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of the Senate hearings on the appropriations bill for the Department of Agriculture I am more intrigued with what I find.

It seems that the North Dakota congressional delegation is pushing real hard for the continuation of the "boondoggle" contained in the act of 1965. In looking in the big green book I find that it takes 56 pages to list the 3,976 payments to farmers in that State of over \$5,000. The State of North Dakota, according to the latest census, has 48,800 so-called commercial farms. This means that roughly 8 percent of North Dakota farms got payments over \$5,000—a total of \$29,659,000. This represents 0.3 percent of the \$1.1 billion which went out in the form of checks in excess of \$5,000.

Texas presents a very interesting picture also. I have noted that the chairman of the House Agriculture Committee is an outstanding Texan, and that the State of Texas has four members on the House Agriculture Committee—POAGE, chairman, PURCELL, DE LA GARZA, and PRICE. It takes 329 pages in the big green book to list the 23,505 payments over \$5,000. Texas, incidentally, has, according to the latest census, about 205,000 farms. This means 11 percent of Texas farms got payments over \$5,000—a total of \$292,834,000. This represents 28 percent of the \$1.1 billion which went out in the form of checks in excess of \$5,000. Keep in mind, if you will, that a great portion of this money is distributed in checks of less than \$5,000.

The State of Indiana, which I am proud to represent, takes up only 16 pages of the big green book. It has 829 payments over \$5,000 and has, according to the census, 108,000 farms. This means that only 0.7 percent of Indiana farms got payments over \$5,000—or a total of \$6,697,000. This represents less than one-tenth of 1 percent of the \$1.1 billion which went out in the form of checks in excess of \$5,000.

So I can understand why the Members of the House and Senate from North Dakota and Texas are pushing so hard for the passage of the "fat cat" bill.

HANDICAPPED CHILDREN'S EARLY EDUCATION ACT

HON. JOHN N. ERLBORN

OF ILLINOIS

IN THE HOUSE OF REPRESENTATIVES
Tuesday, July 30, 1968

Mr. ERLBORN. Mr. Speaker, as a cosponsor of this legislation, I would like to take this opportunity to add my support to that of my colleagues for H.R. 18763, and at the same time commend Messrs. QUINCY, CAREY, and DANIELS for bringing this far-reaching and very meaningful legislation to us. The great need for education of handicapped children at the preschool level was documented by the many witnesses who testified in favor of this bill. It is necessary that children at a very early age be able to benefit from the educational re-

sources offered to youngsters of school age. Both the children themselves and the Nation will benefit if attention is given to the educational needs of this age group before the problems become too damaging. In my own State of Illinois, more specifically in the towns of Joliet, Bartonville, and Pekin, there are public day classes offering services to deaf children. The programs in these schools are good for the children enrolled in them. However, this does not take care of the needs of children in the preschool age group. As research has pointed out, it is necessary that a deaf child start receiving an education immediately after his hearing loss has been diagnosed. H.R. 18763 provides for the development and carrying out of experimental preschool and early education programs for handicapped children so they would not have to wait until they can be admitted to a school or class to start receiving the necessary preschool education which is so vital to their development.

In 1966 the Illinois Legislature revised in a major way our school laws affecting handicapped children and produced in the process what is widely recognized as an exemplary law. It is to be implemented fully in the 1969-70 school year at which time the local boards of education will be under a mandate to provide for mentally handicapped children between the ages of 5 and 21 and for physically and multiple-handicapped from 3 up.

Just last week—July 24—the Illinois Legislature completed unanimous action on an addition to this basic act requiring local boards and the State department of public instruction jointly to pay tuition and transportation up to \$2,000 to private schools for any seriously handicapped children whom it is not practical to accommodate in the local public schools.

The developments are very heartening but, as will be clear, they still do not cover any handicapped children under 3 nor any retarded or seriously handicapped under 5. Yet the evidence presented to the Committee on Education and Labor indicates convincingly that services to these groups should be initiated. We in Illinois would welcome the opportunities offered under the Handicapped Children's Early Education Act to assist any competent agency to take initiative in this area.

POPULATION CONTROL AND FAMILY PLANNING

HON. GEORGE BUSH

OF TEXAS

IN THE HOUSE OF REPRESENTATIVES
Tuesday, July 30, 1968

Mr. BUSH. Mr. Speaker, even before I took office in January of 1967 I heard people say that it was all a Congressman could do to keep up with his mail and his committee work, much less try to think of solutions to the major ills of the world. With the help of hard-working and ded-

icated staff I have been able to answer all the letters which flow daily into my office and to keep abreast of action pending before the Ways and Means Committee on which I serve. But while I not claim to have discovered a panacea for the earth's problems, I have become increasingly aware of a very sensible approach toward meeting quite a few of our most troublesome concerns.

That approach is family planning and population control.

For years we have heard cries of alarm about the population explosion which nations such as India and China are experiencing. It is a very real crisis, prompting President Johnson to say that:

Next to the pursuit of peace, the really great challenge to the human family is the race between food supply and population increase. That race is (today) being lost.

And former President Dwight D. Eisenhower has said:

I have come to believe that the population explosion is the world's most critical problem.

The problem of population growth is skyrocketing, and in this report I intend to address myself to some of its aspects.

The United States is itself not free of the threat of overpopulation. Today we have something like 200 million citizens, but within 32 years—by the year 2000—we shall have 300 million Americans, a 50-percent increase. As the distinguished former Chairman of the Tennessee Valley Authority and the Atomic Energy Commission, David E. Lillenthal, has written:

An additional 100 million people will undermine our most cherished traditions, erode our public services and impose a rate of taxation that will make current taxes seem tame. . . . (Eventually) there comes a point at which a change in quantity becomes a change in quality—when we can no longer speak of "more of the same." And another 100 million people will, I fear, make just that change in the joy of life in America.

Sitting as I have on the tax-writing Ways and Means Committee, which has responsibility for social security legislation, I have heard almost endless testimony to the effect that our national welfare costs are rising phenomenally, prompting me to wonder how we can take basic steps to arrest it. But the problem is by no means wholly financial; it is emphatically human, a tragedy on unwanted children and of parents whose productivity is impaired by children they never desired. In the words of the late Dr. Martin Luther King, Jr.:

There is scarcely anything more tragic in human life than a child who is not wanted.

Adding all this to the problems of poverty in cities and rural areas and to the increase in crime which many sociologists see related to overcrowding, I have decided to give my vigorous support to measures for population control in both the United States and the world. Certainly responsible religions have the right to determine their doctrines, but for those of us who feel so strongly on this issue, the recent encyclical was most discouraging.

ABROAD: THE POPULATION TIME BOMB

Every day the world gains 180,000 people; that is, 180,000 more people will be born today than will die. In a year's time the total is a staggering 70 million, equal to the population of France, Belgium, and Holland combined. At the present rate, the population of the world is expected to double within 35 years to a total of 7 billion people.

These figures do not tell the horrifying tale that overpopulation spins: of increasing poverty, of disease, of human misery, and, worse, of starvation. Famine already stalks India and China with their mammoth populations. Before you go to bed tonight, 10,000 people around the world—most of them children—will have died of starvation and malnutrition. Some say that U.S. foreign aid can easily wipe out this tragedy if only it is applied in large enough quantities. But the respected former President of the World Bank, Eugene R. Black, offers a chilling contradiction:

I must be blunt. Population growth threatens to nullify all our efforts to raise living standards in many of the poorer countries.

Birth control must come swiftly to stave off the number of future mouths which will feed on an ever-decreasing proportion of food. But it is by no means the only answer. The immediate response to the problem of overpopulation is more food. The years 1980-85 are the critical time. If we cannot approach feeding the world's people by then, no program of improved agricultural production or population control will prevent the widescale starvation which will then follow.

At the same time we are rushing to increase the world's food supply, we must also seek to promote information about family planning and to provide those nations which request them with birth control devices. Such methods as the intrauterine device—IUD—and the contraceptive pill, as well as other more traditional practices, have met with a less than totally successful response in the past few years. But until medical research provides better means for stemming overpopulation, we must make sure that these are available on a massive scale to the people who need them and want them. The United States and a few Western European nations have the technological ability for mass production of this equipment as well as the capability for birth control research. If we cannot provide the underdeveloped world with such aid, no one will.

But let me impress upon you that the answer is neither birth control alone nor increased food production alone; it is both. To quote the able former director of the Food and Agricultural Organization, Mr. Binay Sen:

Population stabilization and accelerating the rate of increase of food production in the developing countries are like the blades of a pair of scissors. Neither can be effective without the other.

AT HOME: THE HUMAN TRAGEDY

Over a year ago, the New York Times noted:

In the period of greatest affluence the world's richest city (New York) has ever known, the welfare rolls keep growing at a faster rate each year. . . . The most disheartening point of these statistics is that nearly two-thirds are children under 18, growing up in an atmosphere of despondency and defeat.

What that newspaper had to say about New York City applies to the entire nation. The fastest-growing part of the relief rolls everywhere is aid for dependent children—AFDC. At the end of the 1968 fiscal year, a little over \$2 billion will be spent for AFDC, but by fiscal 1972 this will increase by over 75 percent to almost \$3.7 billion. But these figures do not tell the intensely human side: that the affected children are often unwanted, that two-thirds of them come from families where the father is absent, and that, if past trends continue, they will pass on the curse of poverty to their children. It has been shown that of all the families living in poverty, 33 percent have five children and 43 percent have six children. Seventy-one percent of the non-white poor families have five or more children. Poverty is a vicious trap into which innocent youngsters should not be placed.

We speak of these children as "unwanted"; are they really so? Evidence from various studies indicates that this is indeed the case. One study—reported in "Family Planning, Sterility, and Population Growth," by Freedman, Whelpton, and Campbell, 1959—revealed that while only 6 percent of first pregnancies are unwanted, the figure rises to 62 percent by the ninth pregnancy. A Florida survey reported that 70 percent of the women going to public health maternity clinics did not want additional children. This desire for smaller families is outweighed, however, by the appalling lack of information many women have about family planning: frequently, mothers who finally learn of birth control clinics and aids tell physicians that they were previously unaware of such facilities and would have used them if they had known. The Denver Planned Parenthood Clinic reported that of the women accepting contraceptive help, fully 89 percent had never before used its services. Indeed, it is now estimated that about 5 million women want family planning help—but that only 700,000 actually receive such assistance through public and private sources.

Some statistics from closer to home especially dramatize the need for these services. Mr. Norman Fleishman, executive director of Planned Parenthood of Houston, reports that there are approximately 377,000 women in Texas—54,000 of them in Harris County alone—who are in their reproductive years and are in need of family planning help. But less than 41,000 are presently receiving aid from the 15 Planned Parenthood centers in the State, or only a miserable 10.8 percent of the total need. The big stumbling block are local health departments and public hospitals, which give every kind of postnatal care but do not supply women with birth control information and devices. Only 25 health de-

partments—out of 65 in the State—give family planning information, and only 15 give birth control care. The regional Planned Parenthood office estimates that no more than 15 percent of the poor and near-poor families in Texas have access to effective, medically supervised care that will give protection against unwanted pregnancies in Harris County. In short, the willingness for birth control information exists; it is just the facilities which are lagging.

There are two persistent myths which prevail with regard to family planning in the United States. One holds that the poor want children because it means additional welfare funds for them. This is patently untrue, for studies have shown the poor to be aware of the fact that the increased cost of having another mouth to feed and another body to clothe and shelter far exceeds the pittance they receive from public assistance. Rather, as was mentioned above, the poor have more children than they can afford because they do not have access to proper birth control information and devices.

The second myth is that Negroes do not want birth control, believing it to be a form of "genocide." On the contrary, family planning has been growing in popularity among Negroes wherever it is available because our black citizens recognize that they cannot hope to acquire a larger share of American prosperity without cutting down on births, just as the rest of the Nation must do. But they have met with discrimination in these services as in other health services because they are dependent on public facilities—and those facilities have simply not been active in the area of birth control. To provide medically sound and sympathetic birth control services would end this unwarranted discrimination gap. And as to the issue of whether or not black Americans favor planning their families, we need only repeat the word of the late Dr. King:

The Negro constitutes half the poor of the nation. Like all poor, Negro and white, they have many unwanted children. This is a cruel evil they urgently need to control. . . . For the Negro, therefore, intelligent guides of family planning are a profoundly important ingredient in his quest for security and a decent life. . . . They do not welcome any solution which involves population breeding as a weapon. They have instinctive sympathy to all who offer them fair opportunity to develop and advance as all other people in our society.

The Federal Government, along with many State governments, has taken steps to accelerate family planning activities in the United States, but we need to do more. We have a clear precedent: when the Salk vaccine was discovered, large-scale programs were undertaken to distribute it. I see no reason why similar programs of education and family planning assistance—all on a voluntary basis—should not be instituted in the United States on a massive scope. It is imperative that we do so: not only to fight poverty at its roots, not only to cut down on our welfare costs, but also to eliminate the needless suffering of unwanted children and overburdened parents.

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF SCIENCE AND TECHNOLOGY POLICY
WASHINGTON, D.C. 20506

June 26, 1990

MEMORANDUM FOR TOM RATCHFORD
GENE WONG
BILL PHILLIPS
NANCY MAYNARD
KARL ERB

425 1/2

THROUGH: TOM WELCH / *tm*

SUBJECT: PCAST Minutes for May 24-25, 1990

Attached are draft minutes of the PCAST meeting of May 24-25, 1990. Please review them and provide your comments to me by July 3, 1990. I also need a clean copy of the vugraphs used by Dr. Maynard. Thanks for your assistance.

Wh St
Hugh Stringer

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MINUTES

PRESIDENT'S COUNCIL OF ADVISORS ON SCIENCE AND TECHNOLOGY (PCAST)

MAY 24-25, 1990

WASHINGTON, D.C.

PCAST Members Attending: Dr. Allan Bromley; Dr. Bernadine Healy; Dr. Solomon Buchsbaum; Dr. Charles Drake; Dr. Ralph Gomory; Dr. Peter Likins; Dr. Thomas Lovejoy; Dr. Walter Massey; Dr. Daniel Nathans; Mr. David Packard; Dr. Harold Shapiro.

OSTP Staff: Dr. William Phillips; Dr. Thomas Ratchford; Dr. Eugene Wong; Dr. James Wyngaarden; Dr. Judith Bostock; Dr. Karl Erb; Ms. Sarah Keegan; Dr. Nancy Maynard; Dr. Diane Weiss.

Department of Commerce: Honorable Thomas Murrin

Public: Approximately 20 people attended the open session.

1. The meeting agenda is at Enclosure 1.

Open Session 9:00 A.M. - 12:00 Noon, May 24, 1990

2. Dr. Bromley called the meeting to order and made introductory remarks. He noted that the Federal Coordinating Council for Science, Engineering and Technology was making progress in organizing its work. He said that he had met on May 23, 1990 with the FCCSET committee chairmen and vice chairmen. The committee charters are nearing completion. Three committees plan to produce reports in time for the FY92 budget cycle. The reports will address: Global Change; High Performance Computing and Communications; and, Math and Science Education. There is considerable legislative interest in the output of the committees with several members calling specifically in draft legislation for FCCSET products. Dr. Bromley further noted that PCAST was an important channel for private sector interface with FCCSET.

3. Dr. Bromley then turned to the first agenda item: an information briefing on International Economic Competition. He introduced the topic by noting that much progress in this area had already been made within the government. He further noted that it would be important to hear from PCAST. Since the area is so broad, it was important first to look at the whole spectrum and then concentrate on a few select areas. He then introduced Dr. Gomory to present the briefing.

- a. Dr. Gomory reinforced Dr Bromley's remarks. He said it was important that, in the initial stages of discussion, the Council should be open to discussion of any of the areas affecting international economic competition. Later, when choosing areas for actual work, the Council could be more selective.. He then introduced Dr. Phillips who made a presentation based on the charts

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at Enclosure 2.

b. On the subject of trade imbalances, Dr. Massey questioned whether it was desirable to have surpluses everywhere. Dr. Shapiro commented that a balance of surpluses and deficits is necessary to assure continuance of world trade. Dr. Gomory noted that some people think there is a problem with trade imbalances while others do not.

c. Dr. Gomory noted that in dealing with the area of international economic competition, Product competitiveness rather than basic science competitiveness is to be emphasized.

d. In discussing the elements of competitiveness, Dr. Bromley noted the supremacy of individual companies' capability to take advantage of opportunities. He recommended Michael Porter's book on the subject "The Competitive Advantage of Nations." Dr. Gomory agreed but feels that what government can do to help is centered in other areas.

e. Dr. Bromley asked whether there was undue focus on new discoveries to the neglect of evolutionary development. Mr. Packard thought not. Dr. Gomory said few firms concentrate on breakthroughs. Mr. Packard noted that takeover concerns acted to drive firms to short term focus. Dr. Lovejoy noted that the short term focus has environmental impact.

f. Dr. Bromley asked how important were amortization rules. Dr. Shapiro indicated that they were extremely important. Dr. Wong noted that it is difficult to maintain intellectual property protection. Dr. Shapiro stated that we should focus on differences between US policies and our competitors.

g. Dr. Bromley asked about the importance of patents. Mr. Packard said it is the quality of patents that is important. He suggested that patents should be broken down by industry. Dr. Gomory agreed that we need a better measure of innovation than number of patents.

h. Dr. Bromley said that an emerging technical report from the Department of Commerce indicates that we are on a negative trend line on breakthrough technologies. He introduced Secretary of Commerce Murrin who noted that the NIST developed report, "Emerging Technologies, A Survey of Technical and Economic Opportunity," nevertheless reflected a good interface with industry. Secretary Murrin further noted that PCAST was uniquely qualified to influence the situation.

i. Mr. Packard noted that the predominance of financiers as heads of firms creates a problem for innovation.

j. Dr. Massey asked if "environment" meant global environment with regard to availability of new scientific and engineering knowledge. Dr. Gomory said yes, that the focus was on capturing

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it for national advantage. Dr. Buchsbaum thought new knowledge was readily available. Dr. Likins noted that competitiveness comes with time -- getting there first. There is a need to keep some new knowledge in house to maintain competitive edge. Dr. Shapiro stated that many trading partners have different research sociologies. We must decide whether we are in a better position or not, that answer leading on to policy development. Dr. Massey noted that the question also considered how to insure that US companies take advantage of new technologies -- sometimes offered but not taken.

k. On environment supportive to improvement of existing product, the discussion reflected on the comparison with Japan. Dr. Likins said that process improvement is as important as product improvement. Dr. Gomory said the federal government should honor excellence in manufacturing.

l. With regard to training of the technical labor force, Dr. Bromley asked the panel to consider how to correct the lack of technical competence in the middle sector. What is the right place to train people to make the U.S. production competitive? Mr. Packard reiterated his concern over the flow of business graduates to the financial area for greater pay. The reward structure needs to be corrected. He suggested that government could move more prominent people in education, provide better research facilities and add additional incentives for young people to enter science and technological fields. Dr. Buchsbaum noted that the ratio of engineers to production people on the floor in Japan is about 3 to 1 that in the US. Secretary Murrin added that not only are there many more technical people at operating level in Japan but that they are multi-talented, i.e. can do maintenance, operations, programming. Dr. Likins said high school curricula can influence the situation by eliminating the "general" track and increasing the importance of the vocational track. Dr. Gomory noted that government's ability to educate and to influence public opinion in this area was extremely important.

m. Dr. Phillips reviewed the administration's competitiveness initiatives in the FY91 budget. Mr. Packard noted a need to increase the tax on short term capital gains to deter opportunists. He also underscored the importance of reforming product liability laws, removing barriers to research and innovative development, and developing advanced technologies to meet civil and government needs. Secretary Murrin noted the difficulty of influencing the situation in the short term. The time factor associated with getting legislation through Congress was too great. Mr. Packard asked how any of these initiatives would help in competition with the Japanese or Europeans. Dr. Shapiro answered that they were part of many things we must do. Dr. Bromley noted that EC 92 actions were also important and that the focus should not be only on Japan. Dr. Likins pointed out that increases in research were good but follow through was also important.

n. Dr. Bromley asked if the Council would feel comfortable

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offering an opinion to the President on alternative energy technologies. There was general agreement from the members.

o. Dr. Borlaug asked how important was metric conversion to competition. Secretary Murrin answered that it was a big issue which needs more work.

p. Dr. Massey said the council should consider how to increase interaction between universities, Federal labs and industry. There is a need to avoid legislation that unduly inhibits technology transfer.

q. In discussing possible PCAST initiatives in this area, Mr. Packard commented that the US leadership position could not be restored. He suggested an initiative to better prepare our young people for working in and with other countries. Dr. Borlaug noted the effectiveness of the Peace Corps in this area. Dr. Shapiro stated the need to focus on leadership, wage rates and worker quality of life -- the market would force the trade balance. Dr. Healy stressed the need to make any initiative nationwide and to maintain the federal partnership with state and local governments. Dr. Bromley noted that with regard to improving access to what is happening abroad, the Swedes and the French make much better use of their embassies and consulates than we do. President Reagan's initiative to put additional technologists into US embassies has not been fully implemented. More needs to be done to convince the State Department to improve our marketing capabilities.

4. After a short break, the PCAST turned to the next agenda item, an information briefing on Global Environment and Natural Resources. Dr Lovejoy introduced the topic by distributing an article, "The Biological Diversity Crisis: A Challenge to Science." (Enclosure 3). He noted that the article described the significance of lost biological species in the context of loss of knowledge. Over two tenths of one percent of all species are lost each year. The challenge for the US is how to arrest the loss of resources or develop the knowledge to do so. The US is the country most concerned with biodiversity. There are serious questions about the ability of tropical rain forest countries to set aside areas for preservation. It is an economic issue. Some progress has been made in terms of debt for nature swaps, most of which have been privately funded.

a. Dr Likins raised the issue of the controversy surrounding the construction of a new observatory which imperiled a species of squirrel. He asked how one makes such trade offs. Dr Lovejoy responded that the particular issue concerned unique biosystems on mountain tops -- "mountain top Gallapagos islands". He noted that the issue was not whether to build but how and how much. The issue could have been avoided altogether had sufficient planning and inventory been done before the fact.

b. Dr Nancy Maynard of OSTP made a presentation using the slides at enclosure 4. She read the prologue from the National

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havever the grievances of the La- community—and it has them—a was no way to express them. ever, it was clear from the tele- in pictures that the rioters were her family heads who were seek-

the police riot that Chicago once had. But anyone watching the riot on televi- sion (or, for that matter, participating) learned that the law could be broken with impunity. They suffered no con- sequences—but the city surely will.

Cold War.
"Bringing a new world order into being was heavily dependent on there being strong cooperation between the United States and the Soviet Union in all parts of the globe," says a senior U.S. official. "But the Soviets just

suggests that he votes as an important vote for him in any renewal of the Soviet march toward reform. If he comes back, it is likely to be to lead the parade—if it can be resumed—rather than to seem to follow in Gorbachev's footsteps.

hart Rowen

Family Planning, U.S. Policy and the Deaths in Bangladesh

he death toll has hit a shocking 125,000 in gladesh and may reach 200,000. But don't ne it all on the cyclone and floods. The ster also has its roots in abject poverty, ch is linked to environmental problems and essive population growth.

angladesh is a disaster-prone tiny corner of , suffering from degradation of the water- d in the upper Himalayas that aggravates iodic flooding, creating vast numbers of land- poor. The per-capita income is a miserable 0 a year.

at the same time, Bangladeshi families pro- e an average of almost five children, an rovement over six in the early '80s, but still high. About 115 million people—equal to u-half the U.S. population—are jammed into area 1/65th the size of the United States. ; worst lies ahead: Bangladesh will nearly ble to 199 million by the year 2025, accord- to the World Bank.

disgraced richer nations routinely pump it-billions of loans into the Third World for omic "development" and then ignore the tive pennies that are needed for family ming or reforestation.

World Bank statistics show that despite non- handouts, per-capita income in country after ntry in Asia and Latin America is declining. th too many mouths to feed, there's no stery to the result.

Routinely, we hand out condoms in American ssrooms these days. Yet because of the

power of the antiabortion lobby, normally sensi- ble politicians such as President Bush look the other way when poor mothers and fathers in the Third World beg for modern contraceptive de- vices and training.

The current crisis in Bangladesh gives added urgency to a report on global population prob- lems sent this week to 300 members of Con- gress by the Population Crisis Committee, a Washington research agency.

A key recommendation is that Congress boost Agency for International Development funds for family planning from \$322 million this year to \$600 million next year and that AID scrap the "open hostility" evidenced at the very top of the agency and return to the much bolder popula- tion-control programs it guided until midway through the Reagan administration.

By promoting the availability and use of mod- ern contraceptive techniques, AID helped slow the pace of population growth in the '60s and '70s. It was one of our real foreign aid success stories, notably in Thailand, Indonesia, Mexi- co—and Bangladesh.

But in 1984 President Reagan allowed then- State Department official James Buckley, as chief U.S. delegate to a population conference in Mexico City, to establish a new and circum- scribed American policy. Buckley decided that no AID funds could be used to support any foreign population-control agency if that agency engaged in any abortion-related activities.

"The Mexico City policy says to groups over-

seas: If you use your own resources on abortion, you're ineligible for any grant from us for family planning," said the PCC's Joseph Speidel.

"AID programs are plagued by the ghost of the Reagan administration," said PCC Vice President Sharon Camp. "Reagan ideology claimed that

The Agency for International Development slowed the rate of Third-World population growth in the '60s and '70s.

population growth is a neutral factor in develop- ment—rather than a threat to economic prog- ress, family health and the environment."

There is little doubt that Bush knows better. But he has willingly sublimated lifelong, on-the- record views on the desirability of strong Ameri- can leadership on this issue to an effort to appease the GOP right wing.

This head-in-the-sand policy needs a new and urgent re-examination. The PCC estimates that 1 million women lose their lives annually in the

Third World through illegal abortions. Good family planning could cut that figure in half. The PCC report notes that most demographers be- lieve that the world's population will triple before it stops growing unless more couples adopt some form of birth control by the end of the 1990s.

Family planning advocates are not suggesting using American government money to finance abortions abroad. They want AID to finance what is legal in both the United States and in most Third World countries. That includes fund- ing a comprehensive family planning program that will help couples obtain modern contracep- tives and teach them how to use them effective- ly. They also want to educate Third World women on the dangers of illegal abortions and generate sex education for adolescents in Africa and Asia.

The United States should restore itself as a world leader in the field of family planning. This is an area where a Democratic leadership look- ing for issues has a real opening. Polls show that the vast majority of Americans support funding for family planning. Increasingly, environmental organizations that shied away from entangle- ments with population issues see the nexus between family planning and their own goals, as illustrated in Bangladesh.

Sen. Mitchell, Speaker Foley: What are you waiting for?

February 20, 1991

Discussion Points for Meeting Between
Dr. Bromley and Dallas Peck Regarding the CEES
Mitigation Adaptation Research Strategies
Working Group

1. Existing MARS Working Group not well focused nor organized
 - a. Subcommittee heads and chairman should meet regularly as an Executive Committee
 - b. An "Fy 91" charge to the Committee should provide focus and activity guidelines for this year's efforts.
 - (1.) Need for and extent of contributory research summaries
 - (2.) Priorities of focused research
 - (3.) Involvement of industrial, non-profit, and international organizations
 - (4.) Identification of "new" focused research funding initiatives for FY'93
 - (5.) Provide timetable/schedule
 - c. Provide a concise report (30 pp) on MARS describing: the purpose, organization and elements of the program; areas of focus; what is needed now and in the future; and reference to what U.S. is doing.
2. A vice-chairman of MARS is needed (possibly someone from EPA or USDA).
3. Existing draft of the MARS budget report is only a catalog of ongoing focused research within U.S. federal agencies related to mitigation and adaptation. It should only be used internally and not published. A tremendous amount of effort and additional inputs are needed before it could go forward.

4. **Closer ties should be established with the other CEES Committees and NAS groups working in this area, especially socio-economics.**
5. **Mitigation and adaptation are direct follow-ons from the Global Change scientific and research activities. MARS should provide the applied aspects of and implementation of new technologies and procedures that will directly affect the public at all levels, both nationally and internationally.**

Rhyllis Tilson Piotrow
foreword by

George H. Bush, Jr.,
U.S. Representative to the UN

World Population Analysis
The United States Response

PRAEGER SPECIAL STUDIES IN INTERNATIONAL ECONOMICS AND DEVELOPMENT

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Few issues in the world have undergone such a rapid shift in public attitudes and government policies over the last decade as the problems of population growth and fertility control.

My own first awareness of birth control as a public policy issue came with a jolt in 1950 when my father was running for the United States Senate in Connecticut. Drew Pearson, on the Sunday before Election Day, "revealed" that my father was involved with Planned Parenthood. My father lost that election by a few hundred out of close to a million votes. Many political observers felt a sufficient number of voters were swayed by his alleged contacts with the birth controllers to cost him the election. The subject was taboo—not only because of religious opposition but because at that time a lot of people were unwilling to discuss in public what they considered a private matter.

Today, the population problem is no longer a private matter. In a world of nearly 4 billion people increasing by 2 percent, or 80 million more, every year, population growth and how to restrain it are public concerns that command the attention of national and international leaders. The per capita income gap between the developed and the developing countries is increasing, in large part the result of higher birth rates in the poorer countries.

World Population Crisis: The United States Response recounts and analyzes the events which mobilized the United States leaders to action. Dr. Piottrow presents a story of determined and sometimes disruptive advocates, of conscientious, careful scientists, of political leaders striving to reach a new consensus, of vigorous officials building action programs. It is, above all, a story of individuals and institutions struggling to solve a new kind of worldwide problem within the framework of individual choice and responsible government.

The population problem does not have easy answers. As a member of the U.S. House of Representatives in the late 1960s, I remember very well how disturbed and perplexed my colleagues and I were by this issue. Famine in India, unwanted babies in the United States, poverty that seemed to form an unbreakable chain for millions of people—how should we tackle these problems? I served on the House Ways and Means Committee. As we amended and updated the Social Security Act in 1967 I was impressed by the sensible approach of Alan Guttmacher the obstetrician who served as president of Planned Parenthood. It was ridiculous, he told the committee, to blame mothers on welfare for having too many children when the clinics and hospitals they used were absolutely prohibited from saying a word about birth control. So we took the lead in Congress in providing money and urging—in fact, even requiring—that in the United States family planning services be available for every woman, not just the private patient with her own gynecologist.

I remember another bill before the Ways and Means Committee. This one successfully repealed the prohibition against mailing information about birth

control devices or sending the devices themselves through the mails. Until 1970 the mailing of this information had been heaped in with the mailing of "pornographic" material.

As chairman of the special Republican Task Force on Population and Earth Resources, I was impressed by the arguments of William H. Draper, Jr. that economic development overseas would be a miserable failure unless the developing countries had the knowledge and supplies their families needed to control fertility. Congress constantly pressed the rather nervous federal agencies to get on with the job. General Draper continues to lead through his tireless work for the UN Population Fund.

Congressional interest and support in population problems was remarkably bipartisan—including Jim Scheuer, Ernest Gruening, Bob Taft, Bill Fulbright, Joe Tydings, Bob Packwood, Alan Cranston, and many others from both parties and every section of the country. Presidents Johnson and Nixon both were seriously concerned about the problem, too. In fact, early in 1969 President Nixon delivered an official Message on Population to Congress. In the federal agencies there were at first only a few determined individuals like R. T. Ravenholt in AID and Philander P. Claxton, Jr. in the State Department who were willing to urge their superiors ahead. Now the recommendations of the Commission on Population Growth and the American Future, chaired by John D. Rockefeller 3rd, have urged many agencies to take on a larger role and have called for the U.S. government to adopt a national population policy.

When I moved to the United Nations in 1971 as United States Ambassador, I found that the population problem was high on the international agenda, though lacking some of the urgency the matter deserves. The General Assembly had designated 1974 as World Population Year with a major conference of governments scheduled. The UN Fund for Population Activities, which has raised some \$50 million, now stands ready to help agencies and governments develop appropriate programs. It is quite clear that one of the major challenges of the 1970s, the Second United Nations Development Decade, will be to curb the world's fertility.

The United Nations population program, including the Fund and specialized agencies, stands today at the threshold of international impact. The problem has been recognized; the organizations exist; the resources are at hand. But policy making on the international level no less than on the national one is an educational process. In developing the programs needed, the public as well as government leaders learn from one another. New technologies lead to new policies and laws, new public and private values, new insights into our own problems as well as those of others. We all proceed by trial and error. Will we learn fast enough from one another and with one another how to defuse the population bomb?

One fact is clear: in a world of nearly 4 billion people, with some 150 independent governments, myriad races, religions, tribes and other organizations, major world problems like population and environmental protection will have to be handled by large and complex organizations representing many nations and many different points of view. How well we and the rest of the world can make the policies and programs of the United Nations responsive to the needs of the people will be the test of success in the population field.

Success in the population field, under United Nations leadership, in turn, determine whether we can resolve successfully the other great questions of peace, prosperity, and individual rights that face the world.

Dr. Piotrow's study of evolving population policy, in the United States and in the United Nations, is necessarily a story without an ending. It is not a blueprint for the future, but rather a search for the meaning of the past, an exploration of the means, the arguments, the individuals and the events which did, in fact, influence U.S. policy making over the last decade and a half. But the lessons suggested here—about leadership, about innovation, about national and international organizations—surely have continuing application for the future. Dr. Piotrow was in a unique position to observe and even participate in many of the actions taken.

I worked with Phyllis Piotrow on some of these issues. This book is far too modest about her own efforts, for she has contributed significantly herself to public understanding and support of population activities through her work with the Population Crisis Committee. Certainly the private organizations, like the Population Crisis Committee, Planned Parenthood—national and international—, the Population Council, the Population Reference Bureau, the Population Institute, Zero Population Growth, and others, have played a major role in assisting government policy makers and in mobilizing the United States response to the world population challenge that is described in this volume.

George Busb

U.S. Representative to the United Nations

POPULATION as a cause of GLOBAL WARMING

HOW ARE POPULATION AND GLOBAL WARMING LINKED?

Global warming is the rise in world temperature caused by greenhouse gases, which in turn are caused by human activities, by people. Global warming represents the first time in history that *people* have started to alter the worldwide mechanisms upon which our economies, societies, and natural systems depend.

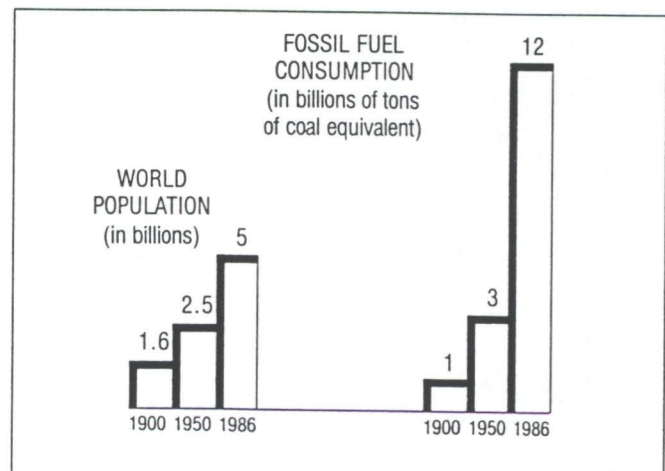
The main greenhouse gases are carbon dioxide (CO₂), methane, chlorofluorocarbons (CFCs), nitrous oxide, and low level ozone, all of which are created or influenced by human activities. These gases form an atmospheric blanket keeping some of the Earth's excess infrared heat from escaping. An international agreement will significantly reduce future CFC use, leaving CO₂ and methane as the most important of the gases.

Although scientists may disagree about the *rate* of global warming, they are in practically unanimous agreement that rising quantities of greenhouse gases contribute to rising world temperatures.* As measured by air bubbles trapped in Arctic ice going back 160,000 years, CO₂ levels have risen and fallen as world temperatures rise and fall. In the past century, with increasing industrialization and a rapidly rising world population, CO₂ levels have increased by one fourth, and they are expected to double by the middle of the next century from their pre-industrial levels, with estimated temperature increases of from 5 to 8 degrees F.

* Scientists' projections of the rate of global warming may vary, depending upon their estimates of the ability of oceans and clouds to absorb excess CO₂ and heat.

HOW DOES POPULATION SIZE AFFECT CO₂ EMISSIONS?

CO₂ comprises about half the total of the greenhouse gases. Approximately three-fourths of excess CO₂ emissions comes from the burning of fossil fuels (coal, oil, and gas), with one-fourth from deforestation. It is *people* who are burning fossil fuels and destroying our forests.

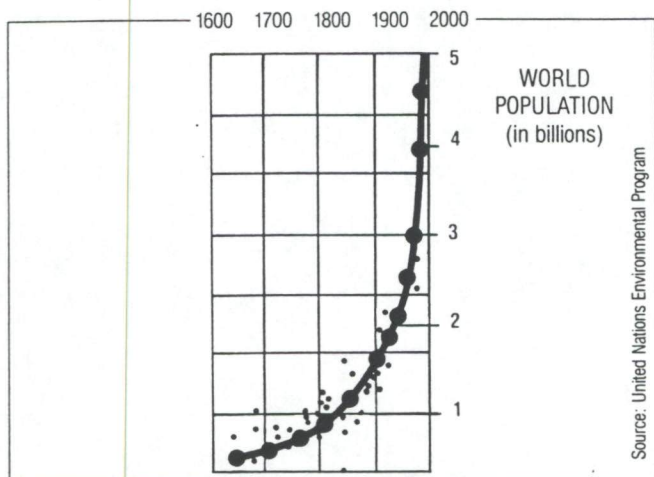


Worldwatch Institute

Scientists show charts illustrating the sharp increase in fossil fuel consumption which has accompanied the rapid rise in world population and the similarity of the curves

showing increases in CO_2 , methane, and population. A larger population in the industrialized countries means more people wanting more energy to heat their homes, run their businesses, and drive their cars. The more people burning fossil fuels, the greater the emissions of greenhouse gases into the atmosphere, which causes global warming.

Although the less developed countries currently account for only one-fourth of world fossil fuel emissions, as they industrialize and increase their energy demands for their rapidly growing populations, they may pass the more developed countries in fossil fuel emissions.



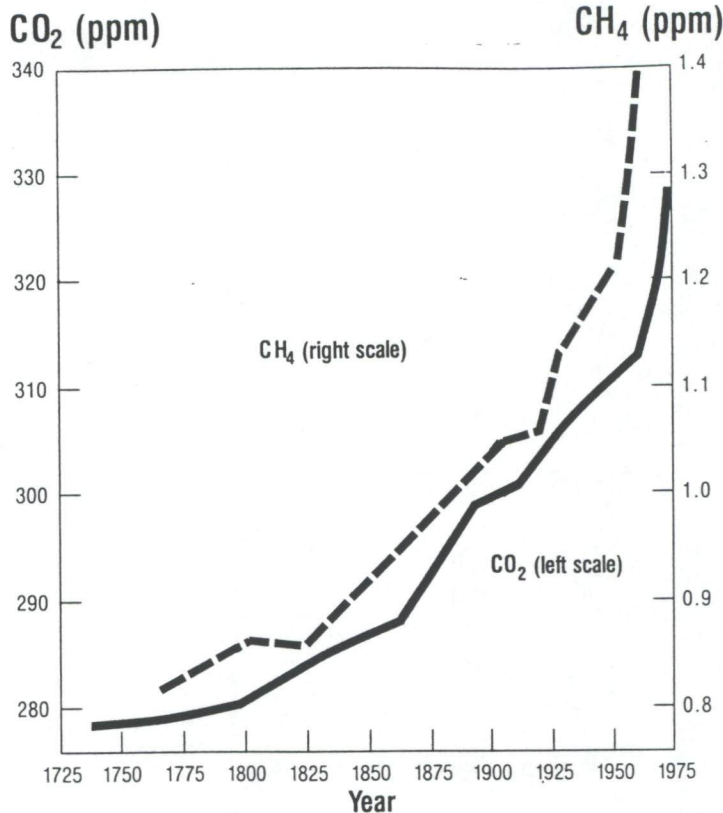
Growth of human population (black line) and levels of methane in the atmosphere (dots) have followed one another closely for centuries.

IS DEFORESTATION AFFECTED BY POPULATION GROWTH?

Two billion of the world's people still depend on fuelwood for cooking and heating and three-fourths of them are cutting wood faster than it is growing back. As their population grows their need for fuelwood increases, with the consequent deforestation, soil erosion, and in dry areas, desertification.

In other Third World countries, as the increasing population needs more food, tropical forests are destroyed to extend the land for growing crops or grazing cattle. In Brazil forests are being destroyed at the rate of a football field every second, and satellite photos show thousands of fires each day. Once a tropical forest is gone it is impossible to replace. Ironically, the cleared land does not sustain agriculture for long, with soil erosion and flooding often resulting.

Whether trees are burned or cut and left to rot, CO_2 is released into the atmosphere and, to make matters worse, the ability of the trees to absorb CO_2 is lost. Deforestation also results in increases in methane emissions, partly from



ATMOSPHERIC CONCENTRATIONS OF CO_2 and CH_4

World Resources Institute (Speth's merging of data on carbon dioxide, CO_2 , from Stauffer and on methane, CH_4 , from Neftel)

rotting vegetation and an increase in the population of termites, producers of methane.

HOW DOES POPULATION SIZE AFFECT METHANE EMISSIONS?

Methane, the second most important greenhouse gas after CO_2 , is some 20 to 30 times more effective per molecule at absorbing infrared radiation than CO_2 . Methane, like CO_2 , has tracked temperature closely for the past 160,000 years, and the graph showing methane increase closely resembles the graph charting population increase. Methane has increased by an alarming 11 percent in the last decade.

Approximately half the methane released into the atmosphere is related to human activities and comes primarily from rice paddies and the intestines of cattle. One-third of the world's people eat rice as the main staple in their diet. Thus in countries like India, China, and Bangladesh, the more people, the greater the need for rice, and in the Americas and Africa, the more people consuming beef and milk, the more cattle, and the more methane from both sources.

WHY IS THE CONNECTION BETWEEN POPULATION AND GLOBAL WARMING OFTEN OVERLOOKED?

Until recently it may have been overlooked just because people hadn't thought about it. Although most scientists are well aware of the connection, a few may overlook it or may assume the connection is so obvious there is no need to mention it. Increasingly, however, top scientists at international meetings speak loudly and clearly about the population-global warming connection.

Population may also be overlooked because it has become controversial. The world has dramatically changed from the Biblical times when God said, "Be fruitful and multiply." Yet it is difficult to modify our ideas even though the planet is threatened and to realize that what was once seen as positive and valuable, i.e., many children for the family, church, nation, or tribe, may become detrimental and destructive when in excess.

WHY WORRY ABOUT POPULATION GROWTH WHEN THE RATE OF POPULATION GROWTH HAS DECLINED?

In the late 1960s the world population growth rate peaked at 2 percent per year, which indicated a doubling of world population in 35 years. Current projections are that world population will double in 39 years. The annual growth rate has fallen from 2 percent to 1.7 percent, so the RATE has declined slightly, but world population is still rapidly increasing and may exceed 10 billion well before the middle of the next century. In addition, the population base is larger and an increased number of the world's young people are just entering their child bearing years. The greatest growth of world population in terms of absolute numbers lies ahead.

Growth rates vary widely from country to country, with six to eight children per family in much of Africa, the Middle East, and Western Asia, whereas rates are near stabilization in many of the industrialized countries.

IF POPULATION IS NEAR STABILIZATION IN THE INDUSTRIALIZED COUNTRIES, WHY IS IT A PROBLEM?

The United States is the fastest growing of the industrialized countries, partly because of immigration and our high teenage birthrate. Rapidly growing areas such as California experience severe water shortages and serious air and water pollution. Although the U.S. contains only 5 percent of the world's population, our greenhouse gases emissions are 24 percent of the world's total! Each additional person born in the U.S. adds to fossil fuel emissions, and the average U.S. citizen uses 200 times the energy of the average citizen of Bangladesh.

IF THIRD WORLD PEOPLE USE SO LITTLE ENERGY, WHY WORRY ABOUT POPULATION GROWTH IN THE DEVELOPING COUNTRIES?

At current rates world population is growing by 90 million people a year, and over 90 percent of that increase will be in the Third World, where the environmental support base is the most fragile. Most growth will be in the urban areas. Studies indicate when people move from rural to urban areas their energy needs multiply many times.

Third World countries (excluding China) added only about 15 percent of world fossil fuel-derived CO₂ in 1985, but the balance will shift as these nations develop, industrialize, and increase their energy use. Some Third World countries may remain poor, but others have economies which have started to boom. Karl Gawell of Zero Population Growth projects that the population added between now and 2030 in the less developed countries will contribute twice the CO₂ emissions as that from the population added in the industrialized world for the same period.

In 1985 China contributed about 10 percent of world CO₂ emissions, with its share having rapidly increased in the last decade. Its share will continue to jump upward as China moves toward its goal of quadrupling output by 2000, using its ample coal supplies in the process. One-fifth of the world's people are Chinese.

Many environmentalists believe the industrialized nations must provide leadership and bear the larger burden in protecting world environment, not only in clearing up some of their own problems, but also in helping the developing countries grow economically while preserving their environment, providing them with the latest energy efficient technology, and helping them limit their population.

DO THIRD WORLD WOMEN EVEN WANT TO LIMIT FAMILY SIZE?

Werner Fornos, president of the Population Institute, speaks of 500 million Third World women who want no more children. Other women may want more children, but they want to space them better. Yet they cannot get the information and supplies they need.

The leaders of 15 African nations have enthusiastically endorsed population programs for their people, but they have no money to fund them. Some poor countries can spend no more than \$1 per person per year for health care.

It is ironic that, when requests from Third World countries for fertility control assistance are at an all time high, the United States has ceased its funding of the United Nations Population Fund.

HOW CAN JUST A FEW DEGREES OF TEMPERATURE CHANGE ALTER OUR CLIMATE?

Small changes in temperature have big consequences for the world's climate. The total global warming since the peak

of the last ice age was only 9 degrees F; a change that shifted the Atlantic Ocean inland by about 100 miles and created the Great Lakes. Previous shifts in the Earth's climate have been accompanied by waves of extinctions of plant and animal life.

By 2100 temperature could increase by 9 to 18 degrees F. If economic development is rapid, population continues its current growth, fossil fuel use increases, and forest destruction continues unabated. Alternatively, temperatures could go up no more than 2½ degrees F if we cut back on fossil fuel use, ban chlorofluorocarbons, reverse deforestation, and limit population growth.

As most scientists believe that global warming has already started, their goal is to slow down the rate of warming to give us time to better adjust to changes in climate and to improve the survival chances of species which can only migrate slowly.

WHAT CAN BE DONE TO SLOW DOWN THE RATE OF GLOBAL WARMING?

Global warming poses one of the biggest problems ever faced by humankind and will require unprecedented cooperation at the international level. We should take measures now to reduce emissions of greenhouse gases as prevention will cost far less than a cure, and a complete cure is probably unobtainable.

First we must recognize that humans are both the cause and the solution. The 20th century has witnessed explosive growth in *standard of living, energy use, and population size*. These are the three main variables affecting quantity of greenhouse gases.

Standard of living in many countries has risen along with the world economy, which today is 20 times larger than it was in 1900. The World Resources Institute estimates that by the middle of the next century our global economy of \$13 trillion will be five times as large as it is today. It will be impossible for world environment to be sustained if the world's people all aspire to western living standards and if ours continues to rise, unless there are dramatic improvements in energy use and a marked slowdown in population growth.

As it is ethically difficult to dissuade others from aspiring to high living standards, changing the first variable is problematic. *Energy use*, however, is a critical variable and allows considerable room for improvement. Currently the U.S. is the least energy efficient of the industrialized nations, and even with recent improvements in energy efficiency, the Japanese and West Germans still produce twice as much economic output per unit of energy as we do. Since two-thirds of U.S. greenhouse gases emissions comes from the transportation and electric utility sectors, taxing gasoline and strengthening gas mileage standards would cut down on gasoline use and hence on ground level ozone and CO₂ emissions. Converting inefficient coal-burning electric utility plants to natural gas or alternative fuels would also reduce

excess CO₂, as well as the sulfur dioxide emissions causing acid rain. We also need to develop and introduce renewable energy supply technologies such as solar, wind, biofuels, or even a newer, safer nuclear fuel.

Population growth, the third variable, is easily amenable to change. It simply means providing more of the world's women with family planning information and supplies. Countless studies show a vast unmet need for family planning assistance throughout the world.

HOW CAN WE REDUCE WORLD POPULATION GROWTH, AND WHAT ARE THE COSTS?

It would be morally and fiscally irresponsible to ignore the world's population growth while combatting environmental degradation and global warming. Just recently figures on population increase have been revised upward by several organizations studying demographics.

The World Bank projects a stabilization of world population at about 11 billion, but only if there is greater worldwide family size limitation by the use of birth control in the near future. The United Nations Population fund's statistics show the world's population could almost triple to 14 billion in a century unless there is much wider use of contraception.

The United Nations Population Fund estimates that, if \$2 billion more were dedicated each year to family planning, contraceptive use would rise from 465 million couples today to 730 million by 2000, and to 1.2 billion by 2025. This change in contraceptive use from 45 percent of world couples to 71 percent by 2025 would result in an eventual stabilizing of the world's ranks at 10.2 billion people. Total current public and private expenditures for Third World family planning is \$3 billion, so an additional \$2 billion is tiny compared to the costs of major energy conversions, or shoring up our seacoasts, which is estimated at \$111 billion.

BESIDES GLOBAL WARMING, ARE THERE OTHER ENVIRONMENTAL PROBLEMS AFFECTED BY POPULATION?

Almost every environmental woe is directly or indirectly related to excess population growth: deforestation, soil erosion, desertification, acid rain, rising sea levels, depleted aquifers, species depletion, and land, air, and water pollution. Our planet is sick, and we are responsible.

The historian Arnold Toynbee, who studied the rise and fall of civilizations, stated that civilizations would continue to prosper if they could make the necessary changes to overcome the challenges they faced; otherwise they declined. The difference now is that not just one nation or one civilization is at stake, but our entire planet. Will we have the wisdom and the will to meet this challenge?

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March 13, 1991

PREPARATORY COMMITTEE FOR THE 1992
UN CONFERENCE ON ENVIRONMENT AND DEVELOPMENT

POPULATION/DEMOGRAPHIC ISSUES
Agenda Item #

POSITION PAPER

BACKGROUND/ISSUE:

In the years since the 1972 Conference in Stockholm, the inextricable linkage between the environment and development has become clear. As populations grow, the demands for food, fiber, transport and shelter increase, often leading to greater pollution emissions, use of pesticides and fertilizers, and accumulation of waste.

Participants at the International Conference on Population in Mexico City in 1984 agreed that "... the principal aim of social, economic and human development ... is to improve the standards of living and quality of life of the people." On this same occasion, the United States explicitly recognized the seriousness of environmental and economic problems and their relationship to social realities.

In today's world, population growth is most accelerated in those areas least able to cope with it. While there is not a one-to-one correlation between environmental degradation and population growth, it is clear that economic development lags tremendously, and environmental degradation is severe in most areas of rapid population growth. In Africa, where population is increasing at 2.9 percent annually, deforestation has caused the loss of more than five percent of forests and woodlands during the past decade. In South America, where population is increasing at 1.9 percent annually, more than seven percent of forests and woodlands were deforested in the 1980's. Deforested land in the tropics is often unsuitable for pasture or cropping, the uses to which it is usually put. The result is rapid degradation of the land, which sometimes leads to desertification and loss of arable land.

Significant declines in mortality accompanied by continued high fertility have led to rapidly growing and youthful populations in much of the developing world. Forty percent of the populations of developing countries are under age 15 and lack training for the work place. They will soon enter job markets ill-prepared to accomodate them. The rural poor and

unemployed migrate to the cities, where demands for services grow rapidly. Governments at all levels, without adequate economic development, lack the resources to provide the services demanded by burgeoning populations. Children have the right to be born wanted, both by their families and by societies which are prepared to make available adequate health care, food, housing, education and job opportunities. Governments have obligations to foster the provision of these vital services through policies which support free markets and the private sector.

The report of the World Commission on Environment and Development, in 1987, focused on the concept of "sustainable development." It is clear that population growth must be slowed to prevent a continuing decline in quality of life and further environmental degradation in many developing countries. The environment and sustainable economic development are inextricably linked to population issues. Problems in any of these areas cannot be effectively addressed without recognizing this linkage and effectively addressing population issues.

RELATIVE IMPORTANCE OF THE ISSUE TO THE UNITED STATES:

This issue is of medium importance to the United States.

The United States is the major donor of development assistance for international voluntary family planning programs, and of numerous other forms of development assistance, including those which pertain to the promotion of sound environmental and developmental policies. U.S. foreign policy recognizes that the environment and sustainable economic development are inextricably linked to population issues. U.S. policy therefore favors a balanced consideration of the relationships between rapid population change, the environment and development. An appropriate and balanced consideration of these linkages can best guide U.S. foreign policies and programs in these areas.

UNITED STATES POSITION:

The United States has explicitly recognized the seriousness of environmental and economic problems and their relationship to social realities. A balanced and appropriate consideration of population issues should accompany any thorough discussion of the environment and development. Rapid demographic change, in particular, may have a profound impact on environmental and developmental policies and programs.

The United States supports voluntary international family planning programs, programs to promote sound environmental stewardship, and numerous other programs and policies intended to promote sound economic development.

LANGUAGE TO BE SOUGHT IN RESOLUTION OR DECISION:

Balanced language which recognizes the relationships between population, the environment and development should be sought wherever appropriate in resolutions or decisions.

LANGUAGE TO BE AVOIDED IN RESOLUTION OR DECISION:

Language which commits the U.S. to new expenditures or to the support of new programs should be avoided in resolutions or decisions.

DRAFT LANGUAGE FOR RESOLUTION OR DECISION:

None is explicitly proposed at this time. See talking points.

TALKING POINTS/STATEMENT:

- o Rapid population growth often leads to acute shortages of food, water, housing, health services and education, and to widespread poverty and environmental degradation. This is especially true where economic and environmental policies are unsound. Unchecked rapid population growth can lead to debilitating debt, economic stagnation and political instability.
- o Mortality must be reduced to improve the quality of health and life. High mortality rates among mothers and their children, in particular, require focussed program strategies. It has been shown that decreases in infant mortality rates, through health programs specifically targetted for women and children, lead to lowered birth rates. Government policies encouraging increased health and family planning services will better enable individuals to choose family size, to space children, and to care for children.
- o The United States supports voluntary family planning programs. The private sector should be enlisted, as much as possible, to provide needed health, family planning and educational services.

- o Increased information, education and communication regarding population dynamics will lead to a better correlation of economic development strategies with population growth. Increased information and education on family planning and child spacing will lead to more widespread and effective practices.
- o The continuing development, distribution and marketing of safe, effective and appropriate contraceptive methods is essential to achieving sustainable population growth within resource limitations.
- o The status and roles of women are changing rapidly in most societies as they become a recognized part of the economic base of the family. Women have traditionally borne considerable responsibilities in agricultural societies and played important roles in resource management. It is important to emphasize the linkage between enhancing the socio-economic status of women and reduced fertility.
- o Aging societies require policies and services to ensure adequate support is available for the aged. Where the financial base is provided to care for the elderly, they will be less dependent on their children and the need to have larger families will decrease.
- o Rapid rural-to-urban migration, international migration, and urbanization create significant developmental and environmental stresses in most instances. Sound national policies which provide more broadly distributed economic opportunities and services can alleviate these stresses. Since natural increase is the main contributor to urban population growth, slowing population growth can also serve to alleviate these stresses.

BUDGETARY IMPLICATIONS:

None.

March 13, 1991
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Population
Control.

Wright April 2, 1991
RP

Dear Mr. President:

In our lifetimes we have seen the second, third, fourth, and fifth billionth person added to the world's population. This year, the net increase will exceed ninety million. At this rate, inevitably the number of people on earth will double in the next thirty-nine years. Over ninety percent of the growth is occurring in the less developed countries, those least capable of coping with such numbers.

Burgeoning population growth, insidious and pervasive as it is, exacerbates all of our global, social, environmental, political, and economic ills, and figures predominantly in the sub-human standard of living suffered by hundreds of millions of people. Things can only worsen under the pressure of more and more people. Many of the rapidly growing nations are already burdened with a predominance of young people just entering their childbearing years and the labor market at the same time. Unable currently to provide adequately for the present populous, the inevitable surge in growth and unemployment alone will create worse problems for these countries.

We have now reached the greatest human predicament of all: How to provide a proper life for twice as many people in the next 39 years without destroying the environment and depleting the finite resources upon which all living organisms depend? The demographic projections are certain without significant action, and our scientists and news reports have provided abundant evidence of how sensitive our planet is to degradation from overuse and misuse of nature's resources.

From small villages through national states and the international community, interdependence is intensifying as more and more people put ever-increasing demands

draft April 2, 1991
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upon each other and upon the planet. Urbanization, for example, produces its own set of problems. Worldwide, we are moving from a predominantly rural species to an urban society. Within the next twenty years, fifty percent of us will live in urban areas. Africa's urban population is growing at five percent a year, representing a doubling time of only fourteen years. By 2025, Africa's urban dwellers will number three times those of North America. Unfortunately, the fastest growing segment of large cities is the slums. The six urban mega-cities of over fifteen million people have reached a size off the scale of human experience. Their management takes us into uncharted territory. Urban economies of scale are dwarfed by problems of congestion and infrastructures are overtaxed into a near inoperative state.

Unemployment, illiteracy, poverty, disease and poor health, debt, and inadequate food and housing are among the conditions which are exacting heavy tolls in human suffering. The fallout includes political instability, national insecurity, and ebbing personal well-being as we know it.

Environmental ethics and democratic processes have low priority where destitution and exploitation prevail. Increasing numbers of people do not represent expanding markets when they are fully dependent consumers without incomes or other basic necessities required to participate in local economies and to develop their productive talents.

Currently, the less developed countries, suffering the most from burgeoning population growth, comprise forty percent of the USA trade. It is in our nation's best interest to help these nations cope with the impact of increasing populations. We need them as viable, stable trading partners.

Population growth does not per se cause all of the world's scourges. It does compound

Handwritten: *draft April 2, 1991*

and intensify them and render their remedies more difficult and more costly. Each day that passes allows the situation to worsen and, without greater attention to this problem, complicates the cost and difficulty of eventual remedies.

We cannot allow short-term economic and political agendas to deter our attack on the fundamental problem of coping with increasing numbers of people. This condition should form the context in which basic decisions are made and priorities assigned.

Slowing the rate of growth in the world's population now will lessen the aggravation of other problems and render their solutions somewhat more manageable.

Partly due to the leadership of the United States through international financial and technical assistance in this area, several countries have succeeded in slowing their rates of growth (although the total number continues to increase at compounding rates). With the strong determination of their leaders, the commitment of local funding, and with technical and financial assistance from international donor agencies and non-governmental organizations, demographic projections for several countries, while still seriously threatening, are less than they might have been without national programs that provide the education and means to limit family size. These advancements have been achieved under widely diverse political, religious, cultural, and economic conditions and clearly have inspired others to be more aggressive in the development of their own programs.

In sum, the problems of unprecedented world population growth must be placed at the top of our global agenda.

Family planning is not the only solution. But, it constitutes a well documented, direct,

Wright April 2, 1991
HJ

cost effective approach. Raising literacy rates, employment, enhancement of the role of women, and other related benefits contribute in some measure to the reduction in family size over time, but family planning has proven to be the single most effective approach.

Thanks in part to United States leadership and technical and financial assistance in the past, we now know what is required, what works, how to provide it, what it costs, how long it takes, and how to assess its effectiveness.

The urgency with which the world now wishes to address this problem has risen substantially as the numbers have mounted and successful models developed.

Our review of the available evidence clearly indicates that what was once thought to be an impossible task now appears do-able if adequate resources are provided. And, the needed support on a global scale is certainly a manageable amount. In addition to financial resources, leadership is needed. We urge you to provide that leadership to the world by expressing your sense of urgency about the problem, your confidence in the possibility of solution, and your recommendation that Congress, the international donor agencies we support, and other donor countries join in an aggressive, fresh initiative to slow population growth. With an estimated price tag of approximately \$10 billion, a challenge grant from the United States to encourage the world's donor community may well provide the stimulus needed to solve this most fundamental problem of all time.

[3] From: William W. Snyder at NCMC 4/3/91 7:37PM (5942 bytes: 151 ln)
To: Jules Blake at OSTP, Jennifer Bond at OSTP, Sara Bowden at OSTP,
D. Allan Bromley at OSTP, Jackeline J. Clawson at OSTP, Alicia K. Dustira at
OSTP, Karl A. Erb at OSTP, Barbara Ferguson at OSTP, Ruth Fisher at OSTP,
Beverly Fleisher at OSTP, Priscilla Foti at OSTP, Damar Hawkins at OSTP,
Donald A. Henderson at OSTP, Janice Howell at OSTP, Michele Huguélet at OSTP,
Paul Huray at OSTP, Kara Kelly at OSTP, Rachel E. Levinson at OSTP, James Ling
at OSTP, Nancy G. Maynard at OSTP, Amy Mincey at OSTP, Marian Nida at OSTP,
Steve Olson at OSTP, Pierre Perrolle at OSTP, William D. Phillips at OSTP,
Don Pryor at OSTP, Margaret Quinlan at OSTP, Virginia M. Rosell at OSTP,
Tom Russell at OSTP, Sally Sherman at OSTP, Mary B. Suit at OSTP,
William Whyman at OSTP, Eugene Wong at OSTP, Kenneth P. Vale at OSTP
To mailing list: #ALL
Subject: PCAST Agenda

----- Message Contents -----

** This is the latest April PCAST Agenda -- Changes **
** may still occur during the meeting. If you have **
** any questions, please call the PCAST office at **
** 395-5101. Thank you. **

(Note: Format changes have been made to make this
document compatible with CC:MAIL)

PRESIDENT'S COUNCIL OF ADVISORS
ON
SCIENCE AND TECHNOLOGY

APRIL 4-5, 1991
AGENDA

THURSDAY, APRIL 4, 1991

OPEN SESSION 9:00 AM - 11:00 AM
CONFERENCE ROOM
COUNCIL ON ENVIRONMENTAL QUALITY
722 JACKSON PLACE, NW

8:30 - 9:00	ARRIVAL AND COFFEE	
9:00 - 9:15	OPENING REMARKS	DR. BROMLEY
9:15 - 10:45	OCEAN SCIENCE -	
9:15 - 10:00		The Honorable John Knauss Under Secretary for Oceans and Atmosphere and Administrator, NOAA Department of Commerce
10:00 - 10:45		Dr. James Baker President Joint Oceanographic Institutions
10:45 - 11:00	CLOSING REMARKS	DR. BROMLEY

THURSDAY, APRIL 4, 1991 Continued...

CLOSED SESSION 11:00 - 1:00 PM		
ROOM 22		
OLD EXECUTIVE OFFICE BUILDING		
1:00 - 4:00 PM		
ROOSEVELT ROOM		
WEST WING, THE WHITE HOUSE		
11:10 - 11:15	OPENING REMARKS	DR. BROMLEY
11:15 - 11:30	NATIONAL SECURITY AND TECHNOLOGY PANEL - A PROGRESS REPORT	DR. BUCHSBAUM
11:30 - 11:45	HIGH PERFORMANCE COMPUTING AND COMMUNICATIONS PANEL	DR. BUCHSBAUM

- A PROGRESS REPORT

11:45 - 12:00	GLOBAL ENVIRONMENT AND NATURAL RESOURCES PANEL	DR. LOVEJOY
	- A PROGRESS REPORT	

12:00 - 12:45	LUNCH	
12:45 - 1:00	BREAK	
1:00 - 1:15	APPROVAL OF TERMS OF REFERENCE AND MEMBERS FOR PCAST PANEL ON EDUCATION AND HUMAN RESOURCES	DR. LIKINS
1:15 - 1:45	PLANS FOR SOCIAL AND BEHAVIORAL SCIENCE IN OSTP	DR. PERROLLE
1:45 - 2:30	DISCUSSION OF MAY AGENDA AND OTHER BUSINESS	DR. BROMLEY
2:30 - 3:00	REMARKS ON THE "REPORT OF THE ADVISORY COMMITTEE ON THE FUTURE OF THE U.S. SPACE PROGRAM"	DR. AUGUSTINE
3:00 - 3:15	DISCUSSION	
3:15 - 3:45	CRITICAL TECHNOLOGIES	DR. PHILLIPS
3:45 - 4:00	DISCUSSION	
4:00 -	DR. BROMLEY LEAVES TO ADDRESS ENGINEERING SOCIETY LEADERS, INDIAN TREATY ROOM (ROOM 474)	

FRIDAY, APRIL 5, 1991

CLOSED SESSION 9:00 AM - 11:00 AM
ROOM 476
OLD EXECUTIVE OFFICE BUILDING

8:30 - 8:50	ARRIVAL AND COFFEE (DR. BROMLEY'S OFFICE, ROOM 358, OEOb)
8:50 - 9:00	MOVE TO ROOM 476
9:00 - 9:15	OPENING REMARKS
9:15 - 9:30	DR. McTAGUE DR. RATCHFORD DISCUSSION OF TERMS OF REFERENCE AND MEMBERS FOR PCAST PANEL ON INTERNATIONAL FRAMEWORK FOR BASIC SCIENCE MEGAPROJECTS
9:30 - 9:45	DR. NATHANS DR. HEALY APPROVAL OF TERMS OF REFERENCE AND MEMBERS FOR PCAST PANEL ON BIOSCIENCE AND BIOTECHNOLOGY PANEL
9:45 - 10:00	DR. GOMORY DR. SHAPIRO DISCUSSION OF TERMS OF REFERENCE AND MEMBERS FOR PCAST PANEL ON INTERNATIONAL ECONOMIC COMPETITIVENESS
10:00 - 10:15	BREAK
10:15 - 11:00	OTHER BUSINESS AND CLOSING REMARKS DR. BROMLEY

DRAFT

THE WHITE HOUSE
WASHINGTON

April 29, 1991

MEMORANDUM FOR THOMAS E. LOVEJOY

President's Council of Advisors on Science and Technology
(PCAST)

FROM: D. ALLAN BROMLEY

SUBJECT: TERMS OF REFERENCE FOR THE PCAST PANEL ON
GLOBAL ENVIRONMENT AND NATURAL RESOURCES

You are requested to establish a PCAST Panel on Global Environment and Natural Resources.

The purpose of the Panel is to enable PCAST to advise the President on issues related to natural resources and environmental sciences that have bearing on long range national goals, government regulation, the transition of Federal R&D findings to industry and academia, areas of potential collaboration with industry participation, of the States in the national program, and foreign access.

World leaders are paying increasing attention to global environmental and natural resource issues. The economic and social consequences of global environmental changes, both natural and human induced, are complex, substantial and only partially clear. Programs to address such changes require policy decisions based on adequate scientific knowledge. For example, the behavior of the linked ocean, atmosphere, land system and their biotic components are at best only roughly understood. Recent reports developed by the National Research Council/ National Academy of Sciences (NAS), the International Geosphere-Biosphere Program (IGBP), and the Intergovernmental Panel on Climate Change (IPCC) all indicate the need for additional research to provide a predictive understanding of the Earth System. The Federal Coordinating Council for Science, Engineering, and Technology (FCCSET) has issued five reports that have provided the framework of the U.S. Global Change Research Program. Federal agencies, including the Departments of Agriculture, Commerce, Defense, Energy, and Interior, the Environmental Protection Agency, the National Atmospheric and Space Administration, the National Science Foundation, and the Smithsonian Institution have major programs coordinated through the FCCSET in support of this Program. An additional report will address research on mitigation and adaptation in response to global change.

The increasing pressure of human population on biological resources and ecosystems is resulting in unprecedented erosion of biological diversity (species of plants and animals). These represent important resources as genetic resources, sources of information about living systems, and environmental indicators. In addition, as biological communities (ecosystems), particularly as forecasts, they perform important functions in biogeochemical cycles and watershed maintenance.

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The Panel on Global Environment and Natural Resources shall:

1. Using the document "Our Changing Planet: The FY 1991 Research Plan", identify areas of potential interaction and collaboration with the private sector in particular to help provide a predictive understanding of the Earth system and illuminate the Nation's ability to mitigate or adapt to global environmental change.
2. Advise on general societal needs that can be served by natural resources, earth and environmental sciences, and identify means for a broad diffusion of the benefits of the U.S. Global Change Research Program.
3. Advise on research needed to protect biological diversity and the impact of human population upon it.

The Panel will submit a preliminary report to the PCAST within 3 months and a final report 6 months after the Panel's first meeting.

The Office of the Assistant Director for the Environment, Office of Science and Technology Policy will sponsor this Panel. Dr. Thomas E. Lovejoy will serve as Chairman. Dr. Nancy Maynard will serve as Executive Secretary and Mr. William Snyder will represent the PCAST Executive Director.

Determination

I hereby determine that the formation of the PCAST Panel on Global Environment and Natural Resources is in the public interest in connection with the performance of duties imposed on the Executive Branch by law, and that such duties can best be performed through the advice and counsel of such a group.

The Terms of Reference for the PCAST Panel on Global Environment and Natural Resources include no assignment requiring Panel members to participate personally and substantially in the conduct of any specific procurement, or place any member in the position of acting as a "procurement official."

Approved:

D. Allan Bromley
Assistant to the President
for
Science and Technology

Date

POPULATION AND THE ENVIRONMENT: KEY FACTS

Major Impacts of Population Growth on Environmental Degradation

1. Sheer numbers and multipliers
2. Time
3. Global carrying capacity
4. Destruction of fragile areas
5. Accelerated urbanization

Basic Formula:

Environmental Impact = Population x Affluence (consumption) x Technology, or $I = P \times A \times T$

Population Growth

Between now and the year 2025, 95 percent of the people added to the world's population will live in developing countries (Sadik, 1990). If the world reaches replacement-level fertility by the year 2000, world population could eventually stabilize at less than 9 billion. However, if it takes until 2080 to reach replacement-level fertility, world population would grow to 14 billion, nearly triple today's size (Haub et al., 1990).

Food and Agriculture

By the year 2000, world food production will have to increase by 50-60 percent over the 1980 level just to keep pace with population growth (UNFAO, 1981). At present levels of subsistence farming, 64 out of 117 developing countries will be unable to feed their populations by the year 2000; the majority of these 64 countries will be unable to support less than half of their projected populations (UNFAO, 1984).

Deforestation

An analysis of deforestation in 38 developing countries found that population growth was a major causal factor (Allen and Barnes, 1985). Slash-and-burn cultivation leads to deforestation as population density intensifies. The number of slash-and-burn cultivators worldwide is growing by 4 to 12 percent annually due to high fertility and migration rates (Myers, 1990).

Wildlife and Habitat

Biological diversity was at an all-time high at the beginning of the industrial revolution when the world had 1 billion people. Today, less than 200 years later, our numbers have quintupled, and plants and animals are disappearing at the rate of 4,000 to 6,000 species a year (Wilson, 1989).

Urbanization

By the turn of the century, there will be 24 urban agglomerations having a population of at least 10 million; most of these are located in the developing world (UN, 1989). About 60 percent of urban growth is due to fertility, the rest to migration from rural areas (Kols and Lewison, 1983).

• will see.

Solid Waste

Due to population growth, developing countries will account for 60 percent of the new municipal and industrial waste generated between 1985 and 2025. If LDC incomes as well as population grow, developing countries could contribute 83 percent of the new waste generated during this period. By the year 2025, developing countries could generate more than half of the world's wastes (Shaw, 1989).

Energy

In the year 2025, a world population of 7.5 billion people (close to the U.N. low projection) would consume 17.6 terawatts of energy, compared with 22 terawatts consumed by 9.5 billion (close to the U.N. medium projection); the difference of 4.4 terawatts is equivalent to world energy use in 1960 (Holdren, 1989).

The number of people without adequate fuelwood will grow from 1.4 billion in 1980 to 3.0 billion in the year 2000; four-fifths of this increase is due to population growth (UNFAO, 1984).

Water

Due to population growth alone, demand for water is expected to double in more than half of the world's countries between 1971 and 2000 (UNFAO, 1986). Much of this water is needed for irrigation to increase food production. Potential water demand exceeds rainfall in most of Africa, the Middle East, north Asia and parts of Mexico, Chile and Argentina (Falkenmark, 1990).

The growing volume of untreated human wastes and toxic substances could render as much as one-fourth of the world's water supply unsafe for human consumption by the year 2000 (UNFAO, 1986).

Greenhouse Effect

Global carbon dioxide emissions increased by 3.1 percent annually between 1950 and 1985, while population increased by 1.9 percent annually during this period. If the U.N. low population projections for the year 2025 could be achieved instead of the medium ones, global carbon dioxide emissions could be reduced by 1.3 billion metric tons--equivalent to cutting present deforestation rates by 84 percent (Harrison, 1990).

Source: Green, Cynthia P. "Population and the Environment: The Decisive Decade Ahead," Population Reports. Johns Hopkins University/Population Information Program, forthcoming in 1991. Available in English, with French, Spanish and Portuguese translations to follow.

Author's address: 5512 Westbard Ave., Bethesda, MD 20816;
telephone: (301) 654-4085

KEY ISSUES

1. All of us are unwitting participants to the largest experiment conducted in the history of the earth. We are testing how many people the earth can support, and ultimately whether human beings can live on the planet without destroying it. While survival is the paramount issue, of secondary interest is whether human beings can modulate their lifestyles for the good of society and future generations.
2. The world may already have exceeded its long-term carrying capacity--the number of people that can be supported by the environment. As more people are added to the world's population, the possibility of a reasonable standard of living for everyone diminishes, while the risk of widespread suffering from famine, disease, and natural disasters grows.
3. Decisions made during this decade will determine whether world population stops growing at 9 billion or 14 billion.
4. Developing countries constitute the major new source of environmental degradation in coming decades; 95 percent of the people added to world population in the next 35 years will live in developing countries.
5. Making an all-out effort to promote voluntary family planning now could make a major difference in the quality of life worldwide, not to mention the survival of the human species on the planet. The difference between 8 or 14 billion could determine whether massive famines kill millions, greenhouse gases trigger potentially irreversible climate changes, or the world's poor continue to ravage land and forests in a desperate struggle for survival.
6. Population growth is a key factor in environmental degradation. Efforts to protect the environment should include measures to limit population growth. Although family planning may be controversial, it is no more difficult than other environmental protection measures such as energy conservation, land redistribution, technological changes, pollution control, changes in commodity price supports and trade policies, resettlement schemes, establishment of protected areas, and a reduction in military spending. One underappreciated aspect of family planning is that couples are already motivated to have fewer children; it is a matter of providing them with the means to do so.

Relationship between Population and the Environment

Rapid population growth affects the environment in five ways:

1. Sheer numbers and multipliers. The 96 million people being added to the world's population annually are a major source of environmental stress. Their impact is multiplied by consumption levels, polluting technologies, population density, and other factors. As obvious as it sounds, it is important to stress that there is no such thing as a "zero impact lifestyle." Every person added to the world's population has some effect on the environment. Beyond this basic level, four factors inflate each individual's environmental impact:
 - o Standard of living, or per capita consumption levels-- The basic formula for estimating the total amount of environmental stress in a given area is: total environmental impact (I) equals the number of people (P) times per capita consumption, or affluence (A) times the technology needed to produce food and goods and dispose of wastes (T). A shortened version reads: $\text{Impact} = \text{Population} \times \text{Affluence} \times \text{Technology}$, or $I = P \times A \times T$.
 - o Technologies used to meet human needs--Technology plays an important role because it can either generate massive pollution or increase productivity through low-impact technologies such as solar power.
 - o Diminishing returns--When the supply of food, energy, minerals, and water becomes scarce or less accessible, then it is difficult and expensive to provide them to additional people. For example, increasing food supplies requires using more energy and investing in fertilizers and pesticides. Similarly, once minerals and fossil fuels close to the earth's surface are used up, it is necessary to dig or drill deeper, use lower-quality supplies, or make other adjustments. These extra efforts entail higher costs and greater environmental damage due to greater energy use and destruction of ecosystems.

Mexico City provides a good example of diminishing returns. It already pumps water from a site 100 kilometers away and 1,000 meters lower. But its population grew by 3.8% annually during the 1980s. Soon it will have to tap into water supplies located about 200 kilometers away and 2,000 meters lower. The energy needed to pump water from this latter site is equivalent to the output of six 1,000 megawatt power plants. Building these plants would cost at least US\$6 billion--nearly half the interest payments on Mexico's external debt.

- o **Threshold levels**--Natural systems such as trees and lakes can absorb a certain amount of pollutants without collapsing. However, as the amount of pollution slowly increases, it eventually reaches a threshold level that overloads and destroys natural systems. For example, a lake may be able to absorb the sewage of 500 people, but will cease to support plants and fishes if the surrounding population grows to 505 people. Thus, population growth beyond a certain point has serious consequences. Unfortunately, it is difficult to identify this point until it has been exceeded.
2. Time. With their populations doubling every two to three decades, many developing countries can barely keep up with the relentless demand for food, jobs, and housing. The pace has left little time to promote environmental safeguards and introduce new technologies. For example, Europe and Asia had more than two centuries to adapt to increases population density so they were able to introduce more intensive farming through the use of new technologies, improved labor productivity, and expanded markets. Africa, on the other hand, has only one-sixth as much time as other regions had to make this transition. If African countries fail to make the technological and economic changes needed to improve agricultural productivity, further declines in crop yields are likely and farmlands may be permanently damaged.
3. Global carrying capacity. Rapid increases in human numbers increase the chances that total world population size will exceed the maximum level that the earth can support. People question whether the world can sustain its present population, let alone 10 or 15 billion. Two factors affect global carrying capacity:
- o The ability of biological systems to provide the necessary food and energy to support humans and to absorb the wastes produced by human activities. Through direct consumption, agriculture, and human settlements, humans use about 40% of the planet's food resources on land (solar energy captured by plants, known as net primary production). If world population grows by 50%--as it is projected to do by the year 2020, more than half of land-based food resources would be consumed by humans. Even more alarming, food production potential has been reduced by 13% in the past four decades. A middle-range estimate of global carrying capacity, based on projected food supplies, is 7.5 billion people. World population is expected to exceed this level within 25 years.
 - o The amount of greenhouse gases that can accumulate in the atmosphere without triggering irreversible and devastating climatic changes. Suppose that in a few

decades scientists conclude that the 1987 global output of 8.6 billion metric tons of carbon dioxide (the leading greenhouse gas) is too high, and that global carbon dioxide emissions should be kept to 3 billion metric tons annually. If world population growth levelled off at about 10 billion people, each person could generate 0.3 metric tons of carbon dioxide annually--the current level of Mali or Sierra Leone. However, if the planet holds 14 billion people, the allotted amount of carbon dioxide emissions is 0.2 metric tons per individual--roughly 50% less.

4. Destruction of fragile areas. Areas with low or uneven rainfall, weak soils, and hillsides can support small numbers of people, especially if they have the freedom to migrate over large areas. However, when areas become densely populated, fallow periods are shortened, fuelwood is cut down faster than it can grow back, and people are unable to roam freely. Intensive cultivation leads to soil damage and erosion and desertification. The cycle of destruction is repeated as families move on to other fragile areas.
5. Accelerated urbanization. As it becomes increasingly difficult to make a living in rural areas, people move to large cities and towns. Cities in the developing world are doubling in size every 20 years on average. These concentrations of people create new environmental problems that do not exist in rural communities because urban dwellers use more water and energy and generate more waste than rural residents. In cities large amounts of energy are needed to import food, water, and fuel; collect garbage; and treat sewage. Cities are more likely to have polluted air and water because natural ecosystems cannot absorb the large quantities of wastes generated in urban areas. As population size increases, the cost to maintain environmental quality (such as providing clean water, treating sewage, and disposing of garbage and other wastes) also increases.

[2] From: Jackeline J. Clawson 4/25/91 8:25AM (3719 bytes: 125 ln)
Subject: PCAST Agenda

----- Message Contents -----

DRAFT

As of April 24, 1991

PRESIDENT'S COUNCIL OF ADVISORS
ON
SCIENCE AND TECHNOLOGY

MAY 2-3, 1991
AGENDA

THURSDAY, MAY 2, 1991

OPEN SESSION 9:00 AM - 11:00 AM
CONFERENCE ROOM
COUNCIL ON ENVIRONMENTAL QUALITY
722 JACKSON PLACE, NW

8:30 - 9:00	ARRIVAL AND COFFEE	
9:00 - 9:30	OPENING REMARKS	DR. BROMLEY
9:30 - 10:30	THE DEPARTMENT OF EDUCATION*	HON. LAMAR ALEXANDER
10:30 - 11:00	DISCUSSION	
11:00 -	CLOSING REMARKS AND MOVE TO ROOM 248, OLD EXECUTIVE OFFICE BUILDING	DR. BROMLEY

* Tentative

DR.

THURSDAY, MAY 2, 1991 Continued...

CLOSED SESSION 11:00 - 4:30 PM
OMB DIRECTOR'S CONFERENCE ROOM
ROOM 248
OLD EXECUTIVE OFFICE BUILDING

DR. BUCHSBAUM

NATIONAL SECURITY AND
TECHNOLOGY PANEL
- A PROGRESS REPORT

11:15 - 11:45

DR. BUCHSBAUM

HIGH PERFORMANCE COMPUTING
AND COMMUNICATIONS PANEL
- A PROGRESS REPORT

11:45 - 12:15

12:15 - 1:00

LUNCH

DR. LOVEJOY

GLOBAL ENVIRONMENT AND
NATURAL RESOURCES PANEL
- A PROGRESS REPORT

1:00 - 1:30

DR. McTAGUE
DR. RATCHFORD

PANEL ON MEGAPROJECTS
IN THE SCIENCES
- A PROGRESS REPORT

1:30 - 2:00

DR. NATHANS

LIFE SCIENCES AND
BIOTECHNOLOGY PANEL
- A PROGRESS REPORT

2:00 - 2:30

DR. GOMORY
DR. SHAPIRO

APPROVAL OF TERMS OF
REFERENCE AND MEMBERS FOR
PANEL ON INTERNATIONAL
ECONOMIC COMPETITIVENESS

2:30 - 3:00

3:00 - 3:15

BREAK

3:15 - 3:45

TO BE DETERMINED

3:45 - 4:00

DISCUSSION

4:00 - 4:30	DISCUSSION OF JULY AGENDA AND CLOSING REMARKS	DR. BROMLEY
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FRIDAY, MAY 3, 1991

CLOSED SESSION 9:00 AM - 12:00 NOON
ROOSEVELT ROOM
WEST WING
WHITE HOUSE

8:30 - 8:50	ARRIVAL AND COFFEE (DR. BROMLEY'S OFFICE, ROOM 358, OEGB)	
8:50 - 9:00	MOVE TO ROOSEVELT ROOM	
9:00 - 9:15	PREPARATION FOR THIS MORNING	DR. BROMLEY
9:15 - 9:30	EDUCATION AND HUMAN RESOURCES PANEL - A PROGRESS REPORT	DR. LIKINS
9:30 - 10:00	DISCUSSION	
10:00 - 10:30	OTHER BUSINESS	DR. BROMLEY
10:30 - 11:15	DISCUSSION	DR. BROMLEY
11:15 - 12:00	OTHER BUSINESS AND CLOSING REMARKS	DR. BROMLEY

Notes from PCAST Panel Meeting - May 1, 1991
Regents Room, Smithsonian Castle

Present: Tom Lovejoy, David Packard, Chuck Drake, Norman Borlaug, D.A.
Henderson, N.G. Maynard

Tom Lovejoy began with a description of how the group might proceed.

DAH mentioned a session he had just had with some White House Fellows who had suggested 2 ways of dealing with the population/food problem. One suggested that we would be fine if we just changed our food production and distribution policy - we could feed everyone. The second suggested that we just let more immigrants into the US.

NB noted that there is not going to be rapid progress in food production. He also said that as family size goes down, the standard of living goes up (e.g. Bangladesh, India)

TL returned the discussion to the papers which had been submitted by Panel members.

DP said that we need a piece about how serious the problem is and why it needs to be addressed soon. We should make a strong case as possible for the urgency of the issue. We do not need all the details but we need to get across the fact that this is the overriding issue with all the major problems being addressed by PCAST.

Then, there is the issue of what to do about it. He then discussed a book he had just read by Roger Freeman of Hoover Inst. (?) which talks about the difference between Malaysia and Indonesia. Malaysia has done well, while Indonesia has been a disaster.

NB commented about the work ethic issue. While people are struggling to achieve survival and success, there isn't a problem. However, once you achieve success, you no longer have the same motivation (often it is the next generation who reaps the benefits)

DP said that when you are working so hard, you do not have time to think about all this. It is when things are o.k. that you can sit around and think about all these crazy things.

CD said that you need a 2x4 to first get the mule's attention (about this problem). Then, we deal with the abortion issue as a failure of family planning. He then quoted something from Edward Abbey.

TL referred to Edward Abbey and the "ethnobotannical" concept.

DP said that things have gotten worse in the past number of years. Countries need to find ways to manage their own affairs. He also noted that funds have not been used for constructive purposes - It is an insipid thing we are doing.

TL mentioned another factor which has greatly contributed to the problem - migration into the cities.

NB agreed and said that this is made worse also because of other aspects of urbanization. There is an increase in need for education, health care, etc in the urban area.

DA mentioned that the problem also stems from the declining infant mortality rate which causes an increase in population.

CD noted that, for all species, the most successful evolutionary strategy is to spew out alot of eggs to insure success. He used as an example aquaculture.

NB mentioned that the problem is complicated by nutritition - the quality of food as a factor.

DP discussed the sibling "Cain and Abel Syndrome" - the less fit is killed.

CD noted that the male lion will eat the young of a competing male lion's pride when he takes over that lion's pride.

DA made a comment about Moses as a good administrator.

TL noted that the NY Times yesterday had an article about an attack on Moses.

TL then discussed the introductory portion of CD's paper.

DA commented that in Bangladesh the problem is so oppressive you can feel the problem as you walk in the country.

CD commented that we can provide fresh mounts to the 4 horseman of the Acopolypse or.....

TL said he still liked the analogy of running up the down escalator.

Some further discussion about words in DP's first paragraph. Also. that there was a great deal of very good material here but the problem is that the paper for the P has to be short.

NM asked what about producing the P paper and then doing a longer article for a publication like "Issues" or Science.

TL noted that the NYT will do something on population and gave an example of some discussions he had had recently.

DA said it would be good to have one paper for the P and then a statement/paper to a larger audience.

DA asked how many administrations have been supportive of family planning and then said that it started with Kennedy and ended with the Mexico City Declaration. He discussed some groups which have been supportive then referred to the orange pamphlet, 1990 World Population Data Sheet.

NB said that in his lifetime he has seen an increase from 22 to 91 million Mexicans, but that food production has not kept pace. He discussed the tremendous jump in agriculture and production - in the 17 most important food and fiber crops. But, he said that while we can go higher in yield, it will be harder to add much more of an increment.

DP mentioned also the effect on the ecology of an area He noted that as an area becomes a better habitat for ducks and geese, it is also better for varmints.

CD noted that what we are asking is "Can we support the number of people we have?".

DP said to forget the prose and say it is a complex issue - a special issue with some fundamental differences among parties, but the overall importance is so great that everyone in this issue should keep in mind the shorter term benefits. He suggest the P could take the high road and deal with the health, etc issues and say join with me and see what we can do with the big issue.

NB said that the problem with the LDC's is that it takes a long time to figure out their problem and that by the time they do, it is too late to do anything about it.

TL noted about the Cessifisian (?) Problem

TL and DA both commented that the problem is presently out of control.

NB said that it has alot to do with immigrations and political instabilities

NM suggested maybe we could feed into the UNCED process - there are three papers which touch on the population problem. (gave the 3 UNCED papers)

NB suggested that we pick out an example of the food and population issues - and the time bought on the food front.

DP said that if something is not done in this decade, it will be too late. We will not be able to feed this population.

TL noted that in the NAS report, they made a mistake in not connecting the world economy to the US situation.

TL mentioned that he head heard a statement by Ambassador Green that....was for apple pie but against motherhood.

DA talked about doing a piece on research. If we had a better approach to the delivery facilities, many more females would take advantage of contraception if were given the opportunity. So much of this is "medicalized" that it is not available to women necessarily. Now we are breaking away from that concept - look at the marketing/merchantizing of the concept. We can do better but it will take a big push.

About new technologies he noted the amount of money going into new research on contraceptives in US was about 0. So little research is going on in US in reproductive biology it is embarrassing to go to international meetings. In Europe, there is such a small research base, the number of opportunities for breakthroughs is much smaller. The product liability problem has forced pharmaceuticals out of business and there is now only one commercial production company in the research field - Ortho.

The strategy is if you had the method in the hands of the woman, the success would be good. But there are not yet simple enough techniques for them to have without the husbands knowing about it. Ideally, you could have women take the pill or have a vaccine 1x month or 1 x year. Another place where this has worked where we are very pleased with is the immunization program - 10 years ago, 10% of kids were vaccinated. Now it is 80% of kids. Much is being done outside the medical community - nontraditional methods of health care.

One of the most successful phenomena is a song which was written for Mexico about family planning. It had huge success for family planning clinics - people swamped the family planning clinics. It was one year on the hit parade. Then it moved to Central America and the same thing happened there. Now, it is in Phillipines. Similar comments about MacDonalds and Viet Nam (Miss Viet Nam), and again in Nigeria.

TL said this is known as the rhythm method.

DA said that the theme of the song was that you probably shouldn't have sex - that it is o.k. to say no. But, if you are going to have sex, go to the family planning clinic and prepare. In other words, it was tied to the market out in the open - merchandizing.

NB asked if the fear of AIDS has added to his.

DA said there are successful research agenda and successful delivery mechanisms. However, there is also the feeling that no matter what you do, nothing will make a difference in the squalor out there.

DP said that there are things being done but not enough.

TL said we need success stories - look at the 2nd page of PPC

SENSITIVE CLOSE HOLD

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DA noted for examples, Mexico is good, also Taiwan.

CD noted that it seemed like there were success stories for every country except the Antarctic.

TL said that was because all that is down there is Krill and they are supposed to be an aphrodesiac.

NB said that when Chevre (?) was President of Mexico he shut down family planning nearly completely. Despite that, they have made good recovery.

TL said he would pull together a few pages on the issue and distribute it to the group.

DP discussed a book called Crowds and Power by Canetti (published before 1960 - hard to get). Get the book and read it. 2 main things - human motivation is a hard thing to deal with and we are a hell of a lot better off than we used to be.

DA said he was distressed by Pakistan and India and fears they will never get better.