New Strategic Partnerships:
Knowledge Frontiers & Enabling Technologies

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Abstract

This concept paper centers on the problem of "disconnect" between the public sector and the private sector - and attendant entities and institutions -- in developing and implementing strategies toward sustainability and environmental viability. Limited communication and mutual awareness, compounded by an absence of significant collaboration, tend to reinforce the gap between the actions of national governments and international institutions (public) on the one hand, and business & industry (private) on the other - and create growing opportunity costs for the global community at large.

The approach put forth in this paper toward framing a viable solution consists of a *process-strategy* designed to reconcile the diverging approaches and to formulate a coherent and mutually reinforcing thrust in activities supporting trajectories toward sustainability. We propose a three Part process focusing on the development and implementation of *New Strategic Partnerships* focusing on *Knowledge Frontiers & Enabling Technologies.*

Part I consists of a *Participatory Design Initiative,* and related activities and outputs. Part 2 consists of two-way *Knowledge Outreach*, namely (a) *Special Events* in international

negotiation forums, and (b) *Technology Inputs & Feedback* from GEF projects in the field. Part 3 is on *Reinforcing Linkages.* The proposed contents and elements of Parts I and 2 are anchored in new mechanisms for facilitating technology transfer, and uses of advanced knowledge management and communications technologies as instruments for technology collaboration.

The contents of Part 3 can take shape only after the conduct and outcomes of the preceding Parts. In each case we address the specific actions and measurable goals for key stakeholders.

I. THE PROBLEM

Divergent Tracks

International responses to climate change and strategies towards sustainable development are advancing along two tracks that may ultimately converge but that, at this point, remain far apart. The first is shaped by intergovernmental organizations - the international institutions and sovereign states that have come together to formulate response strategies expressed through formal commitments, namely the Conventions, international agreements, and related accords. The implementation of such commitments is the joint responsibility of public sector institutions - at the international, regional and national levels. In this connection, the Global Environment Facility plays a special role in that it is responsible for implementation of climate-related measures as well as attendant sustainability considerations.

The second, a separate track, is shaped by the private sector whose innovations in product design and development, applications of scientific processes, and introduction of new technologies serve collectively as "enabling instruments" through commercial mechanisms. Commonly, innovations and inventions generated in institutions of science and technology, and other parts of the scientific and academic community, are introduced into the marketplace through the activities of private entities.

While these two 'tracks' are expected to intersect, the reality is that, in this challenging domain, the 'private' and 'public' entities have proceeded independently. There is limited mutual awareness and even less sustained communication. At the same time, it might well be that the tools of implementation deployed by private entities may be more directly relevant to these challenges - more readily available and accessible -- than the conventional tools of governmental agencies.

The essence of the problem, therefore, is that both the private and the public tracks appear to have ignored potentials for convergence and the opportunity costs of collaboration - or at least of communication. Stated differently, neither has begun to exploit the potential value afforded by the other, nor the mutual gains of coordinated activities in response to global challenges.

Disconnects

Transcending the simple division between the two tracks are serious "disconnects" in markets for environmentally viable and sustainable products and processes that together exacerbate the opportunity costs of convergence between the two tracks. Such costs further impede efforts to implement the Conventions and related international agreements. There are specific disconnects between: (a) supply and demand sides, (b) private interests and public priorities; (c) global markets and local needs; (d) financial instruments and institutional mechanisms; (e) existing technologies and those on the market; (f) incentives for requirements and investments in R&D; (g) knowledge resources and mechanisms for diffusion. And the list goes on.

Compounding these disconnects is poor communication between institutions that *generate* new knowledge and technologies, those that *commercialize* new technologies; and those that provide *regulatory* functions governing performance in both the private and public sectors. The business community has limited understanding of the challenges mandated by the conventions or of the priorities, performance, and operations of the implementing agencies. The scientific community is seldom attuned to the imperatives of international institutions; and agencies responsible for governance - broadly defined - often find that the policy domain appears singularly insulated from the realities of actual operations.

GEF Assessment

The disjunction between the more 'regulatory' approach of public sector institutions and the (often) market-driven focus of the 'private' sector is increasingly recognized in national and international circles. Noting attendant implications, recent GEF reports See: Scientific and Technical Advisory Panel (STAP), *Report of the STAP Workshop on Integrating Science and Technology into GEF Operations*, Chennai, India, January 5-7, 1999, UNEP, STAP Secretariat. also recognize the existence of what can be called a "duality" problem. On the one hand, decision-makers do not have the scientific information (or knowledge) needed to make informed decisions about design or implementation of the most cost-effective GEF projects; and on the other scientists and engineers are not involved in the GEF implementation process. Strengthening partnerships between the GEF and the scientific community has been repeatedly stressed as an important priority.

By the same token, in a report to its Council, the GEF identified a "mirror image" problem with respect to relationship with the private sector. GEF Council, Engaging the Private Sector in GEF Activities, Washington, DC: GEF Secretariat, July 19, 1999.
While the private sector has had few opportunities for direct involvement in its clusters of project implementation, the GEF clearly recognizes the salience of the private sector in the global economy and the legitimacy of business concerns in the domain of technology, commercial confidentiality, and others. According to the GEF, an added contributing factor is the lack of an adequate institutional mechanism for relating its activities to the national level - either with the scientific community or with the private sector.

In short, The GEF fully recognizes the "disconnects" between the private sector on the one hand, and the scientific community on the other, and has already identified some measures essential to a viable response strategy.

Reducing Opportunity Costs

At the global level, it appears clear that the overall assets of the international community are not deployed in ways that enable effective responses to current environmental challenges; the liabilities are mounting. Thus, what appears to be a "lack of capacity" may actually mask some potentially sizable "idle capacity".

Given that both private and the public sectors have failed to address the potential gains-in-synergy, the solution may be found in modalities of enhancing effective communication and strategic interaction. Against this background, we now turn to mapping the elements of a reasonable response strategy. We propose to explore narrowing the gap through public-private collaboration anchored in enabling responses.

The strategy outlined below is framed in the context of an ongoing process, namely international deliberations on Global Accords for Sustainable Development. The Symposium held at MIT, September 1998, marked the third in a series of international conferences targeted to reducing the gap between knowledge and policy. The symposium focused on *enabling technologies and institutional innovations.* Previous events were held in 1992 and 1996, each with specific deliverables and follow-up activities. (See http://gssd.mit.edu/ - "GSSD Reports") leading to new collaborative initiatives. (See "Contacting GSSD" in the above site).

The proposed strategy focuses on *Supporting Enabling Mechanisms* reinforced by appropriate *institutional relationships* and *collaborative activities.*

The essence of such a strategy is to develop working relationships between private and public entities at five levels: the international, regional, national level, municipal, and more local levels. The strategy outlined below will enable the private entities to expand the opportunities inherent in the implementation of global conventions and agreements, and will enhance implementation on the part of the international institutions.

II. Proposed Strategy
SUPPORTING ENABLING MECHANISMS

Contours of Strategy

By definition, then, the process of "reducing disconnects" is one that must be developed collaboratively. If the goal is to bridge the gap between current modalities in business and industry, on the one hand, and new "demands" generated by global accords, the Conventions, and the leading international institutions responsible for implementing the

Conventions, on the other, then some "buy-in" into the process must take place. And this buy-in must also take into account the potentials for innovations, new technologies, new inventions, and new possibilities.

The proposed trajectory to address the "disconnects" is anchored in the notion of "enabling processes" and based on the principle of enhancing linkages between *ideas and practice* through the "Technology Triangle" - namely the strategic interactions among (a) business & industry, (b) government & intergovernmental institutions, and (c) scientific & academic institutions.

Supported by the UN Commission on Sustainable Development as a robust strategy for facilitating technology-centered global activities, the concept of the Technology Triangle draws attention to the needs and requirements of each of the constituent parts, as well as what each can "give" and what it might seek to "obtain". Only through operational working partnerships - in the field and on the ground -- could these three communities bring their joint resources to bear on what are clearly common problems - or problems of the Global Commons.

Essential Criteria

In practice, any effective strategy in the international domain must meet most if not all of the following criteria:

- Internal consistency
- External constituency
- Stakeholder support
- Financial foundations
- Institutional mechanisms
- Provision for continuity
- Feedback for adaptation and correction.

These conditions are especially relevant to strategies for managing large scale environmental problems while, at the same time, meeting the imperatives of sustainable development and alleviation of economic and social marginalization on a global basis. For this reason, we propose a modular approach that would enable assessment and correction at point in its implementation. We also propose to ensure solid foundations, first, rather than outline a fully articulated strategy.

A Three-Part Strategy

In this connection, we propose a three-part strategy, designed to meet the criteria listed above. Part 1 consists of *Participatory Design*, based on consultation, representation and joint formulation. Part 2 focuses on *New Knowledge Generation* with practical implications of creating 'value-added' for key stakeholders. Part 3 focuses on

Reinforcing Linkages 'top-to-bottom' and 'bottom-to-top'.

The advantage of a process-strategy is that it allows the participants to 'buy-in' as soon as they wish to do so. In other words, the success of the process itself ensures the trajectory toward the product or target. Consistent with this strategy, we present below proposed contents for Part 1 and Part 2, buttressed by detailed mechanisms, specific activities and expected outcomes.

III. Proposed Strategy Part 1

PARTICIPATORY PRIVATE-PUBLIC INITIATIVE

Anchoring the Initiative

We propose to begin with a specific initiative in order to "test" the general strategy and further refine it. This initiative focuses on: (i) modes of leveraging innovations in global knowledge networking, (ii) targeting enhanced uses of products and processes, and (iii) supporting sustainability trajectories. The challenge is to engage the private sector in addressing select "best design and technology practices" for targeted uses of Information and Communications Technology (ICT) toward sustainability using a multi-disciplinary and multi-level approach.

By the same token, effective knowledge networking can play a dominant role in reducing barriers to technology access. Such barriers reinforce and are reinforced by differences in ICTs between the developed and developing countries. Structured appropriately, the elements of this initiative - and the agenda for an organizational meeting -- could be used as a vehicle for:

1. reducing barriers to technology transfer and collaboration in select domains,
2. facilitating uses of sustainable products and processes, and
3. improving connections between the demand and the supply sides in emerging markets.

Timing as a Factor:

The proposed " anchor" is especially timely given the following:

1. The concerns and priorities expressed at the World Science Conference (June 26-July1, 1999) related to meeting the needs of developing countries;
2. Ongoing GSSD implementation of new *multilingual functionalities*, namely, search, retrieval, and knowledge management technologies;
3. The 2001 Session of the UN Commission on Sustainable Development devoted to "Information Technologies for Sustainable Development".

Topics & Terrain:

In such deliberations, it may be useful at the onset to take account of differences such as: (a) stockholders vs. stakeholders; (b) bottom-up vs. top-down perspectives; (c) innovation vs. implementation; (d) ICT for sustainability strategies generally vs. ICT for technology transfer and collaboration specifically. Addressing such differences head on may facilitate a shared understanding among the participants. Potential topics of interest, for further consideration, include the following:

- Best Practices as Moving Targets
- Public-Private Partnerships for facilitating Technology Collaboration (i.e. "transfer")
- The Role of the Private Sector for fostering "practical problem-solving learning"
- The "Learning Enterprises" in the context of sustainable development
- Frontiers of applications for sustainable products and processes
- Future Strategies of ICTs for global knowledge networking
- Practical applications of ICT for sustainability goals at the local and national levels.

Proposed Organization

In the context of the foregoing, we suggest a conference program with three modalities: (1) Plenary Policy Sessions (2) Technology-Focused, goal-directed Workshops with involving all three parts of the "Technology Triangle", and (3) Informal and focused group discussions to be held during break or meal periods.

The policy plenary sessions will begin with core presentations by policymakers and business partners on emerging strategies for the use of ICT for furthering technology transfer and collaboration toward Sustainable Development.

The technology workshops will be targeted specifically at the needs and inputs of the participants, and will be orientated towards the production of specific guidelines and the identification of innovative approaches to the use of ICTs for supporting technology transfer and collaboration. The focus groups will proceed in more informal contexts to engage in goal-oriented networking.

Reducing the "Disconnects"

In order to "reduce the disconnects" the proposed initiatives seeks to:

1. Provide a forum for stakeholder assessment of actual uses of Information and Communication Technologies (ICTs) in light of the potential uses for furthering Sustainable Development.

> The goal is to reduce the gap between *actual* and *potential* in *the domain of design, products and processes*. This initiative is distinctive in that the assessments of prevailing trends versus "best strategies" will be region-specific, with an on-the-ground-focus.

2. Involve participants in operational procedures and guidelines for "*best practices*" for uses of ICTs in (a) the general domain of sustainability, and (b) as instruments for access to industry-specific technology advances bearing on sustainability.

> The goal is to identify methods for applying ICTs to strengthening national and local capacity - in both institutional and technical terms.

3. Expand and strengthen the existing knowledge network of "CyberPartners" - essentially partners in Information Technology for Sustainable Development - on a global scale.

> The goal is to establish a network of stakeholders - practitioners serving as a catalyst for on-going policy forum for the advancement of ICTs for Sustainable Development.

4. Encourage and facilitate Private-Public communication and interaction in the domain of technology transfer and collaboration, drawing on advances in ITC's as mechanisms for reducing gaps in knowledge about possibilities at this point in time.

> The goal is to create synergism-space among select stakeholder and knowledge communities.

5. Frame and forge strategic discussions and alliances around "*best uses*" in and of science and technology for sustainable development.

> The goal is to obtain improved understanding of "the global knowledge economy".

6. Converge on modalities for private sector collaboration, consistent "enabling technologies and institutional innovations", so central to objectives of the MIT Global Accords Symposia.

> The goal is to form the basis for longer-range partnerships with the private sector.

Pre- & Post- Activities

We anticipate that the participants will come to the conference having already (a) received from the organizers some background materials, and (b) responded to our request for preparation of a short paper reflecting their situation, concerns, priorities, etc. per a pre-defined format.

Central among our concerns is to develop some targeted implementation activities,

supporting the global community's transitions toward sustainability. The content and focus would emerge from the conference activities and immediate outcomes.

Expected Products

Among candidate products for the 'anchor initiative' are the following items:

• Record of conference proceedings for distribution in book form as well as electronically to represent *Sustainable Development* - on a global scale;

• Structured follow-up global networking process derived from the catalytic functions of the conference;

• Follow-up communication and networking via the *Newsletter* of the Global Accords Consortium in a new section on ICT for Sustainable Development devoted to follow-up

• Document targeted to "best cases" in implementation of new approaches to Technology for Sustainability.

• Terms of reference for generating an integrated "census"- formatted for updates - on products and processes (ESTs) supporting transitions toward sustainability.

• Pilot of the ESTs "census" design and application

• Terms of reference for "Barrier-Removal Project" in environmental markets and/or markets for sustainable products and processes.

Diversity in Participation

Participants would include the following:

• Leaders from a wide range of business & industry sectors, but with a particular emphasis on business partners from innovative enterprises in the Information and Communication Technology sector, Construction, Transportation, and Manufacturing.
• Leaders in implementing strategies for sustainable development at local and global scales.

• Information technology managers - responsible for developing and implementing strategies for management of knowledge about or diffusion of EST's (i.e. environmentally sensitive technologies) in terms of both products and processes.

• Business and industry association leaders.

• Educators, engineers and practitioners focusing on sustainable products and

processes - from design to implementation - as well as

• Innovators in uses of cyberspace as a new "market" domain.

III. Proposed Strategy Part 2
TWO-WAY KNOWLEDGE OUTREACH

Part 2 of this process-strategy consists of *two way knowledge outreach*, namely (a) a set of Special Events, and (b) Technology Inputs & Feedback from GEF Projects in the field.

Special Events

In the first instance, we propose to organize and sustain a set of *Special Events* in international negotiation forums designed to serve two functions:

(a) to present as rapidly as possible developments relating to implementation of *Participatory Design* in order to obtain feedback, elicit critiques and revisions, and broaden the constituency and stakeholder involvement and
(b) to diffuse knowledge about features of and access to new technologies or technology strategies.

We thus propose, first, to continue and strengthen the MIT-led Special Events anchored in innovative uses and advances in information technology - supporting enabling technologies and institutional innovations. Four such initiatives have been undertaken to date. Jointly they have generated important momentum for internet-based policy-driven-inter-institutional international collaboration. The first three were held in conjunction with the Sessions of the UN Commission on Sustainable Development (1996, 1997 and 1998); and the fourth was held at UNFCCC/COP-4 in 1998. The next one planned is for UNFCCC/COP-5, Bonn, 1999.

Technology Inputs & Feedback

Second, we propose that the GEF project portfolio be viewed as an important asset in this strategy. There appears to be no systematic 'feedback" from the field on *technology* requirements or needs to be met by the private sector, nor is there a sense of the view from the field of project performance and realities. Accordingly, it would be important to obtain evidence from 'the voice from the field' on *technology needs* and *the role of the private sector.*

GEF is in a unique position in that it is the *gateway* to new initiatives in the field. What can be learned about the realities of the field from this gateway? We appreciate and understand the considerable advances made by GEF in the evaluation of projects, and in tracking those projects with private sector involvement. Missing from current

activities, however, are technology-targeted analyses. In this connection, for recent GEF
initiatives, see http://www.gefweb.org/monitor/introme.htm. on the annual Implementation Review (PIR),
preparing project Lessons Learned Studies/Notes. On engaging the private sector
http://www.gefweb.org/PRIVATE/priv.htm

Specifically, we propose that a survey be designed for internet-based administration to
the field offices to inquire their views regarding

(a) How to involve the private sector in its projects and implementation
(b) How to provide for project access to relevant new technologies etc.

As a gateway, GEF project portfolio may yield important insights (or used as an
important venue) for determining field future project-level needs. This gateway can be
significantly empowered through the use of innovative multilingual internet-based
communication and conferencing mechanisms. The Global System for Sustainable
Development (GSSD) is currently being made available in four languages (other than English) - Chinese,
Arabic, French, and Spanish - to allow non-English speaking internet access to 'frontier-functionalities' in
information and communication technologies, thus reducing the gap between North and South in this
domain. This, in turn, enables uses GSSD as a mechanism to reduce the knowledge gap related to
products and processes in other technology domains.

V. SYNTHESIS & NEXT STEPS

Purpose

This concept paper addresses the "disconnect" between the public sector and the
private sector - and attendant entities and institutions -- in developing and implementing
strategies toward sustainability and environmental viability. The communication gap
between the public and private agents and institutions is creating a growing opportunity
costs for the global community at large, as well as real and immediate costs ion terms of
added environmental strains.

Proposed Strategy

We propose three-part *process-strategy* designed to reconcile the diverging approaches
and to formulate a coherent and mutually reinforcing thrust in activities supporting
trajectories toward sustainability. The strategy is anchored *Enabling Technologies and
Institutional Mechanisms*. This Concept Paper presented the contents of Part 1
(*Participatory Design Initiative),* and related activities and outputs, and of Part 2 (*Special
Events* in international negotiation forums and inputs from *GEF Projects*). The contents
of Part 3 can take shape only after the conduct and outcomes of the preceding Parts. In
each case we address the specific actions and measurable goals for key stakeholders.
The next step includes organization and implementation of Part 1 and Part 2.

Co-Sponsorship & Collaboration

Following the model of the *Global Accords for Sustainable Development* Symposia (1992, 1996, and 1998), focusing on enabling technologies and institutional innovations, we expect the efforts outlined here to be collaborative ones as well. Proposed in collaboration with the GEF, this initiative will also involve and engage new partners, most notably ESSE -- Engineers & Scientists for a Safe Environment - and others in the Consortium on Global Accords for Sustainable Development (see "Consortium" on GSSD www site), and, potentially, new GSSD collaborators (see "Contact GSSD" on GSSD www site).