

# Valuation and Incentive Measures for Sub-Saharan West Africa Market-Price Based Methods



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# Key Take Home Messages:

- When **markets function competitively**, one can use market prices for the economic valuation of non-market goods and services.
- Even when markets are non-competitive (i.e. **distorted**), one can **adjust market prices** to derive **shadow prices** that could be used for economic valuation of non-market goods and services.
- Differentiate **market** from **shadow prices**.

# Key questions addressed in this lecture:

- i. What are **market price based approaches** to economic valuation of non-market goods and services?
- ii. **How can we apply** these approaches to non-market valuation?
- iii. What are the **advantages** and **disadvantages** of these approaches to non-market valuation?
- iv. How can we use market approaches to economic valuation **when markets are distorted**?
- v. An **exercise** in market price-based methods.

# References:

- I used many references to compile this lecture including:
- **TEEB for National and International Policy Makers Chapter 4: Integrating Ecosystems and Biodiversity Values into Policy Assessment.**
- **TEEB Ecological and Economic Foundations Chapter 5: The Economics of Valuing Ecosystem Services and Biodiversity.**

# Market Price-Based Approaches:

- As the name suggests, these approaches use **market prices** for the **economic valuation** of non-market goods and services.
- In well-functioning markets, preferences and the marginal cost of production are reflected in market prices.
- Technically, economists say that such markets satisfy the **top-level condition** for **Pareto optimality**.

# Market Price-Based Approaches:

- This implies that markets provide **accurate info** on the value of goods and services.
- **Market prices** will reflect the **private** and **social** willingness to pay (WTP) for the traded ecosystem services.
- **Market price-based methods** are often used to obtain the value of **provisioning ecosystem services** (whose outputs are often sold in conventional markets).

# Market Price-Based Approaches:

- To **determine** the **monetary value** assigned to a unit of a non-market ESS, researcher obtains the **prevailing price** for the good or service in the **market** in which the relevant population participates.
- The **value of the ESS** within a given period is the **price of a unit** of the ESS **multiplied** by the **marginal product** of the ESS (i.e. total units of the ESS produced).

# Market Price-Based Approaches:

- The most common way of **collecting** price info is to ask beneficiaries about the price they:
  - i. paid, or
  - ii. received, or
  - iii. quoted in the market for the ESS in the given period.
- Ideally the **farm gate** price is what should be collected (as it reflects the incentives of agents directly involved in ESS extraction).



# Market Price-Based Approaches:

- Using price info, one can construct **financial accounts** showing the values of the different ESS extracted from the ES within a given period.
- The method is **amenable** to the monetary valuation of the ESS presented in the next slide (even when collected **under open access conditions**):

# **Market Price-Based Approaches:**

- ESS for valuation:
  - i. Timber and charcoal.
  - ii. Traditional medicines for humans and livestock.
  - iii. Gums, resins, aloe, sisal, incenses, henna, dyes.
  - iv. Plant species used as fruits, vegetables and food.
  - v. Honey tapped from the forest or dry land.
  - vi. Water for domestic and livestock use, papyrus, typhus from wetlands etc.

# Market Price-Based Approaches:

- Advantage: price data are relatively easy to obtain.
- Disadvantage: market imperfections and/or policy failures may distort market prices making them fail to reflect the economic value of commodities to society as a whole.
- Message: even where market prices are available, they may need to be adjusted to take account of distortions such as taxes and subsidies.

# Market Price-Based Approaches:

- In addition, **seasonal variations** and **other effects on prices** need to be considered when market prices are used in economic analysis.
- In general, market prices can act as proxies for direct and indirect use values **but do not capture non-use values**.
- Where **non-use values** matter for the decision making context, the market price will be a **minimum expression** of economic value.

# Shadow Prices:

- We know that where markets exist but are distorted, **prices will not be a good reflection** of preferences and marginal costs, hence giving **biased valuations**.
- A **variant** of the market price-based method uses **shadow prices** (market prices **adjusted** for transfer payments, market imperfections and policy distortions).

# Shadow Prices:

- Shadow prices may also incorporate **distribution weights**, where equality concerns are made explicit.
- This variant is **generally applicable** as shadow prices may also be calculated for non-marketed goods.
- **Advantages** of shadow prices: efficiency prices reflect the true economic value (opportunity cost) to society as a whole for ESS traded in domestic or international markets.

# Shadow Prices:

- The **disadvantage** is that **derivation** of shadow (or efficiency prices) is **complex** and may require substantial data.
- Furthermore, decision-makers **may not accept** what they might consider to be **artificial prices**.

# **A Practical Exercise in the Application of Price-Based Methods of ESS Valuation.**



# Practical Exercise:

- You are required to estimate the annual value (in local currency) of the following **provisioning services** society extracts under **open access** using **market price-based methods**:
  - i. Timber extraction,
  - ii. Charcoal extraction,
  - iii. Gum arabica extraction,
  - iv. Honey trapped from forests, and
  - v. Livestock watering requirements.

# Practical Exercise:

- Assumptions:

- i. Timber extraction (15kgs extracted in total **per day**),
- ii. Charcoal extraction (12 bags extracted in total **per month**),
- iii. Gum arabica extraction (4 litres extracted in total **per month**),
- iv. Honey trapped from the forests (12 hives extracted in total **per month**), and
- v. Livestock watering needs (an animal drinks 4 litres **per day**, there is a total of 10,000 animals).

# **Practical Exercise:**

- Use the attached EXCEL sheet to compute the annual value of the provisioning services households receive.
- Give an intuitive interpretation (meaning) to the figure you calculated (what does the figure represent?).
- Write a paragraph giving feedback of the research exercise.
- Of what use is the figure you computed for resource management policy?