Environmental and Economic Perspectives of Education for Sustainable Development - Lawrence Surendra

1. Introduction

The objectives of the Experts meeting are:

1. To identify and conceptualize the content areas for ESD
2. To discuss the relationship of ESD with other education initiatives such as Environmental Education (EE), EIU, EFA, UNLD and MDGs
3. To recommend guidelines for reorienting existing education to address sustainable development
4. To plan the organization of the APEID-APCEIU workshop on "Reorienting Teacher Education to Address Sustainability in September 2006"

Keeping these objectives in mind, this paper looking at the 'Environment and Economic Perspectives of ESD', reviews some critical perspectives in relation to economics and the environment interface. Based on that review, some critical conceptual principles central to sustainable development are pointed to and then an attempt is made to see how these concepts could influence the development of curriculum and other interventions in relation to ESD.

Reviewing, the environmental and economic perspectives of ESD, requires a rapid survey of the economic theories and perspectives that have influenced economic development and the policy debates over the paths of economic development. This because sustainable economic development has always taken precedence over all other demands of sustainability, be it nature, culture or society. In such a history and process, the interface/s that has arisen between environment and economics needs to be identified. Doing so may provide us a better basis to look at the perspectives of both economics and environment that are critical and relevant to achieve the objectives of ESD. One interesting method might be to see the clash of perspectives, between economics and environment and as best exemplified in the development versus environment debate. Though we are not going into that debate but the developments in economic theory keeping this clash in view is of relevance to us.

2. Environment versus Development

Economics always gets and is given an elevated status, though in many ways it is an
inexact science and there is as much rhetoric in economics as in many other branch of social science. Part of the rhetoric is also story telling. Economics as in many other fields of knowledge involves varying degrees of story telling. As the economist, Meghnad Desai, writes, “economists tell stories and the simpler, more plausible story, the better is it likely to be accepted. The process is multilayered. When economists tell stories to each other, these are detailed, full of technical arguments, sometimes of econometric evidence. When they address the public at large, they simplify, appeal to intuition. But the simple story told to the politician must connect with the detailed story told to colleagues, otherwise the profession will shun the person. He (or very infrequently she) may become the King’s friend but will always feel defensive when entering the seminar room” (1)

Recognizing the story telling of economists, is also to recognize among other things the perception that has been successfully created in the minds of the public, a perception which has come to stay about there being a generalised conflict between ‘the environment and development’ rather than between particular types of economic growth and development and the environment. In the process, the public at large have to come accept a “environment versus development” controversy and which is continuously kept alive, in favour of and to defend the perspectives and priorities of one dimensional economic growth and elite oriented patterns of growth.

However, given the intrinsic nature of democracy and democratic choice, these narrow economic growth perspectives have not gone completely unchallenged either. The privileging of ‘growth’ as the only form of ‘economic development’ has faced even within the discipline of economics, contesting perspectives, regarding what should be the content, direction and purpose of economic development. Basically, three types of economic perspectives have tried to influence and drive ‘development’. The most dominant and almost hegemonic perspective, which we began with and as part of the story telling of economists, is ‘the growth economics’ perspective. The second perspective which held some influence in the past especially in the 1960s and 1970s, but even then only in fits and bursts is the ‘development economics’ perspective. A more recent entry only in the past decade and half or so, is the ‘environment economics’ perspective.

‘Growth economics’ in one avatar or the other, the more recent in its very aggressive ‘neo-liberal’ form has held sway over economic theorising and policy. A major reason being the attractiveness of the argument that higher rates of growth means increased wealth. And increased wealth could inevitably or automatically deal with all the problems of poverty, overpopulation, unemployment and unjust distribution. What have been the consequences of this we all know and I will come back to it later.

Development economics tried to address the problems of ‘growth economics’ especially in relation to problems that developing countries faced with regard to issues such as: growth with distribution, balanced versus unbalanced growth and so forth. However, development economics also ran into problems, such as the rise of a ‘dirigiste state’ both coexisting and conflicting with an imperfect market. To a great degree, development economics both theory, policy and practice was not able to handle these emerging
contradictions. This coupled with the emergence of problems such as external debt and on the tails of which the IMF inspired 'structural adjustment' was thrust on many countries, became the harbingers of neo-liberalism and globalisation. These events all telescoped and in a very short span of time, contributed to ring the death knell for development economics, not only in public policy discussions but in academia as well. The breakdown of the UN initiated international consensus about ‘development’ that was built carefully from the 1950s through the 1960s and 1970s, the deadlock in which the North-South Talks got into eventually leading to the substitution of the North-South talks with the Uruguay round of trade talks in 1986, created an overall atmosphere that was generally hostile to any talk of development and consequently to development economics also. The invisible hand of the market was taking over all discourse about economic development and growth. Though, the contradictions of the Uruguay round of GATT negotiations and the controversies around the WTO brought back some legitimacy for development economics and allowed it some play.

Environmental economics can be considered a relatively new discipline, that gained currency or rather gained some recognition at the popular level, especially after the Brundtland Commission Report. It got a further fillip during the negotiations leading to the Rio Summit and the Rio Summit itself. Though even prior to Rio summit, economic theory and policy had to concern itself with the rising costs of pollution and the diseconomies caused by waste but which were treated as externalities, since these costs were not and could not be internalised the way conventional neo-classical economics dealt with these problems. This in theory came to be addressed as ‘externalities’ and to a certain extent an ‘economics of pollution’ emerged as a pre-cursor to environmental economics. Resource Economics that tangentially dealt with areas related to Natural Resources could be seen as the beginning of Environmental Economics. Resource Economics grew mainly with the concerns about ‘Scarcity and Growth’ and whether economic growth would be possible in given a finite supply of resources. This preoccupation with resource depletion not as a concern by itself but whether resource depletion would stand in the way of economic growth has contributed to concerns about resources in general within neo-classical economics. Resource economics and its valuations techniques to a certain extent contributed to the growth of a natural resource economics that looked at natural resources and their role within economic growth. However what goes as "environmental economics' or "resource economics" are both, at best, sub-fields of neoclassical economics. To that extent, whether it be in valuing the natural resources or dealing with the externalities of pollution and waste, there is always a talk about "internalising environmental costs". But then the question would be, how would this “internalisation of environmental costs” be done, under globalisation and in a globalising world which undermines the ability of nations to internalise environmental and social costs. When economic integration, powered by free market economics, promotes a race to the bottom, what Amartya Sen calls welfare cutting competition, in terms of the lowest common denominator in social and environmental standards. In such a situation, internalising environmental costs can be a pipe dream. It may have to more to do with what some harsh critics of environment economics, refer to as the cosy, enchanted theoretical world of an emerging class of "environmental economists" cut off
from the social realities of poverty and hunger. Quite aside of the social problems, even in ecological terms, what poses as environmental economics is seen by some economists as inadequate to the challenges faced by the Earth’s ecosystem, and in response new fields as ecological economics has also emerged.

3. Economics, Economists, Sources and Sinks

While economists of different hues and economic theories can always summon this or that evidence to support one or the other argument, for or against the environment, the fact is that science has fairly settled the issue and a paradigm shift has taken place. In 1972, when the Club of Rome made public its famous ‘Limits to Growth’ thesis, positing limits to economic growth in terms of scarcity of resources, resource economists and others showed the fallacies involved and how resource limits could be overcome. However, the real paradigm shift had to be made in relation to nature as a sink; especially, the atmosphere as a sink absorbing globe-warming and ozone-depleting gases, when it was realised that while resource limits could be overcome, sink limits were absolute. The natural ecosystem, including the atmosphere, had absolute limits as to how much of the wastes of economic growth it could take as a sink. This leaves us with no other choice but to address the central problem and deal with the scale of our "growth", "the physical size of the economy relative to the containing ecosystem", as the eminent ecological economist Herman Daly has put it, thus beautifully capturing the relationship of the economy to nature and the dilemma we are in.

This central fact that even if resource limits may be overcome, sink limits are absolute is the most significant contribution from environmental and ecological perspective to achieving sustainable development. In paradigmatic terms, this shift in our understanding of our relationship to “the containing ecosystem” is comparable to the shift in the world view of physics from Newtonian physics to Einsteinian physics. One need not go into a whole lot of environment perspectives in looking at the arguments for sustainable development. The fact that we may reach and breach sink limits leading to may be irreversible consequences is a powerful perspective for humanity to reconsider all that humanity especially in this century has taken for granted.

This is the main reason that even powerful institutions such as the World Bank which has for the past three decades or more, in almost evangelical terms, been propagating the belief that rapid economic growth is the only panacea, is beginning to realise the illogic of such a position. In earlier times when the Bank did address the issue of “Environment and Development” (the 1992 World Development Report was on this theme), it was only to argue that more economic growth was the automatic solution to environmental problems. In the WDR of 1992, World Bank economists even discovered an "environmental Kuznets curve", whereby they could argue that though growth was initially bad for the environment, persisting with growth was necessary because it would be good for the environment later. Though it did not exactly happen that way and which anyway was to be expected. This, in spite of the power, the seduction and propaganda blitz involved in the story telling through the WDRs by the World Bank economists. This is also why it still took the World Bank, almost a decade to change its story line.
The World Bank finally did catch up on the distinction between "sources" and "sinks", in the WDR 2003, ‘Sustainable Development in a Dynamic World’.

A central issue related to the issue of sources and sinks, and the absolute limit posed by the sink limit is scale. At the interface between economic and environment perspectives is scale, which cannot be avoided and which we pay least attention to. We have already referred to this issue earlier with regard to the “scales of our economic growth”. While conventional and all varieties of mainstream economics addresses the issue of allocation, two other critical issues that are not addressed is scale and distribution. If economic policy should seriously address the issue of sustainable development, it should address all the three central economic problems, of allocation, distribution and scale and not just allocation. Education for Sustainable Development has a very important and central role to make people understand the importance of these three central problems of economic development and their relationship to sustainable development.

If it is imperative that economic policy should address the needs of nature and society, and not just the market, can it then do so without addressing the problem of economic scale and redistribution and concern itself only with allocative efficiency via right prices is the central question. Herman Daly, again succinctly describes the situation: "Standard economics strains out the gnat of allocative efficiency while swallowing the twin camels of unjust distribution and unsustainable scale. As distribution becomes more unjust, big money buys political power and uses it to avoid any redistribution. A favourite ploy for avoiding redistribution is to emphasise economic growth.” It is that reality that we see in most of our countries today and this is the given context within which we should promote Education for Sustainable Development in order to achieve sustainable development.

In looking at economic perspectives and the interface between economics and environment and touching upon aspects of economic theory in this regard, it may be necessary to briefly to touch upon the Asian context for sustainable development. A useful take off point for this may be the UN-ESCAPs last (2005) Ministerial Conference on Environment and Development on the theme of ‘Green Growth’. A note put out by the ESCAP Secretariat on the occasion points out that industrial production in the Asia-Pacific region, home to 61 per cent of the world’s population and covering 40 per cent of the world's territory, increased by almost 40 per cent, as compared to the global increase of only 23 per cent.

However, this phenomenal growth was accompanied by some serious environmental problems with possibly disastrous, long-term consequences. Per capita water availability is reaching scarcity limits in many areas subject to seasonal shortages. More than 462 million people were affected by drought, which brought death and homelessness, in South Asia alone during 2000-2004. Over 60 per cent of the water used is in agriculture in at least 30 countries in the region. Agricultural production increased by some 62 per cent between 1990 and 2002, mainly through massive consumption of agricultural chemicals. Overuse of agrochemicals has endangered the productive capacities of agricultural land, impacted on water quality, wildlife and health. There have been dramatic declines in fisheries resources and continued degradation of coastal ecosystems.
If urgent attention is not paid to some of the pressing environmental problems, the state of the environment of the Asia and Pacific region is likely to reach thresholds from which recovery may be near impossible. There can be also the tendency to play a waiting game until every threshold is passed, but it is clear that precious little can be done after crossing the threshold of repair.

In this context, the UNESCAP Regional Implementation Plan for Sustainable Development in Asia and the Pacific, 2006-2010 referred to shifting the development paradigm from `grow now, clean up later' to environmentally sustainable economic growth, or `Green Economic Growth'. No one will disagree that such a shift is both urgent, in relation to the multiple stresses on the region's natural resources and environment, and reasonable, with reference to economic policy.

But what about the issues of scale and distribution. The UNESCAP conference, in advocating `Green Growth', indirectly referred to unsustainable scale but completely bypassed the issue of equity, so central to sustainability - ecological, social, cultural, and last, but not the least, economic. Among the general public, there is a sentiment that like rapid economic growth, focus on the environment, green growth, sustainability and so on, should not become another ploy for not addressing the issue of equity, both internally within nations and between nations in the global economy. One of the major reasons for this credibility problem seems to be the question in the minds of most people, whether any environmentally sustainable economic growth can happen, in the face of what they see as the neo-liberal economic orthodoxies being thrust on the political leaderships of the countries of the region. They see this happening also in part due to collusion by economists, in this case neo-liberal economists sitting in powerful positions of policy-making. This raises some serious credibility problems about economists. It is not only economists who have a serious credibility problem to address but also UN institutions and international agencies. Neo-liberal prescriptions are being constantly challenged and questioned by not only the academic and teaching community, but also increasingly growing sections among the larger public. This has led to some degree of cynicism about the UN's espousal of causes with reference to sustainability and so forth. The question often asked including about the UNDESD is whether these are just ploys to overlook the inequities in distribution and ignore the aspirations of the people. To a certain extent, the credibility of economists will always be questioned and quite correctly, but the greater challenge lies in addressing the scepticism of people about institutions and their lack of faith in institutions. This is one of urgent and central challenges to ESD, what I call addressing the credibility challenge. There is a huge task for in ESD in building faith in institutions especially the UN. In the absence of faith in institutions and some kind of hope that transformation is possible, public cynicism is not the best breeding ground for any kind of progress towards ecological and environmental sustainability.

In the context of the UNDESD, there has to be a more forceful statement from those promoting ESD, especially agencies such as UNESCAP, UNESCO, that as UN bodies they are committed in terms of the U.N. Charter to a normative world view and have a duty to address the issue of equity, unlike multilateral financial and trade institutions wedded to a positivist world view. The UNDESD should and can position itself within
this normative space and show that in the face of the helplessness of people who are being overwhelmed by a positivist world view, ESD offers the space for teachers and communities to mobilise for change, for building hope and empowering themselves.

4. About EIU and Synergy between EIU and ESD

It is in addressing the credibility challenge and putting forward in a strong and credible sense the normative values that the UN systems stands for, EIU has a very great role, significance and supportive role to play with regard to ESD. EIU provides a very important normative framework for a critical understanding of contemporary global reality. A framework within which conflicts between nations that constantly reproduce discourses of war, nationalism and mutual hatred can not only be understood but see how that understanding can help minimize and ultimately eliminate such conflicts. But as we all know that it is not only historical conflicts between nations that colour perceptions of each other, influence learning, teaching and education and the way children learn about others. More importantly and critically it is also inequity within society, social stratification and prejudice between social groups that stand in the way of living together and intercultural understanding. Matter of fact a closely related aspect of EIU is Intercultural Understanding and both are needed for societies and nations to move towards peace and justice within societies and between societies.

EIU as a concept though it arose within the post-world war II context in UNESCO as a way to promote peaceful relations between nations, it was transformed from a normative concept to a more instrumentalist one to promote internationalization in Asian nations seeking new markets in other Asian countries and markets. EIU somehow regained its moorings in the four pillars of Learning, viz. Learning to Be, Learning to Know, Learning to Do and Learning to Live Together that that the Jacques Delor Report ‘Learning the Treasure Within’ spelt out. It is the dimension of Learning to Live Together that EIU emphasizes and promotes. The work of APCEIU is in giving content to the concept of EIU but from a perspective of ‘living together’ by looking at the different dimensions of EIU such as Culture, Peace, Equity, Human Rights, Globalization and Justice and thus provide a transformatory learning environment and a normative world view.

In translating the value of ‘learning to live together’ to teaching, training and pedagogy what has happened in many other normative discourses and pedagogy is a greater emphasis on only the values aspect of the education. One of the problematic parts of focusing largely on values in transformative education approaches, while values definitely should underpin such education, however such approaches without intending to do so, can be or seen to be indifferent to structures and the way power operates. It also asks for an altruistic approach which by itself is not incorrect however does not place in perspective the role of self-interest. This especially so, in an unequal world and in highly stratified societies as in Asia and the Pacific. In recapturing the original meaning of EIU, an important distinction and contribution in APCEIU’s development of EIU as a concept and the development of the five constitutive themes of EIU, is the integration of the structural critique and understanding the links between structures and the lack of equity
or peace. Thus, conceptually also, providing immense scope for further work on EIU with regard especially to development of curriculum, teaching, training process, methodology and pedagogy.

The link between values and structures and moving from a normative understanding and approach to a critical analysis of structures also provides us with the perspectives for the urgently needed tasks of social transformation. In so doing we then also give recognition to the importance of social transformation as a key to achieving normative goals such as a Culture of Peace that EIU ultimately seeks to promote. In that sense, EIU can be said to rest on a kind of tripod of **Values, Structural Analysis** and **Social Transformation**. Such a tripod also makes EIU very relevant in the context of the objectives of the UN Decade for Education for Sustainable Development, 2005 -2014 and which is appropriate to mention here in terms of the synergy that exists EIU and ESD and which must be explored and utilised.

### 5. Building on the synergies between EIU and ESD

The many synergies between EIU and ESD can be beneficially used to promote a world which treasures and values, cultural diversity, respects social justice and thus achieve sustainability and harmony in the relationship between man and nature. In such a synergetic process, EIU and ESD can work hand in hand to ensure peace and equity for all and which the world is so badly in need of. As already mentioned, EIU has its moorings in the four pillars of Learning, viz. Learning to Be, Learning to Know, Learning to Do and Learning to Live Together that that the Jacques Delor Report ‘Learning the Treasure Within’ has spelt out. To this a fifth pillar, that of ‘Learning to Transform’ can be added in the context of ESD and as creatively pointed out by Sheldon Shaeffer, the Director of the Regional Office of UNESCO for Asia and the Pacific and in the context of promoting ESD in the Asia and Pacific Region. It is in the context of ‘Learning to transform’ the task of ‘reorienting education to address sustainability’ also becomes a very critical task.

In achieving Peace, Sustainability and Equity in the Asia and Pacific Region we can see that EIU has a very important role to play and the UNDESD provides a very good opportunity. APCEIU as the only Regional Centre on EIU Focuses on 4 of the five key lessons learnt between Rio and Johannesburg. These are:

1. **ESD** an emerging concept that seeks to empower people of all ages to assume responsibility for creating a sustainable future.
2. Basic Education as a foundation that contributes to ESD
3. Refocusing on existing education policies, programmes and practices.
4. Stress on education as the key to rural transformation and as essential to ensuring the economic, cultural and ecological vitality of rural areas and communities.
Sustainable Development in the perspective of UNESCO is grounded on four interdependent systems and supports four inter-related principles for sustainable living, viz.

Four Systems:
☛ Biophysical
☛ Economic
☛ Social and
☛ Political

Four Inter-Related Principles:
★ Peace and Equity
★ Democracy
★ Appropriate Development
★ Conservation

The synergy between EIU and ESD is not only conceptually in the inter-relationship between the four systems and the four principles that are all crucial to achieving Sustainable Development but also in the fact that Education is central to both. If ESD is not simply about Environment Education as has been emphasised by UNESCO then issues such as the promotion of a normative world view, a pedagogy for learning to transform and advocacy for peace and equity are very critical dimensions of ESD.

6. EE, ESD and the Knowledge Dimension.

Having stated that ESD is not only about Environment Education, it is important to understand what EE can do or cannot do in the context of ESD. To do this one has to make a very quick review of the contribution of EE so far. Without doubt EE has contributed to a wider awareness about the environment, promoting of the understanding of the responsibility of human beings for the environment and their duties to care for it and a deeper understanding of the web of nature. The advantage of EE has also been that it has relied a lot on natural science, whereas ESD may be still limited in that direction, the flip side of this strength in EE has also meant very weak links have been built between society and knowledge (in terms of the science) of the environment. EE has tended to be more individualistic and limited with regard to understanding of structures. ESD has an immense potential to link science and society, to extend knowledge about sustainable development, involving, the natural sciences (ecosystems and sinks), the social sciences (peace and equity) and society (participation and empowerment). Teachers and education should be oriented in such a perspective.

Therefore, a related issue with regard to ESD is not in creating new knowledge about Sustainable Development but in the extension of the knowledge we already have. For the latter again, higher educational institutions have a crucial role to play. So when we say, ‘re-orienting education for sustainability’, the tasks we have to look at is how knowledge that exists about sustainability can be extended and for that what is the role higher
educational institutions can play. To quote Robert Goodland, “There must be a balance in society between investing in sharing of existing scientific knowledge and investing in further extension of that knowledge. Our strong emphasis on public pedagogy reflects our belief that in present circumstances it is more important to extend basic knowledge of how the world works to everyone than for a few advanced specialists to master further details of their special discipline. The scientific background to our principles is not new — indeed they derive their force precisely from the most basic laws of science. All physicists know and accept them (first and second laws of thermodynamics and the principle of matter-conservation). But the voting public does not understand them, and often the scientists themselves fail to see how these laws set the context for sustainable development. Public pedagogy is therefore the foundation of our model. In a democracy, public policy cannot rise above the understanding of the average voter. Consequently, the distribution of knowledge is at least as critical for democracy as the distribution of income.” Of course in the distribution of knowledge, teachers play a very important role. On the other hand they are the worst affected by income distribution getting more and more skewed, especially under conditions of globalization. The linking up of teachers both in a sense of the importance of equity in society and from a perspective of them being a chain in the distribution of knowledge is very critical to the success of ESD. We have to work with the self-interest of teachers in mind and not only ask for their altruism as EE often has tended to do. A point that Robert Goodland et al also make and which we shall come to next. Reorienting Education in such a perspective is going to very significant to the outcomes that ESD can produce in society.

7. Five critical requirements for a model of sustainability and it relevance for ESD

Goodland lists five critical requirements for a theoretical model of sustainability which also I find are very relevant with regard to ESD. The four critical requirements are:

a. The model must be based on a scientifically acceptable conception of the world.
b. The model must contain a scientifically supportable definition of sustainability.
c. The overall perspective must be applicable at different scales, and must see the economy as a subsystem of the ecosystem at each scale. Individuals must see how their actions aggregate from micro scales up to the macro scale, and thus understand their role in the overall move toward sustainability.
d. The micro-economical perspective should not require individuals to act against self interest. We may need some altruistic behaviour in the political task of setting up the rules of the game, but in the actual playing of the game we should not expect individuals to behave altruistically.
e. The model must be pedagogical and simple to disseminate so that it can support a public consensus necessary to be put into practice democratically.

Drawing upon these five critical requirements and relating it to ESD, in particular the objective of ‘Reorienting Education for Sustainability’, I see five tasks that can be listed corresponding to the five requirements for a model of sustainability.

a. The model must be based on a scientifically acceptable conception of the world.

ESD Task: Develop and relate to a simple definition of the “containing ecosystem” and
sources and sinks as characteristics of such an ecosystem.

b. The model must contain a scientifically supportable definition of sustainability. ESD Task: Convey how, the notion of sink limits are absolute and how this puts a limiting condition on man's activities and in relation to the "containing ecosystem" and the sink limits, the scale of man's activity is critical and crucial.

c. The overall perspective must be applicable at different scales, and must see the economy as a subsystem of the ecosystem at each scale. Individuals must see how their actions aggregate from micro scales up to the macro scale, and thus understand their role in the overall move toward sustainability.
ESD Task: Make this a framework for developing ESD in different sub-systems of knowledge that education deals with.

d. The micro-economical perspective should not require individuals to act against self interest. We may need some altruistic behaviour in the political task of setting up the rules of the game, but in the actual playing of the game we should not expect individuals to behave altruistically.
ESD Task: Relate it to the daily lives of teachers, their human rights, situations of peace and equity in the communities in which they teach or they know of. Link their situation to that of the situation of communities and ordinary people. This fifth requirement above will be very clear to teachers, who in most societies are the lowest paid and whose services, especially in conditions of globalisation, are not given the value that society should give them. Whole school approaches and school in the community approaches should be used to show why things happen in a certain way and how ESD perspectives can change them.

e. The model must be pedagogical and simple to disseminate so that it can support a public consensus necessary to be put into practice democratically.
ESD Task: Make this requirement for a model of sustainability also a requirement for ESD.

**Conclusion:** Prior to the Rio Summit, UNESCO Paris, came out with a small publication, titled, ‘Environmentally Sustainable Economic Development: Building on Brundtland Robert Goodland, Herman Daly, Salah El Serafy and Bernard von Droste. This small publication made a significant impact on the thinking of economists, academics, teachers and practitioners with regard to Sustainable Development. Brundtland’s seminal contribution was in conveying the sink limits as opposed to the source limits. This was conveyed by the Goodland et al in a scientifically acceptable conception of the world with a scientifically supportable definition of sustainability and without running away from the real life problems of economic development that is environmentally sustainable. It is a similar task that we face in making teachers, the academic community and the communities at large taking ownership of ESD. Once that happens our roles are redundant and that is how it should be, from a perspective of sustainability.

**Notes:** (incomplete)