

# 16th Lme

Meeting with  
Coastal Partners

Paris (FR) 8 - 11 July 2014



## Leveraging Partnerships & Economic Valuation Tools: water-energy nexus, responsible tourism, open-data innovations

Author: **Kristen Honey**

Institution: **AAAS Fellow / Stanford University**

Session: **2.2**

Day of presentation: **9 July 2014**

# Key Takeaways

Leverage existing strengths with strategic collaborations, strategic planning

- Highlight “bright spots” examples, leveraging economic valuation tools
- Encourage LME community to think further outside the box to expand the LME modules with existing indicators, lessons learned, and best practices already developed and available today in TRILLION dollar industries:
  - Water-energy nexus
  - Responsible tourism
  - Open-data innovations
- Extract lessons from win-win partnerships that leverage alliances/innovations to catalyze real-world impacts and sustainability



# Economic valuation lessons learned & best practices— Follow the “bright spots”



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Leverage existing strengths with strategic planning, strategic collaborations

Natural Capital Project



Center for Ocean Solutions





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# The Natural Capital Project



The Nature  
Conservancy



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ENVIRONMENT  
UNIVERSITY OF MINNESOTA  
Driven to Discover™

**Mission:** *The Natural Capital Project (NatCap) aims to integrate the values of nature into all major decisions affecting the environment and human well-being.*

## Free and open-source software suite:

- **InVEST 3.0** Integrated Valuation of Environmental Services and Tradeoffs
- **RIOS** Resource Investment Optimization System for watershed management

<b>Improving the state of biodiversity and human well-being by motivating greater and more cost-effective investments in both</b>		<b>Download InVEST</b>
		<b>InVEST</b> integrated valuation of environmental services and tradeoffs
Natural Capital = Earth's lands, waters and their biodiversity	Ecosystem Services = The stream of vital benefits flowing from natural capital to people	InVEST is the leading tool for incorporating natural capital into decisions





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## Integrated Valuation of Environmental Services and Tradeoffs (InVEST) 3.0

[http://naturalcapitalproject.org/  
download.html](http://naturalcapitalproject.org/download.html)

NatCap contacts:

- **Gretchen Daily**, Stanford
- **Mary Ruckelshaus**, Stanford

Planning step	How InVEST can help
1. Scoping	Explore how ecosystem services interact
2. Engage Stakeholders	N/A
3. Develop governance structure	N/A
4. Define indicators and thresholds	Assess how marine use may affect ES
5. Assess existing conditions	Assess current ES status
6. Develop future scenarios	Develop future scenarios based on possible alternatives
7. Assess future scenarios	Assess impacts of future scenarios
8. Develop spatial management plan	Inform plan (based on previous steps)
9. Identify sustainable finance	Identify ES beneficiaries
10. Implementation	Identify ES providers/beneficiaries for enforcement plan
11. Monitoring and evaluation	Inform design of monitoring plans
12. Adaptive management	Assess returns of management plans; inform adaptation





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- Vancouver Island, Canada, examines tradeoffs among aquaculture, wave energy generation, fisheries, and coastal protection in marine spatial planning process



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## Resource Investment Optimization System (RIO) for watershed management

<http://naturalcapitalproject.org/RIOS.html>



- Water funds are conservation financing mechanisms that gather investments from water users and direct the funding toward the protection and restoration of key lands upstream that filter and regulate water supply.







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- Latin American stakeholders helped to develop RIOs with input from more than 11 water funds (watershed investment programs).







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- Latin American stakeholders helped to develop RIOS with input from more than 11 water funds (watershed investment programs).
- Columbia improved its return on investment by up to 600% using RIOS, compared to previous approaches to watershed investment.

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# Center for Ocean Solutions



**Mission:** *The Center for Ocean Solutions works to solve the major problems facing the ocean and prepares leaders to take on these challenges.*

Excellent example of how  
to leverage strengths and  
existing resources through  
strategic collaborations,  
strategic planning

COS contacts:

- **Meg Caldwell**, Executive Director
- **Larry Crowder**, Science Director



## Climate Change

Understanding the threats of rising temperature and carbon dioxide levels facing ocean processes, habitats and organisms.



## Ecosystem Health

Sustaining the supply of ecosystem goods and services to coastal societies without compromising ecosystem fundamental structure and functioning.



## Land-Sea Interaction

Addressing the impacts of land-based activities and pollution on valuable coastal ecosystems.





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# Economic valuation lessons learned & best practices— Follow the “bright spots”



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...and think further outside the box to expand the LME socioeconomics module with existing indicators, lessons learned, and best practices:

- Water-energy nexus
- Responsible tourism
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WATER  
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WEST

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FOR THE ENVIRONMENT

THE BILL LANE CENTER FOR  
THE AMERICAN WEST



Center for Responsible Travel  
Transforming the way the world travels





# Economic Valuation: Water-Energy Nexus

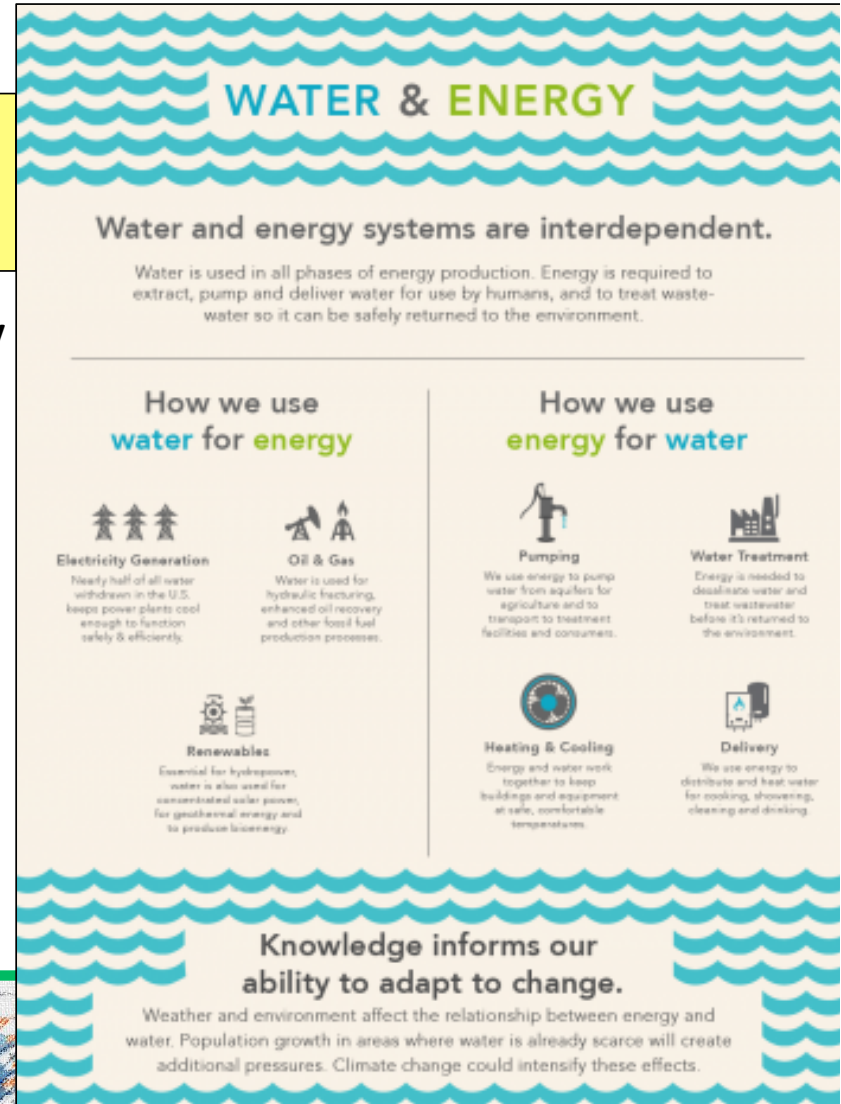
Global electricity market expected to increase to **\$3.2 Trillion** in 2015

- Global Electricity 2012

- International development requires energy

**Interlinked resources vital for economic growth and sustainability**

Infographic by  
DOE 2014



# Economic Valuation: Water-Energy Nexus

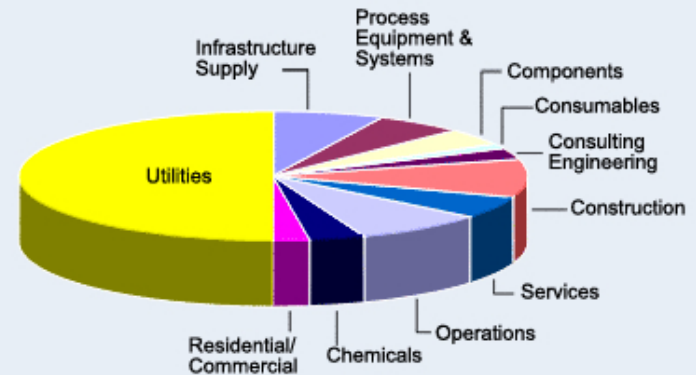
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- International development requires energy
- Energy & water systems are interdependent

Segments of the ~\$375 billion global water industry  
**Global Water Industry Segments**



<http://www.snetglobalwaterindexes.com/market.html>

Water-energy nexus contacts:

- **Buzz Thompson**, Water in the West, Stanford University, CA
- **Michelle Wyman**, U.S. Department of Energy, Washington D.C.
- **Diana Bauer**, U.S. Department of Energy, Washington D.C.



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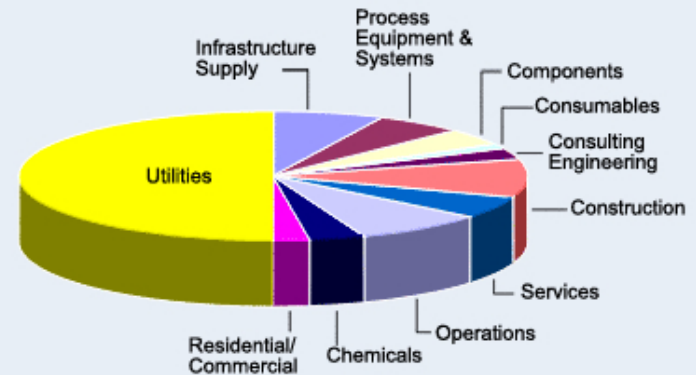
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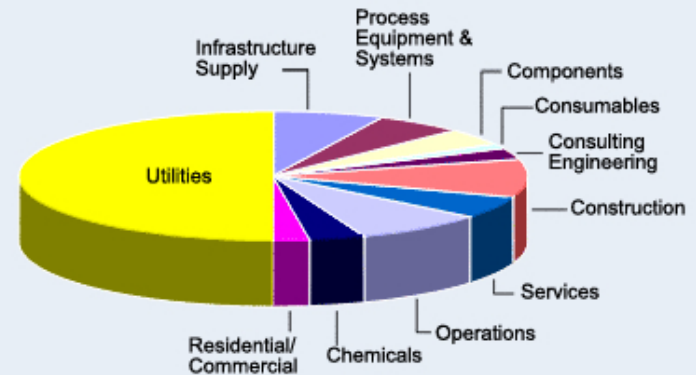
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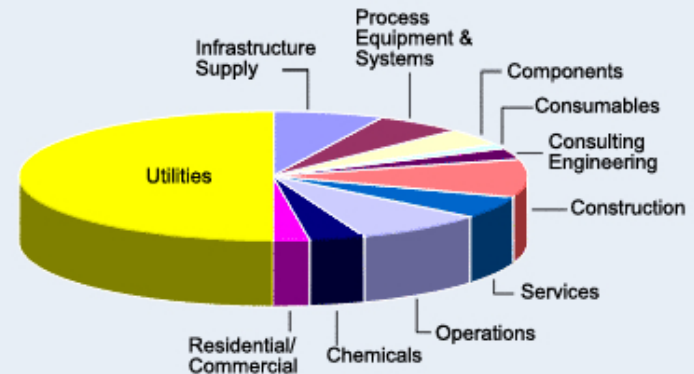
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- Water scarcity, variability, and uncertainty are becoming more prominent, potentially leading to vulnerabilities of energy systems.
- LME socioeconomics & governance modules can leverage existing partnerships/knowledge for integrated approaches to challenges/opportunities at the water-energy nexus.

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<http://www.snetglobalwaterindexes.com/market.html>



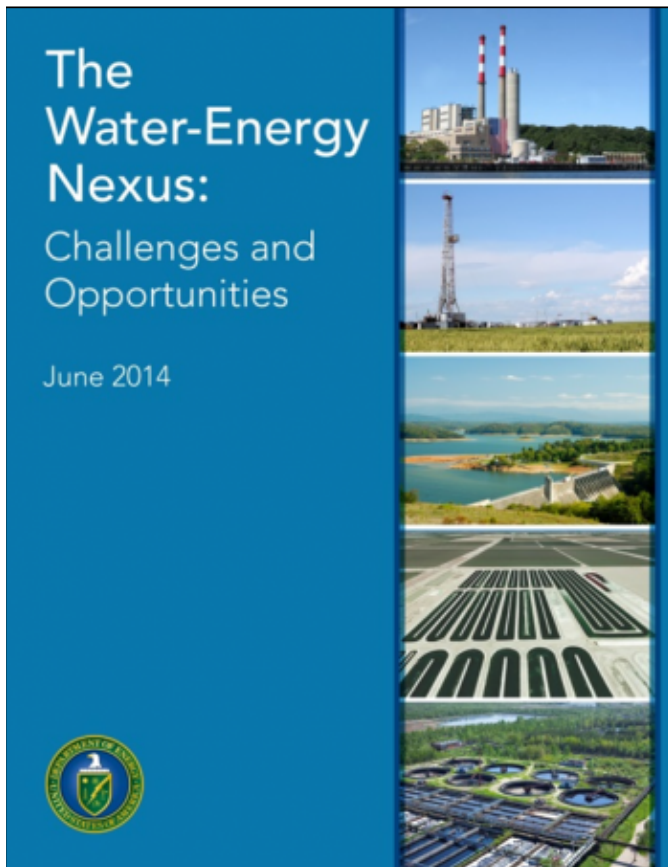
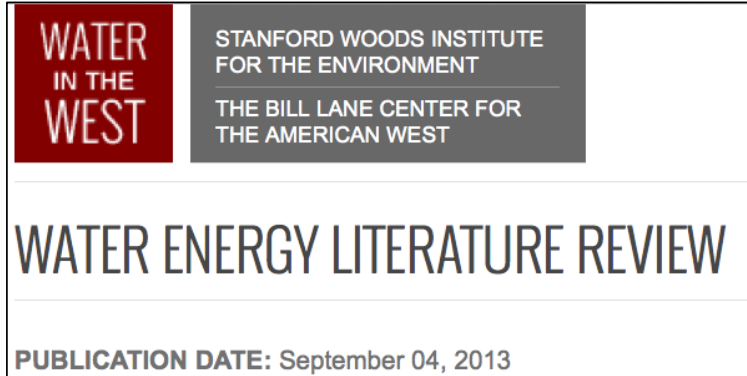


# Economic Valuation: Water-Energy Nexus



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Stanford University prioritizing water-energy nexus solutions  
“Water in the West”



**U.S. Department of Energy (DOE) prioritizing  
water-energy nexus solutions  
DOE Water-Energy Nexus Report**

“The Water-Energy Nexus: Challenge and Opportunities lays out an array of technical and operational challenges across the water-energy nexus at local, regional, and national scales.”

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# Economic Valuation: Responsible Tourism



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- In 2011, international tourism receipts surpassed \$1 Trillion.

CREST contacts:

- **Martha Honey**, CREST Co-Founder & Director, Washington D.C.
- **William Durham**, CREST Director at Stanford University, CA



# Economic Valuation: Responsible Tourism



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- Tourism is one of the top five export earners in four out of five countries (over 150).



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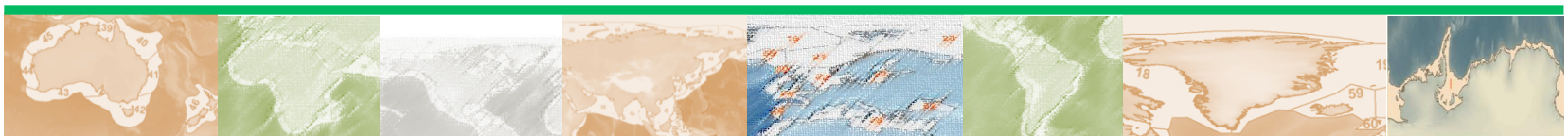
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- **Responsible tourism is one of several related terms that are ethically based (ecotourism, geotourism, pro-poor tourism, responsible tourism, sustainable tourism, voluntourism).**





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- Ecotourism can return as much as 95% of revenues to the local economy, compared to only ~20% for “standard all-inclusive package tours,” according to 2011 UN-supported study by the Collaborative Partnership on Forests.



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- **LME socioeconomics & governance modules can leverage existing partnerships, lessons learned, best practices, and certification criteria/metrics to foster responsible tourism.**

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# Economic Valuation: Responsible Tourism

CREST lessons learned and best practices: <http://www.responsibletravel.org/>

## “The Case for Responsible Travel: Trends and Statistics 2014”

examines a wide range of surveys and studies done in the past five years to assess commitment to responsible travel, that is, "travel that minimizes negative impacts, brings economic benefits to host communities, and preserves the cultural and natural resources of the destinations.”



**Global Sustainable Tourism Council** criteria, indicators, metrics: <http://www.gstcouncil.org/>

**Certification for Sustainable Tourism** TIES and GWU: <https://www.ecotourism.org/>

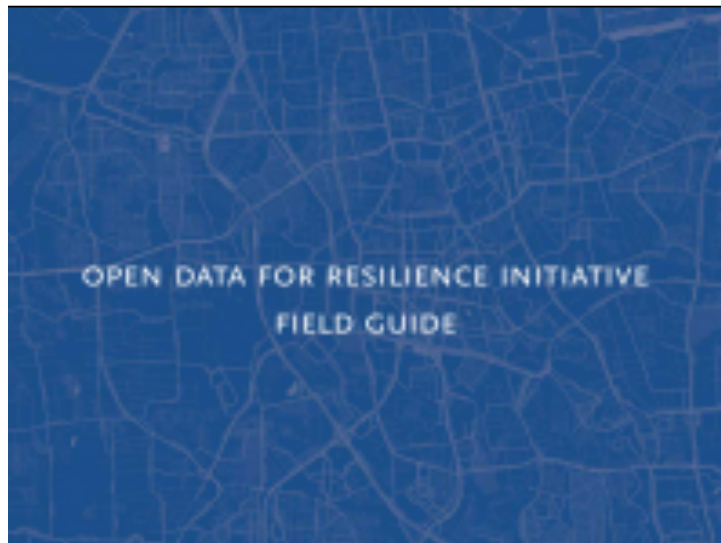
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# Economic Valuation: Open-Data Innovations

The McKinsey Global Institute estimates that the annual value across seven sectors of the economy totals **\$3 Trillion** or more worldwide in 2013.

Open Data is accessible public data we can use to launch new ventures, analyze trends, make data-driven decisions, and solve complex problems.





# Economic Valuation: Open-Data Innovations

Governments are making data “open by default” for increased:

- Transparency
- Accountability
- Citizen engagement
- Stakeholder empowerment
- Efficient and effective delivery of public services
- Opportunities for entrepreneurs
- Accelerated pace of R&D and business innovations



**LME modules can leverage existing partnerships, lessons learned, best practices, and “common core” metadata schema, including:**

- Project Open Data: <http://project-open-data.github.io/>
- #ClimateData Initiative: <http://www.data.gov/climate/>
- Open Data for Resilience Initiative: <https://www.gfdrr.org/opendri>

Open-Data Innovations contacts:

- **Joel Gurin**, Founder, Open Data 500, GovLab, NYU
- **Charles Worthington**, Presidential Innovation Fellow, OSTP, White House





# Key Takeaways

Leverage existing strengths with strategic collaborations, strategic planning

- **Highlight “bright spots” examples, leveraging economic valuation tools:**
  - Natural Capital Project
  - Center for Ocean Solutions
- **Encourage LME community to think further outside the box to expand the LME socioeconomics module with existing indicators, lessons learned, and best practices already developed and available today in TRILLION dollar industries:**
  - Water-energy nexus
  - Responsible tourism
  - Open-data innovations
- **Extract lessons from win-win partnerships that leverage alliances/innovations to catalyze real-world impacts and sustainability:**
  - No one size fits all
  - Leverage and replicate successes, using rigorously defined “best practices”
  - Customize to local context — often driven by bottom-up leadership to address on-the-ground challenges, matched with top-down resources and support

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# Concluding Observations

- **Leverage existing partnerships & resources, whenever possible.**
- **Transform scientific data into insights and \*ACTIONABLE\* items:**
  - Emphasize taking action & actionable outcomes
  - Package data/products for decision makers
- **Emphasize public-private partnerships as government institutions are not designed for innovation, creativity & disruptive technologies... yet all these are necessary to address climate change & sustainability challenges:**
  - Role of government is partnering to encourage & foster creative innovation
  - Partner on all fronts and at all levels/scales, from individual to international
- **Solutions will be local:**
  - Customize to local/regional context, where “top-down” political will, leadership & resources meet “bottom-up” needs, leadership & innovation
  - Creative solutions not likely universal – although some can be replicated & modified to scale up.
  - Recommended approach is tackle complex climate & data challenges from all angles, on all levels/scales, through all sectors (gov’t, private, NGO, academia)



# Many Thanks!

## American Association for the Advancement of Science (AAAS)

- AAAS Science & Technology Policy Fellowships

## Center for Responsible Tourism (CREST), Washington D.C. headquarters

- Martha Honey

## Stanford University

- Emmett Interdisciplinary Program in Environment and Resources (E-IPER) Department
- Woods Institute for the Environment
- Natural Capital Project
- Center for Ocean Solutions
- Center for Responsible Tourism (CREST) Stanford University office
- Precourt Institute for Energy

## Environmental Defense Fund (EDF)

- Rod Fujita

## U.S. Department of Energy

- EERE Strategic Programs Office
- Water-Energy Tech Team

LME Community  
IOC/UNESCO  
NOAA

## Discussion & Questions?

Kristen Honey  
[khoney@stanford.edu](mailto:khoney@stanford.edu)

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