A collaborative, cloud-based decision support platform for resource management and wildfire mitigation

Hugh Safford [1,2] (hugh@vibrantplanet.net) , **Joe Flannery** [1], **Scott Conway** [1]

[1] Vibrant Planet, Incline Village, Nevada, USA   [2] University of California, Davis, California, USA

Land Tender
by vibrant planet

BACKGROUND

Interactions between climate warming and human impacts to landscapes and ecological processes are leading to rapidly increasing scales and velocities of ecosystem degradation. The scale and complexity of the problem pose a major obstacle to rapid and concerted management response. Key components of responding to complex, multijurisdictional management problems include **(1)** efficiently incorporating stakeholder input and developing effective interfaces for client engagement; **(2)** generating relevant data and analytical outputs that managers and stakeholders alike can understand and manipulate; and **(3)** cogently prioritizing potential investments and actions.

Land Tender™ (LT) is a cloud based, visual scenario-building and decision support application built to resolve these and other resource management issues at local, statewide, or national scales. LT is currently being applied in Mediterranean- and temperate-zone forest and shrubland systems in the western US, in projects focused on ecosystem health and wildfire mitigation. Expansion outside of the US and into tropical and boreal landscapes is on the horizon.

LT incorporates high-resolution data, disturbance simulations, and optimization routines to develop a comprehensive atlas of management scenarios for a given planning unit.

Land Tender Workflow

Data inputs and subroutines normalized at the tree/house level
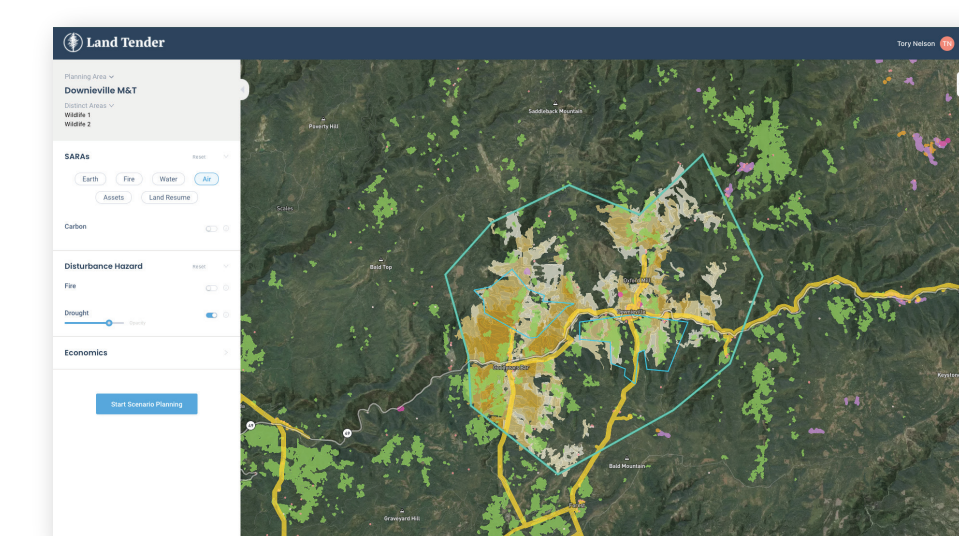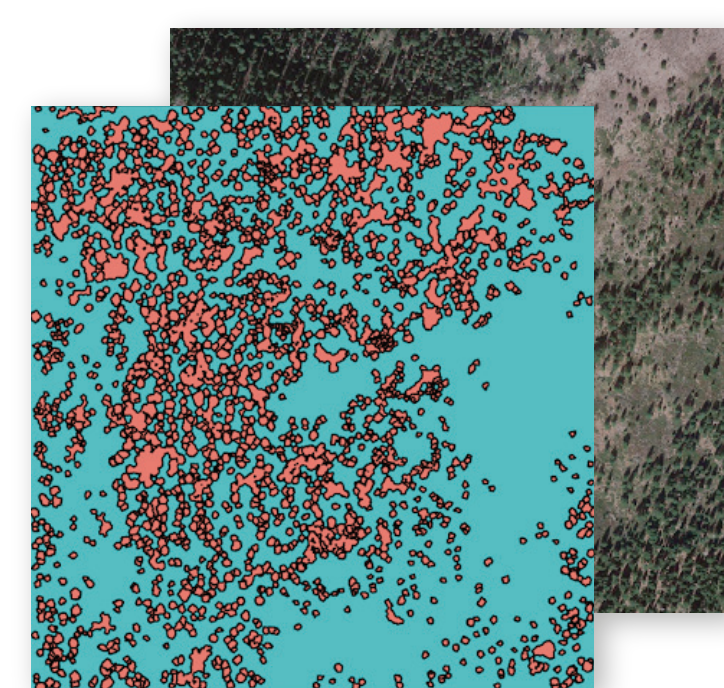
Identification of strategic areas, resources, and assets (SARAs). A mix of a priori identification and stakeholder input.

Development of the "stewardship atlas", allows for preliminary management cost estimates to be produced well before environmental assessment and implementation-contracting stages are reached, providing an earlier window than normal for procuring investment.
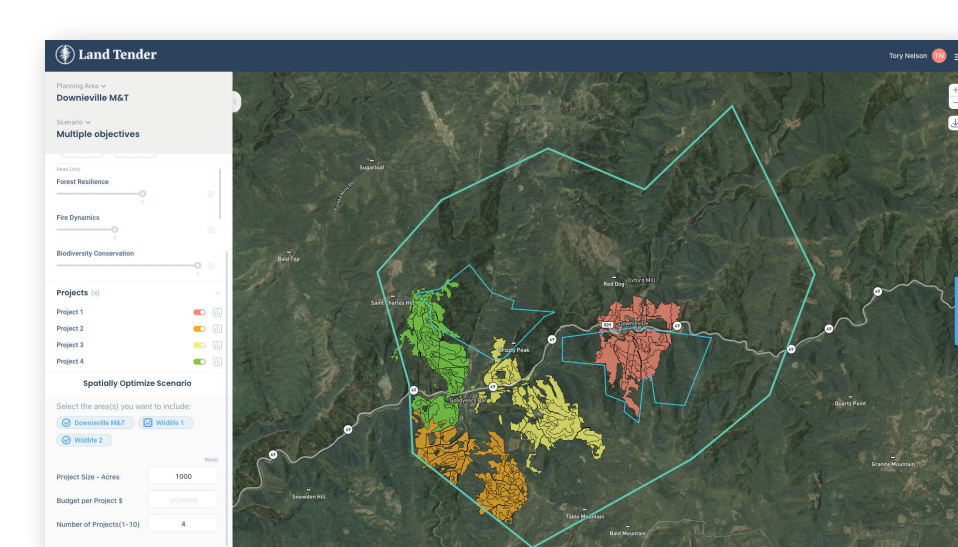

Calculation of the "restorative return on investment", which is the sum of treatment-driven avoided costs and quantified ecosystem benefit of treatments considered.
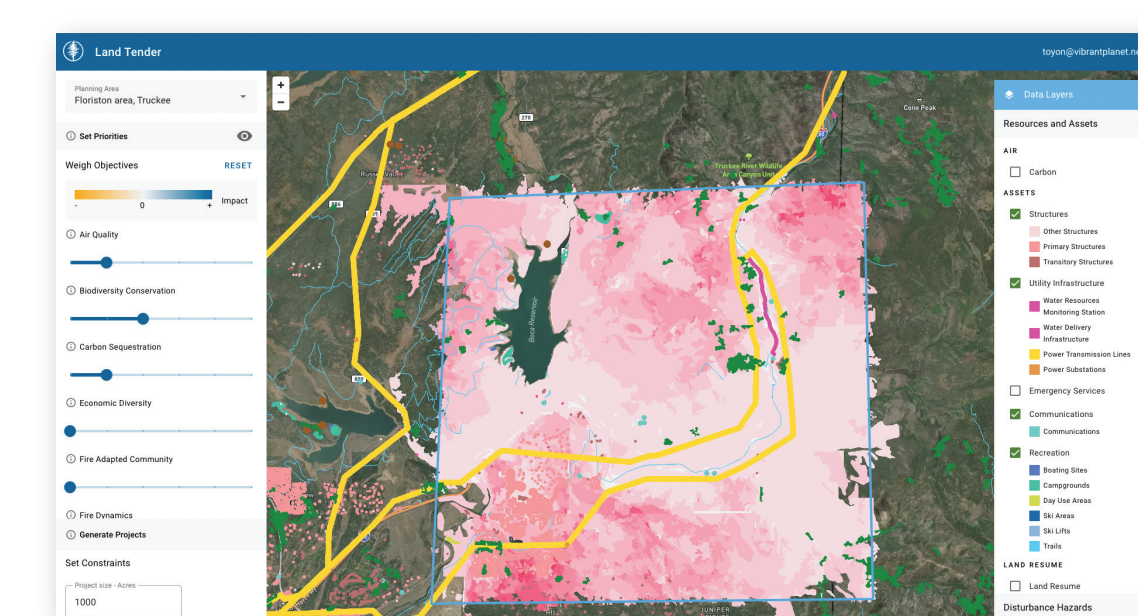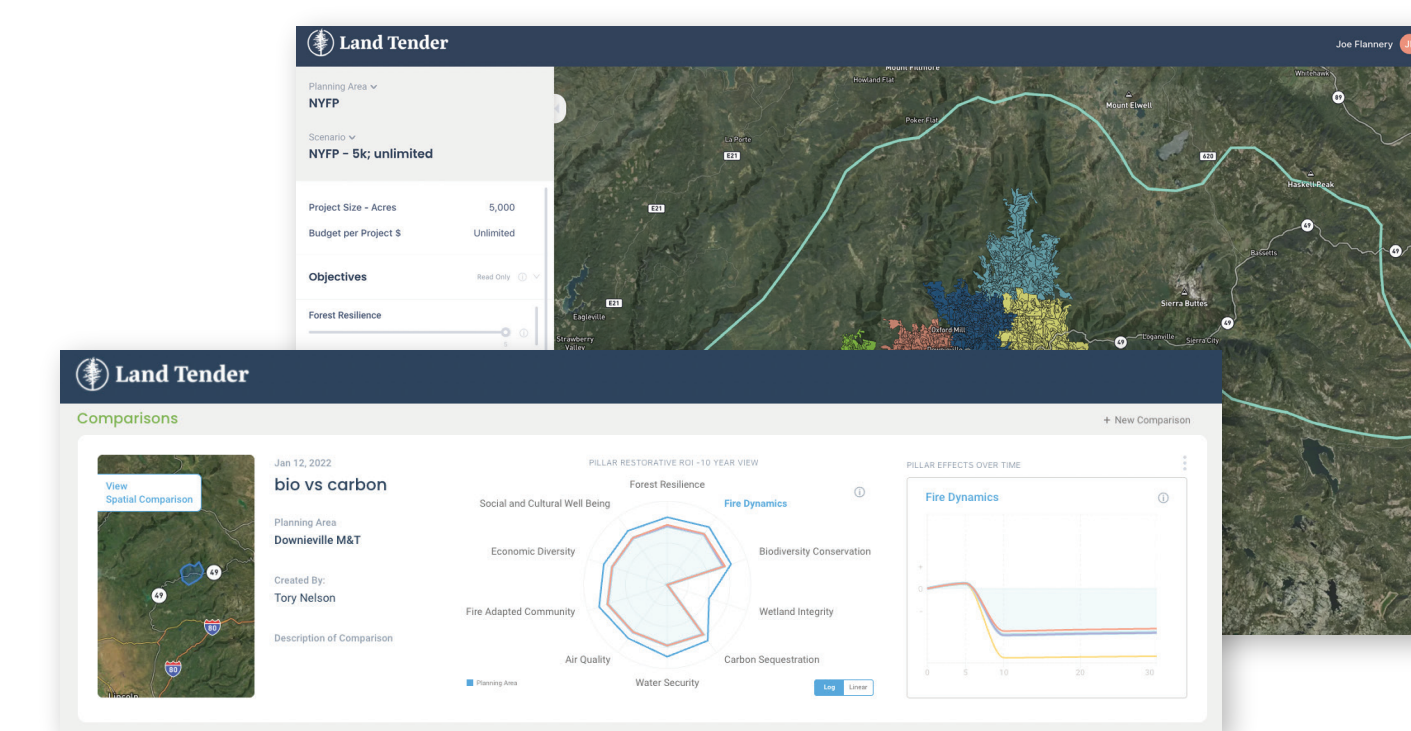
Prioritization of treatments powered by Ager ForSys optimization model – sequences treatments based on user-generated prioritizations of a set of broad "resilience" categories linked to strategic assets, resources and areas ("SARAs"), including, e.g., watershed values, biodiversity conservation, carbon sequestration, economic outputs, forest resilience, and fire safety.

Plan outputs including comprehensive spatial and tabular comparisons of final management alternatives – including projected costs and relative benefits of each alternative across all of the SARA resilience categories, easily exported to environmental assessment processes that precede implementation.
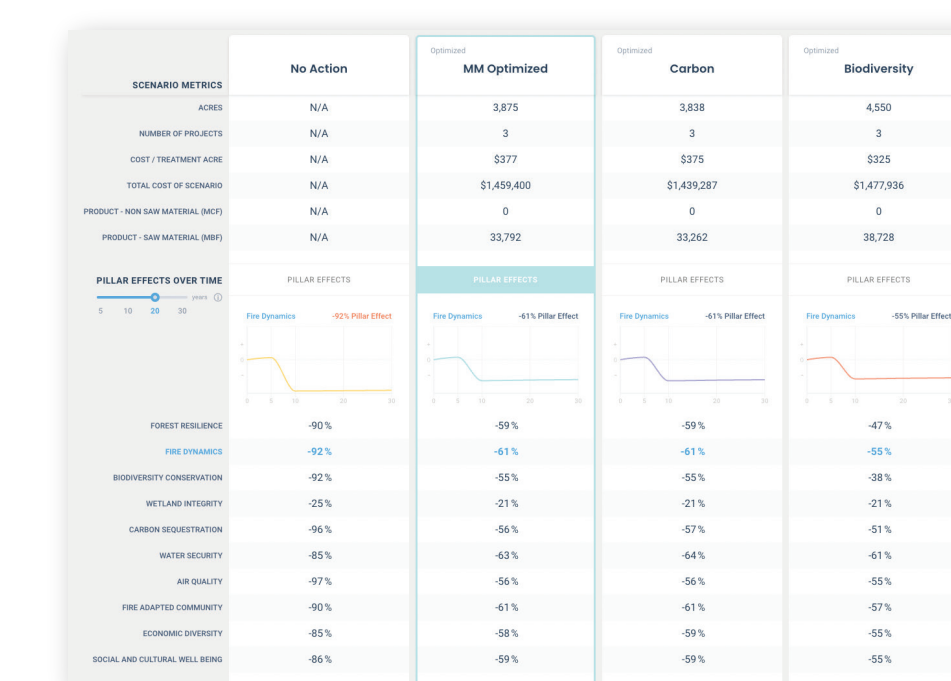
Climate Change

Climate change effects are incorporated via climate scenario-driven changes to fire and drought occurrence and intensity, and by modifying site potentials in the underlying disturbance and succession model.

Drought mortality vs climatic water deficit and tree basal area
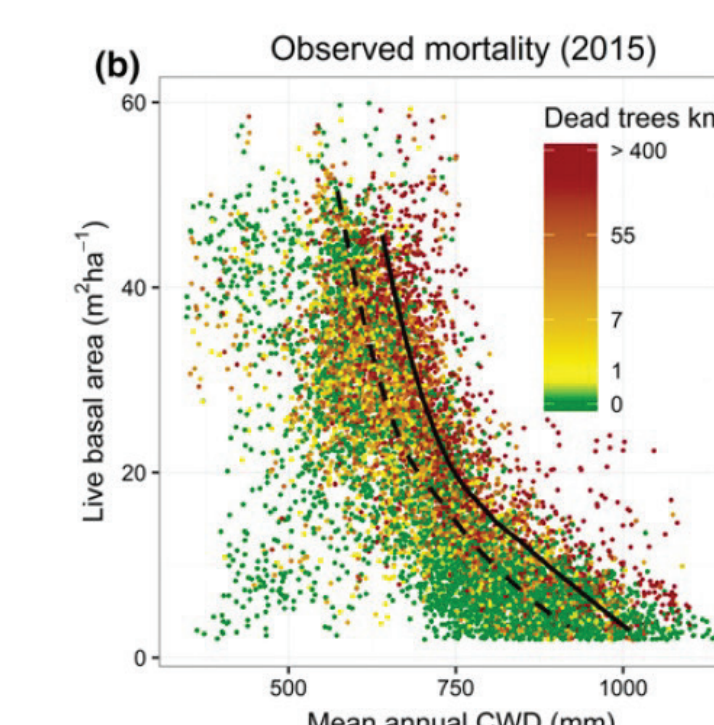
Stakeholder Participation

Stakeholders engage with Land Tender collaboratively throughout the workflow. Stakeholders visualize scenario treatment tradeoffs, treatment prioritizations, and treatment sequencing. Stakeholders and project collaborators share and compare individual scenarios and arrive at consensus and/or a range of management alternatives quickly and efficiently.

SUMMARY

Lend Tender™ Highlights

Stakeholders have efficient and meaningful input at multiple stages of the workflow
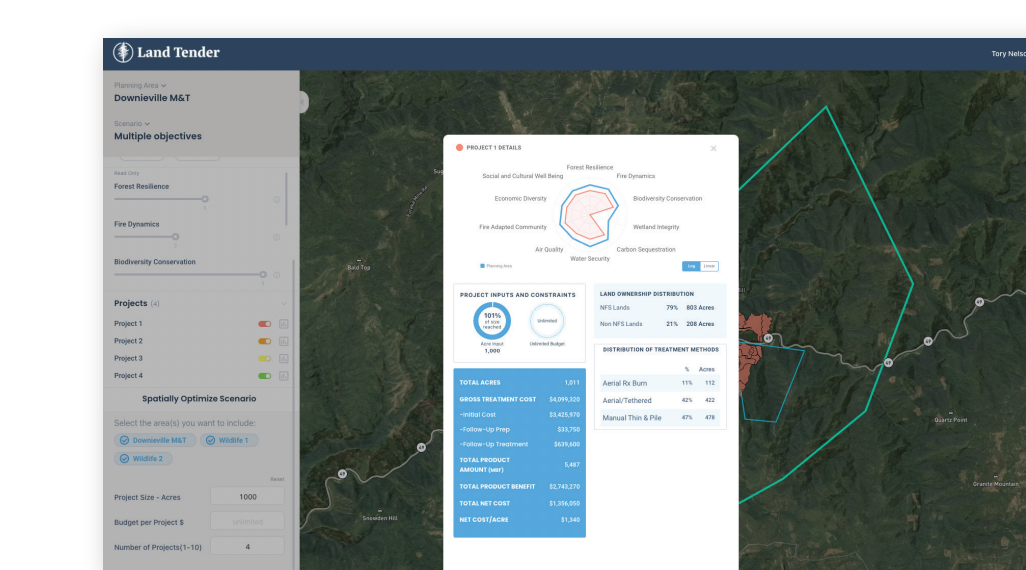

Cloud-based analyses and visualizations permit rapid assessments and real-time comparisons of management alternatives

Early estimates of project cost allow identification of investment needs and opportunities well before project planning is completed
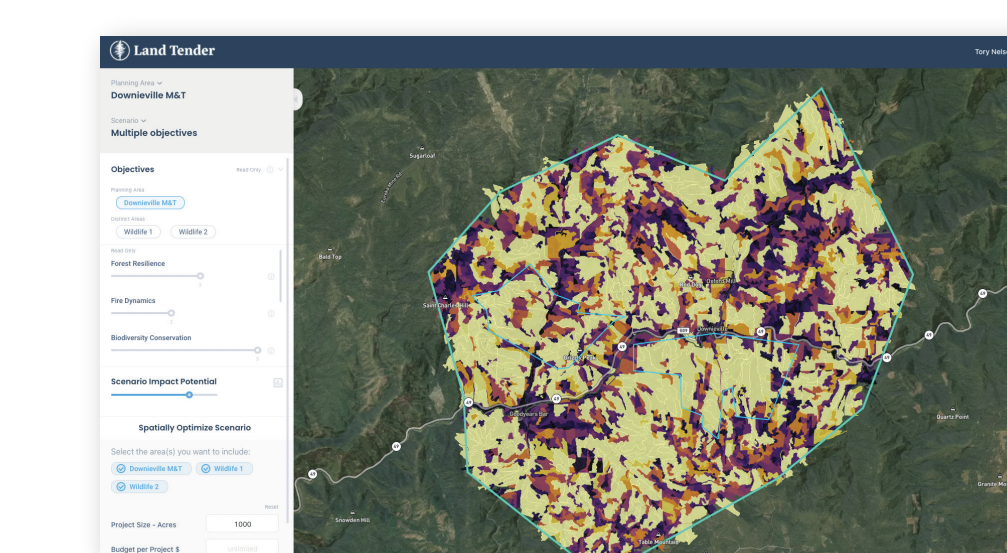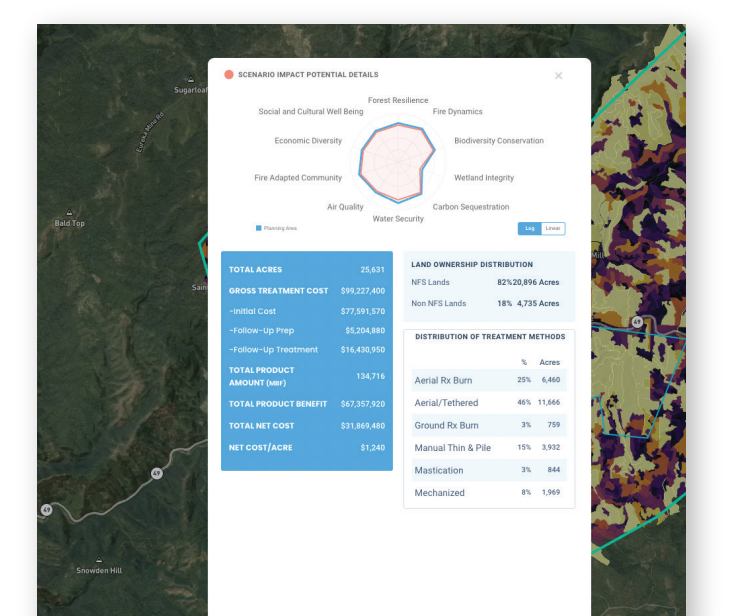
Restorative return on investment leads management to focus on important hectares rather than easy hectares

Treatment alternatives and scheduling are developed by an optimization routine weighted by user-generated prioritizations of SARA categories

THE PILLARS OF RESILIENCE
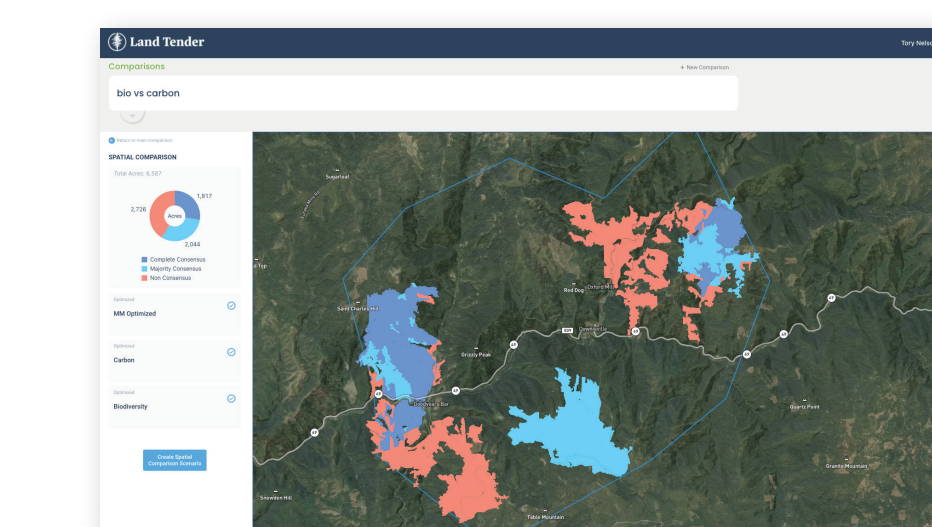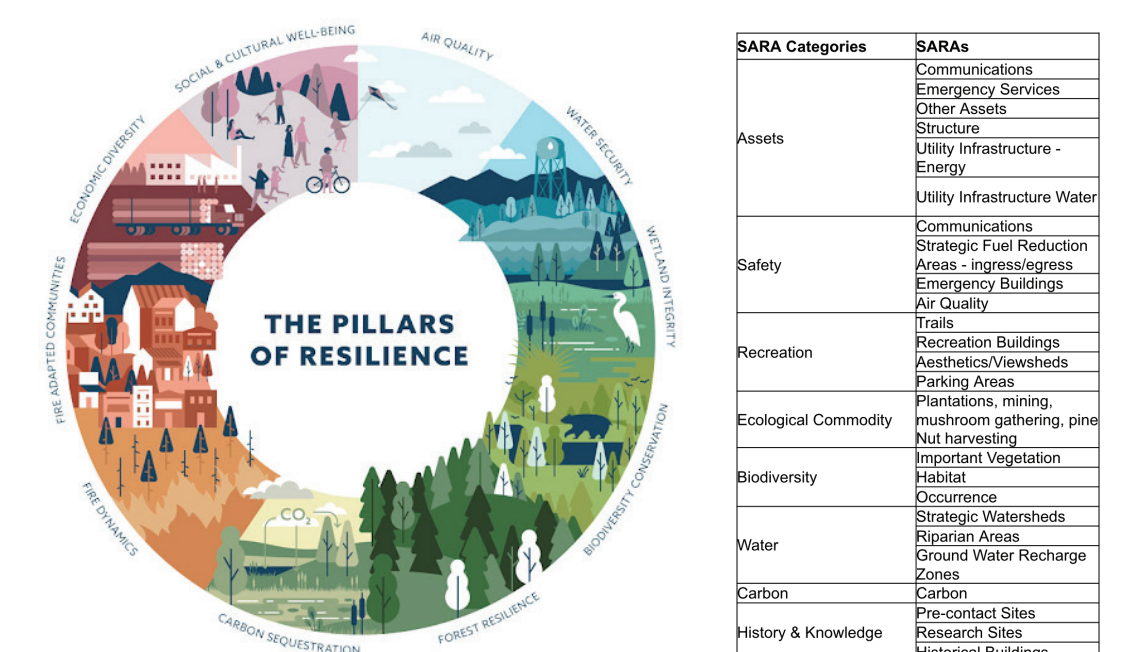
Land Tender™ implementation can cut months to years from typical planning processes in collaborative landscape management

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