Title

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Publication Date

2024-08-29

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Executive Summary

As an aspect of the Nation's green transition, critical minerals such as lithium have become more important for the creation of sustainable technologies such as EV batteries and solar voltaic energy storage. Lithium reserve discoveries at the Salton Sea in Imperial Valley, California have led to the recent development of a lithium extraction facility at the Sea. State and National advocates looking to boost the Nation's domestic battery production capabilities have been in strong support of the project throughout the process, however this urgency has led to environmental oversights on behalf of the project proponents, Critical Thermal Resources. In this context, the push for sustainable technology development seems to contradict environmental preservation and conservation goals. This policy brief will examine how assigning monetary values to the goods and services provided by nature may prove beneficial to effectively conveying the benefits of environmental preservation.

Lithium mining

A Summary of the Case Study

A lithium extraction project dubbed "Hell's Kitchen" is commencing construction at the Salton Sea in Imperial County following approval from the Imperial County Board of Supervisors. Following the assessment of lithium resources at the Salton Sea which was presented to the California State Legislature in 2020, State Legislators have widely supported the construction of a lithium extraction facility. Such support is echoed by other state and national entities in favor of increasing the Nation's EV production capacity. The main goal of the facility is to increase domestic lithium production to create more renewable energy batteries, helping accelerate the process towards state and federal zero-emissions goals. However, community advocacy groups in Imperial County such as Comite Civico Del Valle have raised important concerns relating to environmental and community health regarding the construction and operation of the extraction plant.

For some critical context, the Salton Sea is **California's largest water body** by surface area. It is a basin for runoff from the Colorado River and local agriculture in Imperial County and Mexico. As a runoff basin, the lake has high levels of *toxic sediment* that become airborne due to receding shorelines, dry lake bed disruption, etc. The condition of the lake thus plays a pivotal role in the health of the surrounding environment and its communities. The Biden Administration acknowledged this point of fragility in a 2023 commitment of **$72 million** for accelerating dust-suppression, restoration, and water conservation.[1] However, *California State Assembly Bill AB-1657* in relation to the prospects of lithium reserve extraction at the Salton Sea was signed by the Governor in 2020.

[1] "Biden-Harris Administration Announces $72 Million from Investing in America Agenda to Restore the Salton Sea." U.S. Department of the Interior, December 7, 2023. https://www.doi.gov/pressreleases/biden-harris-administration-announces-72-million-investing-america-agenda-restore.

Lithium deposits at the Salton Sea have led legislators to push for extraction projects to increase domestic lithium battery production capacity. This push is meant to align with state and national climate goals for zero-emissions targets set for completion in the next couple of decades.[2] Projections published by the Department of Energy in 2023 indicate potential production as many as **375 million electric vehicle batteries** from Salton Sea reserves alone. Key stakeholder Controlled Thermal Resources**(CTR)** received final approval of their development and extraction proposal from the Imperial County Board of Supervisors in early 2024. Although economically promising, a lithium extraction project in the region poses a threat to environmental and community health. An appeal by local community advocacy group Comite Civico Del Valle**(CCDV)** in opposition of CTR's project approval cited concerns of proposal inconsistencies and inaccuracies that improperly addressed potential environmental and community health effects of the extraction project.[3] CCDV's appeal references potential CEQA violations surrounding air pollution, freshwater consumption, hazardous materials, and habitat degradation. The appeal was denied by the Imperial County Board of Supervisors in January of 2024, however CCDV has filed a lawsuit (pending as of March 2024) to continue working towards properly addressing concerns. Prospects for domestic lithium production seem to be overshadowing the environmental health dangers associated with lithium extraction at the Salton Sea. However, concerns for environmental and community health remain pertinent for decision makers in Imperial County to address given that construction begins this year. With these concerns in mind, this policy brief will address how nature pricing can be used to entice decision makers to more seriously consider the benefits of conservation in endorsement decisions when there exists contrasting environmental priorities.

Nature Pricing In Context

How can nature pricing prove effective for uplifting important considerations?

In practice, nature pricing[4] utilizes algorithms which take spatial data for given regions to develop assessments of the benefits provided by ecosystem services. These algorithms deal with a multitude of complex layers and overlapping benefits, leading different models and software to create slightly differing projections. As a tool for decision makers, nature pricing provides quantifications that allow for the comparison of conservation benefits and sustainable development using monetary values. By gaining a better understanding of the various goods and services provided by different aspects of the natural environment at the Salton Sea, state and local decision makers will be better equipped to make more educated endorsement decisions.

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[2] Kerry, John, and Gina McCarthy. "Pathways to Net-Zero Greenhouse Gas Emissions by 2050." The Long-Term Strategy of the United States, November 2021. https://www.whitehouse.gov/wp-content/uploads/2021/10/us-long-term-strategy.pdf.

[3] Torres, Christian, and Jordan Sisson. "Appeal of Hell's Kitchen Power Co 1 and Lithium Co 1 Project." Comite Civico Del Valle Inc - Save the Valley, December 22, 2023. https://ccvhealth.org/savethevalley/.

[4] When referencing supporting materials, "nature pricing" can be considered broadly synonymous with terms such as "ecosystem service valuation" and "natural capital accounting", all of which work within the broad umbrella of environmental economics.

Nature Pricing as a Policy Making Tool

To gain a more clear understanding of how nature pricing may be usefully applied in decision making spaces, I conducted a series of interviews with individuals working in economics and environmental policy at state, federal, and private entities. When discussing the value that nature pricing presents in decision making spaces, there was broad consensus amongst participants that being able to quantify nature and ecosystem services using numerics is crucial. Although some did acknowledge that reducing environmental health to a set of numbers can be criticized by those who strive to account for nature through intrinsic value, all research participants acknowledged the unavoidable truth that numeric quantifications are necessary to display a topic's significance. Notably though, a majority of participants also cited that monetary figures are not the only - nor the most effective - figures for decision makers to consider. For example, a former Professor at UC Davis stated that other quantification methods will better accommodate certain perspectives since "the economic lens might marginalize other contrasting values" that some decision makers may prioritize more. Additionally, some participants noted that decision makers may have numeric figures for environmental health that they are already well acquainted with. For these individuals, attempting to convert ecosystem services into monetary values may be less effective than other metrics such as pollution levels or quantification of health risks.

Additional Support: Creating a Convincing Argument

In many of the interviews, participants offered additional lenses and supplemental materials that help increase the variety of ways that ecosystem services and conservation may be communicated. One critical point emphasized presenting conservation priorities through the lens of achieving social goals. A former executive from the White House's Office of Science & Technology Policy discussed how framing conservation and preservation as a key factor in facilitating social services such as stable housing, effective transportation, food security, job growth, etc. can prove effective in communicating important environmental concerns. This framework functions by appealing to the issues and concerns which are most prominent for individual officials and decision makers, acting as either a primary or additional rationale to increase environmental considerations within decision making processes. By ensuring the decision maker's priorities are presented as primary concerns, ecosystem service values can be integrated into the decision making process in a manner that encourages serious consideration.

Participants also suggested a variety of supplemental methods and materials to accompany nature pricing within the decision making process. Primarily, presenting examples of planning and development projects that successfully applied nature pricing can act as a catalyst to convince some decision makers of nature pricing's validity in the planning space. Taking decision-makers for site visits so they can see the positive impacts of environmental conservation and preservation efforts that nature pricing is meant to convey. When such examples are unavailable or unfeasible, an interviewee from the California Natural Resources Agency said that the most important strategy is to present accurate, digestible, and concise information. Especially when presenting loaded data from nature pricing models, it is essential to translate that into presentable and effective information for decision making spaces. Since decision makers will have different backgrounds and familiarity with ecosystem

services, packaging information in a way that can be understood by a wide audience is essential. In this way, the research participants highlighted the importance of strong supporting material to present nature pricing as a strong argument. The consensus amongst interviewees emphasizes that with relevant context and proper presentation, nature pricing has considerable potential to be taken seriously when decision makers endorse planning and development projects.

Facilitating the shift: Next steps towards a sustainable mindset

Moving forward, there is a broad sense of optimism regarding the future of nature pricing and environmental economics more generally. When asked about positive movements in the climate policy space that presented a lot of hope, multiple interviewees cited the inclusion of conservation and ecosystem services coming out in State and National guidance documents over the past few years. A recent shift in the mindset around addressing climate change has initiated a positive shift towards more adequately accounting for nature in decision making processes. The National Strategy to Develop Statistics for Environmental-Economic Decisions is one of many National level guidance documents released in the past two years that attempts to better address the need for quantifying the values presented by nature's ecosystem services. California-specific initiatives such as the State's 30x30 Program is paving the way for an acceleration of conservation efforts, with the goal of conserving 30% of the State's land and coastal regions by 2030. These shifts in the way that policy makers are accounting for nature in their decision making processes is an essential next step in the process. Still, the interviewees unanimously emphasized the need for **changes in our education system**. Altering the way that nature and its benefits are accounted for in decision making processes starts with reshaping how we educate people about our relationship with nature. Shifting our mindset towards considering how humans and nature can coexist in a more sustainable manner is crucial for these Federal and State initiatives to gain widespread traction. In this transition period, the application of nature pricing will play a critical role in translating ecosystem services into current decision making frameworks. Rather than requiring decision makers to fully grasp the inner workings of ecosystem services, nature pricing models can present these subjects in familiar quantifications that allow more effective accounts of nature in the decision processes. In this manner, nature pricing can be utilized as an invaluable tool to help prioritize conservation within the current decision making process around policy endorsement.

Key Resources: Hell's Kitchen

California State Legislature Bill AB-1657: Report, Votes, and Approval Timeline

- https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201920200AB1657

Salton Sea - General Information and Conservation Agenda

- https://wildlife.ca.gov/Regions/6/Salton-Sea-Program/Background
- https://www.doi.gov/pressreleases/biden-harris-administration-announces-72-million-investing-america-agenda-restore

Lithium Resource Evaluation - Department of Energy

- https://www.energy.gov/eere/articles/us-department-energy-analysis-confirms-californias-salton-sea-region-be-rich-domestic

Federal Zero-Emissions Goals

- https://www.whitehouse.gov/wp-content/uploads/2021/10/us-long-term-strategy.pdf.

Controlled Thermal Resources(CTR) - Hell's Kitchen Lithium Extraction Project Stakeholder

- https://www.cthermal.com/projects
- https://www.cthermal.com/

Environmental Impact Report(CTR)

- https://www.icpds.com/assets/hearings/8.-CUP21-0020-CUP21-0021-Hell%27s-Kitchen-PC-Hearing-Pkg-12-13-23-1702404597.pdf

Comite Civico Del Valle(CCDV): Environmental and Community Concern Documents

- https://ccvhealth.org/
- https://ccvhealth.org/savethevalley/

Key Resources: Nature Pricing and Nature-Based Solutions

United Nations Guidance Documents

- https://www.unepfi.org/publications/exploring-natural-capital-opportunities-risks-and-exposure-a-practical-guide-for-financial-institutions/
- https://seea.un.org/content/natural-capital-platforms-and-tools-green-growth-planning

United States Federal Government: Environmental Economic Strategies

- https://www.whitehouse.gov/wp-content/uploads/2023/01/Natural-Capital-Accounting-Strategy-final.pdf
- https://www.whitehouse.gov/wp-content/uploads/2022/11/Nature-Based-Solutions-Roadmap.pdf
- https://www.whitehouse.gov/wp-content/uploads/2023/11/CircularA-4.pdf
- https://www.whitehouse.gov/wp-content/uploads/2023/11/CircularA-94.pdf
- https://www.whitehouse.gov/wp-content/uploads/2024/02/ESGuidance.pdf
- https://www.whitehouse.gov/wp-content/uploads/2023/11/M-24-03-Advancing-Climate-Resilience-through-Climate-Smart-Infrastructure-Investments.pdf

Natural Capital Valuation Tools and Modeling

- https://naturalcapitalproject.stanford.edu/
- https://www.esvd.info/
- https://aries.integratedmodelling.org/get-started/#below

California Nature-Based Solution Initiatives

- https://resources.ca.gov/-/media/CNRA-Website/Files/Initiatives/Expanding-Nature-Based-Solutions/Californias-NBS-Climate-Targets-2024.pdf
- https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents
- https://www.californianature.ca.gov/
- https://resources.ca.gov/Initiatives/Cutting-Green-Tape
- https://wildlife.ca.gov/Conservation/Cutting-Green-Tape

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