Sustaina-what??!?

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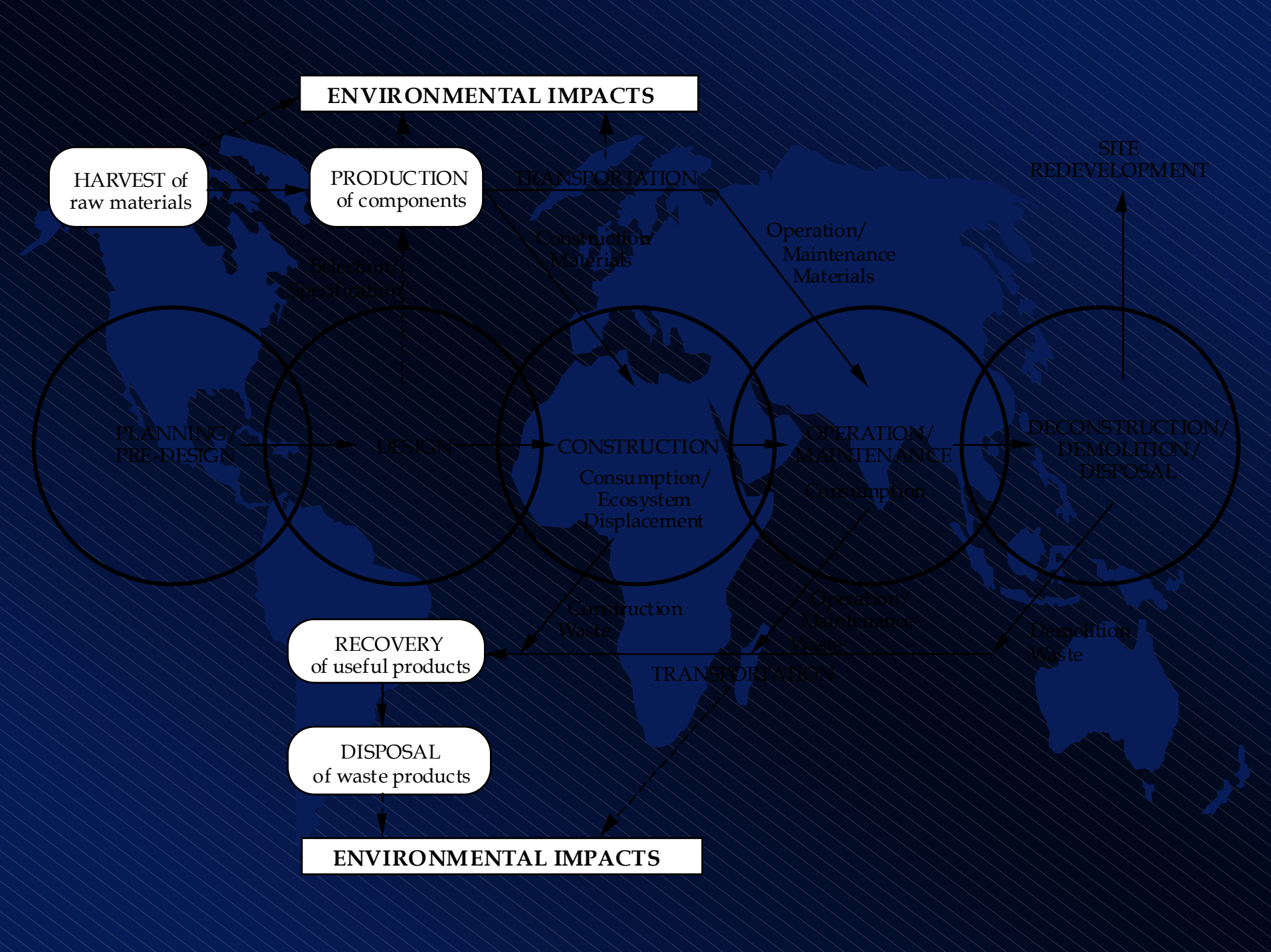
Overview

- Healthy to whom?
- What does “healthy” mean in terms of building materials?
- How can we select and specify healthy building materials?
- What are the challenges of using healthy building materials?
- What resources are available for more information?

Healthy to whom?

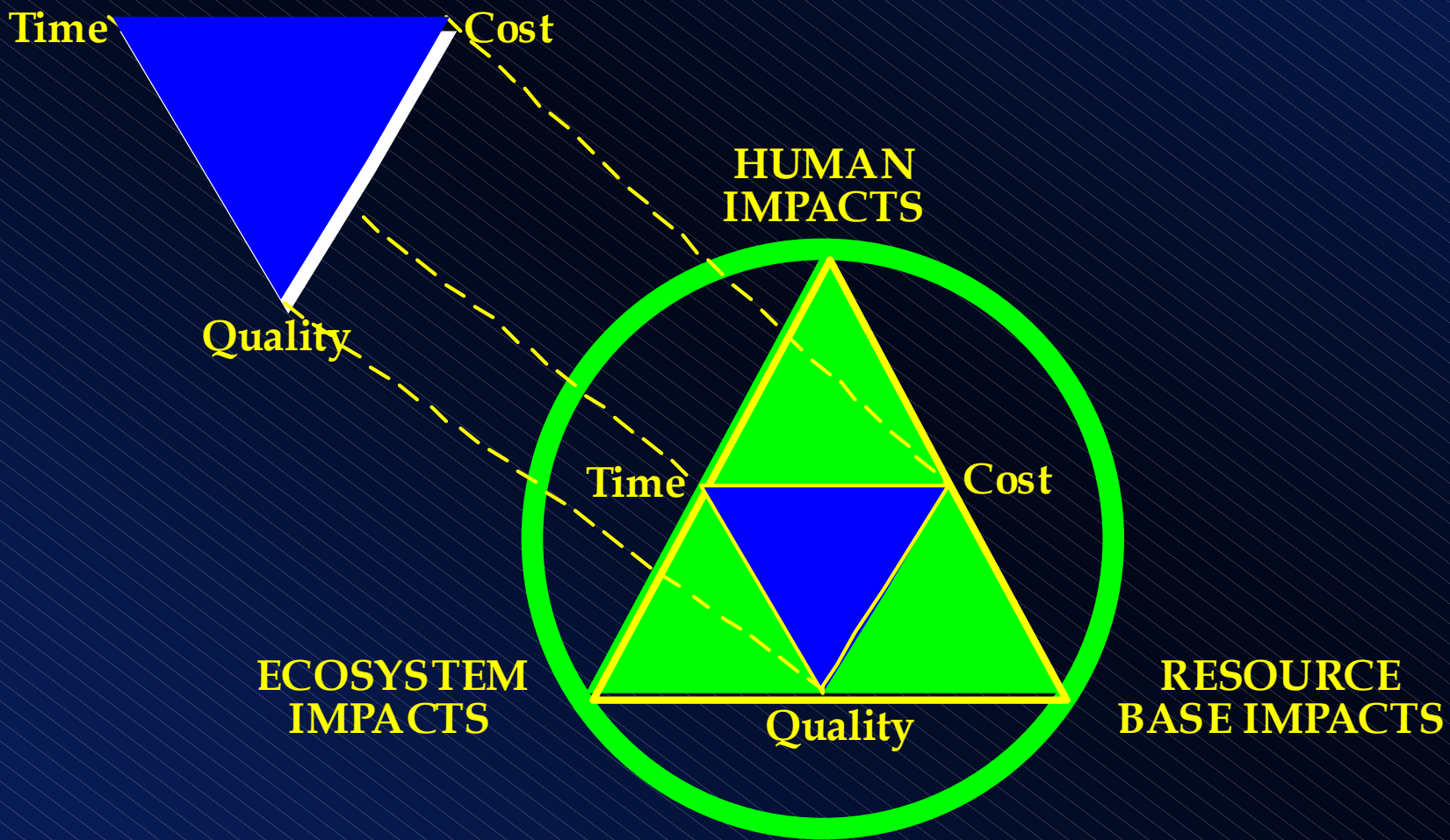
- Occupants
- Think life cycle!


ENVIRONMENTAL IMPACTS
HARVEST of raw materials
PRODUCTION of components
TRANSPORTATION
SITE REDEVELOPMENT
Construction Materials
Operation/ Maintenance Materials
Selection/ Specification
PLANNING/ PRE-DESIGN
DESIGN
CONSTRUCTION
OPERATION/ MAINTENANCE
DECONSTRUCTION/ DEMOLITION/ DISPOSAL
Consumption/ Ecosystem Displacement
Consumption
Construction Waste
Operation/ Maintenance Waste
Demolition Waste
RECOVERY of useful products
TRANSPORTATION
DISPOSAL of waste products
ENVIRONMENTAL IMPACTS

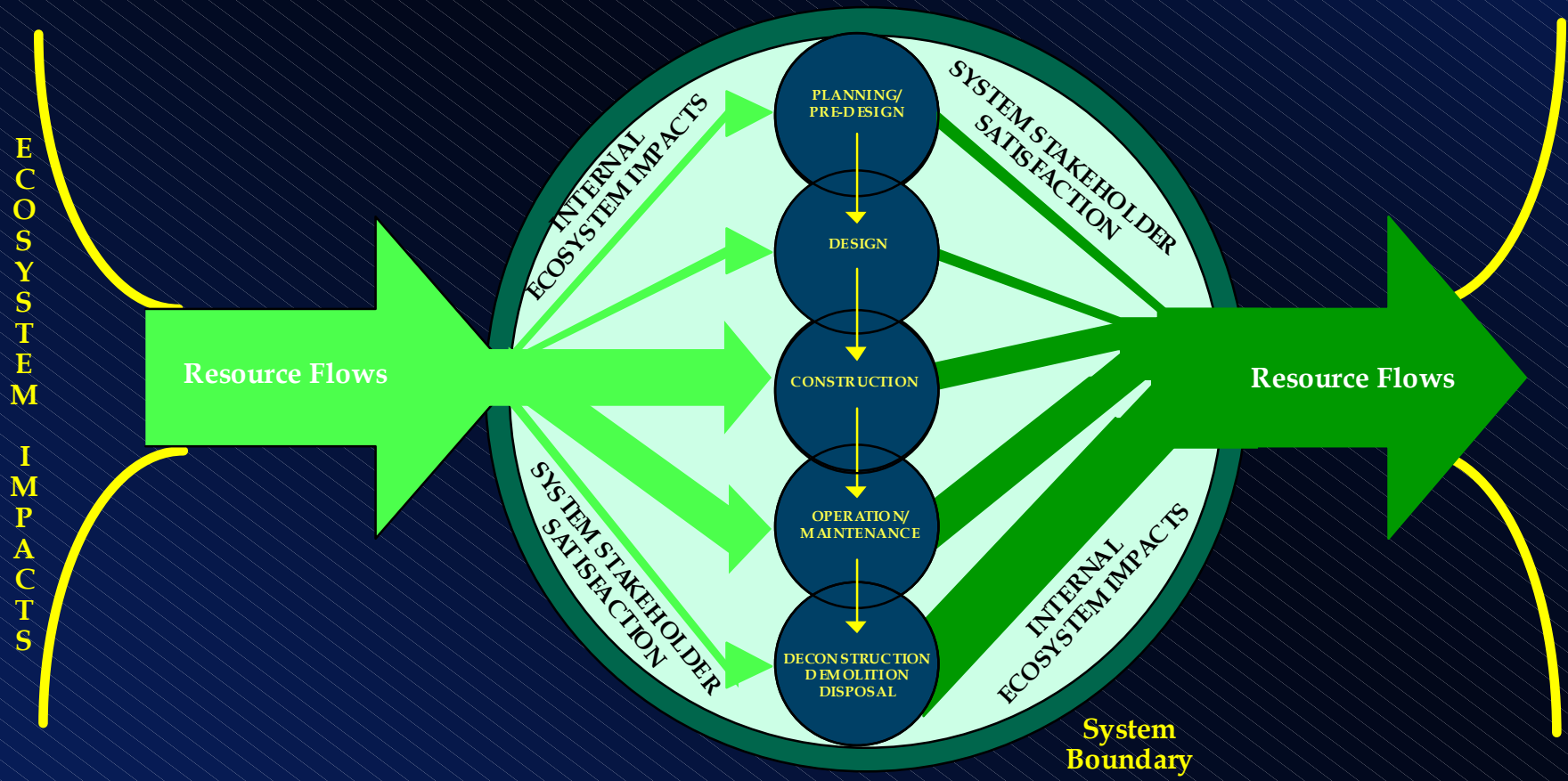
Healthy to whom?

- Direct Stakeholders
  - Occupants
  - Constructors
  - Operators/Maintainers
  - End-of-service-life Stakeholders
- Non-stakeholders and Future Generations
  - Preserve ecosystems
  - Preserve resource bases

Considerations



Impacts of Material Selection



What does “healthy” mean?

- Inside the facility system (stakeholders):
  - Technological Performance
  - Socio-Economic Performance
- Outside the facility system (non-stakeholders and future generations):
  - Environmental Performance
  - Resource Consumption Performance

Technological Performance:

- Durability
- Service Life
- Maintainability
- Serviceability
- Code Compliance
- R-value
- Strength
- Constructability

Socio-Economic Performance:

- Occupant Health/ Indoor Env'l Quality
  - VOC Outgassing
  - Toxicity
  - Susceptibility to biocontamination
- Appropriateness for:
  - Scale/Site
  - Climate
  - Culture
- Economics:
  - Contribution to Economic Dev't.
  - Cost
  - Labor Skill Requirements
  - Labor Amount Requirements

Environmental Performance:

- Impacts on Air Quality
  - Carbon Dioxide
  - Hydrocarbons
- Impacts on Water Quality
- Impacts on Soil Quality
- Ozone Depletion Potential
- Site Disturbance
- Assimilability
- Scarceness
- Impacts during Harvest
- Processing Impacts

Resource Consumption Performance:

- Energy
  - Embodied
  - Operational
  - Efficiency
  - Distributional
- Degree of Processing
- Source Reduction
- Materials
  - Renewable
  - Recycled/Recyclability
  - Reused/Reusability
  - Renewability
  - Packaging Requirements
- Source Location/ Transport Distance

Selecting and Specifying Healthy Building Materials

- Defining and framing the problem
- Articulating objectives
- Identifying/generating alternatives
- Analyzing and evaluating alternatives
- Recommendation/specification
- Implementation
- Follow-up

Selecting and Specifying Healthy Building Materials

- Defining and framing the problem
  - Example: Paper vs. plastic
  - Challenge: Disconnected delivery process
- Articulating objectives
  - Technological, Socio-economic, environmental, and resource consumption objectives
  - Challenge: Information overload

Basic Principles

- Start with the easy stuff!
  - Lowest hanging fruit
  - Consider multiplier effects
- The answer is always, “It depends…”
  - Think Life Cycle
  - Think Systems

Basic Principles

- Question the question!
  - How you frame the problem impacts your likelihood of finding a very good solution
- Altruism is self-extinguishing...
  - Seek transparent solutions
  - Be skeptical - human behavior is *awfully* unpredictable...

Selecting and Specifying Healthy Building Materials

- Recommendation/specification
  - Challenge: Working within existing processes
- Implementation
  - Challenge: Resistance to change
- Follow-up
  - Challenge: Capturing and transferring lessons learned

Challenges

- Disconnected delivery process
  - Distributed responsibility and control
  - Isolation of decisions
  - Ignoring the holistic system perspective

Challenges

- Resistance to change
  - Ignorance: “Sustaina-what?”
  - Skepticism: “Healthy, schmelthy!”
  - Vestedness: “If it ain’t broke...”
  - Risk aversion: “I won’t be the guinea pig”

Challenges

- Making informed decisions:
  - Choosing an appropriate scope
  - Information overload
  - Lack of data

For more information...

- Resource guides
- Theoretical references
- Rating and certification systems
- Case studies and examples
- Manufacturer query
- Ask for help...

Summary

- Healthy goes beyond the building's occupants
- Think life cycle, think systems
- Question the question
- Set reasonable and context-specific goals
- Choose your battles wisely - do only as much as the situation permits
- Don't hesitate to ask for help!


Questions?