



**Valuation of marine and coastal  
ecosystem services:  
Challenges, solutions and  
applications**

James Blignaut

**Dubai**



**Algoa Bay**

**Abu Dhabi**



**1**

**Defining the rationale**

**2**

**Defining and mapping the ecosystems of resource**

**3**

**Selecting the appropriate valuation method/s**

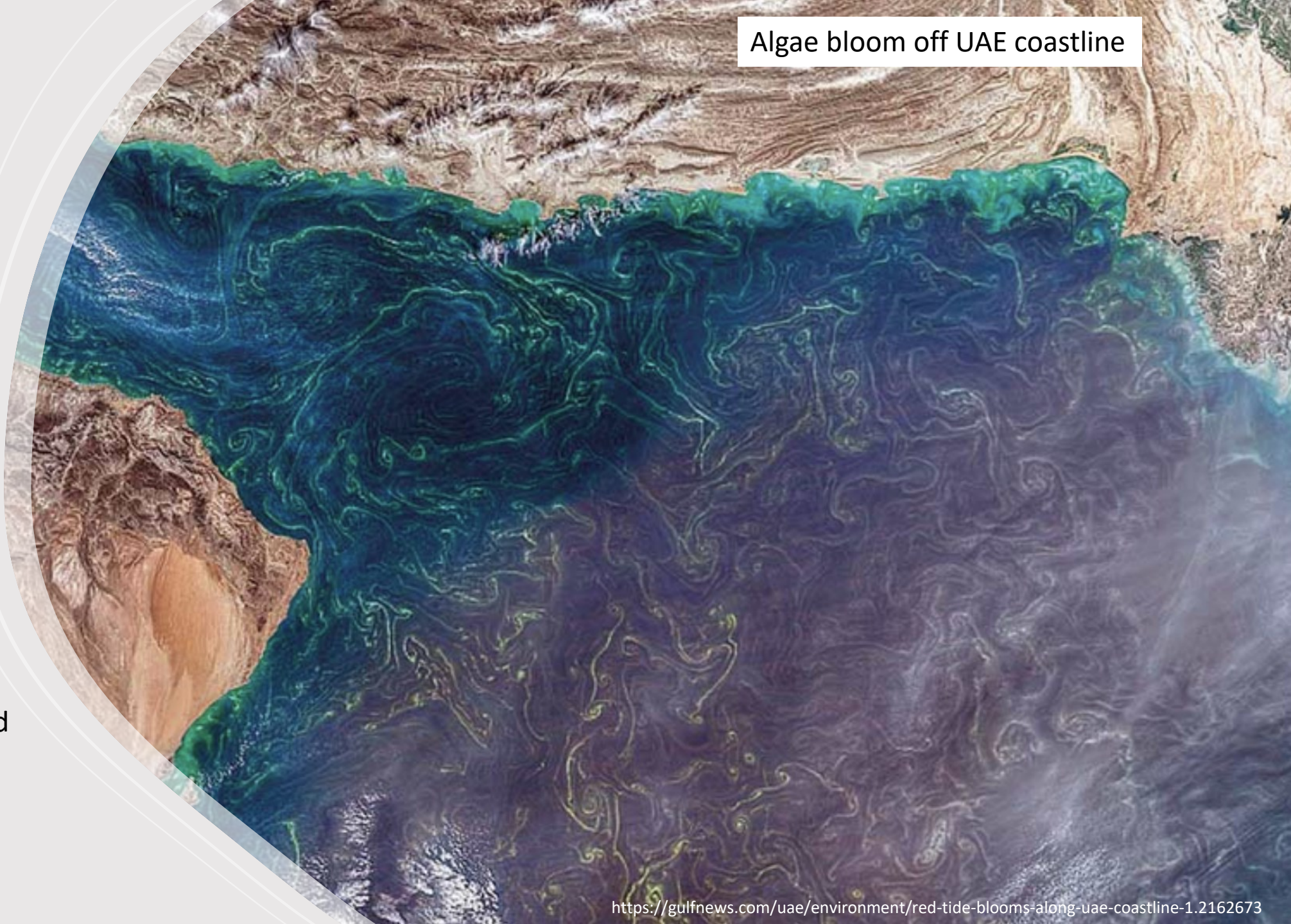
**4**

**Results feeding into ocean accounts and others**

**5**

**Communicating the results**

Algae bloom off UAE coastline



- Prevalence of harmful algae bloom (HAB):
  - Opportunity cost of the loss of amenity values and the impact on the economy.
- Resource trade-off decision-making.
- Resource conservation strategies.
- Blue carbon:
  - Opportunity cost of carbon ecosystems that are under intense pressure, from conflicting land uses.
- Others

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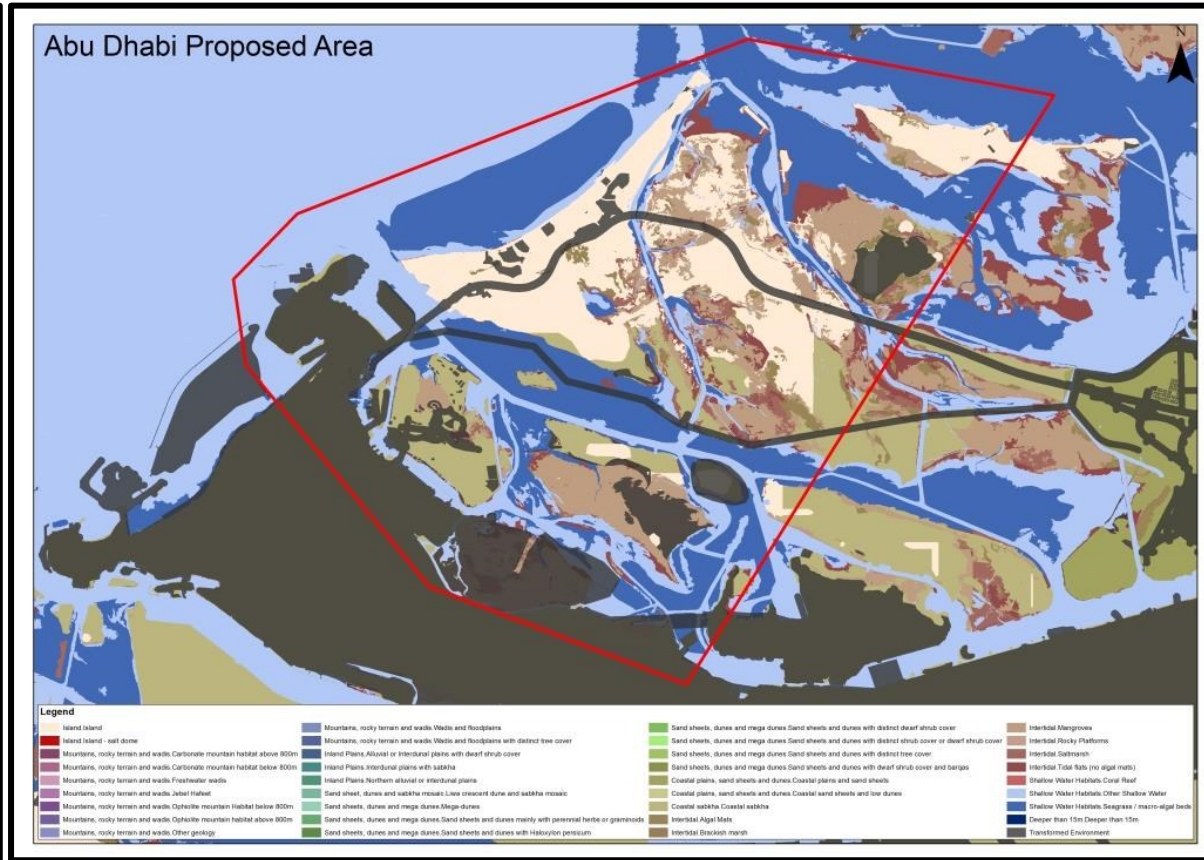
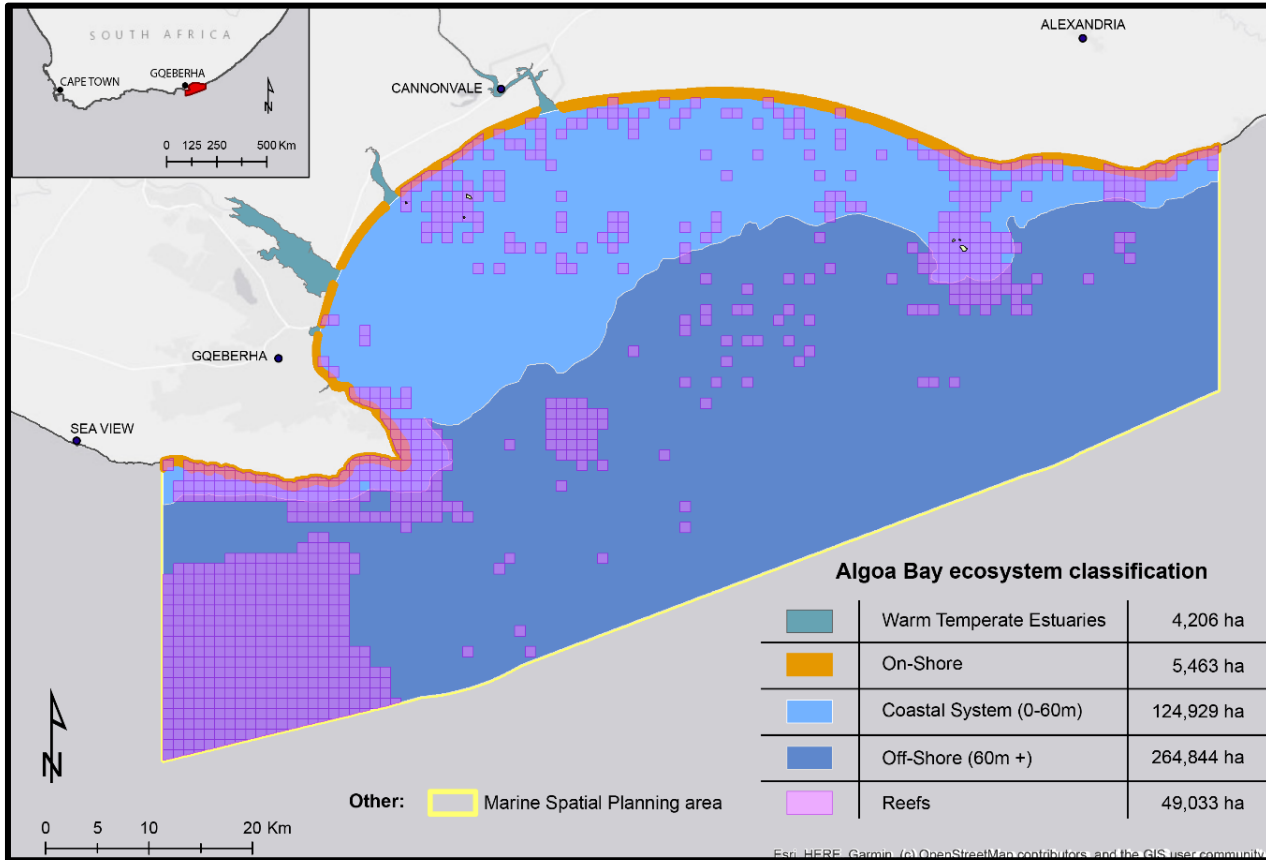
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Study classification	Onshore	Coastal	Offshore	Coral reefs	Estuaries
<b>Classification from source 1</b>	Sandy shore & rocky and mixed shore	Shallow soft shelf & shallow rocky shelf	Deep soft shelf & deep rocky shelf	Kelp forest & shallow reef	Warm temperate estuaries
<b>Classification from source 2</b>	On-land area bordering the coastal system	Shallow water (<60m) Shallow soft shelf & shallow rocky shelf	Deep water area (>60m) Deep soft shelf & deep rocky shelf	Underwater reefs, kelp forest & shallow reef	Warm temperate estuaries
<b>Area (ha)</b>	5,463	124,901	264,842	49,033	4,206

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## Abu Dhabi & Dubai

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### CVM:

Respondents were asked about their willingness to pay (WTP) for a service, and their willingness to accept (WTA) compensation in the case that the service was lost.

WTA was the main measure since tourists and residents consider themselves privileged to the services offered by virtue of the way in which the coastal and marine ecosystem, notably the beaches, is being marketed.





Ecosystem service		Valuation method	Onshore	Coastal system	Offshore	Coral reefs	Estuaries
Provisioning	Right of access	Statutory payments	X	X	X		X
	Food provisioning (non-cultivated)	Market prices		X	X		X
	Food and raw materials (cultivated)	Market prices		X	X		
Regulating	Waste dilution	Engineering values	X	?	?		X
	Air quality regulation	Benefit transfer		X	?		
	Climate regulation	Benefit transfer	?	X			X
	Moderation of extreme events	Benefit transfer	?	X	?	X	?
	Erosion prevention	Benefit transfer	?	X			
	Nutrient cycling	Benefit transfer					X
	Water quality	Benefit transfer					X
Supporting	Refugia services	Benefit transfer	X	X	?	X	?
Cultural	Amenity value	Property values	X				X
	Recreation and tourism	Market prices	X	X	X	X	X
	Spiritual, cognitive and other	Benefit transfer	X	X	?	X	?
	Future values	Benefit transfer	?	?	?	?	?
	Existence and bequest	Benefit transfer	X	X	X	X	?

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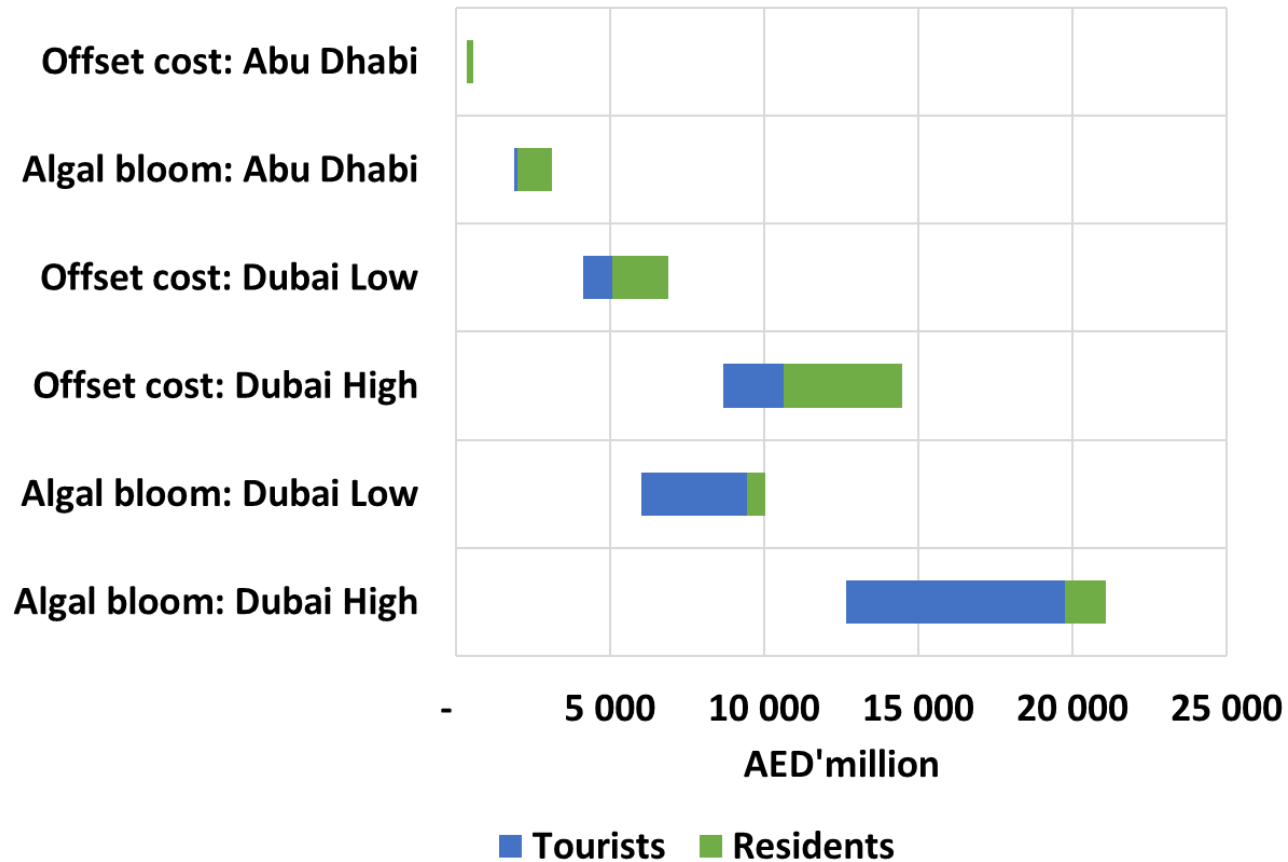
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The distribution of the offset cost and the cost of algal bloom in Dubai for residents and tourists and compared with that of Abu Dhabi

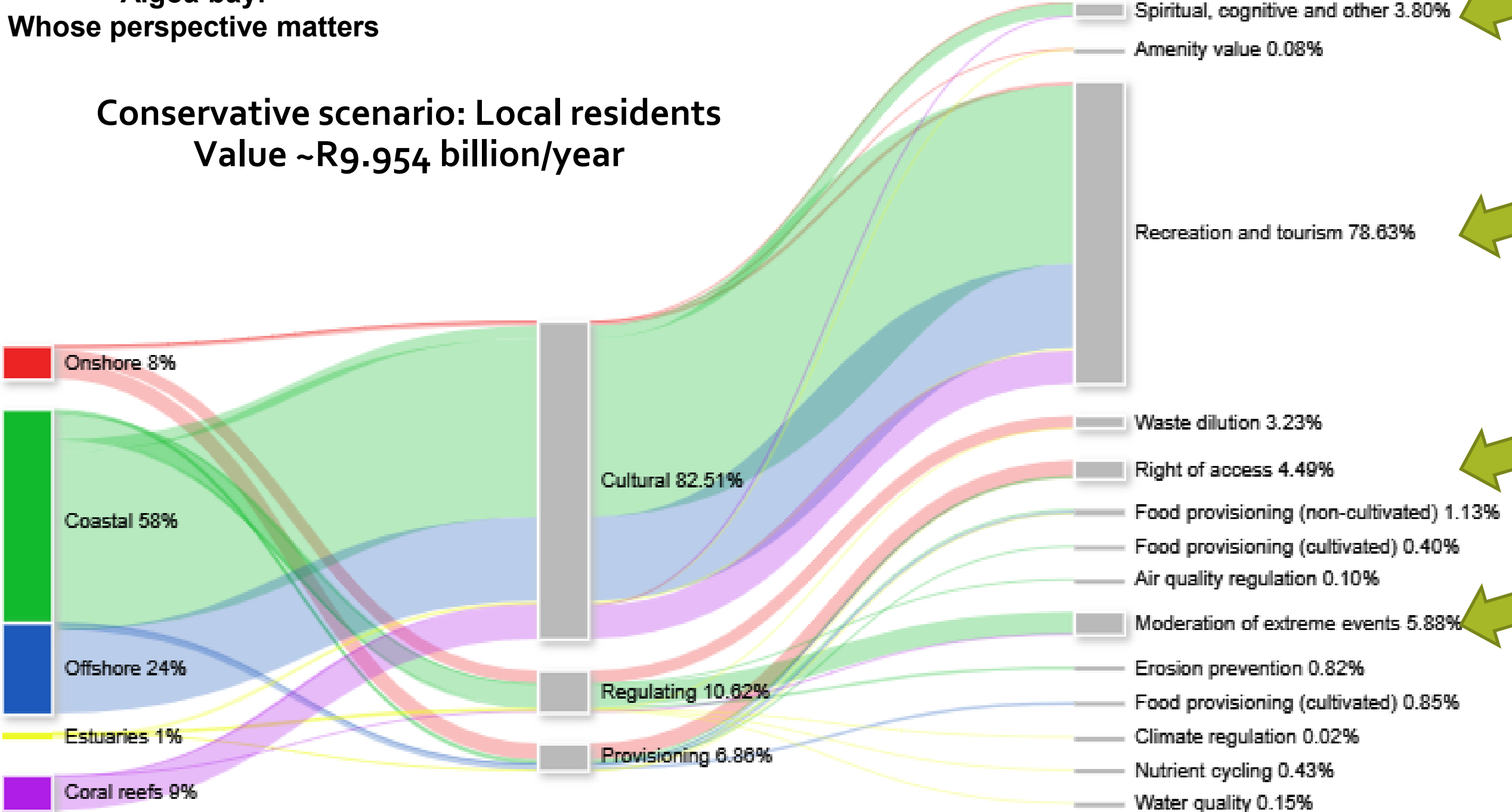
The blue area refers to the tourists' portion and the green to that of the residents.

Offset cost => cost people are willing to pay for an alternative if available

Otherwise, total loss of service

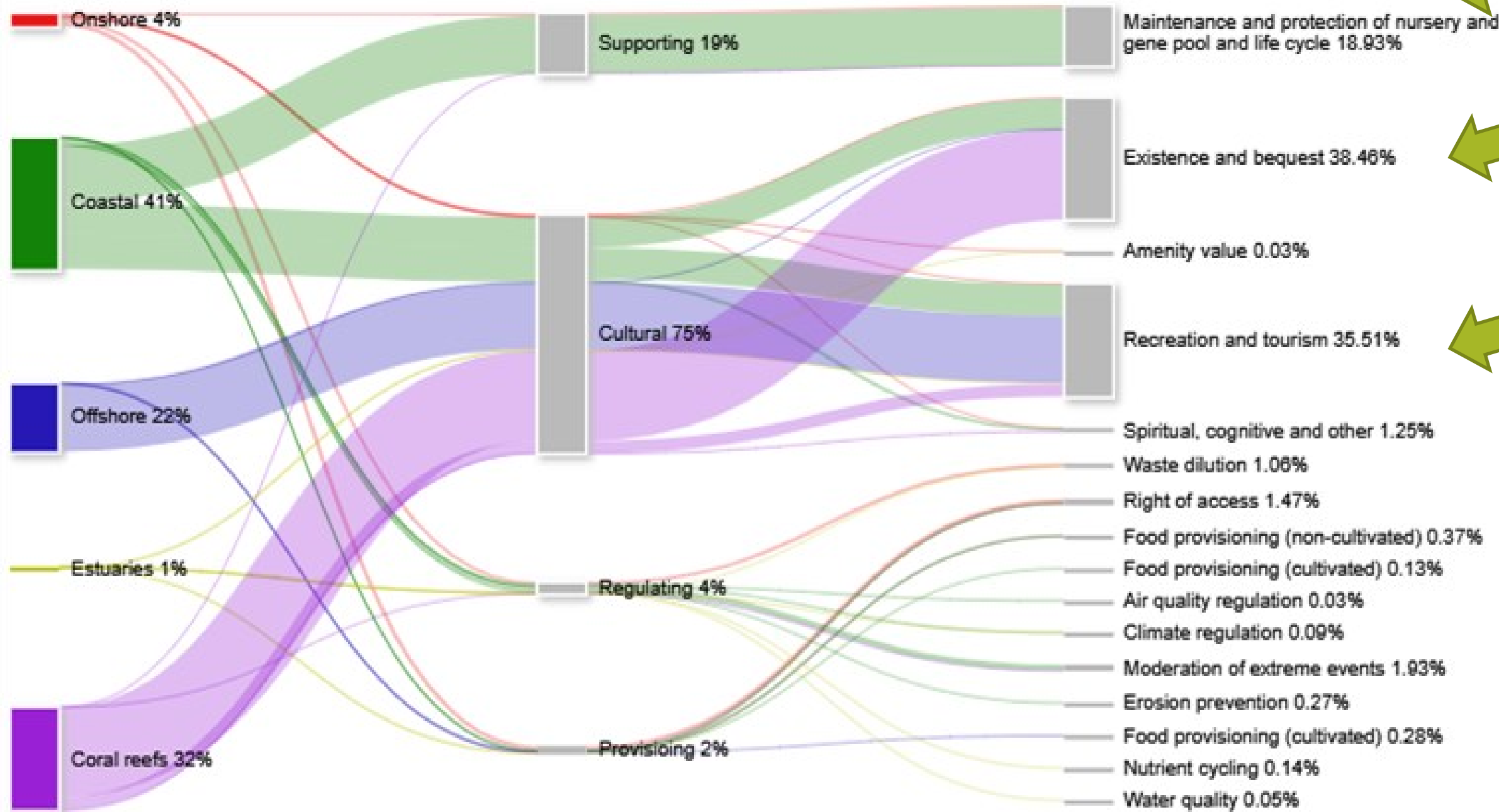
# Algoa bay: Whose perspective matters

## Conservative scenario: Local residents Value ~R9.954 billion/year



# Algoa bay: Whose perspective matters

# Conservative scenario: Global population Value ~R30.32 billion/year



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## Stakeholder workshops

### Academic paper:

- Blignaut, J.N., Mander, M., Inglesi-Lotz, R., Claire-Glavan, J. and Parr, S. 2016. The amenity value of Abu Dhabi's coastal and marine resources to its beach visitors. *Ecosystem services*, 19:32-41.  
<http://dx.doi.org/10.1016/j.ecoser.2016.04.005>

### Book chapter:

- Blignaut, J. Mander, M, Inglesi-Lotz, R., Claire-Glavan, J and Parr, S. 2017. Economic value of the Abu Dhabi coastal and marine ecosystem services: Estimate and management implications. In Azar, E. and Raouf, M. (Eds.) *Sustainability in the Gulf*. Routledge. (<https://www.routledge.com/Sustainability-in-the-Gulf-Challenges-and-Opportunities/Azar-Raouf/p/book/9781138040687>)

### Website:

- <https://assetresearch.org.za/modeling-algoa-bay-a-systems-dynamics-approach-to-understanding-the-interactions-between-user-groups-deriving-value-from-algoa-bay/>

### Video:

