Fédération Internationale des Ingénieurs-Conseils

Project Sustainability Management Pays

Lessons learned in applying PSM
Where do we go from here

by
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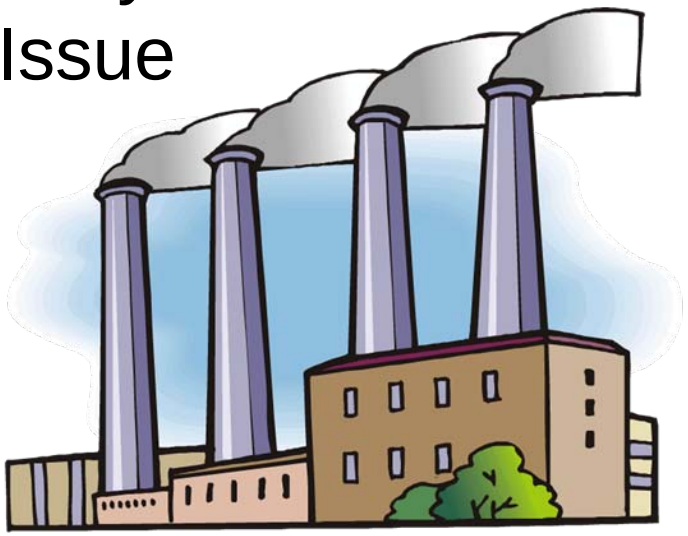
Summary

- The value of FIDIC Project Sustainability Management (PSM)
  - The basis for PSM
  - Experience to date
- Five “mission critical” issues for engineers and society
- The consulting engineer's dilemma
- Where do we go from here?

The Value of Project Sustainability Management

- What is Project Sustainability Management (PSM)?
- The basis for PSM
- Experiences, lessons learned

Achieving Sustainability is a Real and Urgent Issue



- The task is enormous
  - More or less a **complete overhaul** of the world's infrastructure
  - This will be a long journey spanning many decades
- Replace the legacy, non-sustainable infrastructure with increasingly more sustainable technologies, processes and systems
  - Most of which have yet to be invented!

This Overhaul Will Be Done Project by Project

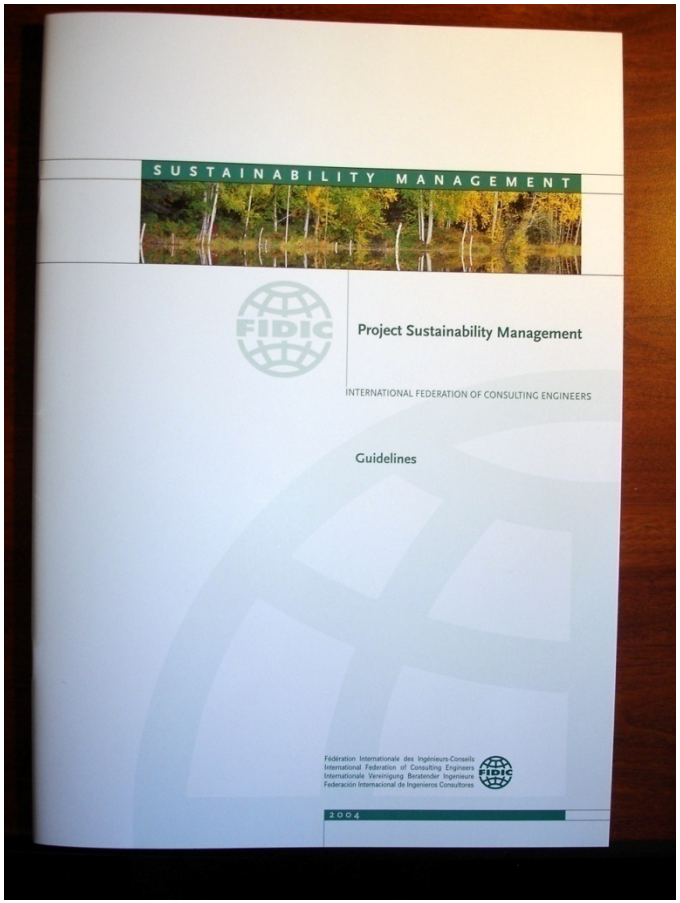
- The rate of advancement will be driven ad hoc
  - By individual project owners and their engineers
  - Based on local regulations, requirements, standards, goals, knowledge and agendas of the stakeholders
- Need for guidance
  - What makes a project sustainable?
  - How do you make progress toward sustainability?
    - How do you set sustainability goals?
    - How do you measure progress toward those goals?
    - How do you make continuous improvement?

"If you don't know where you are going, then any road will get you there."

Lewis Carroll

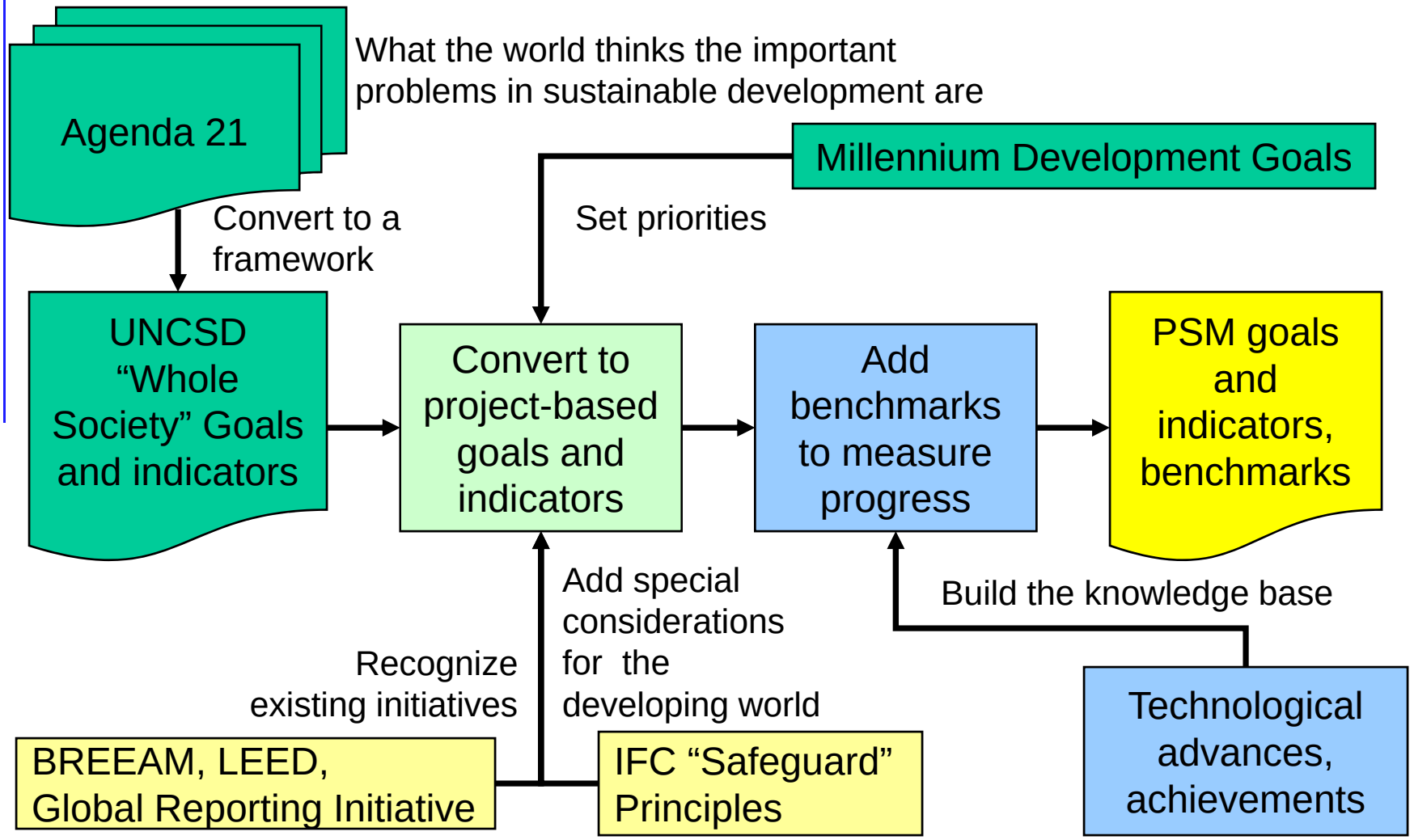
FIDIC Project Sustainability Management Guidelines

- Introduced in 2004 at the FIDIC conference in Copenhagen
- Framework and process for setting project sustainability goals, measuring progress
- Core project sustainability indicators
- Case example



Available through FIDIC: www.fidic.org

FIDIC PSM Approach



PSM Core Goals and Indicators: Examples

Theme	***Sub-theme***	***Goal***	***PSM Indicator***
Category: Environmental			
Fresh water (18)*	Water Quality	Maintain, enhance water quality	EN-14: BOD EN-15: fecal coliform
Category: Economic			
Consumption & production patterns (4)	Material consumption	Reduce the intensity of material use	EC-2: Degree of material usage
Category: Social			
Equity	Poverty (3)	Reduce the percent of people living below the poverty line.	SO-1: Proportion of local workers, companies employed

*refers to chapter in Agenda 21

Experience with PSM To Date

PSM courses, project applications.
Range of client drivers, interests.
Compatibility with other systems.
Modifications/updates needed.
Additional issues

Interest in Project Sustainability Management is Growing

Early courses included interested individuals who wanted to know what they could do on this issue

Current courses are made up of practitioners who are focused on the practical problems of delivering services in this area

PSM Usage

- Full process primarily used on major projects in developing world for organizations in the developed world
- People are finding the core indicator list a useful “checklist” over a range of projects
  - “Pick the most sustainable alternative”
  - Focus on one goal, e.g., energy use reduction
- An updated core indicator list is needed
  - Environmental knowledge improved since Agenda 21
  - Additional issues have emerged and emphasis changed
    - HIV-AIDS
    - Carbon trading

Concerns and Issues Expressed by Users

- *"Why should we be concerned about sustainable development?"*
- *"Where are the sustainable engineering projects?"*
- *"My client has already determined the scope of work. It's too late to get involved in setting sustainability goals and metrics."*
- *"I convinced my client to use PSM. Now what?"*

Five “Mission Critical” Issues for Engineers and Society

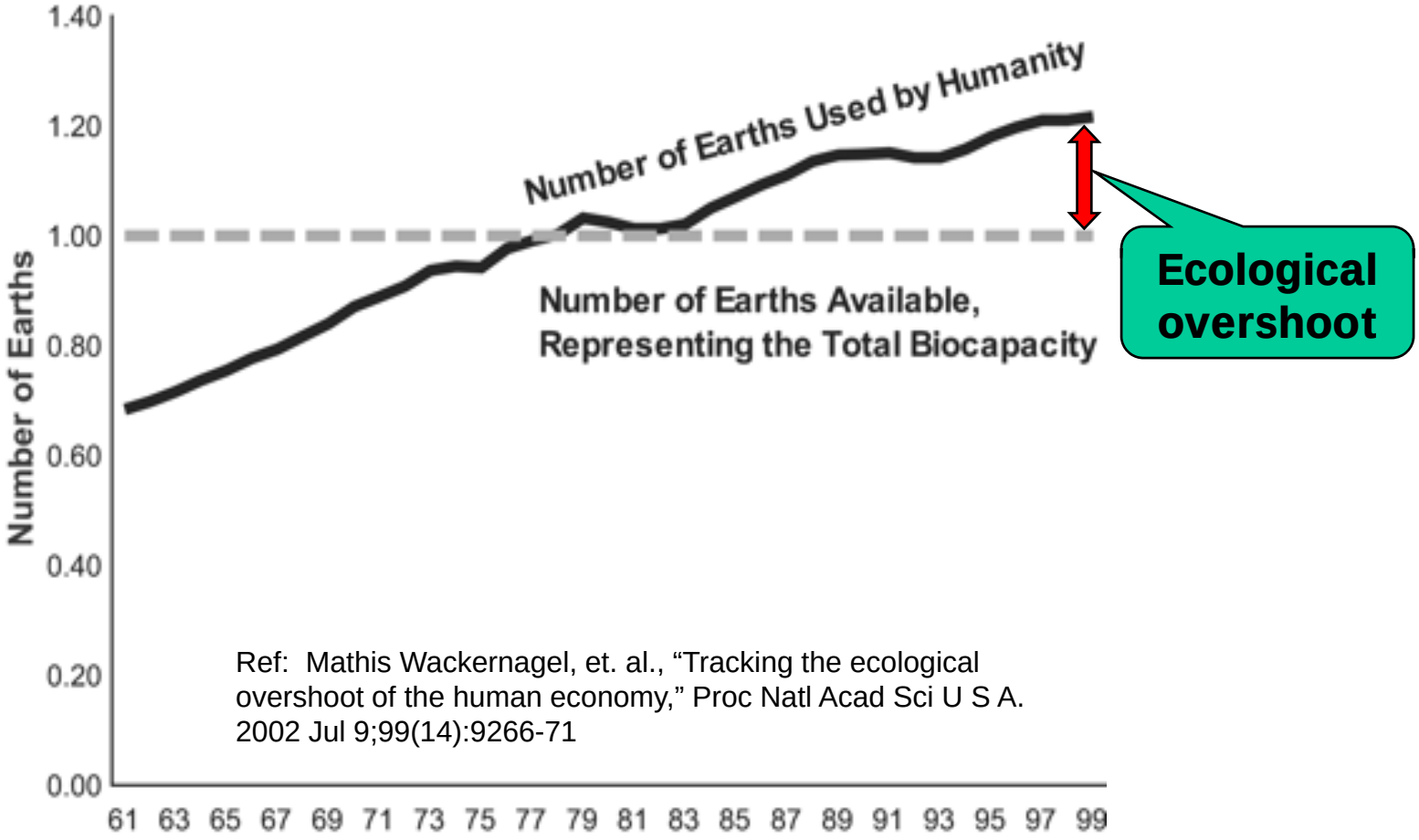
How will the engineering community address the issue of sustainable development?

Issue #1: Our Current Form of Economic Development Is Not Sustainable

- The developed world has an enviable quality of life, but…
- We're using up massive amounts of resources
- We're well beyond the Earth's ecological carrying capacity
- The evidence is in

From *The Economist,* Sep 14th 2006

Available Resources and Carrying Capacities: Current Situation



Ref: Mathis Wackernagel, et. al., "Tracking the ecological overshoot of the human economy," Proc Natl Acad Sci U S A. 2002 Jul 9;99(14):9266-71

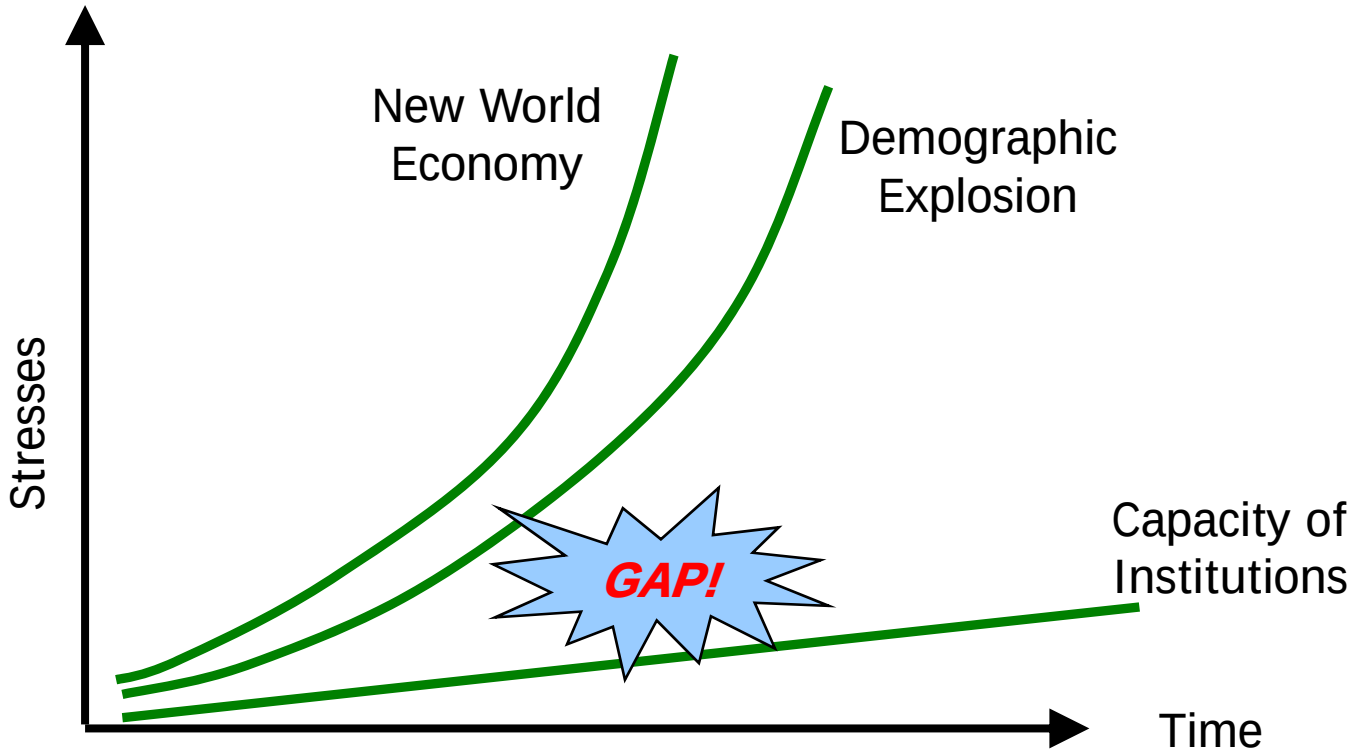
Issue #2: This Situation Will Likely Reach Crisis Proportions Very Soon… About 20 Years

- More and more people chasing increasingly scarce resources
- Unstable supply chains
- Non linear consequences
- Institutions unable to cope

"Let's start thinking about [global warming] now. If the water goes up by three, four, five meters, what will happen to us? Half of Singapore will disappear."

Lee Kuan Yew, Minister Mentor of Singapore, New York Times, August 2007

Gap Between the Two Big Forces and the Capacity of Institutions to Manage



Source: J. F. Rischard, *High Noon: 20 Global Problems; 20 years to Solve Them*, Basic Books, New York, 2002.

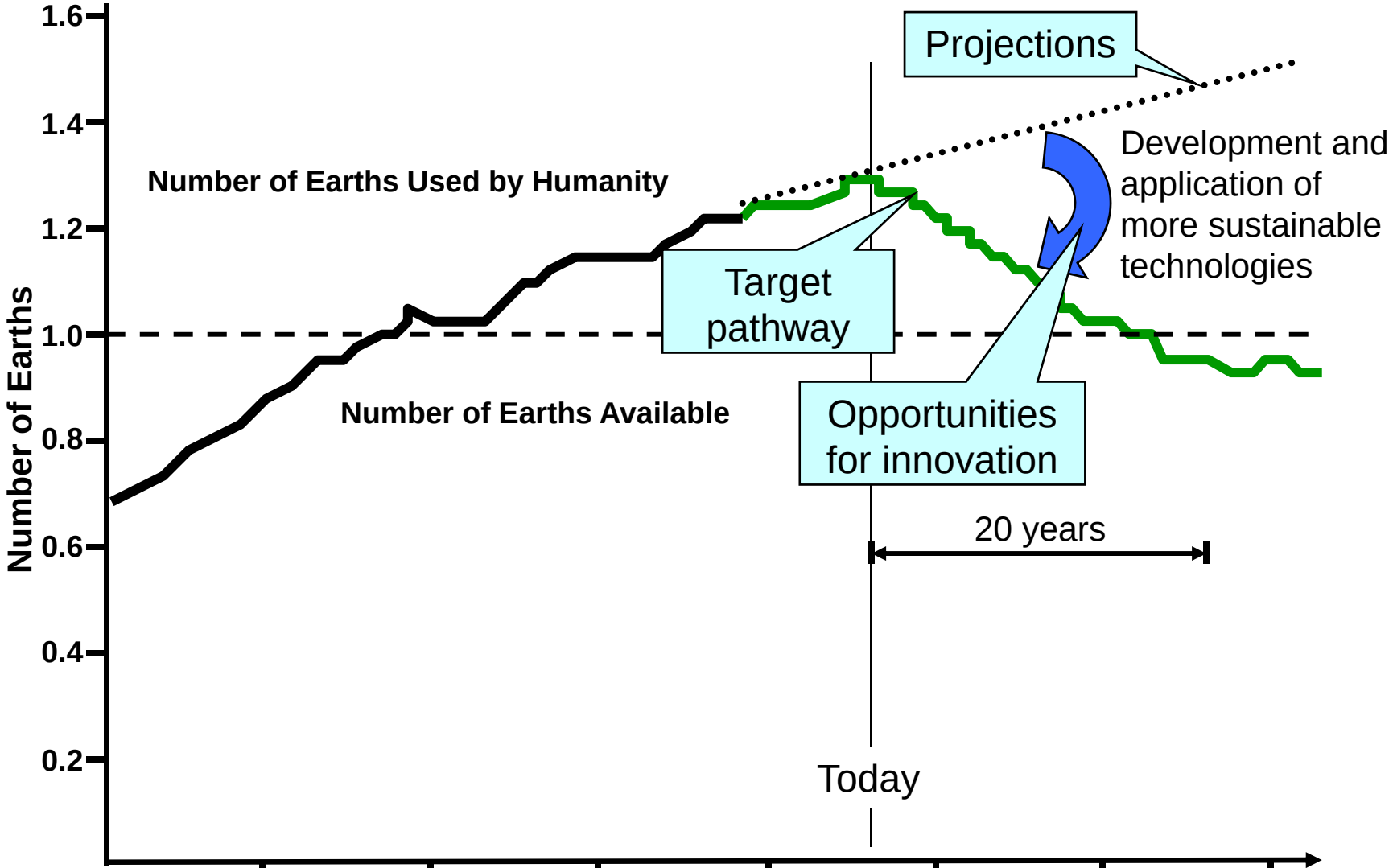
Issue #3: Issues of Sustainability are Changing the Way Business and Government Operate

- Growing public awareness of consequences
  - Global climate change
  - Water shortages and drought
  - Energy shortages and vulnerabilities
  - Infrastructure deterioration
  - Traffic congestion, urban sprawl
  - Vulnerability to disasters, natural and man-made
- Rise of powerful stakeholders
  - IT is the great enabler
- Emergence of credible voices in industry and government

Market Drivers for Sustainable Engineering Services

- Reputation
  - Preserve and enhance reputation along sustainability dimensions
- Innovation
  - View problems and issues through a “sustainability lens”
  - Look for innovative solutions.
- Necessity
  - Urgency to mitigate or adapt to direct impacts, consequences
  - Meet statutory requirements

Path Forward



Issue #4: The Engineering Community Should Be Leading The Way, But Currently Is Not

- Most are engaged in delivering conventional engineering designs
  - Building to code
  - Protecting the status quo
- Few tools
- Even fewer incentives

Engineer's Position in the "Food Chain"

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Decreasing influence on policy and strategy

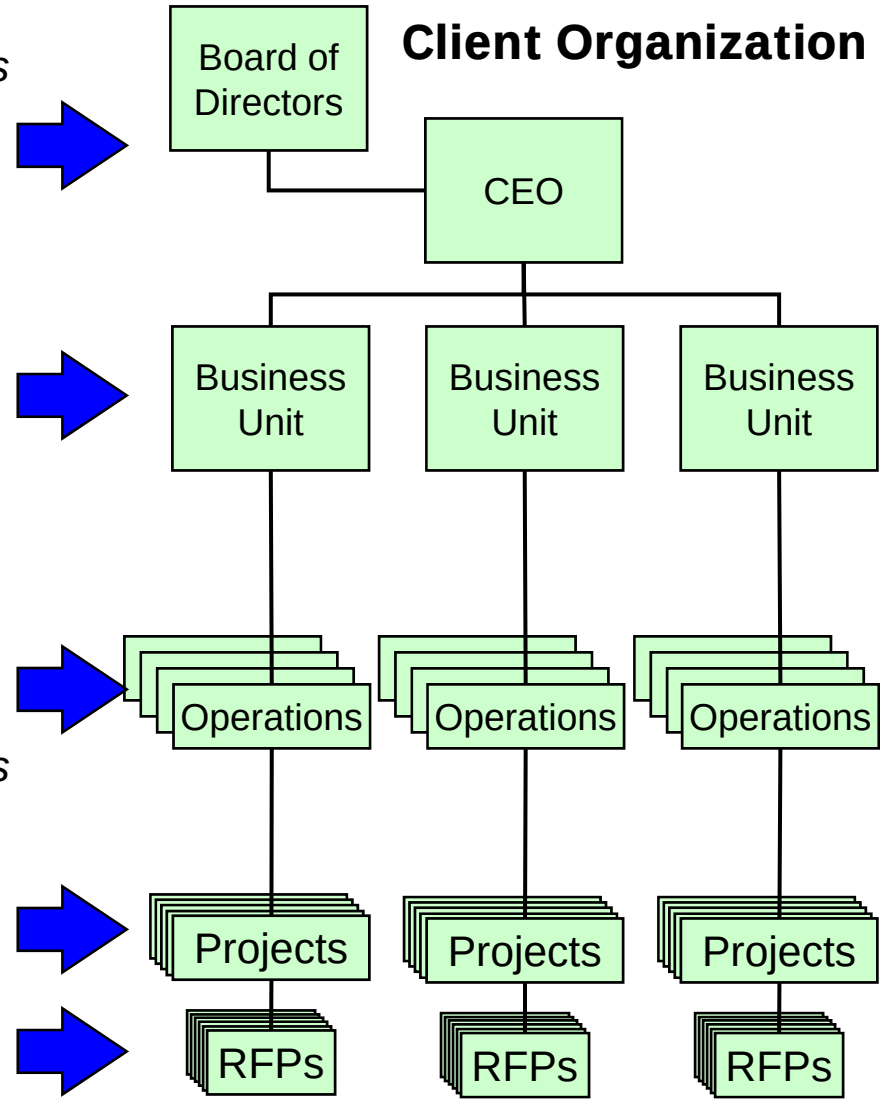
- *Icon Consultants*
- *Industry Peers*
- *Accounting Firms*

- *Industry Practitioners*

- *Industry Associations*
- *Regulating Organizations*

- *Architects*

Engineering Firms



- *Vision, mission and goals*
- *Policies and strategies on sustainable development*

Translation

- *Goals, objectives & measures*
- *Relative importance*

Translation

- *Operational changes to achieve sustainability goals, objectives*

Translation

- *Projects initiated or affected by sustainability goals, objectives*

Consulting Engineer's Dilemma

"Architects are selected on the basis of their successful design innovations; engineers are selected on the basis of how many times they've delivered the same design successfully."

Rolf Saegesser/SKS Ingenieure, Switzerland
FIDIC 2006 Fall Conference, Budapest

Issue #5: Others Are Engaging…

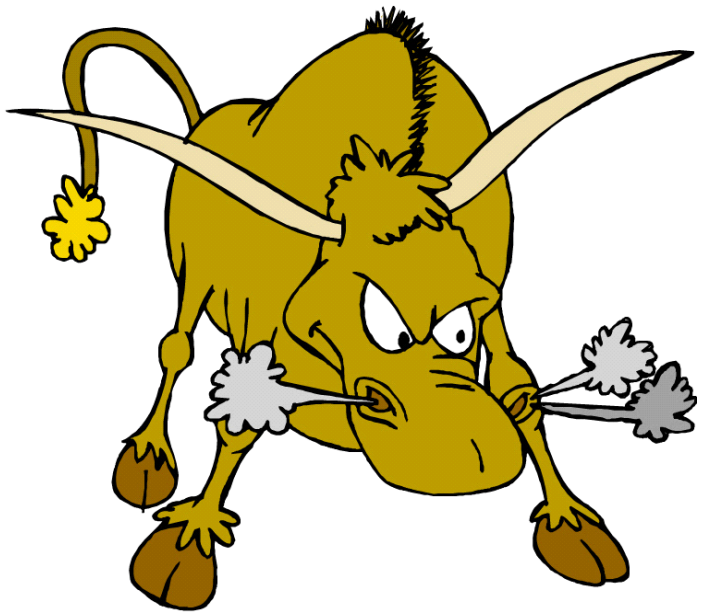
- Some are capitalizing on new opportunities
  - Viewing engineering problems in a sustainability context
  - Creating tools to help clients view their problems differently
  - Devising new solutions… and saving money!
  - Moving away from commodity engineering
- Examples
  - Accounting firms
  - Architects
  - Your clients!

…and Portraying the Engineering Community as Stupid!

- RMI Factor 10 design
  - "Nonviolent overthrow of bad engineering"
- Examples
  - Large pipes, small motors
  - Tunneling through the cost barrier
  - Selling services, not products

Source: Rocky Mountain Institute

How Should the Engineering Community Engage?

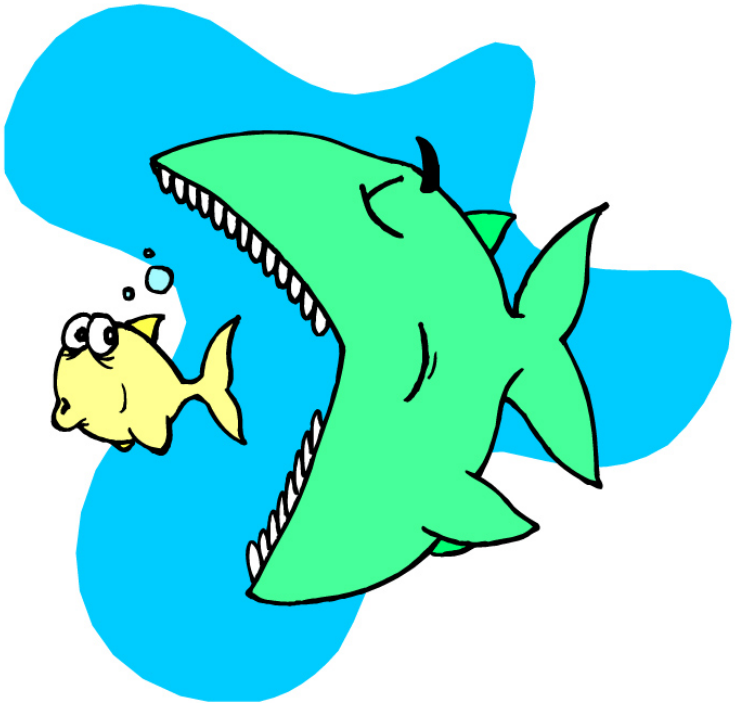


OR

An Approach for Engagement

- Recognize the role engineers play in moving society towards sustainable development
  - Understand the business case for sustainable development
  - Don't perpetuate the status quo
- Develop and apply the requisite sustainability processes and tools
  - ***Seven "building blocks"***
  - ***Project Sustainability Management Guidelines are the first building block***
- Deliver projects that "raise the bar" on sustainable performance
  - Apply technologies that contribute to sustainability
  - Use "high performance" project teams, engineer-owner collaboration, alliance contracting
  - Help create an "environment for innovation"

Moving Up the “Food Chain” of Sustainability Projects



How Can Engineers Play a More Significant Role in Achieving Conditions of Sustainability?

Building Blocks

7. High level client access on matters of strategy and policy
6. Tools for maintaining, enhancing SD performance
5. Tools for visualizing sustainability issues, holistic solutions
4. Tools for creating, designing and delivering holistic solutions
3. Project management processes for applying new, more sustainable technologies cost-effectively
2. Procurement processes that foster client partnerships, risk sharing
1. Framework and process for setting sustainability goals and metrics

Increasing influence on policy and strategy

Engineer's Role

Helping to shape organizational policy and strategy

Helping to embed sustainability practices into the client's business

Helping to make operational and infrastructure changes to improve client sustainability performance

Helping to define project goals, objectives and measures for improving sustainability performance

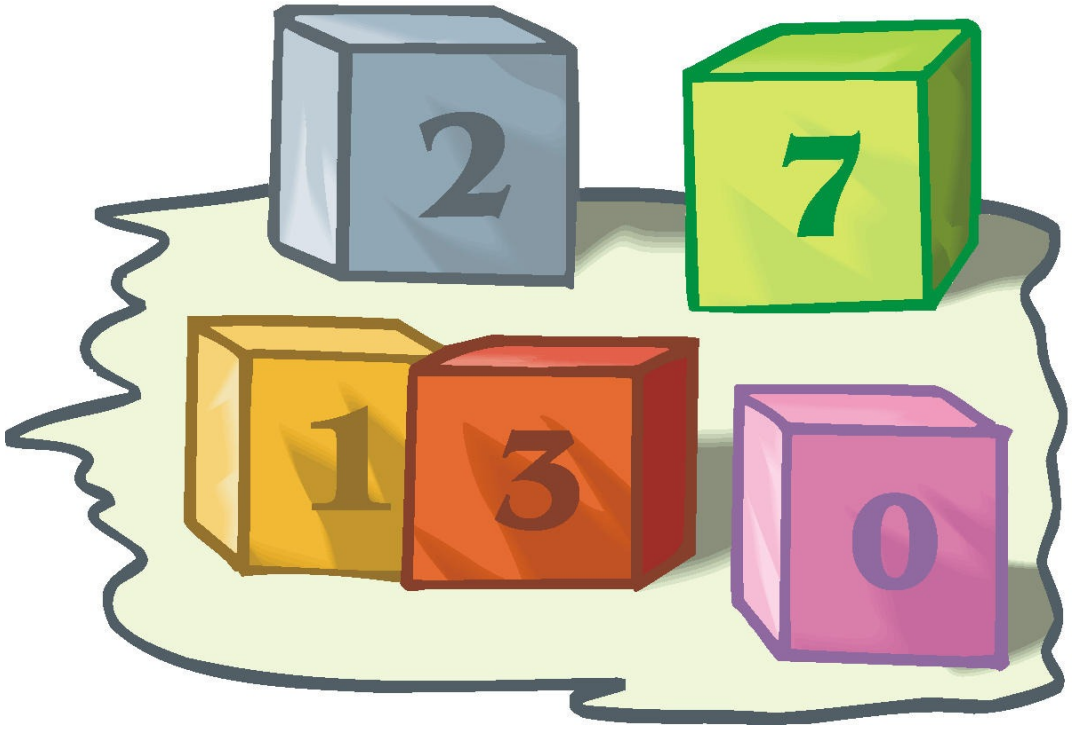
Delivering projects that contribute toward sustainability

Engineering Firms Today

Delivering bits and pieces of projects related to sustainability

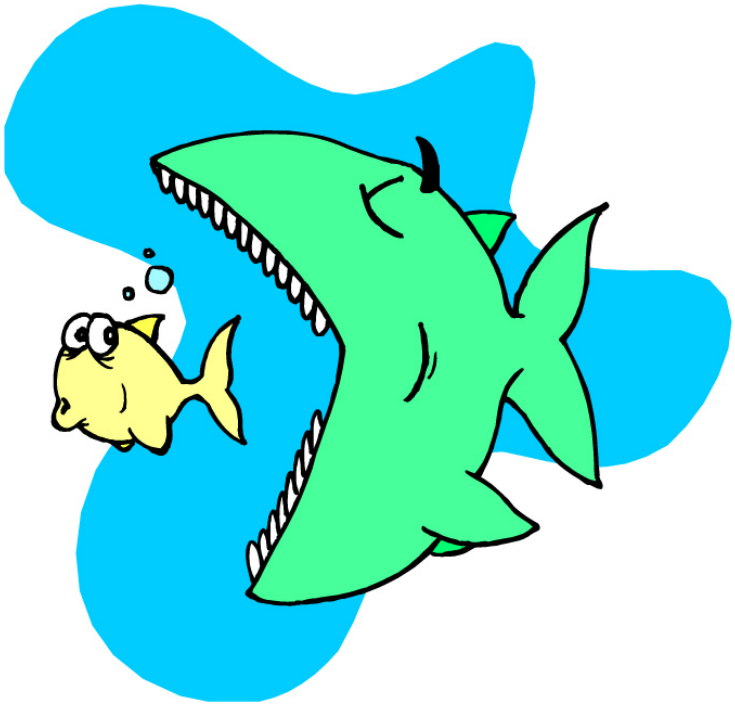
Moving Up the Sustainable Project Decision-making Hierarchy

Seven Building Blocks



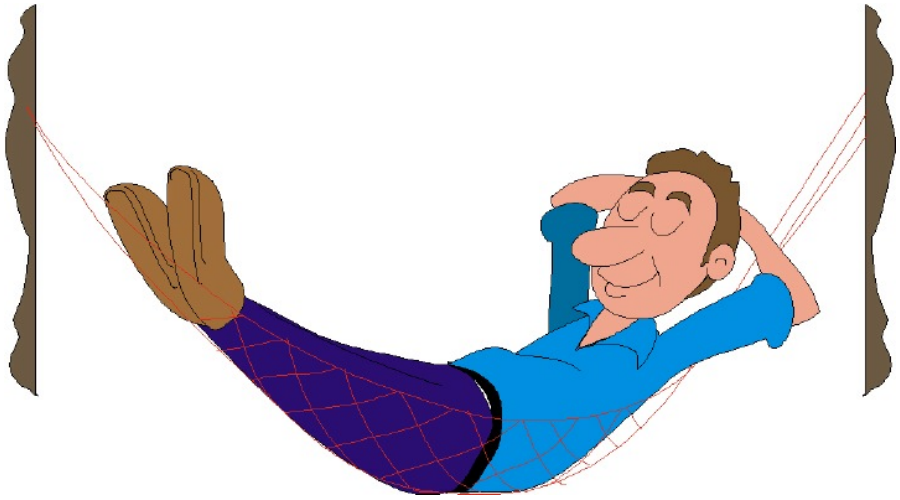
Challenges: Position of The Engineering Firm on the Clients Sustainable Project “Food Chain”

Are we content just being “bottom feeders”?



Do You Really Want to Move Up?

- Some companies seem perfectly comfortable delivering commodity engineering services
  - Systems, policies, procedures are designed to handle
  - Skill base is well suited to the work



What's your company's comfort zone?

1. Framework and Process for Setting Project Sustainability Goals and Metrics

- Making real progress vs. “accessorizing for sustainability”
- Existing project-oriented goals and metrics
  - LEED
- FIDIC’s Project Sustainability Management Guidelines
  - How to make real and verifiable progress toward conditions of sustainability

2. Procurement Processes for Engaging High Performance Teams

- What kind of project team does it take to deliver a “sustainable” project?
  - Defining “high performance” teams
- How do you assemble such a team?
- Procurement processes for selecting “high performance” teams

3. Tools for Visualizing Sustainability Issues, Holistic Solutions

- Tools for seeing the big picture
  - Full impacts
  - Life cycle costs
- Tools for collaboration
  - Working with stakeholders

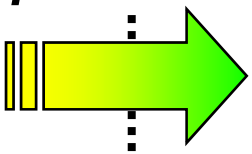
City of Olympia, WA: Vulnerabilities to sea rise

4. Tools for Creating, Designing and Delivering Holistic Solutions

- The context for sustainable design
- Prerequisites for delivering a successful sustainable design
- Whole system design principles
- Steps to delivering holistic solutions

Transition to Holistic Engineering

Conventional design techniques ***Holistic design techniques***



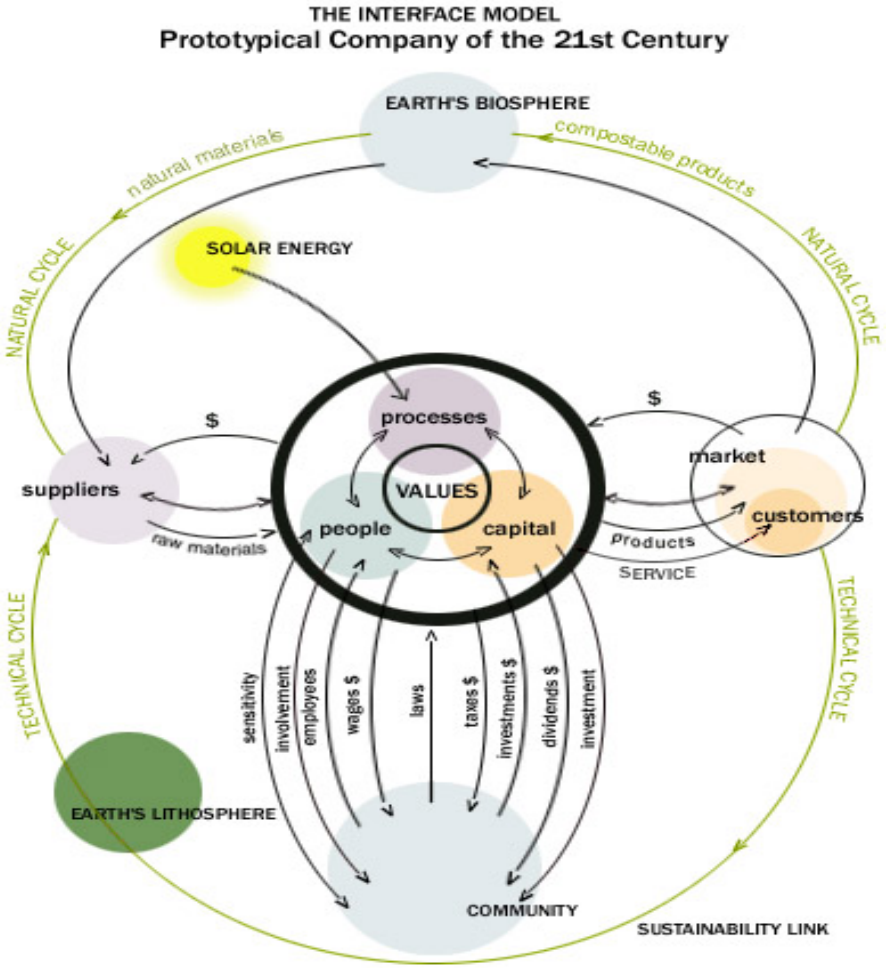
Replace	Reconfigure	Reexamine	Re-imagine
Replace conventional equipment, systems, processes with more efficient substitutes.	Reorganize or rearrange design components to increase efficiencies and/or effectiveness.	Reconsider all design assumptions, key design variables that affect eco-efficiency. Look for ways to optimize. Stretch the problem boundaries Incorporate more holistic solutions.	Drawing from a broad range of disciplines, seek to reinvent the system, process or facility using more sustainable technologies and approaches, while delivering the same or better functionality.

5. Project Management Processes for Applying New, More Sustainable Technologies Cost-effectively

- Important differences between conventional projects and projects that contribute to sustainability
- Creating and managing the application of new and more sustainable technologies
  - Creating an environment for innovation

6. Tools for Maintaining, Enhancing Sustainable Development Performance

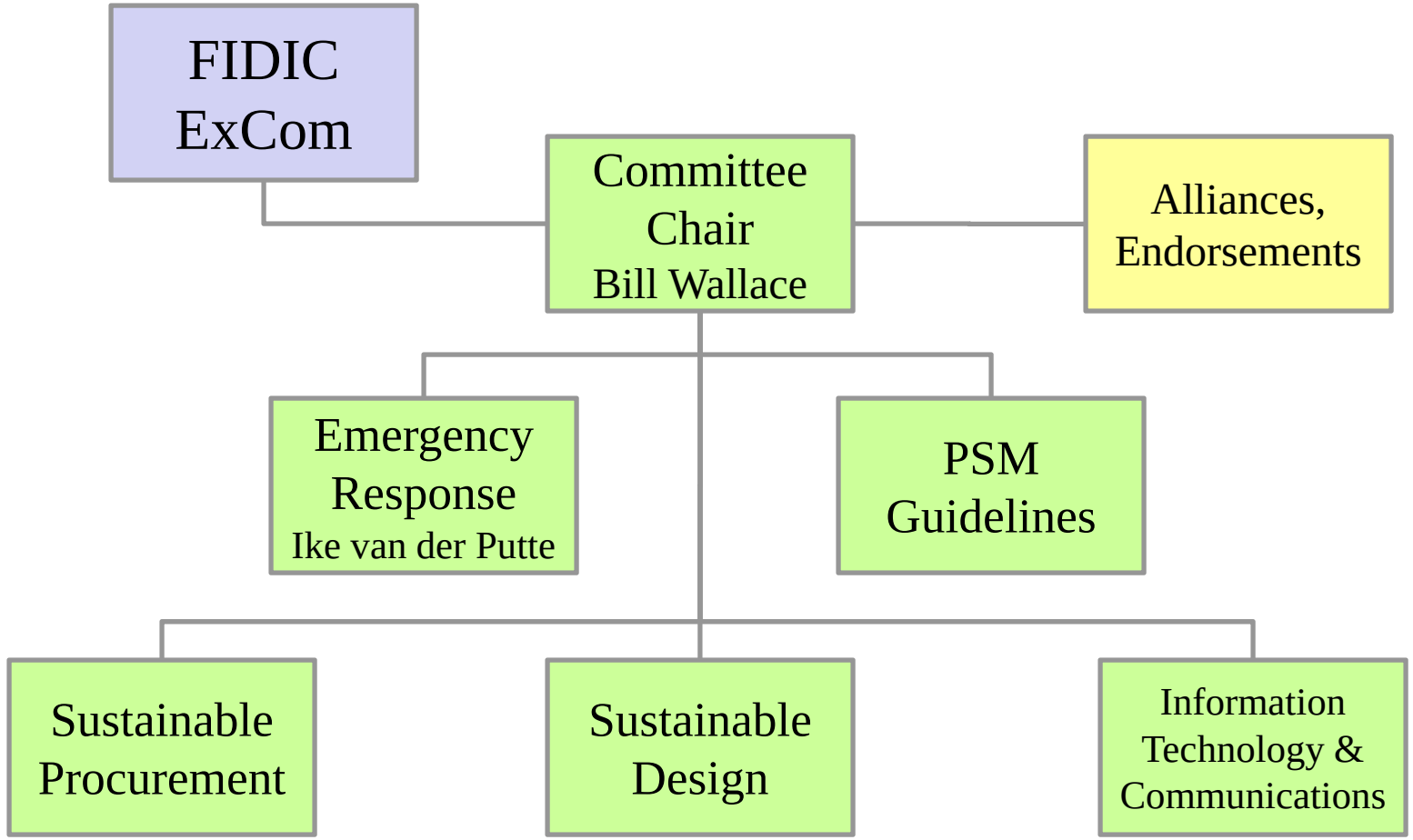
- Sustainability Management Systems
- Preventing “backsliding”



7. High Level Organizational Access on Matters of Strategy and Policy

- Getting your organization's leadership conversant about sustainable development

FIDIC Sustainable Development Committee Organization



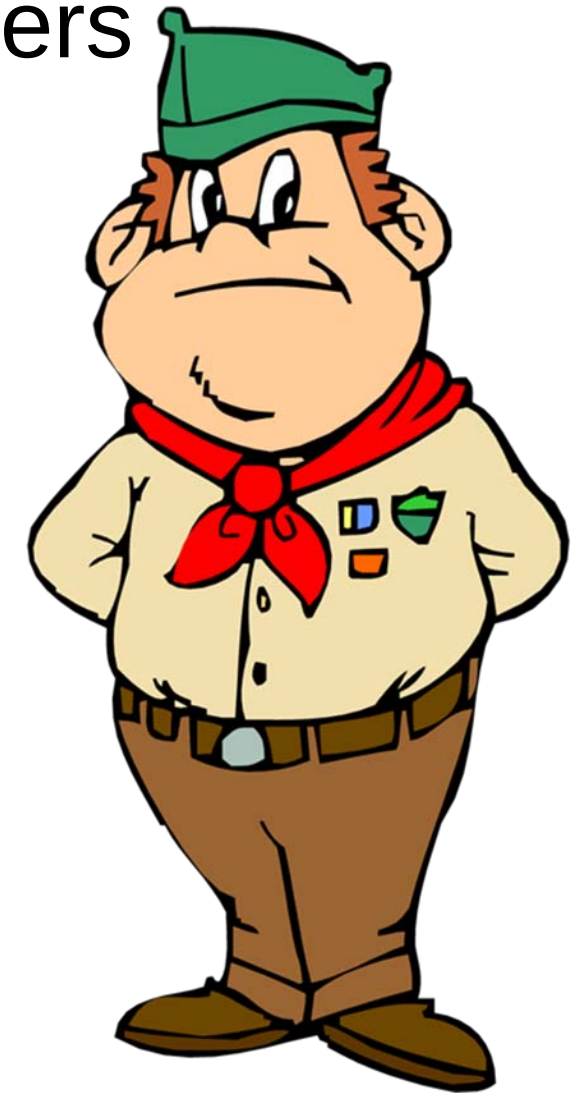
Sustainable Development Committee Tasks

- Continue to work on issues related to disaster management and emergency response
- Revise the Project Sustainability Management Guidelines
- Develop a procurement process for selecting and engaging integrated project teams
- Develop tools and methodologies for creating, designing and delivering holistic solutions
- Develop relationships and obtain endorsements from key organizations

We Are Recruiting Committee Members

Come talk to us

- Bill Wallace
- Ike van der Putte
- John Boyd



Discussion?

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