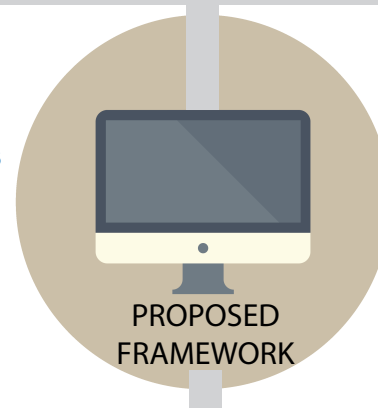
- Degradation/ reliability aspects of PV module:
- Generally quoted in manufacturer data sheet - Drops to 90% of efficiency in 10 years, then drops to 80% of efficiency in 25 years
- The current version available in the link (http://cstem.cstep.in/cstem/) operates at hourly resolution. A minute wise resolution model has also been developed

OUTPUTS

Layout/ Configuraion of plant	Land Area	Plant Output (hourly)	Capacity utilisation Factor, Performance Ratio	Capital Cost	LCOE IRR

For more information: http://cstem.cstep.in/cstem/

www.cstep.in