

# SRR Rangeland Ecosystem Services Assessment Framework

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# What are Ecosystem Services from Rangelands

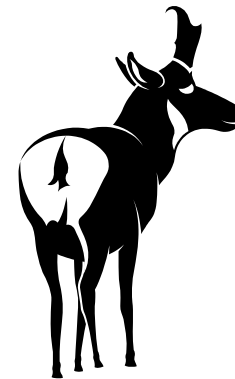
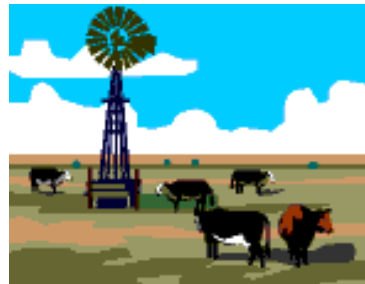
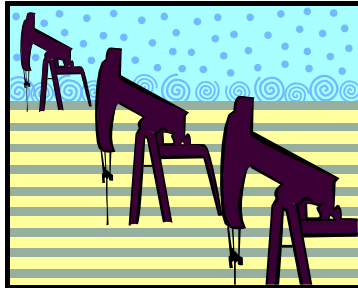
- \* Goods and services derived from rangelands
- \* Link between the biophysical world and the social systems humans use
- \* Basic premise – if humans don't value it in some way, not an ecosystem service
- \* Can basic human value be converted to monetary value

# Types of EGS

- \* Biological
- \* Hydrological
- \* Atmospheric
- \* Others
- \* Tangible
- \* Intangible

# Ecosystem Goods

- \* Extraction and processing – Tangible

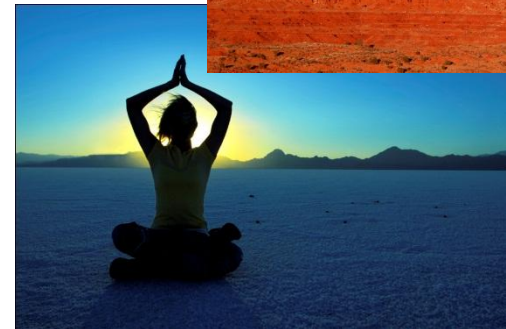


# Ecosystem Services

## Direct Experiences - Tangible



## Indirect Opportunities - Intangible



# Biological EGS

- \* Domestic livestock
- \* Wildlife
- \* Forage for livestock
- \* Forage for wildlife
- \* Food for humans
- \* Fish
- \* Hunttable or Catchable fish and wildlife
- \* Biofuels
- \* Fiber
- \* Biochemicals
- \* Genetic material

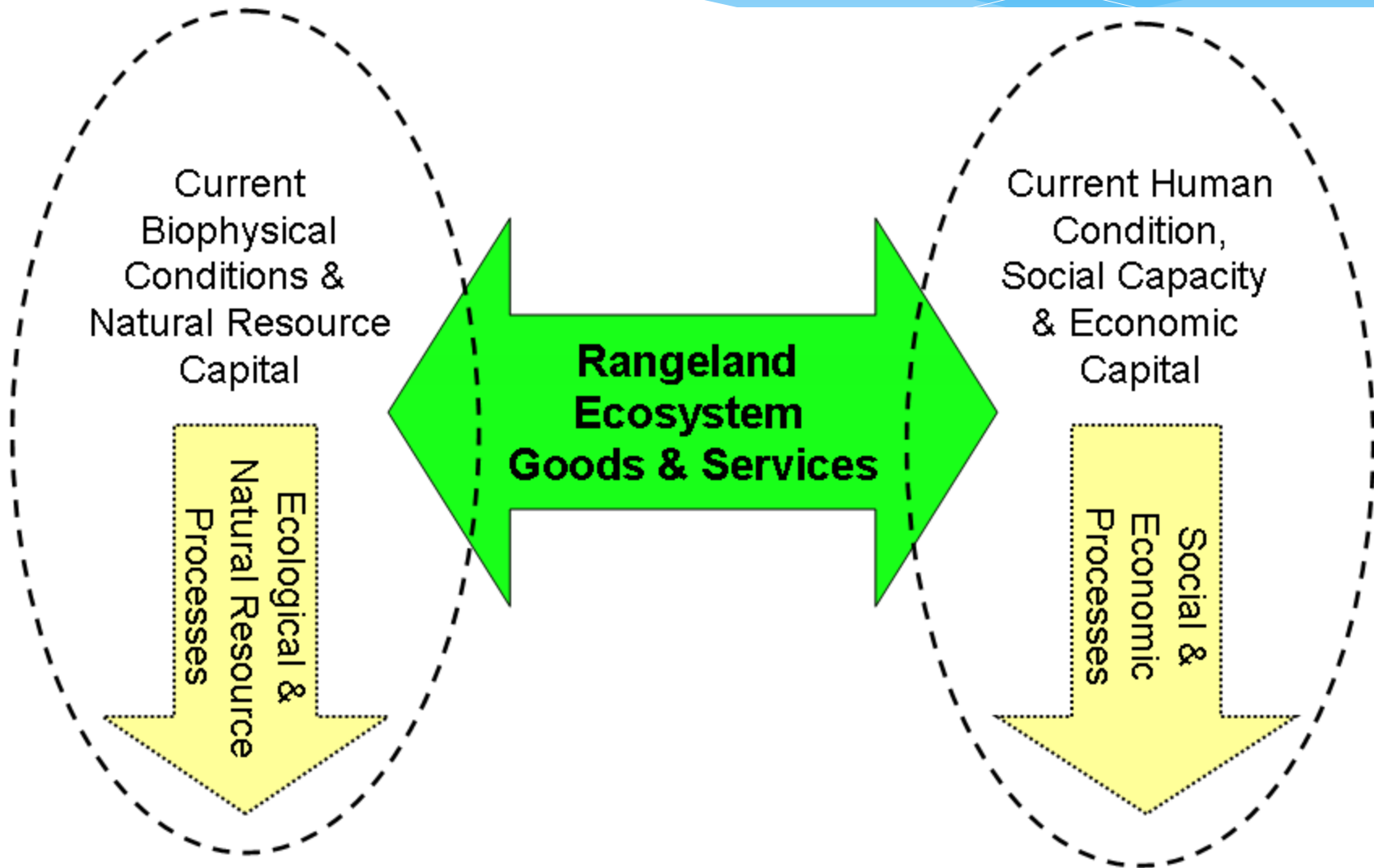
# Hydrological/Atmospheric EGS

- \* Drinking water
- \* Floods for channel and riparian area rejuvenation
- \* Water for economic benefit
- \* Water bodies for recreation and tourism
- \* Minimizes chemicals and particulates
- \* Contributes to clean air
- \* Hydrologic, Solar, and Wind energy potential
- \* Flood mitigation

# Miscellaneous EGS

- \* Views and scenes
- \* Cultural or Spiritual resources
- \* Scientifically significant sites
- \* Historical/Archaeological sites
- \* Recreation and tourism sites
- \* Ornamental resources
- \* Ceremonial resources





# How to Determine Whether the Ranch can Profit from Production

- \* Ranch planning
- \* Assess biological, hydrological, atmospheric, and other physical resources (supply)
- \* Describe the market potential (demand)
- \* Evaluate ranch resources (time, labor, facilities, etc.)
- \* Consider interactions with other activities
- \* Develop an enterprise, partial, and/or whole ranch budget

# Partial Budgets

Positive Impacts	Negative Impacts
Added Returns	Added Costs
Reduced Costs	Reduced Benefits
<b>Total Positive</b>	<b>Total Negative</b>

# Partial Budgeting

- \* For relatively small changes
- \* Within an existing enterprise
  
- \* Change calving season
- \* Buy a new truck or piece of equipment
- \* Build a fence (new or repair old)
- \* Lease additional property for spring grazing

# Enterprise Budgets

- \* Sources of income
- \* Expenses for production
- \* Allocation of gross income to fixed costs
- \* Expected profit from this enterprise

# Enterprise vs. Ranch Budgets

## \* Enterprise

- \* Each product analyzed individually
- \* Other enterprises supply inputs (or buy outputs)
- \* Costs of production
- \* Should I be in this product line?

## \* Whole Ranch

- \* All products analyzed together
- \* Inputs purchased and outputs sold at market prices
- \* Total profit
- \* Should the ranch stay in business?

# How to Determine the Potential Benefits and Costs

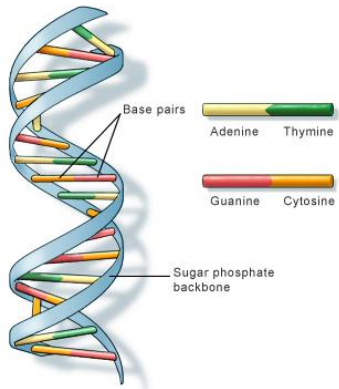
- \* Determine whether capitalizing on a particular EGS is worth the effort
- \* Consider how it fits in the operation
- \* Consider whether there is a market for the EGS
  
- \* Set of questions to ponder

# Questions to Evaluate

- \* Must Haves
- \* Wants
  - \* High Importance
  - \* Moderate Importance
  - \* Low Importance
  - \* Consequences



# Exist on Rangelands?



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# Important to Rangeland Processes or Human Well-Being



# Must Haves

- \* Does the EGS exist on or is derived from rangelands?
- \* Is the EGS important to rangeland ecosystem processes and/or human well-being?
- \* If answers are “Yes” to both, continue

# Wants – High Importance

- \* Does the EGS provide a basic human need? Is it important to society?
- \* What is the current level of demand for the EGS?
- \* How responsive is the EGS to management?

# Wants – Moderate Importance

- \* How easily is the EGS measured?
- \* How important is the EGS over local, regional, and national spatial scales?
- \* How important is the EGS over different temporal scales?
- \* How resilient is the EGS?
- \* How much does human activity impact the EGS?
- \* How important are rangelands to this EGS?
- \* How unique is the EGS to rangelands?

# Wants – Low Importance

- \* For this EGS, are there no potential substitutes

# Consequences

- \* Is the EGS impacted by local, state, or federal regulations?

# Example

	Livestock	Biofuels
Exist on Rangeland	Yes	Yes
Important for Process or Well-Being	Yes	Yes
Basic Human Need	High	Medium
Level of Demand	High	Low-Med
Responsive to Management	High	High
Easily Measured	High	High
Importance over Spatial Scales	Local – High Regional – Med National - Low	Local – High Regional – Med National - Med
Importance over Temporal Scales	Medium	Medium
Importance of Rangelands to this EGS	Medium	Low
Uniqueness of EGS to Rangelands	Medium	Low



# Questions

- \* Main point is to evaluate potential for each EGS
- \* While one EGS may be in vogue, will your rangelands support it
- \* Have the discussion before going further with your analysis

# Conclusions

- \* Variety of ecosystem goods and services from rangelands
- \* Not all are created equal
- \* Not all can be profited from
- \* Opportunities abound, but so do pitfalls