



# Ecosystem service knowledge in decisions

*really??*

## What does it look like?

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Natural Capital Project & WWF

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# Outline: ES knowledge in decisions

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- NatCap approach
- Dream vs. reality
- Insights from spatial planning
  - How was knowledge used?
  - What enables use?

people's lives and livelihoods depend on nature



understanding where and when nature matters most



will improve decisions



# NATCAP'S APPROACH

Advance science of  
ecosystem services

Create user-friendly  
approaches & tools

Build capacity  
and tell success  
stories



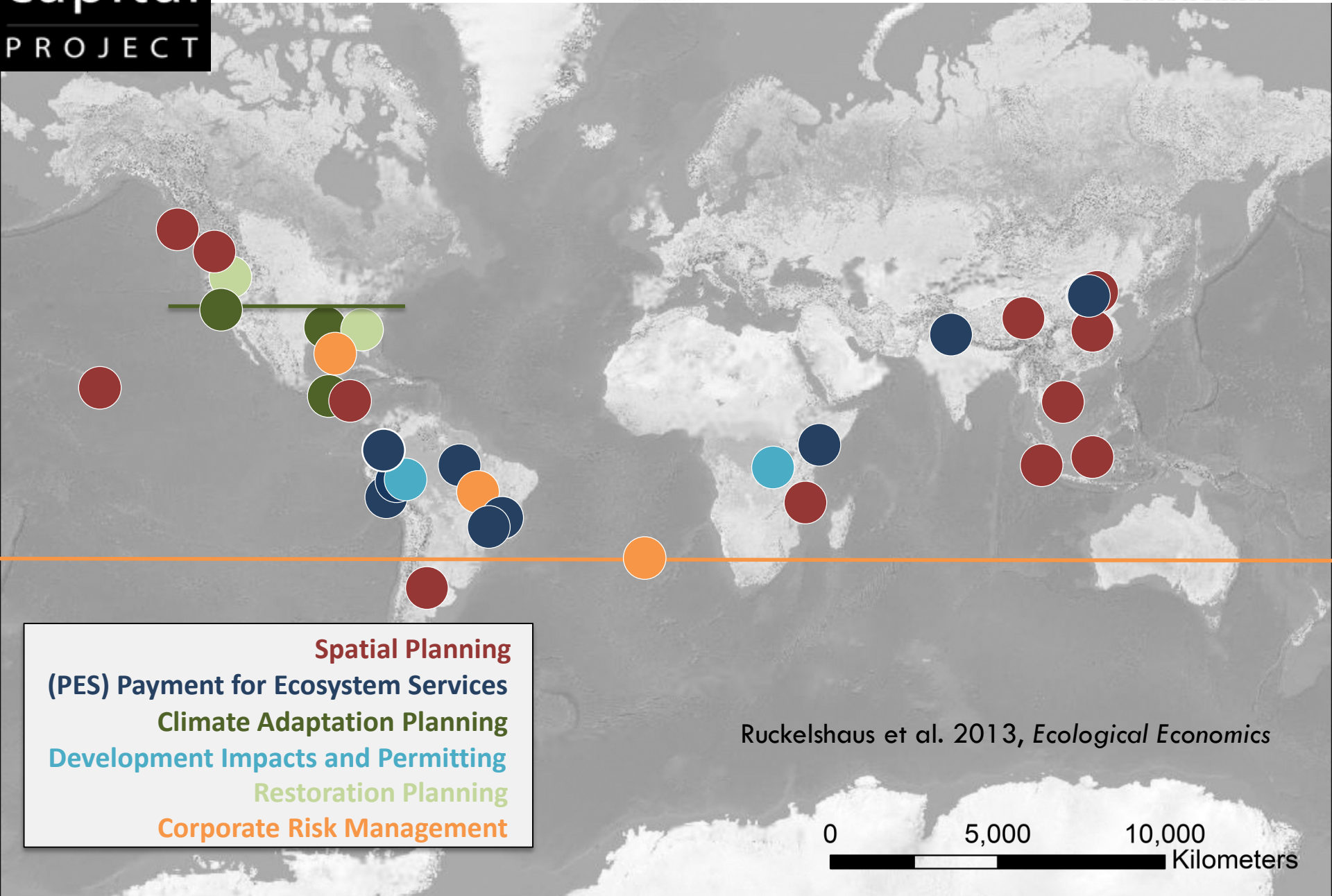
**Get information about natural  
capital into decisions**

**Make decisions with better  
outcomes for people and  
nature**

# What evidence exists?

- Others share dreams: ES info → decisions
- But few assess whether information used
- Scant evidence and slow progress





How is ecosystem service  
knowledge used in spatial  
planning?





# Ways knowledge used?

1. Conceptual use
2. Strategic use
3. Instrumental use





# Conceptual use



@ Jürgen Freund / WWF

Knowledge broadens and deepens understanding, shapes thinking, and builds new beliefs and values

# Strategic use



Knowledge is used to support a specific intervention or policy option, or justify previously held beliefs and values

# Instrumental use



Knowledge flows from scientists to rational decision makers who make observable decisions on technical grounds



An aerial photograph of a coastal town. In the foreground, there's a road and some greenery. Behind it, several houses with different colored roofs (red, grey, blue) are visible, interspersed with palm trees. The town is situated along a curved shoreline. In the background, the ocean is visible with a few small boats. A semi-transparent grey box is overlaid on the lower half of the image, containing text.

## Conceptual use

- Strong evidence, esp. early on
- Belize example:
  - Evidence on likely impacts of mangrove clearing for proposed port on coastal vulnerability
  - Influenced stakeholder preferences in scenarios



## Strategic use

- Strong evidence; later and iterative
- Vancouver Island example:
  - First Nation used evidence on likely effects of aquaculture and float homes on water and habitat quality in tribal park
  - Used to strengthen their case .

# Instrumental use

- Limited evidence in all 3 cases
- Belize example:
  - Coastal Zone Management Plan based on compromise scenario
  - Approved by Board, soon to be voted by legislature

## Belize Integrated Coastal Zone Management Plan 2013

Coastal Zone Management Authority and Institute  
Ministry of Forestry, Fisheries, and Sustainable Development



*Promoting the Wise, Planned Use of Belize's Coastal Resources*

Cite as:

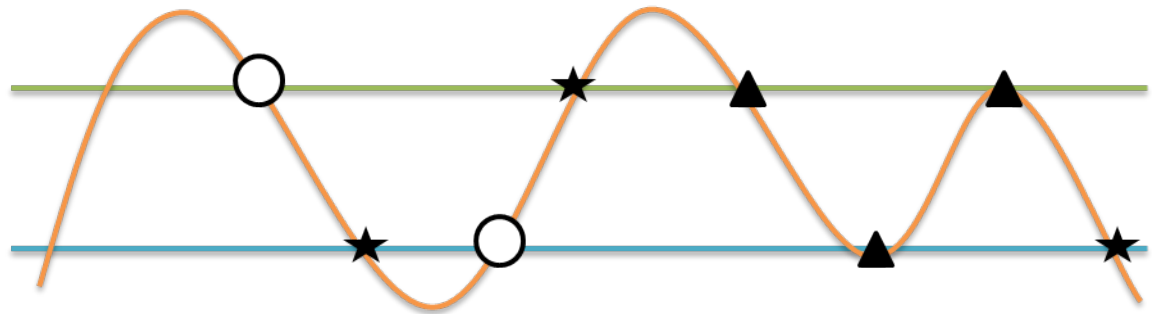
Clarke, C., M. Canto, S. Rosado. 2013. Belize Integrated Coastal Zone Management Plan. Coastal Zone Management Authority and Institute (CZMAI). Belize City.

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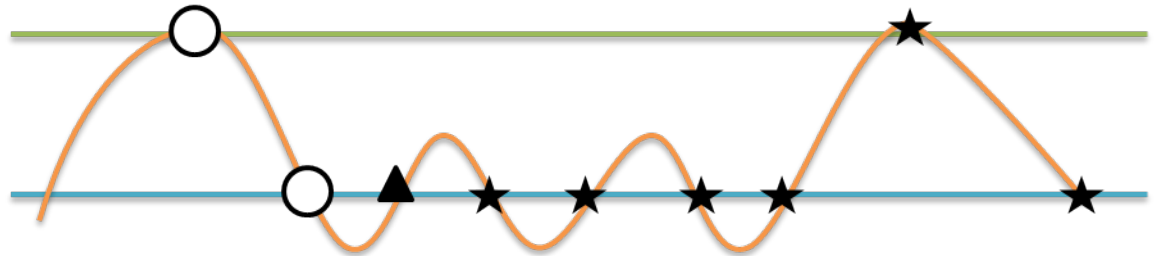
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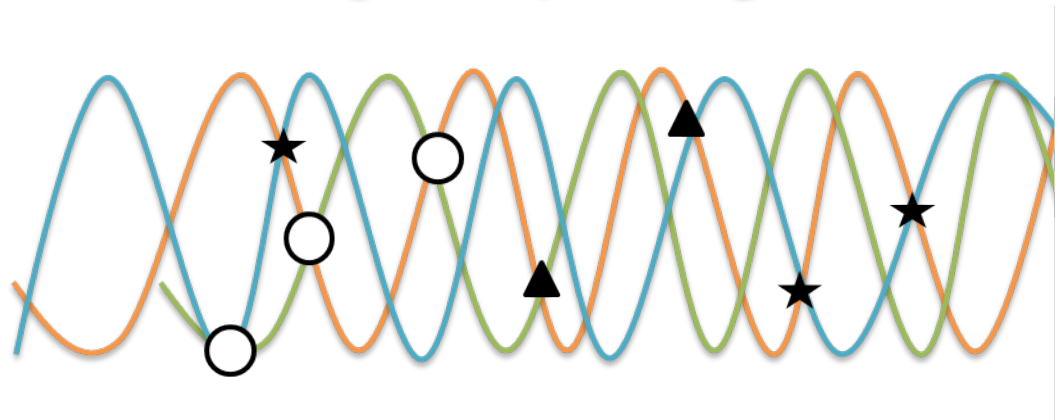
# Belize



# Hawaii



# WCVI



Policy makers —

Stakeholders —

Scientists —

Conceptual ○ Strategic ★ Instrumental ▲

Time →

# What enables use?

- **Conceptual use**

- Meaningful participation: diverse groups regularly
- ES affected by externalities, not yet quantified

- **Strategic use**

- Scenarios – to express values, preferences, goals

- **Instrumental use**

- Established planning process, clear decision authorities, agreed scientific basis

# Conclusions

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- ES knowledge use is complex
- Requires more research, new disciplines / thinking
- Promising approaches for empirical work
- Early engagement & long time horizon needed



# Many thanks to



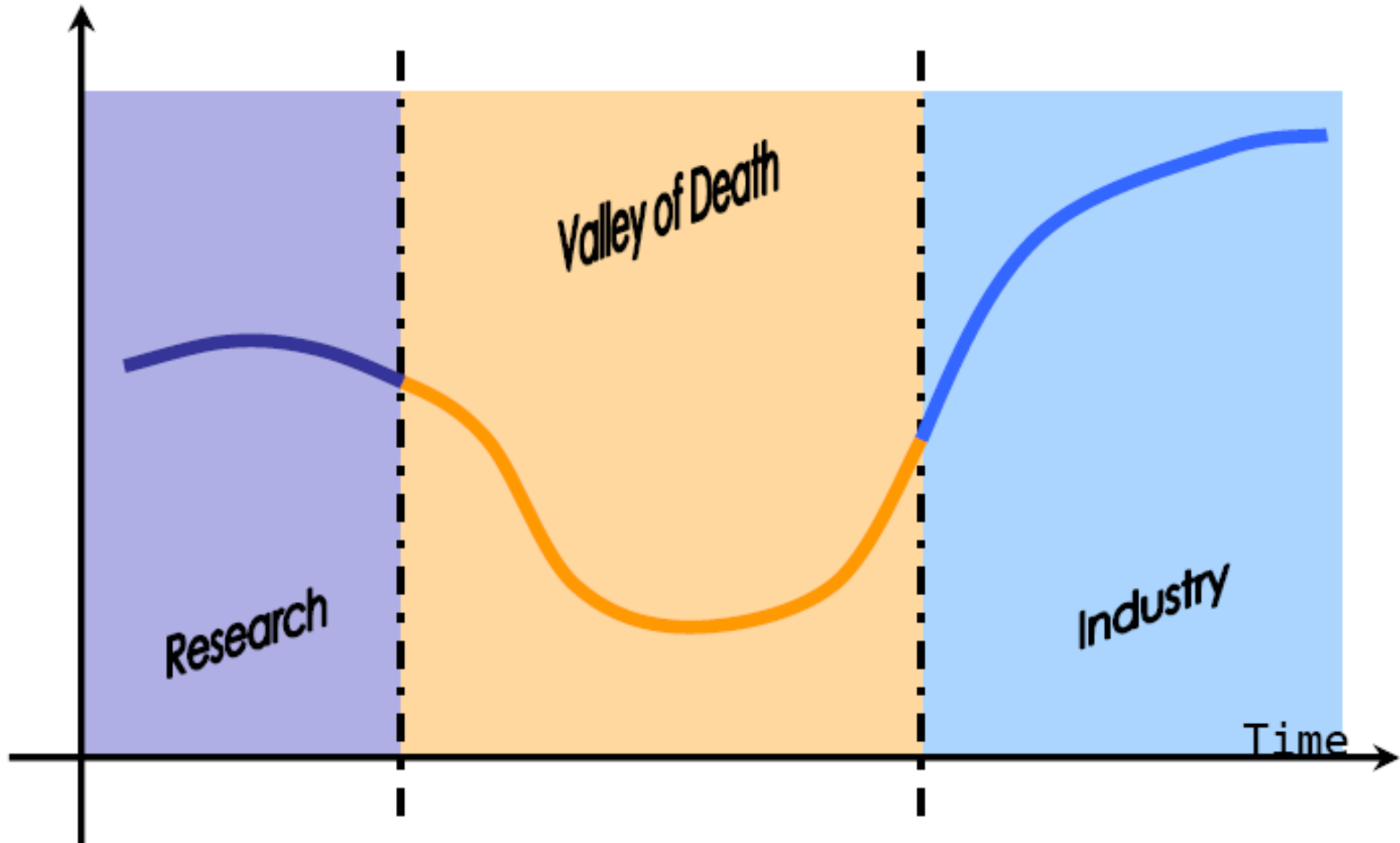
- Patricia Tillmann
- Steve Posner
- Joey Bernhardt
- Kirsten Howard
- Amy Rosenthal
- Katie Arkema
- Giorgio Calderone
- Bill Clark
- Brendan Fisher
- Josh Goldstein
- Anne Guerry
- Neil Hannahs
- Kevin Head
- Kai Lee
- Michael Mascia
- Pamela Matson
- Taylor Ricketts
- Mary Ruckelshaus
- Jennifer Spencer
- Gregory Verutes
- Spencer Wood
- Google
- Summit Foundation
- And many, many others....

# Spare slides

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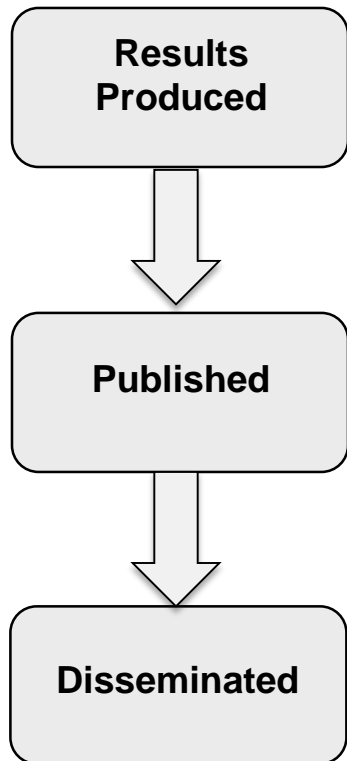


# Valley of death?? Something on going to scale?





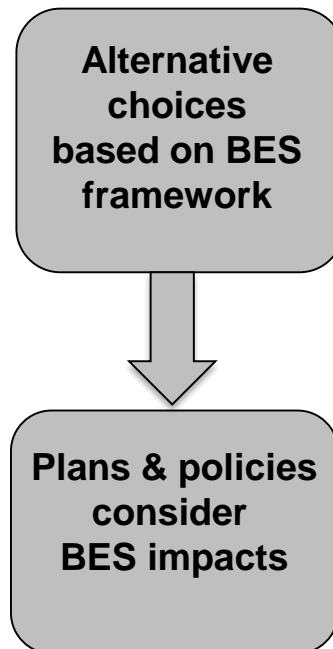
**PATHWAY 1:  
Conduct Research**



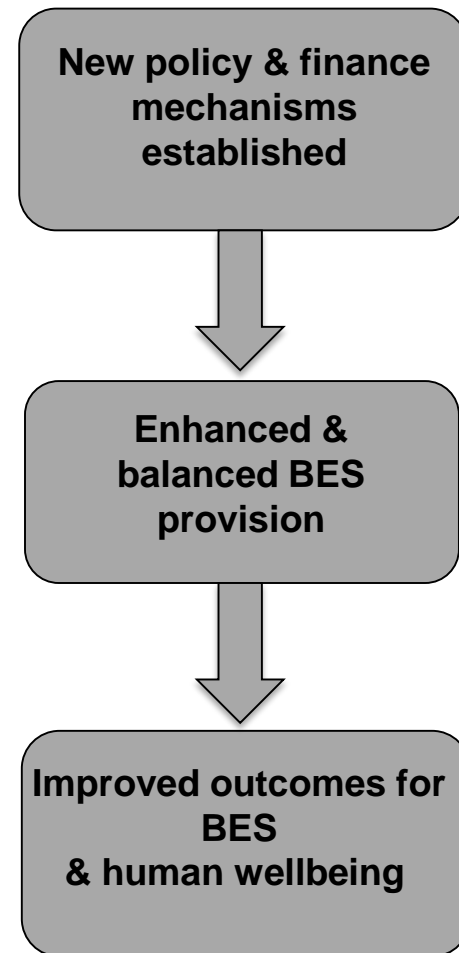
**PATHWAY 2:  
Shape Minds**



**PATHWAY 3:  
Generate Action**



**PATHWAY 4:  
Improve Wellbeing of People and Nature**



Increasing impact

Context	Location	Decision Makers	Impact Level			
			1	2	3	4
Spatial Planning	Sumatra, Indonesia	government				
	Belize	government				
	Oahu, Hawaii	private				
	Vancouver Island, Canada	government, private				
	Baoxing Country, China	government				
	Upper Yangtze Basin, China	government				
	Hainan Island, China	government				
	Kalimantan, Indonesia	government				
	Department of Defense: WA, VA, GA	government				
	Puget Sound, Washington	government				
	Cauca Valley, Colombia	government, private, NGO				
PES Design	Medellin, Colombia	government, private, NGO				
	Amazon, Brazil	government, private, NGO				
	Eastern Arc Mountains, Tanzania	government				
	Beijing, China	government				
	Putumayo region, Colombia	government				
	Monterey & Santa Cruz County, CA	government				
Climate Adaptation	Galveston Bay, Texas	government				
	Cesar Department, Colombia	government				
Permitting/ Mitigation	Virungas: DRC, Uganda and Rwanda	government				
	Mobile Bay, Alabama	NGO				
Corporate Risk Mgmt	Freeport, Texas	private				

### Legend

**Colors:** evidence of impact on the ground (darker shades, more impact)  
**Grey:** currently working toward that level of impact

1. CO-PRODUCE  
KNOWLEDGE

Results  
produced



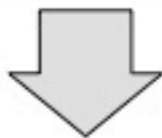
Published



Disseminated

2. SHAPE  
MINDS

People aware  
of and  
understand ES



Stakeholders  
focused on ES

3. BUILD  
SUPPORT

Common  
language  
developed



Different  
positions  
articulated



Stakeholder  
differences  
mediated

4. GENERATE  
ACTION

4a

Alternative choices  
based on ES  
framework



Plans and policies  
consider ES impacts

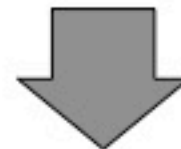


4b

New policy and  
finance mechanisms  
established

5. PRODUCE  
OUTCOMES

Enhanced and  
balanced ES  
provision



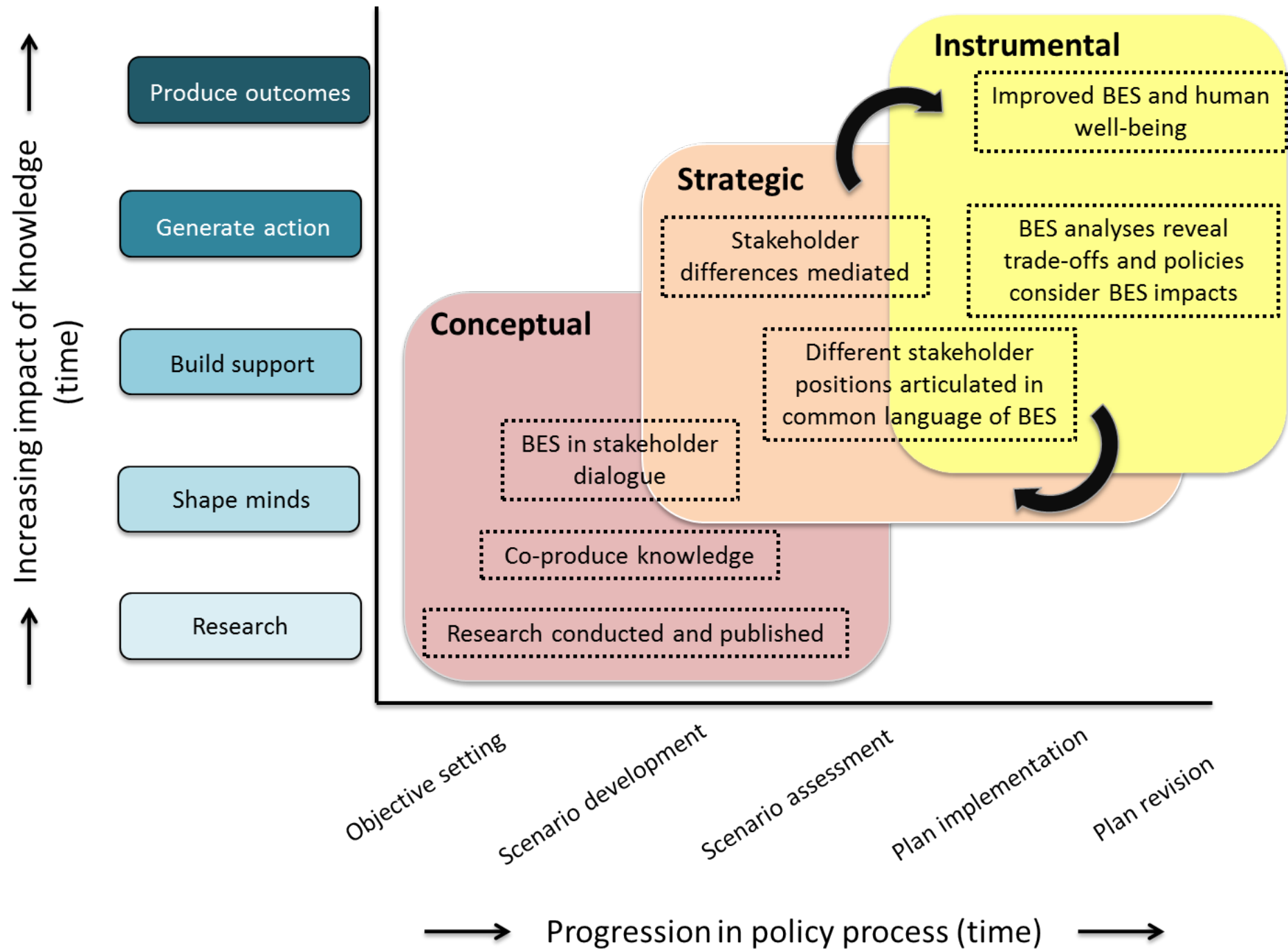
Improved  
outcomes for  
biodiversity,  
ecosystem health  
and human  
wellbeing

Conceptual

Strategic

Instrumental

Increasing impact





# Select decision contexts carefully



- We now often evaluate the ‘ 5 Ps ’ –
  - Policy question
  - Policy window
  - People
  - Pertinent data
  - Iterative science-policy Process.

Rosenthal et al. 2014. IJBSESM