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Environmental Accounting Meeting October 9, 1990

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Incorporating Environmental Criteria into National Income Accounts and Other Economic Measures

List of Participants

Senator Al Gore
Senator Jeff Bingaman
Congresswoman Olympia J. Snowe

Mr. Stephen Viederman, Jessie Smith Noyes Foundation

Mr. Conn Nugent, Nathan Cummings Foundation

Dr. Robert Repetto, World Resources Institute

Dr. Herman E. Daly, The World Bank
Dr. Mohan Munasinghe, The World Bank
Dr. Salah El Serafy, The World Bank

Dr. Robert Costanza, University of Maryland

Dr. Henry Peskin, consulting economist

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Dr. Richard Greg Michaels, U.S. EPA
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THE
INTERPARLIAMENTARY
CONFERENCE ON THE
GLOBAL ENVIRONMENT

1/2/91
Called Steve Wiederman
- he will send names
that he may know.

(I told him looking for
mid-level ; PhD not
~45,000.
nec.) for IEC.

PHOTOCOPY
PRESERVATION

TRIPLICATE

SERGEANT AT ARMS
United States Senate

№ 087156

Request for Report on } Mechanical Equipment.

Date October 10, 1990

NAME

Suite No. SR396 Building Russell

To Senator Gore

FROM Office Machines (Loans)

Requested by Approved by Date

P.O. NO.	ASSIGNMENT	Trade-In	Sale	REPAIRS
Clerk Hire ( ) Regular ( )	Temp. ( ) Perm. ( ) Exchange ( )	( )	( )	O. H. ( ) Shop ( )

Equipment: Transcriber Make Sony BM-50A Serial No. 14567 $

If equipment is returned:

Remarks: ATTN: Mary Margaret or Jean Kerr

TEMPORARY LOAN ONLY. TO RETURN EQUIPMENT PLEASE CALL 4-3384.

Service Department O.K. Pat Northern

Equipment requested by

Equipment received by

DRAFT/October, 3, 1990

October 4, 1990

Dear _____:

You are cordially invited to a meeting on the current status and future prospects for national and international efforts to incorporate natural resource depletion and other environmental criteria into national income accounting systems. The meeting will occur on Tuesday, October 9, from 9 am until 11 am, in room 385 of the Russell Senate Office Building.

The purpose of the meeting is to discuss the current status of environmental accounting initiatives at the U.N., World Bank, in the U.S., and in other nations, and to determine whether there are opportunities for Congress to facilitate movement toward incorporating natural resources and other environmental criteria into national income accounting systems.

Enclosed you will find a list of participants for the meeting, as well as a draft agenda. On behalf of my colleagues and the Jessie Smith Noyes Foundation, thank you your interest and participation. I am looking forward to your participation in what I am sure will be an informative and productive meeting.

With best regards,

Sincerely,

Al Gore

enclosures

October 10, 1990

Dear

I would like to thank you for participating in yesterday's meeting on environmental accounting. I was very pleased with the meeting, and felt that it was extremely productive. A lot of good ideas were discussed, and numerous questions were raised for future study. We have a good base to build on in the months to come.

I consider this issue to be of utmost importance, and I will be dedicating a substantial amount of my time to it in the months to come. I hope that you will allow me the opportunity to call upon your expertise as the work proceeds.

Thanks again for helping to make the meeting a success.

With best regards,

Al Gore

Al -
Thank-you for participants in yesterday's meeting. Please approve.
Rick

Incorporating Environmental Criteria into National Income Accounts and Other Economic Measures

Agenda

9:00 - 9:05 Welcome

9:05 - 9:15 Conceptual Overview of Incorporating Environmental Criteria into National Income Accounts, Dr. Robert Repetto

9:15 - 9:25 Discussion and Questions

9:25 - 10:00 Activities Related to Incorporating Environmental Criteria into National Income Accounts

- 9:25 - 9:30 U.N. Statistical Office, Dr. Peter Bartelmus
- 9:30 - 9:35 Discussion and Questions

- 9:35 - 9:40 The World Bank, Dr. Mohan Munisinghee
- 9:40 - 9:45 Discussion and Questions

- 9:45 - 10:00 The U.S. Government

  - 9:45 - 9:50 Dr. Carol Carson, U.S. Dept. of Commerce
  - 9:50 - 9:55 Dr. Greg Michaels, U.S. EPA
  - 9:55 - 10:00 Discussion and Questions

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10:10 - 11:00 Discussion

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+ Opportunities for Congress to facilitate incorporation of environmental criteria into national income accounts and other economic measures

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from Peter Bartelmus

Table 2: Framework for Integrated Environmental and Economic Accounting (consolidated)

	Tangible assets (Table 1.3)		
	produced		non-produced natural assets
	except natural	natural (biota)	
Opening stocks	991.3	83.1	1744.4

+ (plus)

Use/Value Added (Table 2.2)	Total	Domestic production (industries)	Final Consumption		Capital accumulation			Rest of the world
			house-holds	govern-ment	produced assets		non-produced natural assets	exports/ imports
					except natural	natural (biota)		
Use of goods and services	591.9	224.0	175.0	42.5	68.0	1.4	7.3	73.7
thereof env. protection services	(36.2)	(22.4)	(8.8)	(5.0)				
Gross Domestic Product (GDP)		293.4						
Consumption of fixed capital		26.3			-23.0	-3.3		
Net domestic product (NDP)		267.1						
Use of natural assets (environmental costs)	-1.6	59.8	17.1	-5.0	5.1	-0.9	-73.0	-4.7
thereof: depletion		(17.5)	(0.7)			(-0.9)	(-17.3)	
degradation	(-1.6)	(42.3)	(16.4)	(-5.0)	(5.1)		(-55.7)	(-4.7)
Environmental adjustment of final demand (environmental costs)		22.2	-17.1		-5.1			
Environmentally adjusted net Domestic Product (EDP)		185.1						

+ (plus)

Supply (Table 2.1)				
Goods and services	591.9	517.4		74.5
Imports of residuals	-1.6			-1.6

+ (plus)

Revaluation and adjustment to market valuation	138.1	13.5	464.0
Other volume changes (marked valuation)	-25.3		22.8

= (equal)

Closing stocks			
	1149.1	93.8	2165.5

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more new grants than subsequent budgets have allowed the agency to sustain. At the same time, in response to pleas from the scientific community for more stable funding, the average length of grants was growing from 3.4 years to the current 4.3 years. This means less money has been available for new grants and those up for competitive renewal. To suddenly award thousands of new grants would solve the short-term problem but set the stage for the same kind of crisis a few years down the road.

So what can be done? NIH has already begun to shift available money around. Ruth Kirschstein, head of the National Institute of General Medical Science, said that her institute will sometimes go out of its way to help the desperate—denying extra funds to a scientist with more than one grant to fund someone who has no other support, even if that person received a lower ranking from a study section. NIH has also used "downward negotiations," a euphemism for cuts, to take money from continuing grants to free money for new grants.

But researchers feel available money just won't do the trick. Some say it is time to mount a massive, grass-roots lobby campaign to convince Congress that more money should be put into biomedical research. William Brinkley of the University of Alabama described efforts by the Biophysical Society and the American Society for Biochemistry and Molecular Biology and the American Society for Cell Biology to educate Congress on the importance of biomedical research. Such efforts, he maintained, had already helped create a more favorable budget climate.

But John Holmfeld, science consultant to the House Committee on Science, Space, and Technology, warned that scientists could lose their credibility on Capitol Hill if they run to Congress every time they faced what he described as a "mini-crisis." "Rather than start a lobbying campaign to solve this immediate problem," which he estimated would have less than a 50–50 chance of success, he said, "you ought to think, as others have suggested, in strategic terms," such as establishing goals and priorities for spending. "Not only do we need a better idea of what's happening," said David Baltimore, the new president of Rockefeller University, "but we need a model of what ought to happen."

Some strategies have already been developed. Floyd Bloom said an upcoming report from the Institute of Medicine that he helped write will recommend testing a sliding scale for funding. Instead of funding some grant seekers fully and giving nothing to others, Bloom said the report will recommend providing graduated amounts of money depending on study section rankings. "In our calculations for the current year this might permit an additional 350 grants to be supported," he said. Other recommendations will be to give early, informal reviews for young scientists so that they will have a better chance of winning renewal, and creating a mechanism to support research teams during transitional periods as they finish one project and want to head in a new direction.

Whatever long-term solutions the Bush Administration and the NIH devise, they are not likely to bring short-term relief, and times will continue to be tough. Acting NIH director William Raub asked last week's forum audience to look for the silver lining: "Some of the strongest advocates of biomedical research . . . in private go so far as to say a bad year now and then reinvigorates our advocacy and helps in the long run." And some, he added, would say that "we should look to the fruits of this anguish rather than simply bemoan it." But a moan went up from the audience even as he spoke.

■ JOSEPH PALCA

Multidisciplinary Look at a Finite World

Fledgling field of ecological economics seeks to imbue ecology with more theoretical rigor and bring economics down to earth

HOW DO YOU ASSESS THE FUTURE VALUE of the spotted owl? Quantify the "gross national waste product"? Model the intergenerational impacts of the greenhouse effect? Determine the earth's human carrying capacity?

These are questions of almost unimaginable complexity, and they are usually ignored within conventional economics and ecology. But they are the kinds of things experts puzzled over at the first meeting of the International Society for Ecological Economics, held in May at the World Bank in Washington, D.C.

The meeting marked the debut* of a "trans-discipline"—ecological economics—designed to supply a bridge between the natural sciences and economics. And it seemed to have tapped a need—about 150 participants were expected; 372 showed up. The attendees came to see if it made sense to bring under one umbrella work that has been conducted in recent years in resource and environmental economics, systems ecology, energy, applied physics and mathematics, operations research, and anthropology and sociology. What they had in common, says economist Ralph d'Arge of the University of Wyoming, is that they are "a whole group of people with interests in a revised macroeconomics consistent with physical and biological laws."

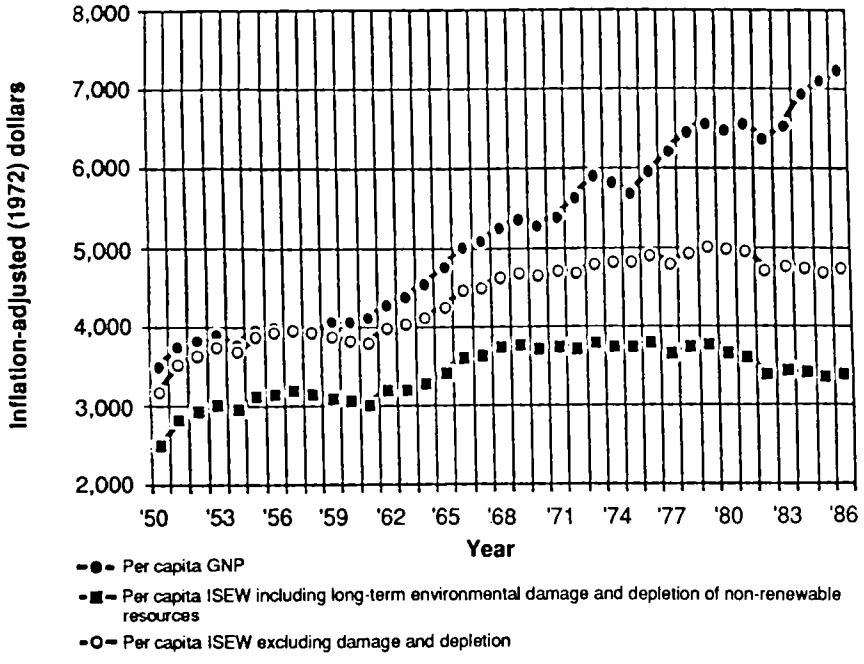
That means they believe there are limits to growth, and some think the limits have already been reached. Many see the time as ripe for an economics based not on growth, but on "sustainability." According to World Bank economist Herman Daly, one of the organizers of the conference and a maverick in his trade, this calls for replacing the old paradigm of the economy as a self-contained system with one that treats it as a subset of the biophysical system.

At present, said Daly, "There is no point of contact between the macroeconomics and the environment." He said leading economics textbooks do not even contain entries on such topics as natural resources, pollution, and depletion. That's because most economists treat environmental functions as "externalities." Ecologists, for their part, have little understanding of economic constraints, said conference co-organizer Robert Costanza, an economist at the University of Maryland's Chesapeake Biological Laboratory. They tend to stick to natural systems and leave out the human angle.

People working in ecological economics are inclined to be technological pessimists. They start with the premise that there is no getting around the First and Second Laws of Thermodynamics: since energy/matter can't be created or destroyed, resources are finite; and that once dissipated they can't be reused (entropy law). Most do not believe new technologies will be sufficient to avert major human and ecological disasters if current trends continue. They see no alternative to slowing population growth and the "throughput" of environmental goods and services.

Sustainability has become the rallying cry for development experts in recent years, but the term is nonspecific. What level of eco-

* The Society for Ecological Economics was formed at a meeting in Barcelona in 1988. It has its own journal, *Ecological Economics*, edited by Robert Costanza.



Source: H. Daly and J. Cobb, For the Common Good (Beacon Press, Boston, 1989)

Index of sustainable welfare. *Herman Daly of the World Bank and John J. Cobb of the Claremont School of Theology have devised a substitute model for the U.S. GNP that includes a measure of distributional equity in an "index of sustainable economic welfare" (ISEW). Adjustments are made for a variety of factors including services, costs of pollution, loss of wetlands and farmland, and "defensive" government expenditures that do not add to wealth. The result is an economy that has declined somewhat since the 1970s—in contrast to one continuously gaining, as reflected by GNP.*

nomic production can be sustained, for how long, and for how many people? Daly believes the first task is to come up with some parameters for sustainability by establishing an "optimal scale" for the world economy. One macroindicator, he said, has been offered by Paul Ehrlich and Peter M. Vitousek of Stanford University who have estimated the proportion of the world's output from photosynthesis that humans presently use or preempt. Currently, it is 25% of the earth's total photosynthetic capacity and 40% of land-based capacity.

Beyond the general goal of sustainability, there was little consensus at the conference on how to get from here to there. A lot of the talk was general, highly technical, or heavy on macro-theorizing (some people want to trash neoclassical economics; others want to merely modify it). But some clear themes emerged.

"Intergenerational equity"—making decisions that will not compromise life for future people—is one. "All decisions over time have been treated by economists as investment questions, as if all resources were always this generation's resources," said economist Richard Norgaard of the University of California at Berkeley. The discount rate has been a long-disputed example. The use of discount rates, applied to assess cost and benefit flows of particular resource or development decisions, is based on the fact that humans value the present over the future. In practice it means, for example, that a slow-growing timber stand can't compete with a dam that provides immediate payoffs. Daly supplies an analogy with the goose that laid the golden eggs: at some point, the assessed future value of the egg flow gets close to zero, and the "efficient" course is to kill the goose for its meat.

But changing discount rates scarcely begins to address a much larger dilemma: how to set values on environmental goods and services. Currently, said mathematician Colin Clark of the University of British Columbia, "much of apparent economic growth may in fact be an illusion based on a failure to account for reduction in natural capital." Resource economists have been trying for years to devise ways to incorporate the "real" costs of resources and pollution in systems of national income accounting to improve gross national product (GNP) estimates. Economist Henry Peskin of Silver Spring, Maryland, described several ways of revising accounts to reflect this, including separate identification of pollution abatement expenditures and keeping a balance sheet of stocks of natural resources. Governments might tax depreciation of mineral and petroleum reserves to slow down depletion, he added. Whatever the strategy, said Peskin, "the environment has to be treated as a productive sector."

A far more radical approach to grounding economics in physical reality is offered by a group of researchers who want to replace conventional economics with an "energy theory of value." Biologist Howard Odum of the University of Florida has devised a system for reducing all economic transactions to common energy units called "emergy" (for embodied energy), defined as the solar energy that went into a product. Using Ecuador's shrimp industry as an example he said when the raw energy that goes into shrimp exports is converted to emergy, the country exports ten times as much as it receives. At the other end of the scale is a country like Japan, which is getting a free ride emergy-wise.

Odum's approach is controversial, to say the least. Perhaps more representative of current efforts is an assessment of the "real" dollar value of Louisiana wetlands done by biologist Costanza and economist Stephen C. Farber of Louisiana State University. They combined conventional estimates of commercial and recreational values of the wetlands with calculations of the solar energy used by plants in the system. The gross primary [energy] production was converted into fossil fuel equivalents, which were in turn stated in dollars, using a ratio of GNP to total economy fossil energy use. Costanza concluded that if Louisiana were looking to its long-term future, it would be charging $17,000 an acre instead of the $300 to $500 (exclusive of mineral rights) the market does now.

It is through painfully complex studies such as these that people working on the border between biology and economics want to chart sustainable paths for development. So far, few decision-makers are paying attention to these models, which are not even understood by most conventional economists, says d'Arge. But they are far more substantive, say this group, than are the speculations that went into the old "limits to growth" scenarios that economists helped shoot down as "empty models."

Indeed there are already signs that ecological economics is becoming institutionalized: new institutes are being formed by the Swedish Academy of Sciences in Stockholm, the University of Siena, and the University of Ottawa. Costanza said the University of Maryland is also seeking funding for a graduate research training program.

"The big challenge in the coming decade," he said, is "to redesign the playing field at the local level" in accordance with long-term global goals. Then Costanza offered a hard-headed assessment: Because of the enormous uncertainties to be faced, he said, "we have to construct the best models that we possibly can and then not believe them."

■ CONSTANCE HOLDEN

UNITED NATIONS STATISTICAL OFFICE

BRIEF ON THE HANDBOOK ON ENVIRONMENTAL ACCOUNTING

1. Background

Calls for environmentally sound and sustainable growth and development reflect a general agreement on the need to integrate environmental objectives into socio-economic planning and policies. National accounts have provided the most widely used indicators for the assessment of economic performance and trends of economic growth. Two major drawbacks of national accounting have raised doubts, however, about the usefulness of national accounts data for the measurement of long-term sustainable economic growth and socio-economic development. These drawbacks are the neglect of (a) new scarcities of natural resources which threaten the sustained productivity of the economy and (b) the degradation of environmental quality from pollution and consequential effects on human health and welfare. In addition, expenditures for maintaining environmental quality are accounted as increases in national income and product, despite the fact that such outlays should be considered as a maintenance cost to society rather than social progress.

2. UNSO Programme of Environmental Accounting

Given the diversity of existing approaches in this area, the United Nations Statistical Office, in collaboration with the United Nations Environment Programme (UNEP) and the World Bank proposes to develop concepts for integrated environmental and economic accounting which could be used as a basis for internationally comparable work in this field. The natural starting point for such a development is the System of National Accounts (SNA), which is currently being revised. In the ongoing revision process it has already been agreed, to include an extensive chapter on satellite accounts, which reflects the traditional approach to integrate

areas of special concern into the System of National Accounts. Nonetheless, the importance and the complexity of the environmental issue has led the experts to the conclusion that this topic needed further in-depth study which could be best dealt with in form of a separate Handbook to be issued along with the central framework of the SNA.

3. Objective and Contents of the Handbook

The ultimate objective of the Handbook is to arrive at alternative definitions of environmentally adjusted indicators of capital, income and expenditure, value added and their respective components. These indicators are meant to be more appropriate tools for measuring economic performance and taking policy decisions concerning sustainable growth and development.

The proposed integrated economic-environmental accounting framework is partly a modification and partly an extension of the System of National Accounts. In a first step, environmental activities and environmental products are being defined and hence separately identified in the accounts. Then the system is enlarged to include asset balances not only of produced assets, but also of environmental assets, for which the Handbook is to elaborate an appropriate classification. The inclusion of environmental assets is necessary to describe the costs of depleting natural resources and of degrading the environment through economic activities. Information on depletion of natural resources and degradation by pollutants and waste residuals are typically available in physical terms only. Consequently, the Handbook will comprise proposals for valuation of physical indicators, necessary to include environmental cost adjustments in the accounting system. It should be pointed out, however, that complete balance sheets will only be established for the natural environment as far as it has become part of the economic activities (e.g. timber tracks, fish of fish ponds, water of water reservoirs).

4. Country studies

In order to gain experience concerning the implementation of the proposed integrated accounting system, one pilot project is presently being carried out in collaboration with the Mexican Statistical Office. For this purpose the general framework has been adapted to the specific situation of the country. The experiences so far have shown, that one of the greatest problems is the large diversity of the available environment statistics, which are compiled by a variety of public as well as private institutions for very different purposes. A further country project will be carried out early next year in Papua New Guinea. The results of these and possibly further country studies, will form an important part of the Handbook.

5. Work accomplished and future timetable

The United Nations Statistical Office has hired Mr. Carsten Stahmer from the Statistical Office of the Federal Republic of Germany to prepare a first draft of the Handbook. He presented an intermediate report in January 1990 and a draft of Chapter I in May 1990. Further chapters have been prepared and were discussed extensively with Messrs. Peter Bartelmus and Jan van Tongeren of the United Nations Statistical Office. The entire draft is due to be presented by the end of October 1990, so that it can be submitted for discussion to the SNA expert group meeting, scheduled for the first week of December. A revised version of the draft will be discussed by the forthcoming Special Conference of the International Association for Research in Income and Wealth (IARIW) on environmental accounting (Baden, May 27-29 1991). The draft Handbook will be widely circulated for comments and contributions, prior to its publication in the Handbook Series of the SNA.

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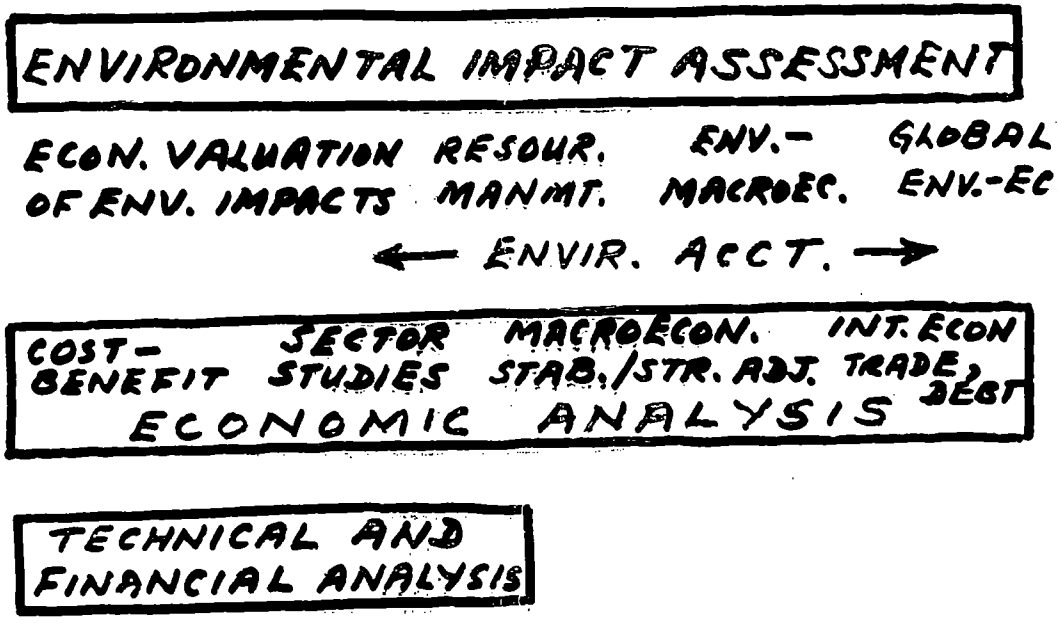
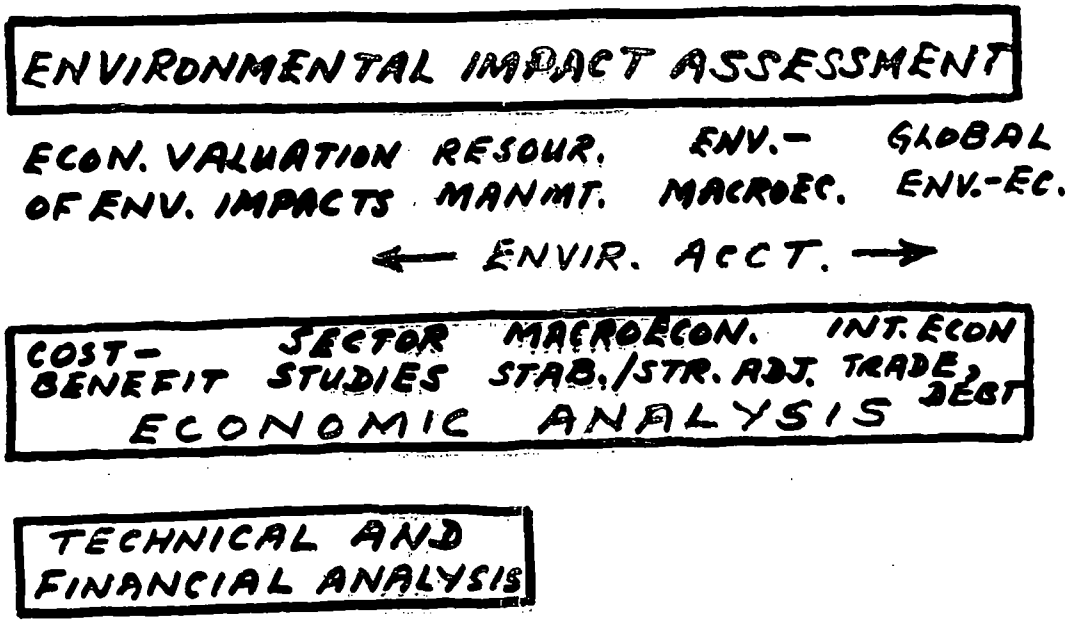

ENVIRONMENTAL IMPACT ASSESSMENT
ECON. VALUATION OF ENV. IMPACTS
RESOUR. MANMT.
ENV.- MACROEC.
GLOBAL ENV.-EC.
← ENVIR. ACCT. →
COST-BENEFIT
SECTOR STUDIES
MACROECON. STAB./STR. ADJ.
INT. ECON TRADE, DEBT
ECONOMIC ANALYSIS
TECHNICAL AND FINANCIAL ANALYSIS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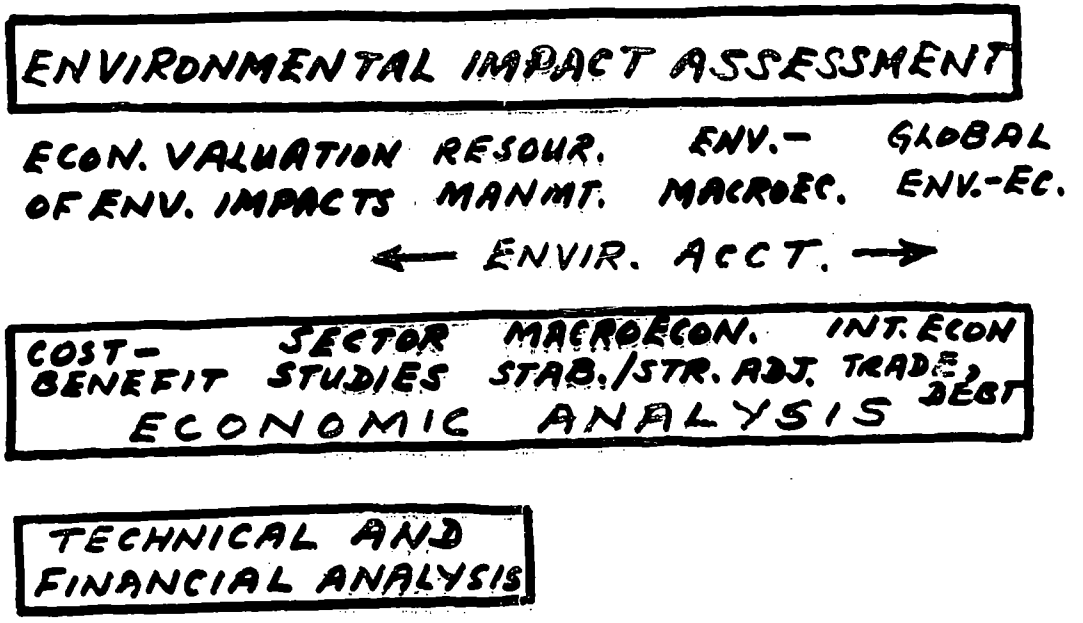
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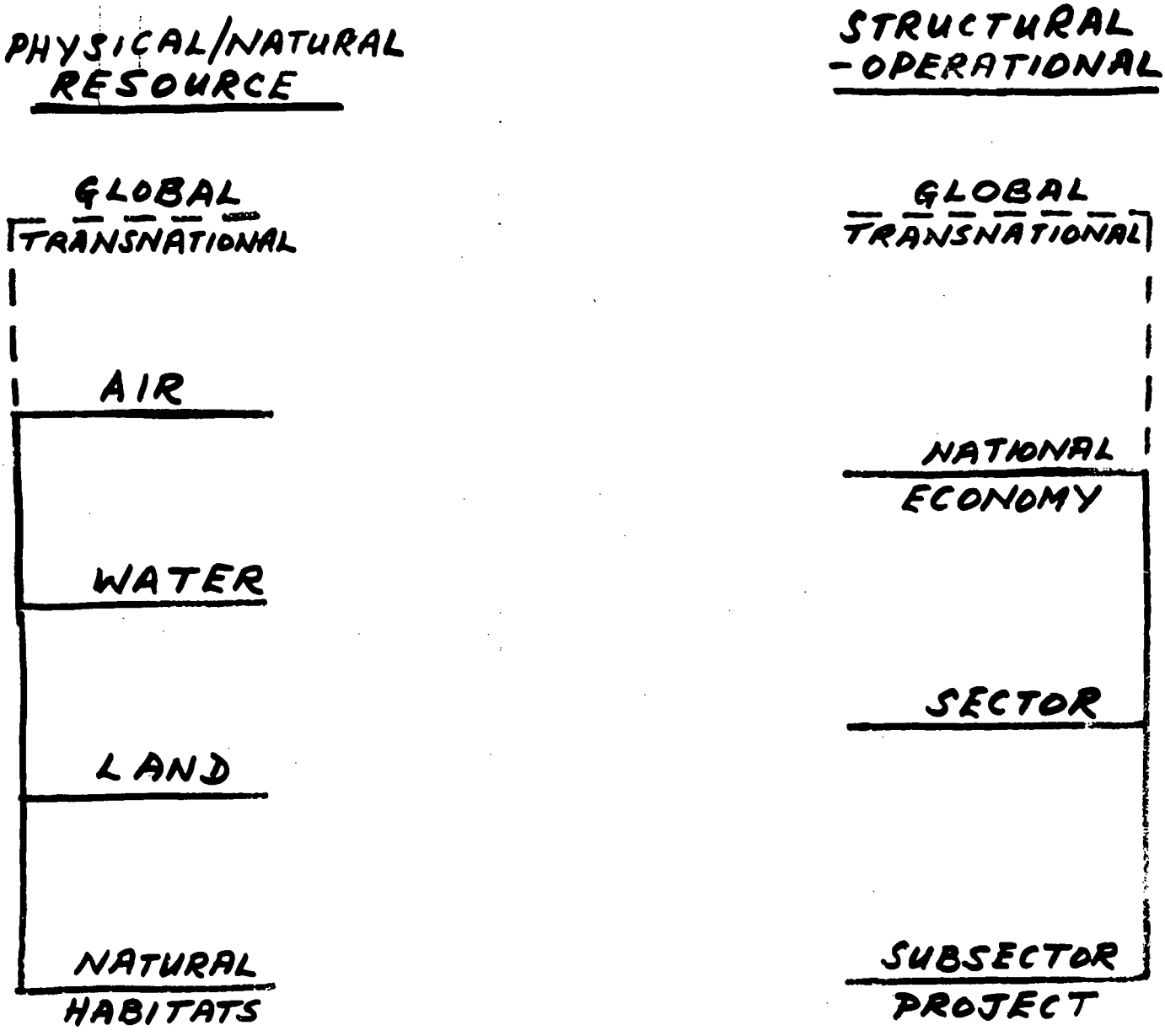
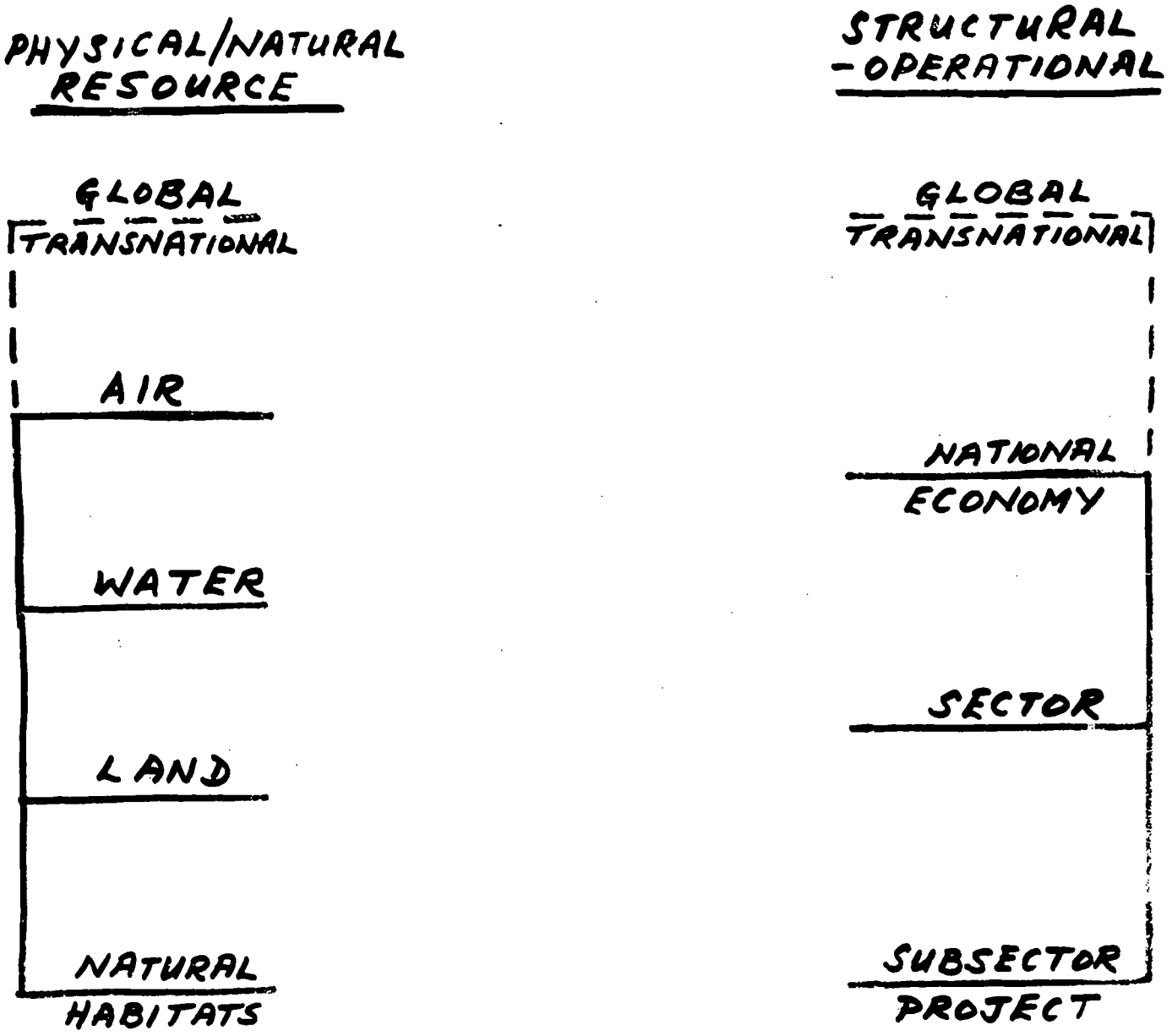

PHYSICAL/NATURAL RESOURCE
STRUCTURAL - OPERATIONAL
GLOBAL TRANSNATIONAL
AIR
WATER
LAND
NATURAL HABITATS
GLOBAL TRANSNATIONAL
NATIONAL ECONOMY
SECTOR
SUBSECTOR PROJECT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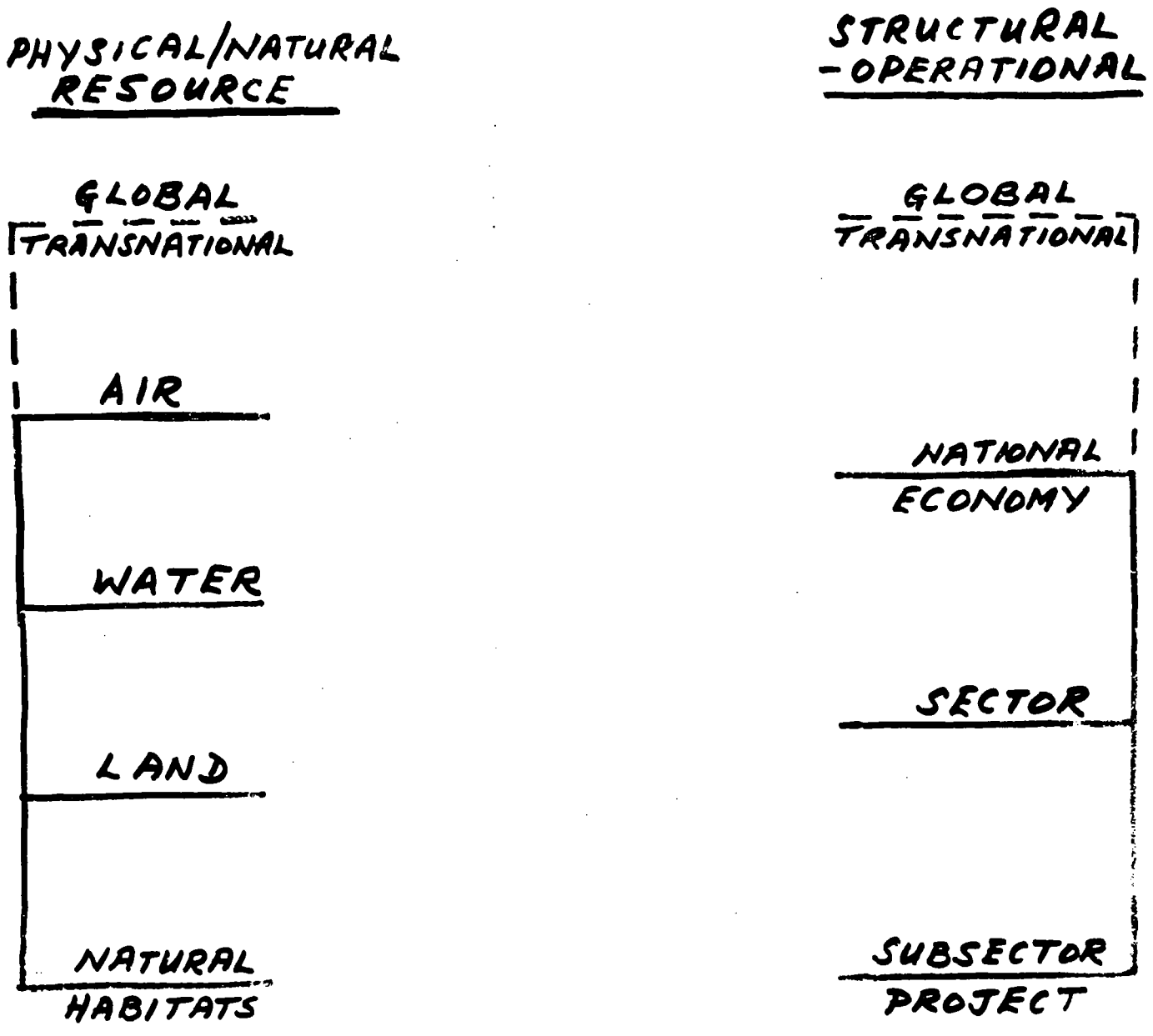
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SUBSECTOR PROJECT

Mtg 9-11 or 10-9-90

* Making this a Jt. Econ. Comm. Initiative

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Repetto - natl income accts
- Al - gathered to understand Eng.
- also has done work on productivity

Steve Anderson - also participated in mtg w/ pol. fdrs.

Int'l Society of Ecological Economics - Costa Rica

Kaster - natl income accts } other Senators
Wirth & Heinz - Project 88 involved

Repetto -
GNP - adopted by Keynesian Economics
* Hawaii & other worlds.
Keynes was concerned by the Great Depression - natl

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Resource mgmt & policy

Smith, Mark } classical economics

{ human practices, natl res & reproducible capital
{ 3 elements = this is more appropriate model today.

Why to measure increase in a finance-based econ:
Consumption

* we don't do this -- don't have nat'l accounts GDP credit as do other forms of cap (no - reflects depletion of capital).

*.: Our Revision need to make
→ Nat'l Resources are a form of CAPital (formation & fin income depletion ⇒ ↓ " ")

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Some European countries & LDC's are doing this.
We in a position -- conceptually & empirically
to do this!

* Our problems w/ productivity
Arithmetic blamed e.g. on pollution controls.

* perverted sense of
productivity = whether you have transformed
inputs into outputs of goods (GNP)

but maybe should look
@ lessening of loss of
env value.

* look @ Envtl regs. as IMPROVING
PRODUCTIVITY.

Peter Bartelmus

* must disaggregate -- no ad hoc
adjustment of single $.
* need an integrated & articulated
system.
* also - what can/can't be measured

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yes -- there are the priceless aspects of "the earth" but gnd water, minerals, fisheries forests are Real & quantifiable

A/D National Income Accnts -> calculated by UN & then used by World Bank to decide whether to give loans.
-> not been trying to press a D. (th.with able to see)

System of National Accnts -> Carson working w/ UN to incorporate enviro.
x contrary to Repetto -- " v. difficult.
∴ Setting up Satellite Accnts --
guidelines (~1993) in S.A. -

normal systems - process grey 20 yrs.
method of accnt
AL - this entirely inadequate
-> satellite adjustment = cat... adjustment

Raskin -> v. much problem ...

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understanding of what "S.A." means;
no common defns etc.

→ hopes

Carson – U.S. will begin to incorporate new revised estimates by 1995 (we have not previously used UN SNA methods).

Daly → avoid impoverishment by overconsuming = pt. of accounting.
Muller = current measure of natl income deemed accurate (agrees w/ Repetto) → concepts Right! Measurements may be tough!!
Measure of welfare → something different (will speak to later

Serafy: 1968 = last Δ of SNA.
Shldn't shy away from making estimates.

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Munasinghe

Cameron – M
Some African countries do not acct
for depreciation even in a
std. nat'l acct.
∴ v. big step to include envtl
acct.
→ satellite acct = useful interim
step as move tward conventional
SNA.

Al – what is nature of the burden they
face

M – not in a position to meaningfully
apply

Repetto – they have the stats just do
different things w/it.

Barbara — → whether can do
envrl acctg is v. diff. than
imposing on other countries

Al – US can set an eg; World Bank, etc

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shld be active in using newer methods.

---

funds not there to help LDC's →
World Bank – only 500,000 to work @ 3 countries.
UN does not have staff
WRI can't do on own.

---

productivity measurements different from welfare "
Perkins → no system that accts for both
AL → focus of hrgs. next yr. will be to find such a unified system.
→ as a framework – but costly implementation may be prohibitively high.
ex. Chesapeake Bay
ex. Kornligaars – have come away from unified to a more simplified.
AL – goals – they also abandoned their CO_2 goals, too.

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Bartelmus -
Satellite Accounts.
x detailed discussion of their system.
will be ready by end 1991 --
but definitely by June 1992 Brazil
conference.

Repetto - thinks this framework reps.
a lot of progress.

but feeling of regress - process
reversing. The SNA now well advanced
than [illegible] could have gone much further
in this time. -
Peskin/Daly writing of this 10 yrs ago.

B - but took 40 yrs to implement SNA!

Peskin & Vickerman

x need $ to do case study &
to build infrastructure to
continue

Repetto - any idea of how much would cost
over a decade to start implementing
this (ex. 10 countries/yr).

B - 2 World Bank studies - 40-50K per
country for pilot studies

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AI - w/that order of mag -> didn't philanthropic orgs fund this kind of 88 ?? (w/ help of USAID)

Y -> yes; but don't want to do all World Bank's work.

*AI wants follow up communication on this.

AI - LDC's are taking the lead here.

Munasinghe - problem = conserv. not emphas. of econ growth. envir. accounting req. measurement. ?? whether SNA shld be revised - but how fast!!

envt'l aspect = mandatory part of WB projects -> MICRO level

but MACRO level also important =>

*AI wants better info on exactly how

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micro (project by project and) works.

WB will publish a yearly study of physical indicators of wealth.

Carson - US efforts.
- working of UN - commentary on Handbook.
- make accnts. aware of this, introduce policymakers to it, prepare them.
- revised SNA by 1993.
- Commerce - couple of yrs. ago had an effort (head by Jan Peskin) → but then cut by 1st Reagan budget

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now gearing up again.
* budget is a/in Commerce
Committee!!
* AL wants the ia fo. x.

Jan Reskin now @ CBO (Q: CBO doing
nothing??).

Al - what are hardest cats. to D?
C - nat'l resources = where we are
stuck; must find valuations.
- Daunting
imputation of value to nat'l resources
= most daunting.
Repetto → yes for some, no for
others - ex timber & water
have transaction values
Al - what of space v. distorted?
R - harvesting costs a
problem; but have mkt RTS.

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Repken - also common resource problem.

but Q ex. of biodiversity v. need to evaluate ex. - how much is spotted owl habitat worth?

Costanza - also don't understand yet what these resources are doing - need to value forests etc have idea of all vital functions they play.

Al - doesn't like idea that "mechanisms" will be the key to evaluate resources, accepts that something ought to be valued that way, but and things (commons, etc.) are Not so susceptible (all dealing for a scale)

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Costanza - std. mkt approach v. ltd. → need to start from coherent value of envl - not just value as perceived by the purchaser.

Bob Nichols - EPA

focusing on the econ. valuation of envtl impacts

(resource mgmt - dept of Interior)

no one doing uniform envtl accounting.

working w/ Peskin on Chesapeake project

Conventions are confining.

pro values @ the margin but enormous consumer surplus

EPA using contingent techs. to try to assess value to consumer

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need to enact impacts for
fed projects
+ one step ** should do in
general for econ policy *
→ ex every tax bill
should have one.

A1 - what if we in Congress look @ series of
concepts in classical economics.
instead of the econ. study approach -
look @ traditional concepts & redefine
Classic concepts in Economics | them on ecological framework.
ex Repetto's ideas re: ⓐ productivity
ex ⓑ depreciation
ⓒ consumption (Peskin)
ⓓ capital formation
ⓔ savings
ⓓ Consumer Sovereignty
as say consumer in what place
here & now is sovereign $$

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Repetto (e) consumption = consumer use.
velocity of use
could range from X mins - - -
velocity of production / transformation

*velocity of physical transformation

(f) reciprocal = durability > Daly

(g) infrastructure > O'Neill

Bartelmus (h) income (& its allocation to factors of production).

Perkins (i) Thomas Juster article 1970
(econ performance)
not counting all forms of wealth
that make a difference - excluded
[illegible]
measure its deterioration & growth.

JTL suggestion!
Case Study of Cameroon as a nation
who doesn't have an idea of
depreciation,
would suggest rather look @ UK depletion of
— oil reserves -) had party, [illegible] now is [illegible] & [illegible] to provide for future

Incorporating Environmental Criteria into National Income Accounts and Other Economic Measures

List of Participants

Senator Al Gore
Senator Jeff Bingaman
Congresswoman Olympia J. Snowe

Mr. Stephen Viederman, Jessie Smith Noyes Foundation

Mr. Conn Nugent, Nathan Cummings Foundation

Dr. Robert Repetto, World Resources Institute

Dr. Herman E. Daly, The World Bank
Dr. Mohan Munasinghe, The World Bank
Dr. Salah El Serafy, The World Bank

Dr. Robert Costanza, University of Maryland J. Ecological Economics.

Dr. Henry Peskin, consulting economist to CEPA & World Bank.

Dr. Carol Carson, Department of Commerce Bureau of Econ Anal.

Dr. Richard Greg Michaels, U.S. EPA - Economics in Policy Office.
Dr. Bill O'Neil, U.S. EPA

Ms. Barbara Bramble, National Wildlife Federation - Natl Policy Director.

Dr. Peter Bartelmus, U.N. Statistical Office

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from Peter Bartelmus
UN Statistical Office

Table 2: Framework for Integrated Environmental and Economic Accounting (consolidated)

Opening stocks

Tangible assets (Table 1.3)		
produced		non-produced natural assets
except natural	natural (biota)	
991.3	83.1	1744.4

+ (plus)

Use/Value Added (Table 2.2)	Total	Domestic production (industries)	Final Consumption		Capital accumulation			Rest of the world
			house-holds	govern-ment	produced assets		non-produced natural assets	exports/ imports
					except natural	natural (biota)		
Use of goods and services	591.9	224.0	175.0	42.5	68.0	1.4	7.3	73.7
thereof env. protection services	(36.2)	(22.4)	(8.8)	(5.0)				
Gross Domestic Product (GDP)		293.4						
Consumption of fixed capital		26.3			-23.0	-3.3		
Net domestic product (NDP)		267.1						
Use of natural assets (environmental costs)	-1.6	59.8	17.1	-5.0	5.1	-0.9	-73.0	-4.7
thereof: depletion		(17.5)	(0.7)			(-0.9)	(-17.3)	
degradation	(-1.6)	(42.3)	(16.4)	(-5.0)	(5.1)		(-55.7)	(-4.7)
Environmental adjustment of final demand (environmental costs)		22.2	-17.1		-5.1			
Environmentally adjusted net Domestic Product (EDP)		185.1						

+ (plus)

Supply (Table 2.1)				
Goods and services	591.9	517.4		74.5
Imports of residuals	-1.6			-1.6

+ (plus)

Revaluation and adjustment to market valuation	138.1	13.5	464.0
Other volume changes (marked valuation)	-25.3		22.8

= (equal)

Closing stocks

1149.1	93.8	2165.5