

EE475

Introduction

14 January 2015
by
Ajarn Chol Bunnag

Outline

- Relationship between Human and Environment
 - Thomas R. Malthus
 - Environment as an asset
 - Social-Ecological System (SES)
 - Anthropocene

Why do we need a framework or a theory to understand interactions between social/economic system and the environment?

Thomas R. Malthus

- An Essay on Principle of Population (1798)
- Population growth rate is Geometric progression whereas growth rate of food is Arithmetic progression.
- Eventually, the population growth rate will exceed the food growth rate. This will lead to a catastrophic result.
 - Reduction of birth rate (war, prostitution, contraception, infanticide)
 - Increase of death rate (War, famine)



Thomas R. Malthus
(1766-1834)

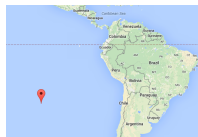
Examples

- The Collapse of Mayan civilization during the 6th - 8th century A.D.



Examples

- A hypothesis regarding the fall of civilization on the Easter Island on the west coast of Chile

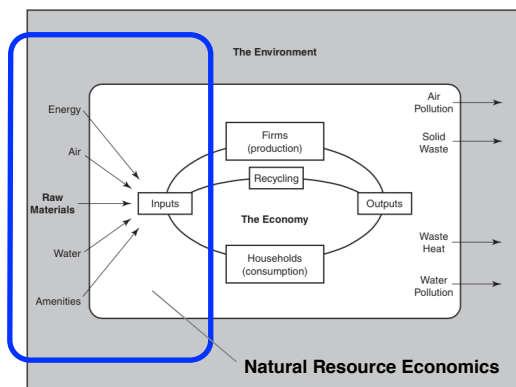


What is your opinion on the idea of Malthus?

Environment as an asset

- This framework considers environment as an asset that provides services for human lives and the society.
- This framework is employed by the field of natural resource economics.
- What are possible benefits or services human being and society can receive from the environment?

Environment as an asset



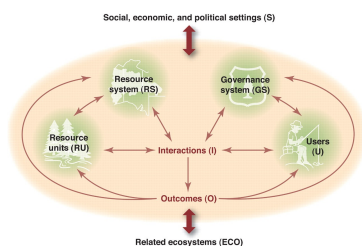
Environment as an asset

- In this framework, natural resource is considered as a type of capital, natural capital, in conjunction with other inputs, yield useful goods and services.
- Characteristics of society and economy in question, including technological, institutional, and demographic factors determine which part of the natural world would have value.

Social-Ecological System (SES)

- Since 2000s, SES framework is used widely among scholars studying environmental and natural resource issues in relations to sustainability and resilience concept.
- Social system is not a sub-system in the ecological system but co-existing and interacting with it. Dynamic of one system inevitably affects the others.
- To achieve goals of sustainability and resilience, one needs to consider both systems and their interactions to understand the phenomena and achieve sustainable solutions.

Social-Ecological System



- Social-ecological system can be illustrated in many forms.
- This SES framework is proposed by Elinor Ostrom (2009).

In your opinion, what are the differences between the Environment as an asset and the SES framework?



Anthropocene

- An geological period when changes of global natural system are caused significantly by human actions.
- Paul Crutzen, a Nobel Laureate in Chemistry, coined the term in 2002. It was used informally by geologists and environmentalist.
- Jan Zalasiewicz et al. (2008) investigated the claim by measuring geological factors used for determining geological period and found evidences that support the existence of Anthropocene.

Anthropocene

- The study found that the Anthropocene has started since the industrial revolution in the late 18th century, and accelerated in 1950s with globalization.
- Factors that indicate Anthropocene are the followings
 - Changes to physical sedimentation
 - Carbon cycle perturbation and temperature
 - Biotic change
 - Ocean changes

What is your opinion after learning about the Anthropocene?
