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17.181 / 17.182 Sustainable Development: Theory and Policy

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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”.

** Lecture Notes

Knowledge Intensity of Economic Activities

-Clear evidence of shift toward knoweldge intensity toward end of 20th century

- If knowledge is power, we must harness its power toward sustainability and survival

- Importance of treating knowledge and its deployment as a critical assett

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Knowledge as Power

According to Webster's dictionary, to "know" is to "hold something in one's mind as true or as being what it purport to be"…[this] "implies a sound logical or factual basis"[and it also means] "to be convinced of…."

Accordingly, what is 'known' is that which is 'generally recognized….'?

We extend this standard view of knowledge to take into account a cluster of understandings that we refer to as a knowledge system.

Knowledge System - Defined

An organized structure & dynamic process to

(a) generate & represent content

(b) domain specific or relevant, with

(c) logical connections between content of knowledge to its value (utility)

(d) enhanced by a set of iterations to enable advances

(e) subject to criteria of relevance, reliability, and quality

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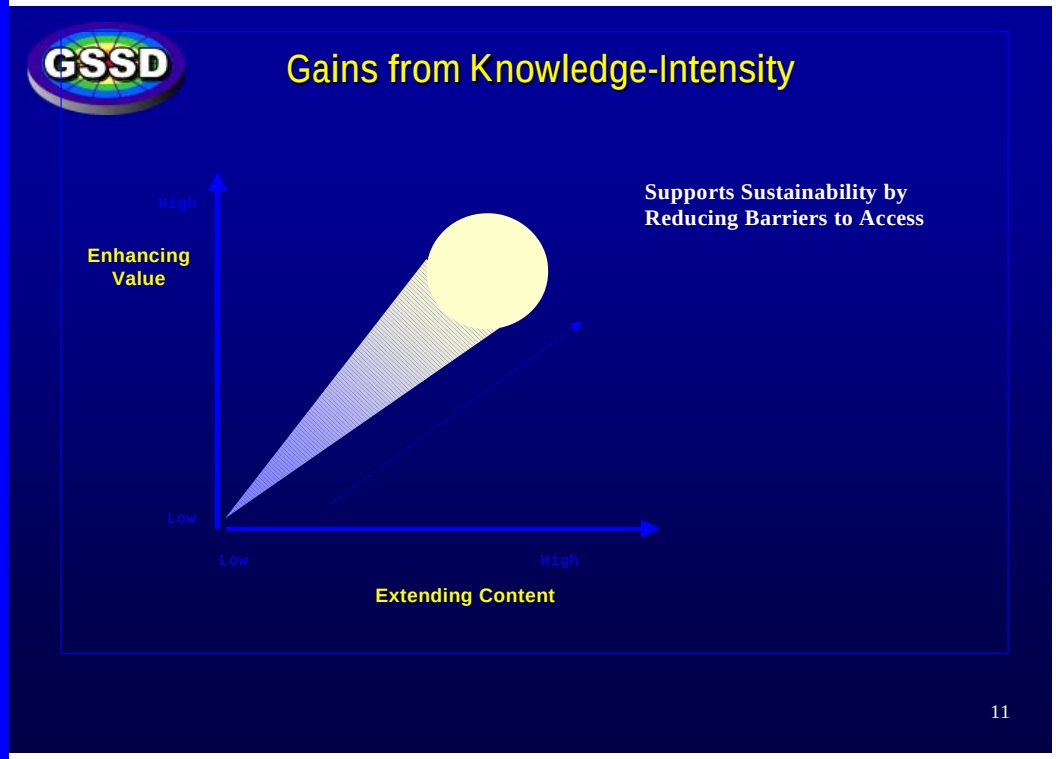
Essentiality:



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, (a) in the most generic terms, and (b) with reference to more specific activities that provide the 'engine' for the linkages.

The Sustainability Knowledge Transition

- 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

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Sustainability as a "Knowledge Domain"

Economic growth theory seen in a global context seems to frame processes of growth as seen by those on the 'top' of global social and political systems rather than by those at the 'bottom', nationally or internationally.

We focus on the knowledge base related to matters of 'sustainability' and to question the wisdom of the economic growth model sees 'more' as a strategic imperative subject only to efficiency

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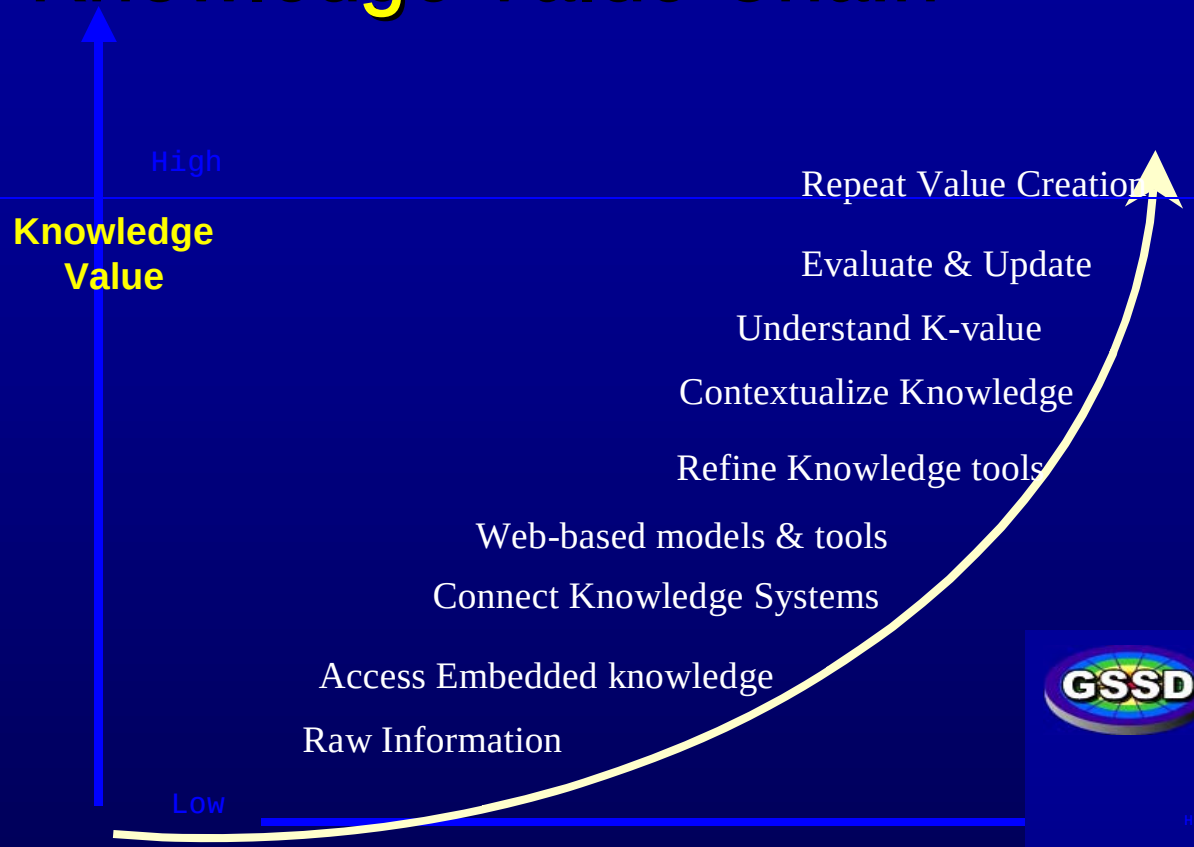
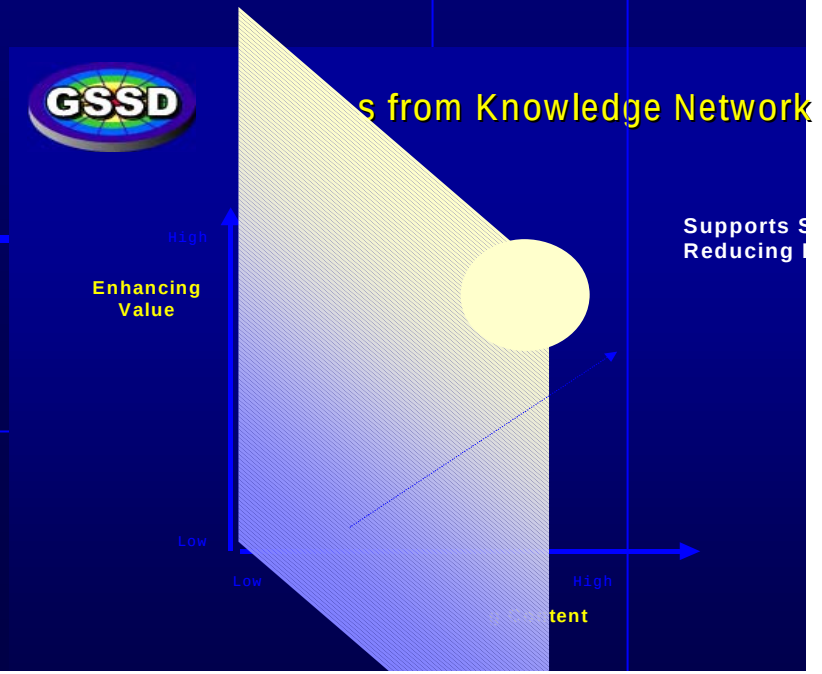
Knowledge Value-Chain



Dynamic Knowledge & Value Creation



GSSD

Barriers to Knowledge on Sustainability

1. Basic ambiguity of sustainability
2. Explosion of information on sustainability
3. Gaps in infrastructure conditions in the industrial and developing countries
4. Impediments to the provision of local knowledge
5. 'Knowledge-bias' from Industrial Countries' sources
6. The matter of language on the Internet

Solution Strategy to Knowledge Barriers

1. **Conceptual ambiguities** – provide a *conceptual framework* to capture current understandings of key issues and interconnections,

2. **Explosion of information** - develop a *knowledge provision process* that is coupled with quality controls and content consistency checks.

3. **Infrastructures differences -** partnerships with knowledge providers in various parts of the world

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New Strategy for Reducing Barriers

....continued

4. ***impediments to the provision* of local knowledge.** - web-based mechanism for enabling inputs& submissions from LDC to world

5. **'*knowledge-bias' from Industrial Countries' sources*** develop and implement cyber partnerships with institutions from developing regions

6. **Internet is an *English-speaking*** medium in a world that is non-English speaking - develop multilingual functions to enable the provision and distribution of knowledge that does not original in English & vice versa,

Conceptual Framework – Mapping 'Sustainability'

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

- **human activities** in various forms
- **known consequences** and problems
- **Scientific and technological** solutions
- **Socio-Economic, and Political** solutions
- **International Responses** and Global Accord

The Basics – Continued

- Recognizing that ‘everything’ is related to ‘everything else’, nonetheless this unbundling approach allows us to see the individual pieces (i.e. the parts), as well as the constituted whole of a complex system.

- As a “map,” GSSD shows routes as well as obstacles (and obstacle courses); it may also provoke new ideas about new options (and resolution of obstacles both existent and emerging).

- GSSD serves as a “map” to capture and “locate” both the fact of diversity and the changes of diversity over time and across space.

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

GSSD

Knowledge Base

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

Search & Retrieval

- Select returned abstracts
- Submit query - connect to source
- Determine utility

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