



Global System for Sustainable Development



Global System for Sustainable Development

Knowledge Meta-Networking for Decision and Strategy

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النظام العالمي للتنمية المستدامة

全球可持续发展系统

Sistema Global para Desarrollo Sustentable



What is GSSD?

- **Global Knowledge e-Network of e-Networks**
- **Structured Knowledge about Sustainability**
- **System for Multilingual e-Networking**
- **Diverse Knowledge for Decision Support**



The Problem

If knowledge is power, we must harness the power of knowledge for sustainability goals

But decision-makers, scholars, investors, governments, & analysts can often find it difficult to identify, locate, access and use relevant knowledge.



The GSSD Goals

- **Facilitate Knowledge Access**
- **Organize Masses of Materials**
- **Meet Needs of Diverse Groups**
- **Increase Local Access to Global Knowledge**
- **Increase Global Access to Local Knowledge**
- **Deploy New Communication Technologies**



Site Organization:

Click on each item

What is GSSD?

Knowledge networking system

Diverse functions, exploration tools, and forms of knowledge representation

Knowledge System

Meta-Data base: Date, cases, policies, with abstracts & links to source. Curated for quality

Mapping Sustainability

Focus: Gains from mapping sustainability & from the GSSD mapping system

Search GSSD

Diverse Options: Simple, advanced, & several graphical alternatives

GSSD Mapping Design

Structure: Focus on human activities, with problems, solutions, & international responses

Submit Site

Abstracts and key words: User enabled tags for search & link to sources.

Research & Reports

Select research: Publications, & early conference. See also GSSD [Director web site](#).





GSSD

Knowledge System

- **Organized system of knowledge**
- **Created by discrete actors with knowledge producing capacity**
- **Combined through common organizing principles**
- **Whereby actors retain their individual autonomy**
- **Networks enhance value & expansion of knowledge**



What does GSSD do for Knowledge Development

- **Provides coherent conceptual framework**
- **Helps to manage explosion of information**
- **Enables multilingualism and localization**
- **Facilitates provision, search and navigation**



How GSSD Organizes Knowledge on Sustainable Development



Overview of Content

Population

- Population Dynamics
- Urbanization
- Migration and Dislocation
- Consumption patterns
- Unmet basic needs

Energy and resources

- Energy use and source
- Forests and land uses
- Water uses and sources
- Agricultural and rural activities

Technology

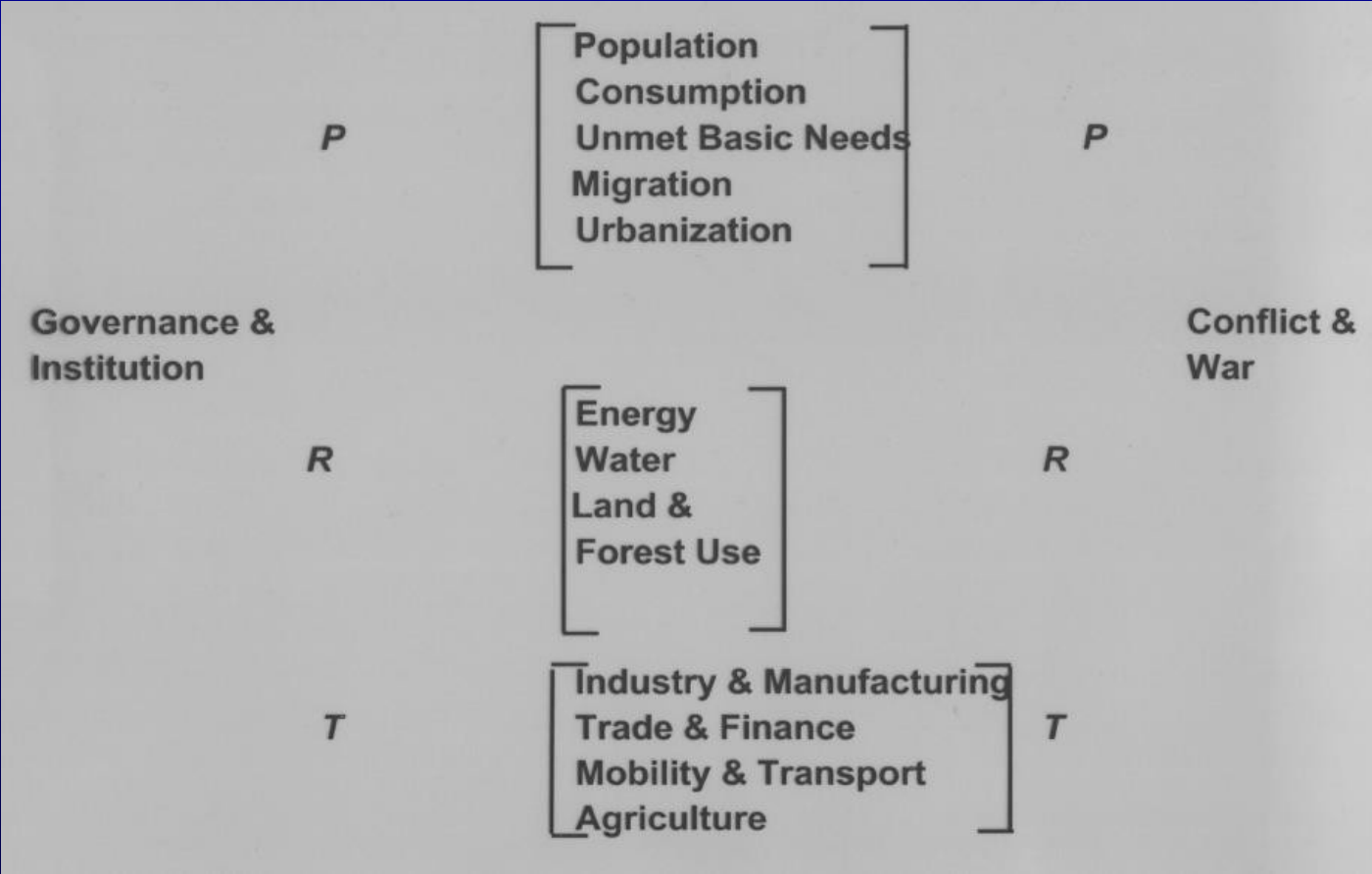
- Trade and Finance
- Industry and Manufacturing
- Mobility and Transport

Decisions and choices

- Conflict and War
- Governance and Institutions



Knowledge Representation Sustainable Development



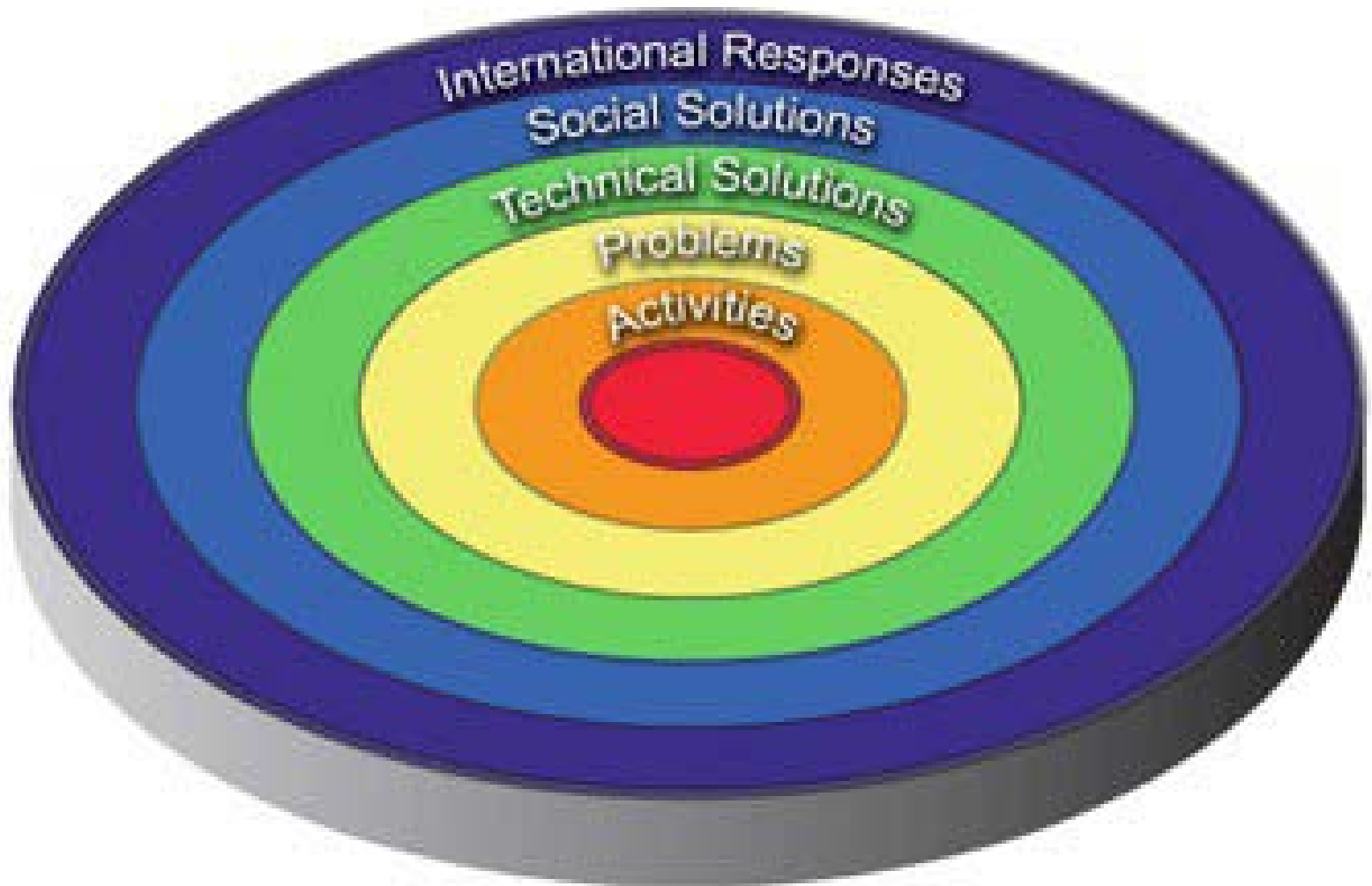


Organization by **Dimension**

- Type of **human activity** – system state
- **Problems** created by activity
- **Technical & Scientific Solutions**
- **Socio-Economic & Regulatory solution**

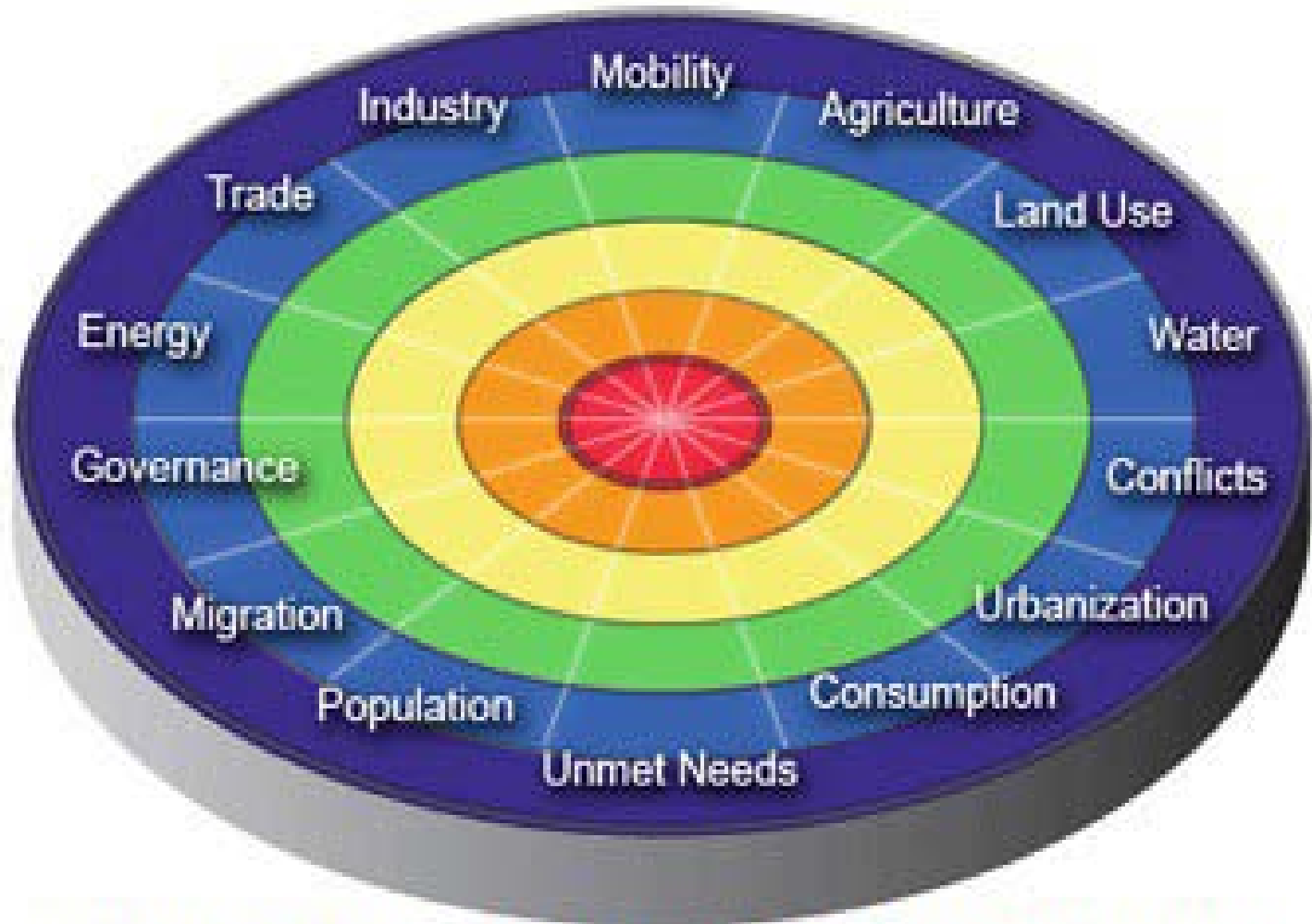
Dimensions are then broken down into details

DIMENSIONS



Source: Nazli Choucri et al. *Mapping Sustainability*. (p.18). Retrieved from <http://gssd.mit.edu/gssd-mapping-design/dimensions-human-activity>

DOMAINS



Source: Nazli Choucri et al. *Mapping Sustainability*. (p. 17). Retrieved from <http://gssd.mit.edu/gssd-mapping-design/domains-human-activity>



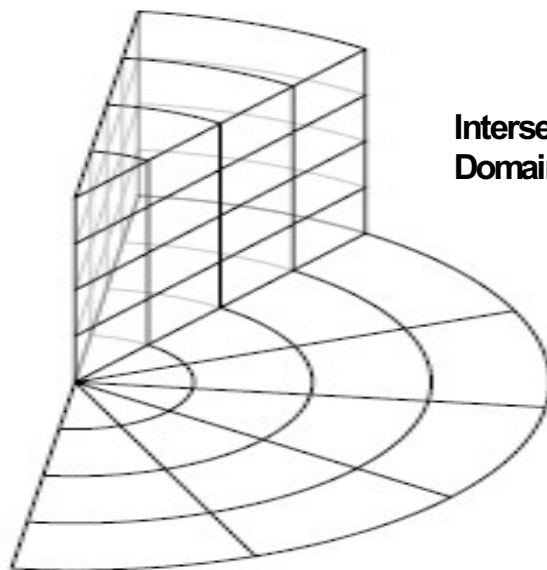
*Organization
Provision
Management
Retrieval*

of

Knowledge

The Frame System

Domain – The Topics*



Intersection of
Domain and Dimension

Dimension – The Issues**

Notes: * Recall Figure 4.9
** Recall Figure 4.10

MIT

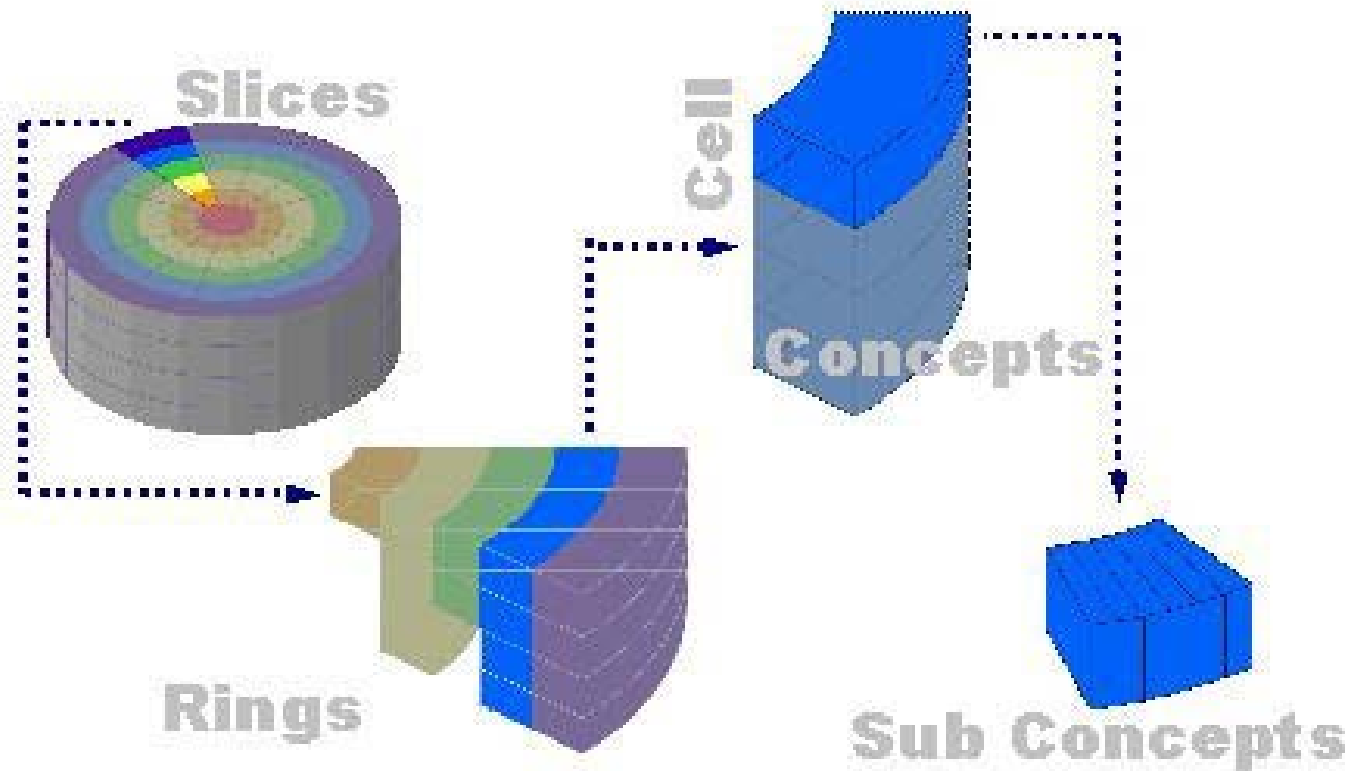
N Choucri 2014



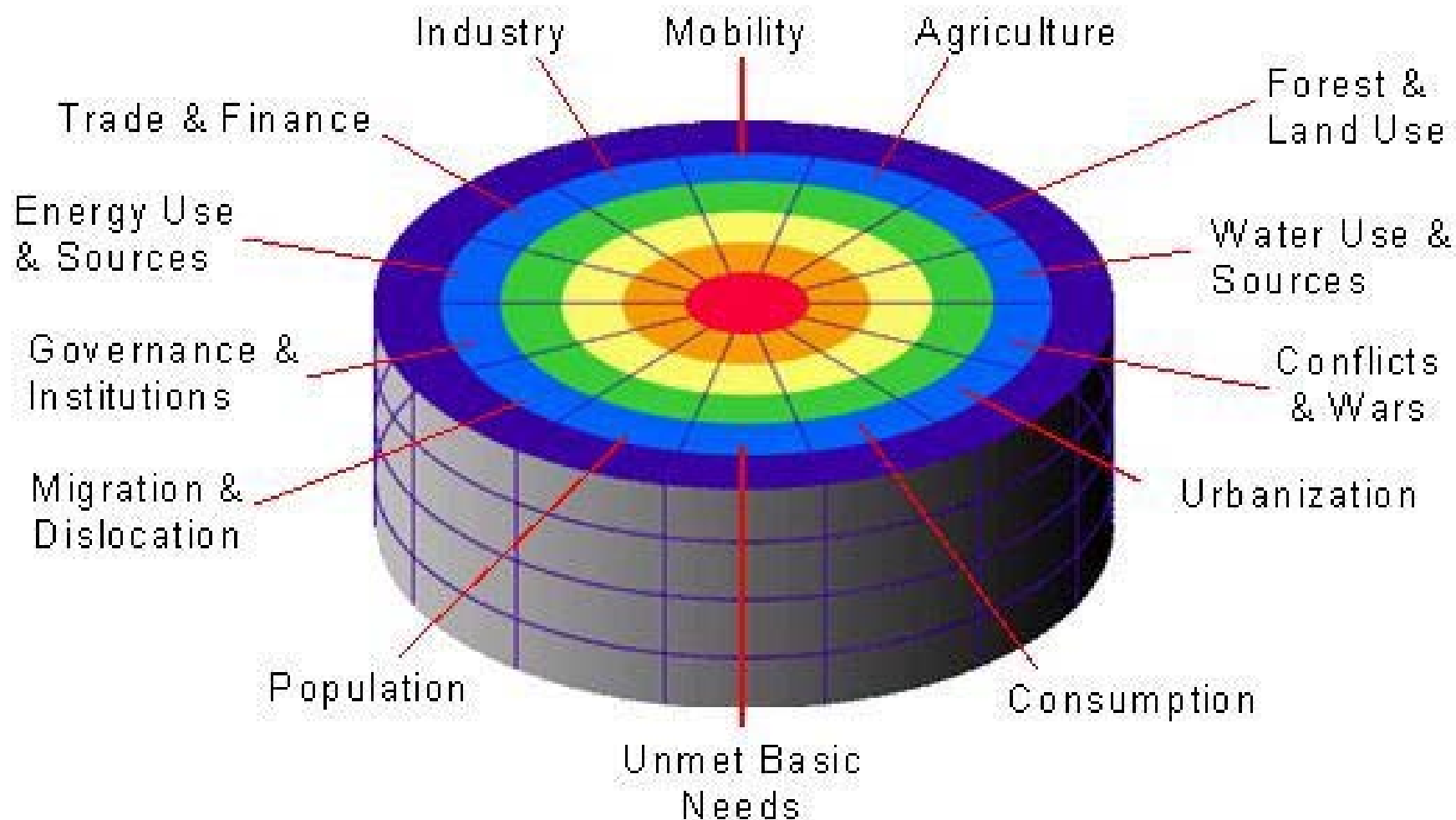
Overall Knowledge Structure

- **Domains** – topics (slices or subject matter)
- **Dimensions** – for each topic there are problems & solutions; overall there are also international responses.
- **Connectivity** – the linkages between them
- **Frames** – skeletons & outlines to fill out
- **Knowledge** – searchable data base & e-library

Conceptual Framework



Source: Nazli Choucri et al. *Mapping Sustainability*. (p. 22). Retrieved from <http://gssd.mit.edu/gssd-mapping-design/connectivity-linking-domains-dimensions>



Source: Nazli Choucri et al. *Mapping Sustainability*, (p. 13). Retrieved from <http://gssd.mit.edu/gssd-mapping-design/integrated-system>

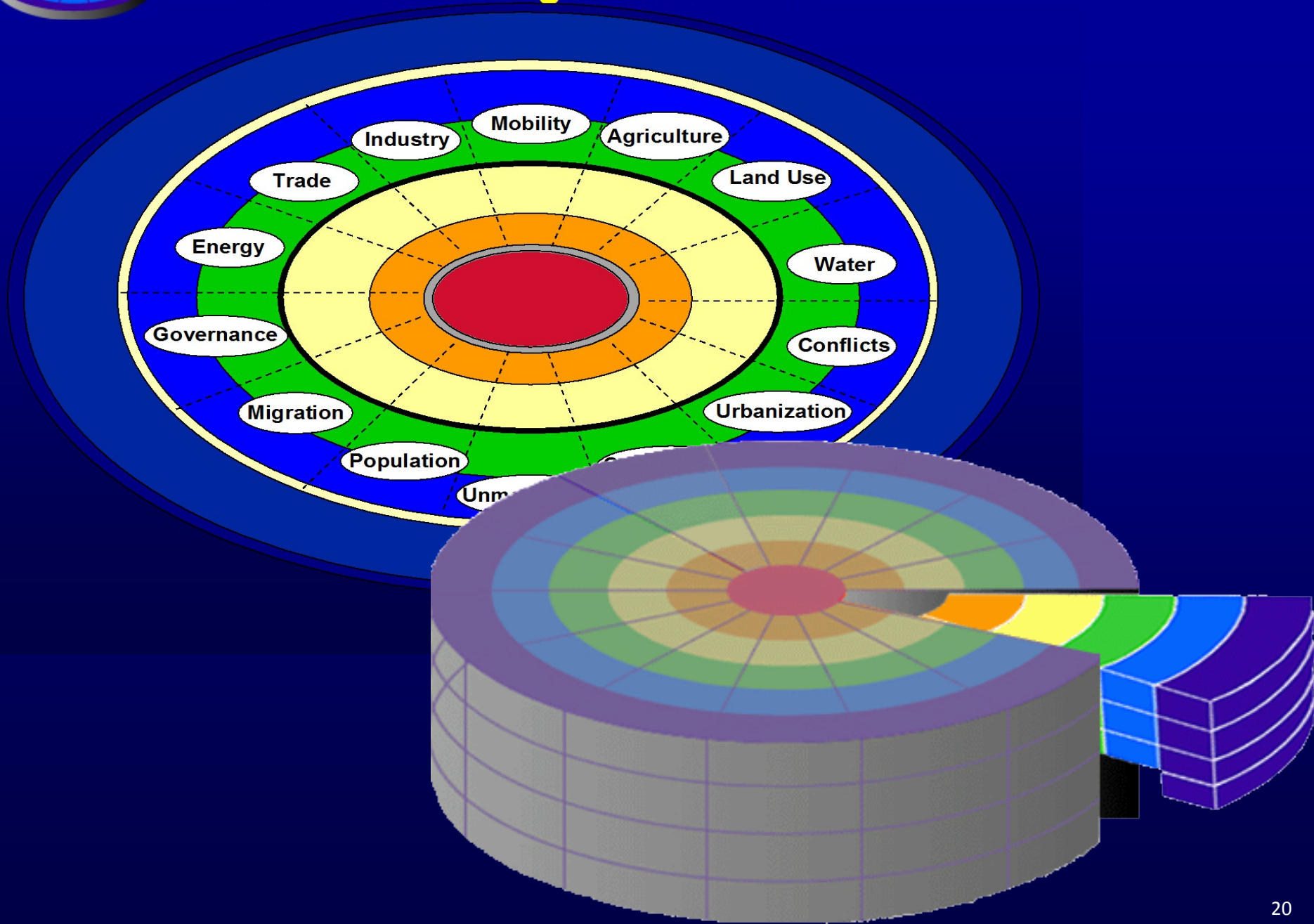


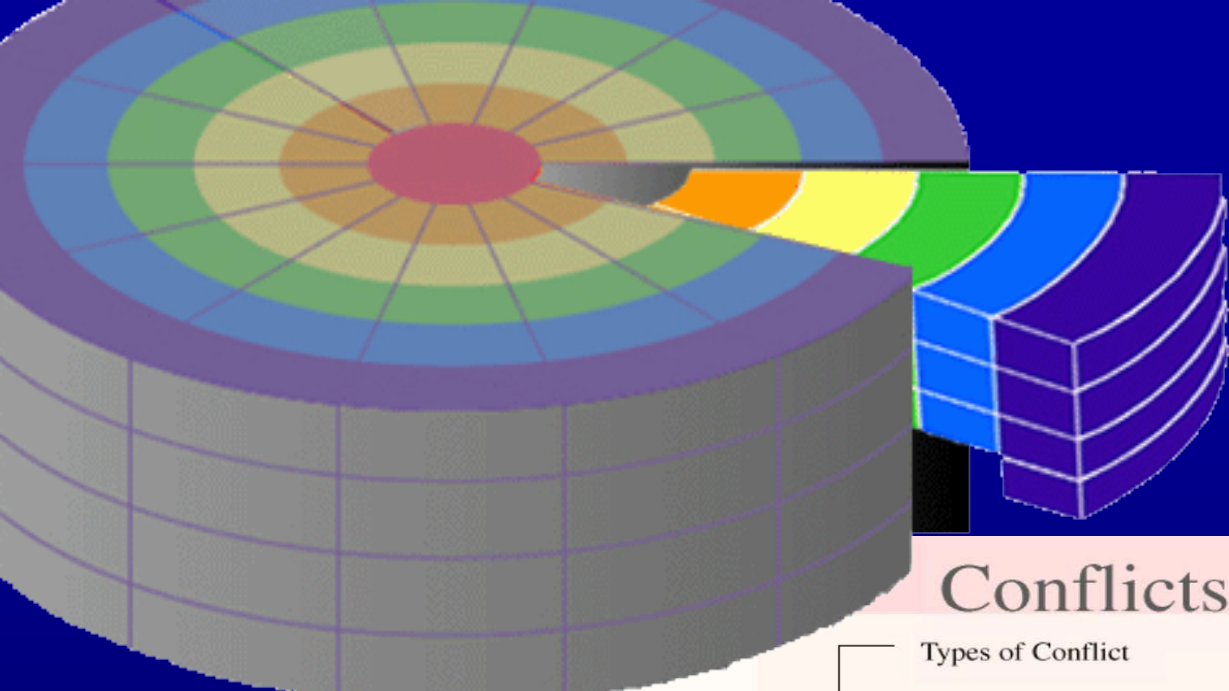
International Responses





GSSD Knowledge Framework





Conflicts & Wars

Activities & Conditions

- Types of Conflict
 - Causes & Sources
 - Military-related Activities
- Scope and extent
 - Participant Characteristics
 - Types of Warfare
 - Security Concerns
 - Economic Concerns
 - Socio-Political Concerns
 - Conflict Processes
 - Misperceptions vs. Strategic Moves
 - Military Systems
 - Weapons and Weapon Systems

Sustainability Problems

- Environmental Damages
 - Social Impacts
 - Economic Impacts
 - Impacts on Sovereignty
- Conventional Warfare
 - Possible Effects of Nuclear War
 - Demographic Damages
 - Refugees and Returnees
 - Health Impact
 - Education and Human Capacity
 - Restriction of Civil Liberties
 - Losses from Conflict and Violence
 - Problems from Wartime Conditions
 - Imperialism and Colonialism
 - State Building

Scientific & Technological Solutions

- Improved Warning Systems
 - Enhanced Monitoring Systems
 - Improved Disposal of Munitions
- Intelligence
 - Communication

Social Economic, Political & Regulatory Solutions

- Confidence Building Measures and Improved Dispute Resolution
 - Diplomacy & Negotiations
 - Post-conflict Reconstruction
- Types of Negotiations
 - Scale and Scope
 - Enhancing Social Contracts
 - Rebuilding
 - Strengthening Restitution and Accountability
 - Improved Institutional Forms and Measures

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Characteristics of GSSD Knowledge System



Sustainability Knowledge Base ie the data held by GSSD

- **Multi- disciplinary evolving content from roughly 350 institutions & lots of individuals**
- **Open knowledge submission system**
- **Content quality reviewed and abstracts created (or submitted)**
- **With the URLs for direct access to original source**



Knowledge Type

- **Concept & Theories**
- **Indicators & Measures**
- **Models & Case Studies**
- **Collections**
- **Agreements & Organizations**
- **Policy, Strategy & Responses**



Illustrative Slides

The following three slides show

- the submit site form
- the various search choices



Submit Site

Submit a
site

Submit Site

Title *

URL *

Abstract *

Author

Institution

Year

2012

Input By *

Affiliation

Email *

Domains/Issue Area *

- Agriculture
- Conflicts & Wars
- Consumption
- Energy Use & Sources
- Forest & Land Use
- Governance & Institutions
- Industry
- Migration & Dislocation
- Mobility
- Population
- Trade & Finance
- Unmet Basic Needs
- Urbanization
- Water Use & Sources

Industry Focus

- Construction
- Extraction & Processing
- Manufacturing
- Chemical
- Energy
- Electronics
- Information & Telecommunication
- Internet & Cyberspace
- Transport
- Machinery & Equipment
- Timber Paper & Pulp
- Food & Agriculture
- Service Sector
- Legal & Financial
- Other Services

Dimensions/Problem/Solution *

- Activities & Conditions
- Sustainability Problems
- Scientific & Technical Solutions
- Social/Economic/Political & Regulatory Solutions
- International Responses and Global Accords

Datatype(s) *

- Agreements
- Bibliographies & Reports
- Case Studies
- Collections
- Events
- Indicators
- Models
- Policies
- Organizations
- Theory/Definition

Region(s) *

- Asia
- Europe
- Middle East
- Africa
- North America & Greenland
- South & Central America
- Oceania & Antarctica
- Global

Country

-CAPTCHA

This question is for testing whether you are a human visitor and to prevent automated spam submissions.

A W M K i



Search options

Search GSSD

Simple Search

Search Terms

Search

Reset

Advanced Search

[Advanced Search »](#)

Graphical Search

User specified search criteria, consistent with GSSD knowledge system. By slice focusing on subject, topic, or issues. By ring focusing on activity, problem, or solution type. By cell focusing on the intersection of a specific slice and ring.

[Graphical Search »](#)



Advanced Search

Search GSSD

Advanced Search

▼ [Select Search Criteria](#)

Domains-Issue Area

- Agriculture
- Conflicts & Wars
- Consumption
- Energy Use & Sources
- Forest & Land Use
- Governance & Institutions
- Industry
- Migration & Dislocation
- Mobility
- Population
- Trade & Finance
- Unmet Basic Needs
- Urbanization
- Water Use & Sources

Industry Focus

- Construction
- Extraction & Processing
- Manufacturing
- Chemical
- Energy
- Electronics
- Information & Telecommunication
- Internet & Cyberspace
- Transport
- Machinery & Equipment
- Timber Paper & Pulp
- Food & Agriculture
- Service Sector
- Legal & Financial
- Other Services

Creation Date Between

Start date End date
-Year ▼ -Year ▼

Results per page

50 ▼

Dimensions-Problem/Solution

- Activities & Conditions
- Sustainability Problems
- Scientific & Technical Solutions
- Social/Economic/Political & Regulatory Solutions
- International Responses and Global Accords

Regions

- Asia
- Europe
- Middle East
- Africa
- North America & Greenland
- South & Central America
- Oceania & Antarctica
- Global

Datatype

- Agreements
- Bibliographies & Reports
- Case Studies
- Collections
- Events
- Indicators
- Models
- Policies
- Organizations
- Theory/Definition

Search Terms



Graphical Search

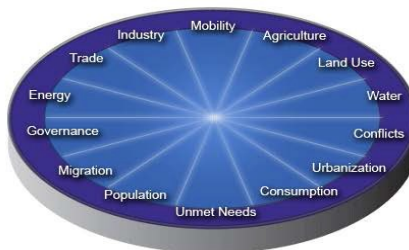
Search GSSD

Search GSSD

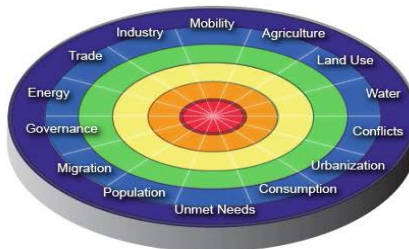
Search GSSD by Problem/Solution - Ring



Search GSSD by Topic/Issue - Slice



Search GSSD by Topics/Problem/Solution - Cell



- Activities
- Problems
- Technical Solutions
- Social Solutions
- International Responses



Common Uses of GSSD

- Utilize structure of knowledge content outline in text or graph
- Submit your site to expand reach
- Search over GSSD knowledge
- Explore different perspectives



Knowledge for Transitions to Sustainability

- From supply chain to knowledge chain
- From material production to meeting social needs
- From isolated understanding to increased value due to knowledge
- From knowledge creation to knowledge diffusion
- From knowledge diffusion to Innovation & creation



Different users value different things

- **knowledge base repository – with url**
- **search & navigation system**
- **educational system (the ontology-knowledge structure for 14 features of sustainability)**
- **open system of distributed knowledge inputs**
- **Other**



GSSD Website

<http://gssd.mit.edu>

MIT OpenCourseWare
<https://ocw.mit.edu>

17.181 / 17.182 Sustainability: Political Economy, Science, and Policy
Fall 2016

For information about citing these materials or our Terms of Use, visit: <https://ocw.mit.edu/terms>.