

# **RESOURCE MANAGEMENT: PUBLIC-PRIVATE PARTNERSHIP AND KNOWLEDGE SHARING**

**By**

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**27 August 2001**

First of all, my sincerest thanks for the kind invitation to participate in this Symposium cum Workshop on "Resource Management: Public-Private Partnership and Knowledge Sharing" sponsored by SEARCA, DAAD and Alumni-Nachkontakt Konsortium of the Universities of Gottingen, Kassel and Marburg. I consider it an honor and privilege to be able to share a few of my humble thoughts with you.

The imperatives of natural resource management requires new, relevant partnerships to ensure broadest access to technologies and information and to bring their benefits to all of mankind especially to the developing nations. It may be worth our while to consider first what Chief Seattle said in 1854:

"This we know. The earth does not belong to man; man belongs to the earth...all things are connected. Man does not weave the web of life; he is merely a strand in it. Whatever he does to the web, he does to himself."

The environment and policy, economics, ethics, laws and science are connected even as rapid development, population growth and the accompanying pressure on resources create conflicts whose consequences we cannot underestimate.

Thus, a common vision has to be developed and a common effort undertaken in order to obviate the negative consequences of development on our natural resources. There is a need to develop a natural resource management agenda that is coherent and

where all the stakeholders actively cooperate to make strategic sustainable natural resource management a reality.

We note that the private sector, in particular, is becoming increasingly important in developing and disseminating the philosophy and technology of sustainability. Private sector is being encouraged by governments to participate in projects that have, in the past, been financed by public funds.

The development agenda has become so complex that we must actively build collaboration between public and private sector in order to fulfill our goals and objectives. Many development agencies now define the private sector not only as national and multinational for-profit enterprises and small-scale entrepreneurs, but also as public institutions or organizations that are entirely or mostly funded by industry, or that derive part of their income from selling products of their research.

### **The Continuing Challenge**

The world order has rapidly changed over the last two decades with the advances in technology. The new global order requires the development of economically resilient, prosperous rural communities which are at the same time able to manage competitive industries and practice integrated and sustainable practices especially with regard to land, air and water resources.

These new challenges show the importance of innovation as the pillar for communities to achieve competitiveness, profitability and sustainability. Thus partnerships between public and private sector will be a necessary although not a sufficient condition to attain these goals.

Many of us hold the traditional view that agriculture is a low-technology activity. However, it has become clear over the years that agriculture is a knowledge-intensive activity. The earlier we disabuse our minds from the traditional views, the faster we can extricate ourselves from the notions that agriculture need not and cannot be competitive,

especially for the poor farmers of the developing countries. This defeatist attitude has caused many farming operations to be inefficient, with the farmer feeling helpless and losing control of his operations. Government, on the other hand, fearful of social unrest, persists in providing short-term rescue measures that perpetuates the vicious cycle.

Another concern is the effective management of the tense relationship between sustainability and productivity. The harmonious relationship between maintaining adequate levels of productivity and preserving the integrity of our environment can only be enhanced if we have an adequate understanding of the impact of human activity on how nature operates. This includes studies on the regenerative capacity of natural ecosystems and the earth's capacity to absorb waste. And at no other time in the history of science are more and more secrets of nature being unlocked than now. Thus the availability of the powerful tools of modern science, including biotechnology and information technology should be exploited to serve the purposes of defining sustainable productivity, especially at the farm level.

Allow me to share with you a few thoughts which I hope will help us in arriving at a common vision and a common action plan for the public and private sector to work hand-in-hand to promote sustainable development.

### **Innovation- The Key to Development**

The key to an effective system of innovation is science and technology. Although, tremendous strides have been achieved in science and technology and many people live better lives now, still many people have been left out. With all the wealth in the world, we still have 1.2 billion people living in extreme poverty, unable to gain access to even the minimum basic needs of food, housing, education, health care, potable water, and livelihood.

These are times of rapid change. And as the world tries to move fast towards free-market economies, we tend to ignore the fact that the majority of the world has little or no surplus capital to make their presence felt in the marketplace and have little resources to

invest in innovation. The poor in many nations live on a hand-to-mouth existence such that their social and economic conditions cannot tolerate the risks, especially the potential margin for error that current investment modes entail.

Who then will this group-the majority of the world's poor- turn to for innovations that will allow them to cope with the difficulties and uncertainties of this day and age?

Sharan Burrow, President of the Australian Council of Trade Unions had this to say in the International Herald Tribune of 13 September 2000:

"Market-led globalization is leading to a race to the bottom where efficiency and profit matter more than fair share for working people."

On the other hand, there are nations and societies that have achieved a level of prosperity to be able to provide for even more than the minimum basic needs of their citizenry. These are the developed countries and the newly emerging economies that by the act of history have gained enough momentum for innovation and wealth creation.

It is now widely known that the world population is now increasing at the rate of three people per second while one hectare of productive land is being lost every 8.23 seconds. It is estimated that 6 billion people will be living on earth by the year 2000. The equivalent of a new Bangladesh with 100 million inhabitants will be created annually.

We face formidable challenges in the light of all these changes. And many times the question has been asked: can we keep this system going? Can we sustain the allocation and scale of utilization of resources that we currently apply? Are we moving towards infinite dreams without realizing we are in a planet of finite resources? Can we sustain the pace and scale of development we are now engaged in?

I suppose these are the questions we want to start answering. Technological and scientific competence and superiority have become tools for effective competition especially among the industrialized countries. But if we take a snapshot view of the

horizon we find that too little of the great power of modern science and technology has been directed at development. As such, its strategic role for development has been limited and access to new tools and new information has been controlled by the rich and the powerful. Like the Greek mythological character Sisyphus, poor nations have been pushing the rock of progress on the increasingly steep slope of development, often overtaken by global events especially in the arena of trade.

In fairness to all, several mechanisms have been created and we have all tried our best to try to correct these disparities. However, the attempted mobilization of scientists in developed countries to deal with problems found mainly in developing countries has not been very successful, and the S and T capabilities of developing countries are far too limited to deal adequately with the enormous problems of development. Their capacity to generate, acquire, disseminate, and use knowledge is limited. This weakness does not enable the world's poor from being freed from the shackles of economic deprivation where even minimum basic needs cannot be provided.

It was Einstein who once said that problems could not be solved with the same kind of intelligence that created them. I suppose we are all here today to come to grips with the issues that affect technology cooperation as it is able to serve sustainable development. We need new approaches and new thinking.

It is interesting to note that in spite of large amounts of time and resources spent for social amelioration and poverty elimination by harnessing technology transfer, there still remains a significant number of poor people in many parts of the world.

Why is this so?

### **Focus on People**

Sir Aaron Klug, Director MRC Laboratory of Molecular Biology in Cambridge once said that:

"Scientific breakthroughs don't come from committees, they come from the brains and hands of individuals who need a place to work and who need an infrastructure to support them."

Sir Klug's observation highlights the need to provide a human face to the enterprise of technology partnerships. It is the human hand and the human brain that can make things happen. And the human brain and hand are activated towards productive purposes by the knowledge. For an individual to be able to do something, he must have the tools and the know-how. Thus, access to useful knowledge determines the extent to which the human brain and the hand are used to create new wealth. But it is also emphasized by Sir Aaron Klug that the individual must be provided a good workplace and an infrastructure to be able to create and innovate. I suppose this is a very critical key factor in development. We have heard several testimonies of individuals in developing countries, highly trained and brilliant but whose creative powers are stymied by the fact that the environment just is not supportive of such initiatives. Our development work must help foster this environment for innovation.

I suppose it is eminently clear to all gathered here today that science and technology are very important in converting a nation's resources into tradeable goods and services which in turn brings in new wealth. Developed countries have succeeded in transforming their and other nations' natural endowments, including human resources, into wealth. On the other hand, a good number of the nations are still struggling to make both ends meet, oftentimes preempted by the fact that even their own natural endowments are used by other nations to create wealth, while the benefits of the value-adding enterprise are not shared equitably.

Globalization exposes humanity to processes that are dispassionate, brutally calculating and fickle. In many instances the poor nation is left holding the bag. Either the nation's natural endowments are depleted or substitutes, often synthetic, are found and traded extensively, to replace the previously traded products. Communities whose resources have been depleted and whose produce has been substituted become

marginalized and will need access to mechanisms to allow them to recover. As is becoming increasingly apparent in the ferocious international battle for technology's products and markets, the contributions made by human capital and intellectual resources are crucial to the economic vitality of the country.

### **Sustainable Development**

The impact of rapid population growth on the utilization of the finite resources of this planet earth speaks eloquently of the need to review our strategies for development. We only need to witness the difficulties we encounter in the management of wastes we generate to be able to conclude that we need to exercise more restraint lest we cause irreparable damage to the environment. Our inability to provide health care to our expanding population is evidenced by the fact that even now tens of thousands of children still die of malnutrition everyday. We are increasingly finding it difficult to cope with new diseases, such as AIDS, which continue to affect the productivity of communities. Criminality and deviant behavior disrupt otherwise peaceful societies and diminishes their ability for high performance.

This growing malaise in the turn of events as globalization sets in is explained by UN Secretary-General Kofi Annan as our "paying too much attention to commercial interests and not enough to social, cultural or environmental ones."

The Brundtland Commission, meeting in 1987, defined sustainable development as "meeting the needs of the present without compromising the ability of future generations to meet their own needs." This was the start of what many still consider as an elusive development paradigm which is not anchored solely on economic or material progress but links all of these to the finiteness of the earth's resources which set limits to environmental effects of development.

The notion of sustainable development has been discussed widely. In fact one can hardly find an individual who is opposed to it. But fourteen years after the concept of

sustainable development was brought to the fore, it still remains a vague and imprecise concept.

Robert Solow, the 1987 Nobel Laureate in Economics, believes that the notion of sustainability is about "society's obligation to the future, a moral one people are supposed to have for future generations." However, Solow argues that one "cannot be morally beholden to something that is not feasible. "Thus," he further argues, "to leave the world as we found it in detail, that's glib but essentially unfeasible."

It is the well-being of future generations, Solow argues, that will make the concept of sustainability reasonable and useful. "It is an obligation to conduct ourselves so that we leave to the future the option or the capacity to be as well-off as we are." But because the future is difficult to extrapolate, it is extremely hard to make anything precise out of this definition.

But what about those of us who are technologically oriented and gathered here today? How do we reconcile our efforts, our projects, and our research towards upholding what Solow calls "future well-being?"

Since sustainability is such an important concern, we cannot just beg the question and leave it unattended. We are advised by Solow that "in thinking about sustainability, the resources that are used up and those left behind, as well as the sort of world left behind--including the built environment, productive capacity (plant and equipment), and technological knowledge must be taken into account."

What seems to be quite central to our discussions in the next few days is that fact that "technological knowledge" as Solow calls it, is a contributory component towards sustainability.

How are we going to conduct ourselves so that technology partnerships ensures future well-being?



## Capacity Building for Innovation

The promotion of technology cooperation in order to foster sustainable development must be anchored on knowledge-based capacity building to enable society to establish a system for innovation. Together we must strive to identify repair mechanisms in correcting societies' mistakes that has caused many of the difficulties we face today including environmental degradation.

In striving towards a sustainable strategy for development, we must face the reality that in poor countries where one is struggling to keep body and soul together, it is not common to expect that its citizens will come up with an innovative idea and have the energy to pursue it. The culture of poverty is characterized by shortages, fear of tomorrow, empty stomachs, lack of opportunities. Poverty and hunger are marked with shame and humiliation. There is a severe lack of capital, goodwill and interest. Poverty generates conflict between the people in the urban and rural areas. For developing countries, it is therefore under severe constraints that sustainable development strategies have to be designed.

In addition, S&T capabilities of developing countries are far too limited to deal adequately with the enormous problems of development. Only 4% of the world expenditure on R&D and about 14% of the world's supply of scientists and engineers are in developing countries, where more than 80% of the world's people live.

Furthermore, very often, interventions are focussed on debt and currency problems of developing countries. What is overlooked is the failure of local corporations to deliver world-class returns on capital. This may be traced partly to a weak S&T base because many of these countries have barely reached the innovation stage.

It is therefore, very important that in fostering technology cooperation, we recognize the following:

- a. Technology and education are necessary but not sufficient assets for development. These provide the platform within which a knowledge-based development plan can be sustainable.
- b. Technology partnerships should be initially focussed to meet the minimum basic needs. Without these needs being provided, it will be difficult to expect a significant portion of a nation's citizenry to participate in the development process.
- c. Technology partnerships be provided to allow developing countries to cope and be agile with economic changes and allow them to pursue a means of livelihood.

In the end, it is expected that technology partnerships serve as a means of empowerment of the disadvantaged sector and as the centerpiece of poverty alleviation

### **Consolidating our Gains**

In continuing to pursue our goal of promoting development without sacrificing the well-being of future generations, it may be worth our while to just highlight a few major concerns which, I believe, can further enhance our common effort. I have indicated earlier that there are lessons to be learned from success stories and although a bit slow, palpable improvements have taken place in many fronts. The question now is whether these gains can be consolidated and sustained.

**Timeliness.** Many developing countries are on a "catch-up" mode after long years of neglect and misdirected application of its scarce resources. A dimension in the development process, which is gaining more and more importance, is the timeliness of interventions. Globalization has changed the pace of political, social and economic events and the extensive electronic communications networks that are now being established have profoundly changed the pace of activities, especially in the economic and financial sector. Capital can be brought in and out at a moment's notice and unfavorable

developments in one corner of the globe can be broadcast throughout the world and affect activities in other places almost immediately. Those with the resources and access to the corridors of power react immediately and can affect the turn of events. The poor nations, lacking the resources and means to adjust to the situation, are overcome by the events and unable to take advantage of the opportunities or protect themselves from ill effects.

I am sorry to say that we find many development projects facing this problem. The decision-making process that will approve or disapprove a well-thought out project may take so much time such that when the decision is made, the conditions may have significantly changed. We still hear of project gestation periods of 2 to 3 years. At this day and age, this is definitely unacceptable.

Not only is timeliness crucial because many developing countries are in the catch-up mode, but also because projects which are oriented to prevent further environmental degradation may find themselves being implemented at a time when so much damage has been done and the process of remediation becomes very expensive or has very little chances of success. What is at stake here is the opportunity cost and we must now adjust the pace of our response.

**Convergence.** The desire to eliminate poverty has attracted the imagination of many individuals, institutions and governments. There are now many players in the field, big and small, public and private. Expectedly, their interest are diverse and in some cases at counter-purposes. Thus the very limited resources for official development aid has been often been directed towards a very dispersed arena of concerns. We hear reports of project activities supported by one donor within one country or geographical region, proceeding in diverse directions and in an uncoordinated fashion. Considering that the resources being invested in development are limited, this lack of coordination and convergence of purpose is appalling. The results are therefore delivered with minimum impact and the changes expected are very localized. This "pilot project" approach, while it has valid reasons has not really created the critical mass of impact to facilitate the scale-up and widen the benefits of the project. For example, there are instances where the

venue for technical assistance to improve farm productivity is not matched with the corresponding infrastructure needs. Improved seeds and farm practices may be introduced into one area but the needed farm-to-market roads are being constructed in another area, in the name of equity. This is not to suggest that institutions change their agenda but rather be more sensitive to the need for coordination with other development efforts. Traditional approaches have been to "piloty" and disjointed, uncoordinated and thus efforts to upscale the results of the project have been difficult.

One of the areas where convergence of development efforts is crucial is in technology transfer. This enterprise involves the linkage between the innovation systems of the cooperating countries. Disjointed and uncoordinated efforts will be a waste of resources and will result into minimal impact. Innovation systems are most difficult to handle because they span many activities for the system to function effectively- education, predictable legal system, infrastructure and trade policies among others. Thus development assistance that will intervene in one of these activities without coordinating with other efforts in the related activities may not be sustainable.

Preparing for the well-being of the future through technology cooperation requires no less than the coordinated and convergent undertaking to firmly build the foundations for a national system of innovation.

***Technology blending.*** One of the challenges we all face in development work is the reality of dealing with very heterogeneous communities in various stages of development and preparedness. Thus, if we are serious in making sure our projects work, we have to be prepared to be agile, flexible and adopt various levels of approach depending on the general capacity of the communities we are tasked to assist. This may sound like we are making the task more complex, but that is what it really is. Our desire to simplify our approaches may not be appropriate to the realities we face in technology cooperation and in sustainable development. We have to be prepared to accept that the situation is more complex that we are able to perceive and that there are many variables that have to be dealt with in implementing a technology cooperation project.

A good assessment of the limitations on the part of the collaborators will allow the partners to fit their intervention to the prevailing situation and trigger a change. We must make sure our technologies are robust and that improvements will persist even if external assistance is phased out. Thus a calibrated response scale which ranges from the low to high input continuum is essential in our technology cooperation programs. Let us remember that any incremental improvement we are able to put solidly on the ground is welcome, especially where such can improve the capacity of the poor to cope with the uncertainties they have long been suffering from.

There is a need for a more long-term view of our interventions. Systems of innovation take time to establish and stabilize. The interventions we are delivering are to be reckoned as part of a long journey.

## **Conclusion**

I hope that I have conveyed to all the complexity of the task and the need to mobilize as many groups as possible into the development agenda. Private sector must now engage in development . We are all connected and no one is isolated from whatever happens in the web. While individual nations have responsibilities in their own territory, the effort must be global. Private sector in the developed countries must allocate resources for development assistance if we must strive for a world that is productive, just and free.

At the end of the day, our initiatives will be judged according to the contribution it has made towards strengthening the national system for innovation, which is the infrastructure for solving present and future problems of great complexity and assuring the future well-being of the nation. Our efforts must protect the science base, improve national capacity to access new knowledge and make it an active partner in technology interactions.

The rapid shift to the market economy has caused developing countries to experience assaults that challenge the real productive competence of the nation. In many

cases the risks have become too much for the nation to bear and international assistance has been sought. We must aim at long term strategies to help develop private sector entrepreneurship and to help entrepreneurs profit from innovation. It is now well recognized that the science base depends ultimately on the private sector and the preparedness of industry to invest in S&T.

In orienting any public and private partnership towards sustainable development, it is crucial that an environment is established that fosters innovation and investment. Such schemes should also ensure science and technology security in order for a developing country to achieve a level of self-reliance to allow it to add value to new knowledge and new technologies and to respond effectively to local needs before the problem becomes too difficult to solve.

Technology partnerships is not just purchase of inputs of production and the acquisition of know-how in production. These are going to be useless if there is no strong capacity for innovation in the shopfloor of a small enterprise.

Modern technology is most effective in the hands of skilled workers. A strong and innovative science base is vital to maintain the competitiveness of any business enterprise.

Without S&T capacity, no country will be able to formulate policies and strategies for achieving sustainable human development; absorb, adapt, and improve imported technology; or expect to develop its production potential, even in those areas where it has potential competitive advantages. We must remember that resource management is not just keeping our environment clean and balanced, it is also making sure that man is able to live a productive life.

As we now begin two days of discussions on how partnerships and cooperation could be used to enhance sustainable development, allow me to quote Albert Einstein:

"It is not enough that you should understand about applied science. Concern for the man himself and his fate must always form the chief interest of all technical endeavors; concern for the great unsolved problems of the organization of labor and the distribution of goods in order that the creations of our minds shall be a blessing and not a curse."

Please accept all my good wishes for productive and meaningful discussions during this symposium

Thank you.