



# **Sustainable Development: Theory & Policy**

**Week 4**

**New Thinking & the Knowledge  
Economy**

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## 4.1 Representing Knowledge for Sustainability

# Knowledge Matters

- Generally speaking, ‘knowledge’ refers to recognized considerations (facts, data, observations, theories etc.), where the essential criterion is ‘recognition’.
- Among the various meanings accorded to the term ‘domain’ by *Webster’s Dictionary*, one of the most relevant to the present discussion is this: “the set over which a function is defined”, and a second is “the set of elements to which a mathematical or logical variable is limited”.

# The Basics for Representing Sustainability

The strategy we have adopted with regard to the sustainability domains is to differentiate between and among:

- Human activities in various forms, on the one hand, and
- The nature and types of known intended or unintended consequences
- Unbundling content process

## 4.2 Knowledge Intensity & Leveraging the Power of Knowledge

Intangibles



# Knowledge Intensity of Economic Activities

Clear evidence of shift toward knowledge intensity

Evidence toward end of 20<sup>th</sup> century

OECD comparative study

Importance of treating knowledge and its deployment as a critical asset

## Concepts or Semantics?

**Economists view knowledge as a privately produced public good**

**Individual's consumption of knowledge does not reduce the consumption others**

**We define *knowledge system* (next slide) & focus on the law of *increasing returns*.**

**We define a *knowledge system* -**

**An organized structure and dynamic process  
(a) generating and representing content,  
components, classes, or types of knowledge,  
that is (b) domain specific or characterized  
by domain relevant defined by the user or  
consumer, (c) reinforced by a set of logical  
relationships that connect the content of  
knowledge to its value (utility), and**

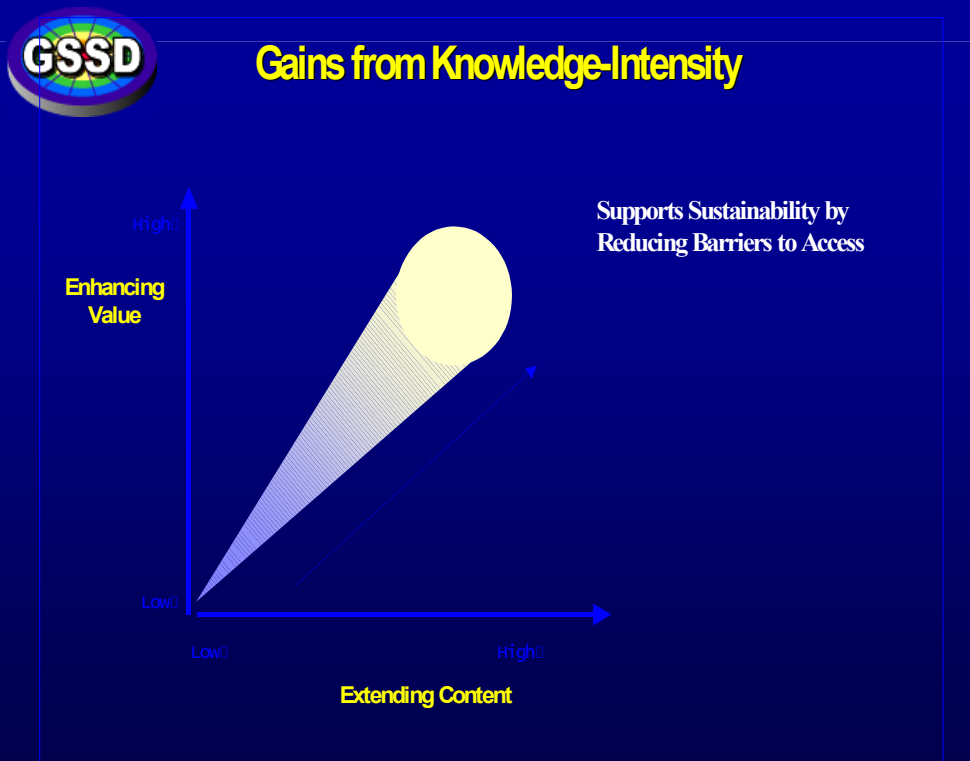
**continued ....**

**We define a *knowledge system* -**

**continued**

**(d) enhanced by a set of iterative processes that enable the evolution, revision, adaptation, and advances, and (e) subject to criteria of relevance, reliability, and quality**

# Essentiality:



Giving that knowledge can no longer be viewed simply as a 'residual' – companion to the proverbial 'technology factor' in the production function – but *central to economic performance*, in some sectors it is a driving force.

basic proposition between content and value in schematic form, first in the most generic terms, and then with reference to more specific activities that provide the 'engine' for the linkages.

## 4.3 Knowledge Barriers & Knowledge Strategies

Knowledge Assets in Place

# Barriers to Knowledge on Sustainability

1. *Basic ambiguity of sustainability*
2. *Explosion of information on sustainability*
3. *Gaps in infrastructures conditions in the industrial and developing countries*
4. *Impediments to the provision of local knowledge*
5. *'Knowledge-bias' from Industrial Countries' sources*
6. *Internet is an English-speaking medium in a non-English speaking world*

# Knowledge based - Internet Resources

## Knowledge Providers

How is Knowledge Provided?

What Data - Access & quality?

Why collected & by whom?

How to reduce information barriers?

When to facilitate data access & reuse?

## The Internet

Millions of sources

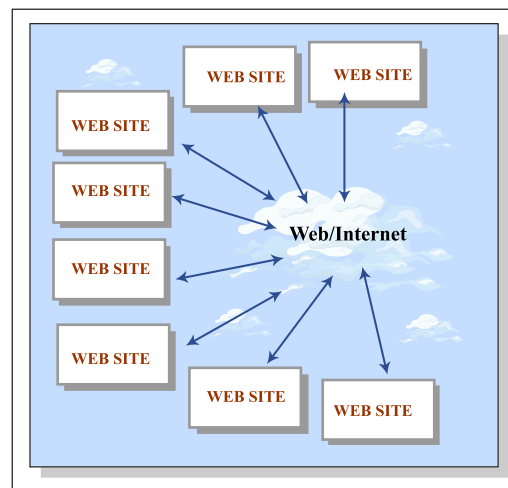


Figure by MIT OCW.

## GSSD

Knowledge Base

- Semi structured
- Quality controlled
- Wide coverage
- Diverse perspectives
- Multi-data types

Search & Retrieval

- Select returned abstracts
- Submit query - connect to source

Submit Sites

- Stakeholders
- Institutions
- Governments
- Business & Industry

Source: Adapted from Harry Zhu

# Knowledge Network

- **Organized system of discrete actors with knowledge producing capacity**
- **Combined through common organizing principles**
- **Actors retain individual autonomy**
- **Network enhances value of knowledge to actors & further expands knowledge**

## Knowledge for transitions to sustainability

- From 'supply chain' to 'knowledge chain'
- From material production to meeting societal needs
- From isolated understanding to increased value due to knowledge deployment
- From knowledge creation to knowledge diffusion through networking practices