THE ECO GAME: NORTHERN GHANA

A GAME FOR EXPLORING THE IMPACT LAND USE CHOICES
HAVE ON **ECO**SYSTEM SERVICES, **ECO**NOMICS, AND RESILIENCE.

Players select land uses to provide resources needed to meet their community's basic household needs and build resiliency against natural disasters and other shocks and stressors. The winner of the game is the community with the most resources after three rounds, representing 3 decades.

KEY CONCEPTS

LAND USES

CONVENTIONAL AGRICULTURE | CLIMATE-SMART AGRICULTURE | AGROFORESTRY | FRUIT PLANTATIONS | FUELWOOD PLANTATIONS | LIVESTOCK | SHIFTING CULTIVATION | NATURAL FOREST

RESOURCES

Each land use produces or requires a specific amount of food, water, or energy (fuelwood). These resources provide for basic household needs.

FOOD | WATER | ENERGY

RESILIENCE

Resilience is a measure of the ability to mitigate, adapt to, and recover from shocks and stressors. During each round, communities are faced a natural disaster (drought, flood, fire, or pest) and the level of resiliency a land use offers determines the impact the disaster will have on resources.

ECOSYSTEM SERVICES

Land uses create conditions that directly impact water quantity and quality, essential habitat for flora and fauna, and sequestration of carbon dioxide (a greenhouse gas) from the atmosphere. These benefits are called ecosystem services. Based on these conditions, specific values have been assigned to each land use for greenhouse gas sequestration, soil erosion and runoff, and biodiversity.

During every round, each community selects a Chance Card whose impact is often determined by the ecosystem services provided by selected land uses.

PROPS

- **Land use cards:** 8 land use types, each with a unique resource, resiliency, and ecosystem service profile. (10 copies)
- **Tokens:** Representing food, water, energy, and money.
- **Chance Cards:** 26 cards with positive and negative outcomes.
- **Disaster spinner/dice:** Any prop that produces randomized disaster outcomes (flood, drought, fire, and pest). Standard dice can be used: rolls resulting in 1 & 2 = flood; 3 & 4 = drought; 5 = fire; 6 = pest. A free customizable online spinner (wheeldecide.com) could also be used.
- **Moderator Table:** To keep track of scores.

ROLES

Moderator(s):

- Keep track of resources and totals in Moderator Table
- Lead player discussions on ecosystem services and land use outcomes.

Communities (3-4):

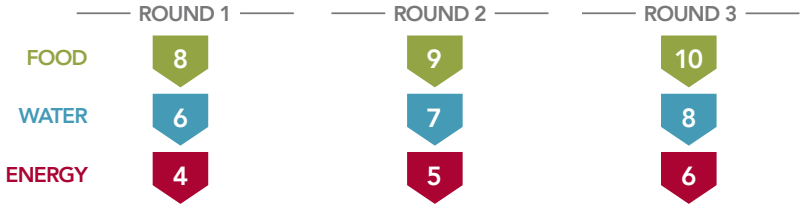
- Individual players or teams make land use decisions each round to maximize resources.

FEED THE FUTURE The U.S. Government's Global Hunger & Food Security Initiative
USAID FROM THE AMERICAN PEOPLE
WINROCK INTERNATIONAL

INSTRUCTIONS

1. **LAND USE CARDS:** Each player (or team) selects 4 Land Use Cards. Any combination of Land Use Cards can be selected and, if desired, exchanged the beginning of each round.
2. **RAINFALL:** Moderator(s) hand out water tokens representing rainfall to each community. Diminishing rainfall across decades attributed to climate change results in progressively less water tokens issued each round, as shown below:

3. **RESOURCES:** Moderator(s) hand out or collect food, water, and energy tokens to each community according to selected Land Use Cards. Moderators can note total resource values in the Moderator Table ***(Resources line)***.
4. **HOUSEHOLD NEEDS:** Moderator(s) collect tokens from communities to meet household needs corresponding to the round/decade. As the population grows, so do household needs which increase each decade, as shown below:



5. Moderators note total remaining resources in Moderator Table ***(Subtotal 1 line)***.
6. **CHANCE CARDS:** Each household picks a Chance Card and the moderators collect or distribute tokens accordingly.
7. Moderators note impacts in 'Chance' field of Moderator Table ***(Chance line)***.
8. **DISASTER:** Any player rolls dice or spins the disaster wheel to determine which type of natural disaster (drought, flood, fire, or pest) strikes the communities. A changing climate means increasing severity of natural disasters, so the specific impact of the disaster on each community will depend on the round/decade and the resiliency level of selected land uses, as shown below. For example, in round 1, if the natural disaster is drought, communities will lose 1 water token for every Land Use Card with a resiliency value of 0. Moderators collect tokens accordingly and note impacts in 'Disaster' field of Moderator Table ***(Disaster line)***.

Round/Decade	Land Use Resiliency Level	Impact			
		Drought	Flood	Fire	Pest
1 – Mild Disaster	Resiliency 0	-1 Water	-1 Food	-1 Energy	-1 Food
2 – Moderate Disaster	Resiliency 0	-2 Water	-2 Food	-2 Energy	-2 Food
	Resiliency 1	-1 Water	-1 Food	-1 Energy	-1 Food
3 – Severe Disaster	Resiliency 0	-3 Water	-3 Food	-3 Energy	-3 Food
	Resiliency 1	-2 Water	-2 Food	-2 Energy	-2 Food
	Resiliency 2	-1 Water	-1 Food	-1 Energy	-1 Food

9. **Players may not proceed to the next round with negative values of any resource or money**, so before final calculations for the round are completed, negative values must be reconciled. For every negative resource value, twice the number of another resource must be spent to return the negative resource to the minimum allowable value of zero (this represents selling surplus household resources to meet basic needs). For example, -1 food requires 2 energy or 2 water tokens; -3 water requires 6 food or 6 energy tokens. The moderator(s) therefore collect tokens accordingly and note outcomes in the Moderator Table ***(Negatives reconciliation line)***. If a community does not have enough resources to reconcile, they may draw from the resource total from a previous round. If resources are still insufficient, they may not proceed to the next round.
10. Moderators calculate final total, combining all resources for each community (should match the number of tokens held by each community) and record in the Moderator Table ***(Round totals line)***.
11. Moderator debriefs players on round outcomes and discuss the impact of land use choices, chance cards, and disaster cards.
12. Players return tokens.
13. Repeat over a total of three [3] rounds.
14. Moderator calculates final game totals by adding community totals across all three rounds.