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The Global Climate Emergency, Possibilities for Stabilization and Proposals for  
Immediate Action

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We are convening tonight on what I shall call the "Year of the Earth, 4.6 billion and 1."

Let us abbreviate the title of this lecture to climate emergencies, possibilities and proposals.

Now follows a summary of the elements in the earth-atmosphere system that form the physical boundary of the problems to be discussed.

Glacial period. Geologists have identified over 20 glacial periods. The time appears to vary in a range from about 70 to 120 thousand years. The ice volume in the world appears to vary over the last million years from a minimum of 35 to a maximum of 80 millions of cubic kilometers.

Interglacial period. An interim time of around ten to twelve thousand years. We are at the end of one now.

Major signs of change from interglacial to a glacial period.

1. Atmospheric carbon dioxide has been below 280 parts per million for over 10,000 years and has now risen rapidly since 1900 up to 350 parts per million.
2. Reduction in global biomass on land (primarily forests) has been approximately 40% since 2500 years ago, tropical forests more like 45%.
3. Soil mineral content is down 25% to 40% or more. A good source for such information is the Brookside Farms Laboratory Association, Inc., New Knoxville, Ohio, where they handle over a million soil samples a year from the U.S. and other countries.
4. Health of the trees, plants, animals and humans goes down when the soil is depleted of minerals. Forests start dying (as in Europe recently and parts of the U.S. and Canada) and are increasingly subject to pests and forest fires under the stress of mineral depletion, increasing heat and drought in the summers, and increasing frost and freezing spells from Autumn into the Spring.

5. Snow and cloud cover. Satellite pictures show increasing snow cover in the northern hemisphere. The reference is to maximum coverage, not annual averages. Snow, in general, is deeper, comes sooner and lasts longer into the Spring.
6. Cloud cover in the middle latitudes is increasing in days per year, area covered, and density of moisture due to the CO<sub>2</sub> induced warming in the lower latitudes — a cooling effect. Note the article in Nature September 10, 1987 which says: "With increasing CO<sub>2</sub> concentrations the cooling effects of cloud optical properties will dominate over the greenhouse effect..."
7. Heat loss from the earth. Snow and clouds, particularly, reflect heat away from the earth's surface, increasing the rate of cooling, especially in the latitudes above 50 degrees. Consider, in Europe, areas from central France and Germany northwards. Snow has fallen in recent years for the first known time as far South as Saudi Arabia and Southern Italy.
8. Lakes rising. In the U.S., Salt Lake and the Great Lakes are rising and increasingly causing damage to roads, railways, utilities, houses and apartment buildings. This is due primarily due to the increased CO<sub>2</sub>. The opposite of warming and evaporation in the lower latitudes is the dumping of rain and snow in the higher latitudes.
9. Animal, bird and tree species are moving down from the colder latitudes, each in their own way. C. Bertrand Schultz points to the sighting of arctic ravens so far south in recent times as Kansas and Italy. Look also to various tree species dying out in the north and tending to grow further to the south, a sign of oncoming climate intermittent cold intensities.
10. "Greenhouse" effect The greenhouse effect leads to more evaporation of water primarily in the lower latitudes. Here then is moisture which is later becomes cloud cover, hail, rain storms and snow in the higher latitudes.
11. Transition from interglacial to glacial period. The evidence is all around us, and mounting rapidly. Consider: this is the first time in the last 10,000 years that CO<sub>2</sub> has risen above 280 ppm — and is up to 350 ppm. The forests were not cut back so far, or dying so rapidly, during the little ice ages a few centuries ago. The soil minerals were not as depleted then as now, leading to the current massive forest dieback and burning.
12. The increased use of fossil fuel in this century has speeded up the process. Transition to greater conservation and alternative energy sources is, therefore, an essential part of an earth regeneration program.

## I. Emergencies

Glaciation, in the short run, means intense weather changes, food destruction, shorter and shorter growing seasons, and eventually increasing areas of winter snow that no longer melt off in the summer.

### Amazon and storms

Up to now, societies have been semi-passive victims of climate intensities — of the full food, property and life-destroying fury of the glaciation process.

We note the report of the Amazon Boundary Layer Expedition, manager Robert J. McNeil. July, August 1985, dry season; April, May 1987, wet season. Involved were the U.S. National Aeronautics and Space Administration (NASA) and Instituto de Pesquisas Espaciais of Brazil. They wanted baseline data before farming and ranching alter the forests significantly. Now the forests do not take out ozone and carbon monoxide to the extent they formerly did.

"The violence and size of Amazon storm systems took scientists by surprise" writes Charles Petit, San Francisco Chronicle, 5-20-88, reporting on presentation at American Geophysical Union conference, Baltimore, MD.

### European forests

According to the analysis of tree rings, the European dieback of forests has been the worst in the last 30, 40, 50 years. This period appears to be the time when soil minerals have become so out of reach of tree roots that the mass dying of trees across all of Europe has become more obvious.

### Social/environmental emergency

Carlos Cardoso Aveline speaks to action in Brazil, and internationally through the Environment Liaison Centre [ ERS-674 ]. There, current action is to mobilize NGOs in southern Brazil.

What about political strength of the majority of the people? In quite a few countries still, a very small percent of the population, large landowning and corporate group, are keeping up internal divisions, so that there can not be progress on economic, social, and political relations, therefore not on environmental or above all, on climate stabilizatin. International corporate involvement is strong in Brazil, seven or eight foreign companies involved in most of the cutting of forests.

If you cant organize from the bottom up, and carry through quality of life programs, then what is going to happen when the pressure downward from climate intensities drives a society, a region, a country, into some form of "total action"? drives a society still violently split by internal conflict? Do they just die in tremendous numbers — from floods, landslides, tornadoes, hurricanes, drought, famine, freezing — with no part in how their society is organized and operated?

What will be the 'demonstration effect' across countries of varying degrees of socio-economic grouping (wealth-poverty split), regarding quantity and quality of political involvement? Particularly, when some areas begin to move to "total action" for climate stabilization?

### Natural disaster emergencies

The UN International Decade for Natural Disaster Reduction is to include mitigation projects throughout the world, covering such areas as earthquakes, landslides,

tsunamis (tidal waves), hurricanes, tornadoes, floods, volcanic eruptions, and wildfires (James K. Mitchell [ERS-677]). We recommend that mitigation programs be integrally tied to the economic development of a country, its present situation, its goals, and its plans for change. Natural disaster assessment must reflect an estimate of the impact of accelerating climate change, and efforts to bring about climate stabilization.

Natural disasters are increasing. Technical ability to cope is increasing, but how much can we carry out to protect life? The source of the disasters is all around us, climate change. The source is moving fast, the disasters are accelerating. Go for the source, or what is the purpose? This means opening up the full picture, the full process, the "total response."

"There is now clear evidence that changes in the earth's climate may be sudden rather than gradual. It is time to put research into the build-up of carbon dioxide in the atmosphere on a better footing." (Wallace Broecker) "...Research on the continental parts of the environmental system (vegetation, soils and waters) remains in the Dark Ages. ..." p. 125. Wallace Broecker. Nature July 9, 1987. Vol. 328. Commentary. "Unpleasant surprises in the greenhouse?" pp. 123-126.

"If, as the climatic record in ice and sediment suggest, changes in climate come in leaps rather than gradually, then the greenhouse build-up may threaten our food supply. To date, we have dealt with this problem as if its effects would come in the distant future and so gradually that we could easily cope with them. This is certainly a possibility, but I believe that there is an equal possibility that they will arrive suddenly and dramatically.

"To prepare ourselves, we must take the problem of climatic change as seriously as we take those of cancer and nuclear defense. There are no easy solutions, and we must gear up for the long, hard job of working out how earth's climate operates. To do this will require not only more financial and human resources, but also the administration appropriate to the task. Not only do our current managers lack a proper intellectual grasp of the problem, but they are obsessed with legislatively imposed five-year reports, and give little attention to developing a long term strategy to build the needed base of knowledge. Even with a great intensification of effort, I fear that the effects of the rise in concentration of the greenhouse gases will come largely as surprises. But the greater our knowledge, the greater the wisdom that will be brought to bear if surprises do come." p. 126.

I've talked with workers, who have been in the Antarctic, and one or more harbors they used previously are now frozen to the extent that they can no longer be used.

USSR. Georgia, Tbilisi in August 1984, 7-8 degrees C. lower than usual, for both summer and winter. They feared for the fruit crops. There was a similar temperature drop in Canada and the Great lakes area the following summer.

The entire world's storm systems are taking people by surprise. Note Melbourne, Australia December 2, 1987 -- the freezing storm, 180 miles East of Melbourne in Western Victoria, that reportedly froze about 30,000 sheep to death in one night. They had been sheared, but no one expected such a storm in summer time.

The violence of the transition into glacial conditions will be beyond present comprehension. This follows from hot and cold areas becoming closer together, the temperature difference becoming greater, and the wind and storm responses accelerating drastically.

#### Political emergency

Who will and can lead? Are political candidates calling for climate stabilization, for jobs, food and climate action? How can they, until their constituents are aware

and call for climate stabilization? What candidates can move toward climate stabilization, combined with full employment, and full job support (food, housing, health, education, training, child care, guaranteed income for those unable to work)?

Kenneth E.H. Watt. Here is a powerful combination of human and environmental endeavor: a systems approach, monumental research, international respect as a top scientist, and a person motivated out of basic honesty, to help open up the entire climate stabilization dynamic -- physically, socially, and politically [ ERS-468, 673 ].

To postulate only "warming" without recognizing the complete climate cycle, is playing the world's people for fools. Why are so many going along with it? Why are technical and political people, committed to the Quality of Life of their people, going along with the "warming" only?

How long can top level world scientists, who know a good part of the truth of the whole climate cycle, the overall cooling driven by the warming in the lower latitudes, be bottled up? How long can partial and false information be the main output of the media, and even key science meetings?

Change is taking place. The new term is "global change" and "global change monitoring." What has to be monitored is the total social/environmental panorama, the impact of society on the environment and the impact of environment on society. Millions are dying in drought and famine zones of the world, made worse by the rapidly changing climate -- in fact, by the whole range of climate extremes in the middle and northern latitudes.

## II. Possibilities

Gernot Graefe, Director, Institute for Bio-Energy Research, Austrian Academy of Sciences, has brought sections of dying forest back to new growth with applications of finely ground rock dust (local dolomite sources), and organic additives (including grape residue from the wine industry) [ ERS-676 ].

J.F.L. Childs, Senior Pathologist, U.S. Department of Agriculture, has had excellent results in control of citrus blight disease in Florida using a rock dust from montmorillonite clay, particularly rich in minerals and trace minerals ("Azomite") [ERS-679].

Azomite rock dust, from southern Utah, has been used for over 40 years in the U.S. with good results both as to biology and economy, as a soil amendment for crops, and feed additive for poultry, sheep and cattle.

This basic work in remineralizing both soil and animal feed is further supported from commercial and experimental operations in Germany, Switzerland, Australia, New Zealand, and numerous states throughout the U.S. These results achieved by small and large operators, with varying degree of technical background, are a fertile base for scientific investigation and reporting.

We are speaking here of remineralization of soil for forest revitalization or new planting, agricultural crop improvement (mineral quality, quantity, and almost complete abolition of the need for pesticides), and animal and human health (from eating agricultural products with higher mineral and trace mineral content).

From reforestation, made possible by soil remineralization, now consider the energy aspect of the CO<sub>2</sub> reduction goal. Fossil fuel can be replaced by alternative energy technology development: solar, wind, alcohol fuel, hydrogen fuel, various bio-mass solutions and possibly other.

At least 125 megawatts of solar thermal electric power facilities are now operating in southern California, small multi-modular plants. Life-cycle costs for this technology, in cents per kilowatt hour, are considered to be competitive with oil and nuclear plants. Photovoltaic cell technology is far more expensive, but suitable for special application where there is no electric distribution system to supply power.

Wind-electric power generation is well established in Europe, parts of the U.S., and elsewhere. There are plans on paper to make this a major source of power where wind conditions are sufficient. At one time in the late 1970s there was an interesting project in which Viet Nam, plus an international aid organization, were in touch with a California firm to develop low cost, low maintenance wind electric generators. The goal was to replace about 200,000 oil-driven pumps that pumped river water up into rice fields. For numerous reasons, that particular arrangement did not go through.

Brazil is a leader in developing alcohol fuel. Alcohol and oil from plants, for fuel, is a growing potential.

The social/environmental relation is next. The quality of life is an emergency in many parts of the world. It is primarily through jobs, food, and support programs, that the great majority of the people in any country are going to go on to become conscious and active participants in climate — climate stabilization through soil, forest and energy work to reduce CO<sub>2</sub> and other greenhouse gases to the extent possible. The call for jobs, food and climate stems from emergency conditions and speaks to possibilities.

Through jobs, food and support services, people can go on to climate stabilization. The possibilities, for such a global shift in goals and work, lie in the movement throughout the world to end military conflict, establish international negotiations and peace, to win the long fought for rights for democratic involvement, participation and decision making. These conditions are basic to environmental action. The possibilities are increasing with each new day. National and international bodies are giving much more attention during the last few years to peace, social, economic development, environmental and climate relationships.

### III. Proposals

#### Reports

There have been a number of reports of international significance, with many good points on the environment and a more general systems approach, but no mention of climate emergency, glaciation, and a soil-forest-energy climate stabilization program.

World Commission on Environment and Development (WECD) and Madame Gro Harlem Brundtland to the 42nd General Assembly.

Secretary-General Javier Perez de Cuellar refers to the challenge by the World Commission, as a "... radical departure in the way we conduct development," in his address to the General Assembly October, 1987.

He refers to "...peril in which the environment has been placed". He is to integrate work, the recommendations of the report, into the work of the UN system, should the General Assembly so decide.

Shimwaayi Muntamba. Executive Director, Environment Liaison Centre (International) Nairobi, Kenya. She wants to go from individual projects to long-term objectives, long-term framework, involve local people in decision making process, and appeal to the NGO world.

#### We have to look down into the soil and up into the sky

Gernot Graefe concluded his paper in Budapest, June 1987, at the annual meeting of the International Society for General Systems Research [ ERS-676 ]: "With CO<sub>2</sub> rising dramatically, evidence points to a new ice-age period approaching rapidly. It will need all our courage, knowledge and joint global activity, to slow down the impact. The starting point must be the build-up of the linkage system of soils: Man in still the missing link in the re-structuring of the biosphere he is in danger of destroying."

The job is to stabilize the world's major forests, swamps, and wetlands — which can be viewed as the world's organs. Bring the CO<sub>2</sub> count from 350 ppm back down to 280 parts per million or less. In summary, there are four main areas of work: soil remineralization, reforestation, energy conservation, and construction of alternative energy technology facilities.

We point to the central problem, climate stabilization. The CO<sub>2</sub> budget becomes the pivotal planning tool. The earth regeneration plan is to be established by region. Regions with more facilities and food will have a responsibility to share with regions with less.

#### You can't

You can't shoot down a hurricane.  
You can't blow up a region to get rid of drought.  
You can't plug the hole in the ozone layer with an MX missile.

You can't use chemical warfare on high latitudes, increasingly covered with snow, covered more deeply with snow, and with snow lasting longer into the spring.

You can't experiment with bacterial warfare on increasing floods and landslides as they wipe out villages, communities, mountain sides, and valleys.

But you can wipe out all meaningful life with nuclear weapons.



## You can

Each day we lose in working for transition from military production to earth regeneration activity, the greater will be the human, food and property losses in the next five to ten years.

Climate stabilization is the most "sustainable" short run and long run program. It is the framework.

Nuclear weapons could destroy us all, and the problems would be over. The fight for peace is primary to everything now.

Jobs, food and climate are the forces driving us along this route. We must make the globe environmentally sustainable.

Over 90% of all military expenditures and resources will have to be reassigned to soil, forest and energy work within a short span of time -- a massive, emergency move worldwide. It is not clear what the total loss of human population will be over the next ten to fifteen years. 10% to 20%? And what will be the relation between the earth and atmosphere by then? As we reduce CO<sub>2</sub>, the central trigger in the global system, there will be steadily and increasingly destructive climate intensities. This means loss of life, property, food, and the technology on which modern society functions.

## Global change monitoring

A greatly expanded U.S. and world data gathering program is needed. We recommend that a central body be made responsible for coordinating and gathering required data, and for making the data available on a quarterly basis. In the U.S., the National Oceanic and Atmospheric Administration (NOAA) is a good candidate. Within the UN, the United Nations Environment Programme (UNEP) is one logical place for this function. A full scale data program as indicated below should be started immediately, and be functioning by the end of 1988 on an emergency basis.

Major types of data should include, on a regular interval basis, at least for the northern hemisphere:

- Snow cover, depth and volume of snow
- Sea ice, arctic and antarctic
- Land surface air temperature
- Rural surface air temperature
- Sea surface temperature
- Troposphere temperature (1 1/2 to 10 km.)
- Stratospheric air temperature (15 to 20 km.)
- Cloud cover and optical characteristics
- Precipitation
- Mapping of soil mineral quality
- Desertification
- Trends in land use: forest and swamp cover
- Derive CO<sub>2</sub> source and sink data (key element of the system)
- Forest fires and dying forests

## Call to action

This is a call to action. There is no time to keep skirting around the edges -- with research, plans, strategies, possibilities, on paper, and for years to come.

This is a call to respond to the need for a "total" earth regeneration program. Instead of one "Paul Revere", as in a particular time and place in US history, there are thousands, if not millions of voices, calling out for a total social and environmental program. They must come together. The question is how and when.

How will five billion people — the earth's population — make their best effort? Not with military actions going on in the world to enhance the power of some to exploit others. Not with landless, starving populations, with a terrible shortage of jobs and support systems.

We must look to the need for people in all walks of life to join the effort to save the human species from environmental/climate disaster.

People in management and ownership of productive facilities are a small percent of the population. They alone can do little with soil, forest and energy work for climate stabilization. What is the process going to be in which they find new roles, in combination with all forms of labor and community groups?

Ibn Browning, a well known US industry consultant, told me some years ago that he and the Hopi elders had agreed, standing together on a mountain in New Mexico, that the area would be waist deep in permanent snow around the year 2010. This was their sense of the movements of the earth/atmosphere conditions and the world's history. This is a very probable course if we are not able to mount a sufficient climate stabilization program.

Utility companies know the outages are increasing. Truck drivers know that wind storms are turning over more rigs while they are driving on freeways.

Victims of rising lakes, floods, and ocean storms pounding shore lines, know they have been hit. Around the world, more regions have become shut down from snow and wind storms, and the media describe the results and the extreme conditions.

How much additional death, destruction of property, food, and all aspects of infrastructure, will have to take place before retarding forces are exposed, and replaced by an international movement of public groups aroused to surge ahead in their own interests?

The main outlines of the earth-atmosphere conditions are clear, known, and open to work with. It is the inter-relations of parts of the biosphere that will require ongoing study as physical programs are developed in soil, forest and energy work. Nations and the UN must work region by region. See what soil, forest and energy actions most fit the conditions of that area, are most natural, most effective. The nature of life in each region is the guide to an Earth Regeneration Program.

Now to the heart of our work. Cooperation. Peaceful competition. This goal is coming from different groups in the policy making levels in the U.S. and other countries.

But how do we achieve peace with our earth and atmosphere? The price of peace is involvement. People will move as they understand the link between their every-day lives to exist and the struggle to save our world as we know it. There is a vast majority who will have to do the physical work of an earth regeneration program, or no one will make it.

Internal social conflict destroys the positive movement of people toward balance. This is the balance of the earth and atmosphere, to stabilize climate.

There is now in the U.S. the balance of (a) farm workers wanting to eliminate pesticides, (b) organic farmers eliminating pesticides, and (c) Congress and the U.S. Department of Agriculture moving to promote "low input agriculture". Yet look at where we are. Have we solved more than 1% or 2% of the problem? We know the solution — the main one: remineralize with adequate rock dust, broad mineral and trace mineral content, as found in nature, plus some organic material.

Back to the earth, in a new sense of understanding, fullness, dependence, and harmony.

It is new. Where is it written in our laws that climate shall be stabilized? A draft of legislation is now in Congress for initial review: Earth Regeneration/Climate Stabilization Act of 1987.

To achieve this, social forms of life must be stabilized -- with jobs, food and all support functions, social stability. This means moves to reduce internal conflict, suppression, exploitation, poverty, endless misery and early death.

Public force is reaching for a final salvation from early irradiated death -- total nuclear disarmament. At this time in the earth's history, this means all disarmament, the absence of war and the urgency to respond to social needs.

Climate is driving us toward the final social/environmental solution. There is a new inseparableness.

We shall respond to this as people who refuse to be semi-passive victims of climate intensities -- of the full food, property and life-destroying fury of the glaciation process.

This paper is my "song of the earth"

"The high-profile American attention to Amazon science, said Brazilian meteorologist Jose Raimundo Coelho, has also helped convince his government of the importance of attempts to preserve the jungle." Here is a case of technical and government joint action. But will there, however, be action to preserve the remaining forests?

Who, what forces supporting the present Brazilian government, will want to do anything to change the present economic flows, to change the profit making in the forest region, to preserve the rainforests, and other forests in the jungle area?

We are looking at non-industrial countries with a relatively small percent of the population living and working in cities. We are looking at countries with 3-10% of the population doing the farming, highly urbanized countries comprised mostly of industrial and service sectors. And we are looking at many countries inbetween. The combinations are different in them all; but the need for jobs, food, supporting conditions, and "climate," is universal.

How can new coalitions be brought together in each region, or each country, to start winning a program encompassing jobs, food and climate ?

How can the technical, scientific, and other middle classe elements, survive without the movement of the great majority of the people organized around jobs, food, and climate-related work?

The wealthiest ruling groups, be they in non-industrial or industrial countries, need the most "help" in understanding that climate stabilization is now over-riding the short-run profit-making goals of each individual company acting first in its own behalf, and then as part of an owning group within a circle of related owners. Some of them have, fortunately, been looking at warming and cooling data for four years or more.

There is a growing number of science people speaking to the intensities, by latitude and season, of climate changes that are becoming increasingly destructive as we head into the final ten or twenty years of the transition into full glacial period conditions.

How many science people are still funded to work in "warming" controlled agencies

that, in effect, are arguing over how to hold the paddle as their canoe is on its way over Niagara Falls. This image is the height of caricature. We can, however, go productively into remineralizing soils, rebuilding forests, changing energy technologies, reducing atmospheric carbon dioxide as rapidly as possible, defending ourselves against the ongoing climate changes, and working for the ultimate stabilization of the climate. Human society can do the rock-grinding work of the glaciers, with the world's present technology, and survive.

Such a massive global employment program is also a matter of economic development.

Within the world's people as a whole, some part are outside the cash flow system, or almost entirely outside. Let us ask about the working population as a whole, the wage earning portion of the population, or those raising and selling farm products, no matter how small the amount. What will they be doing? How does all this relate to them?

Is there any tie-in between the three quarters of the population and the environmental goals, saving the forests in this case?

Can there be more tie-in?

Who are the leaders the people trust? Local priests? Union leaders? Popular armed leaders, helping resist the bloody destruction by local property owning power groups in various countries?

Note the recent massacre of villagers in Columbia, in parts of Brazil, in other areas of South and Central America.

Are we looking for middle class re-alignment (such as 14%), including assistance from technicians, scientists, educators, against the extremes — the extreme physical, economic, environmental destruction of a small wealthy part (such as 1%) of the population ?

Where is the population base (the 85%)? What does this mean to them? After all, it is their work that is under discussion around the world, in conferences.

They are struggling to live, and a good part of them are not making it. They are starving, dying early of illness, of slow malnutrition, or massacre by rancher landowners, or jailed, tortured, killed by military and police of the 1% of the population teamed up partly with the 14%, middle class.

Where in all this can there be much popular movement, with the CIA and other special U.S. agents, training Central and South American forces in torture?

Where, out of all of the present carnage, are we going to expect progress on forests, on climate stabilization?

How can significant parts of the 14% join with the 85% for mutual effort for life, for jobs, food, and then climate?

How can there be any significant climate stabilization progress without progress on jobs and food and living conditions for all the people of a country? Basically, total involvement.

Climate stabilization is an ultimate central movement, reaching into all parts of the environment, directly for workers, or indirectly, as environment — toxics for example — affects their health.

The 1900s, the 20th Century, is the first test of the human population in holding off glacial conditions, which could wipe out most of our food and living base in

short order. Let's buckle down and go for every possible old and new form of jobs, food, living conditions, and through this to climate stabilization.

### Organize

1. Organize training sessions around soil, forest, conservation and energy work. Trainers are needed at local levels by the hundreds and thousands. Organizers are needed at the community level -- at villages in non-industrialized countries, and towns and cities in the industrialized countries.
2. Each people (tribe, nation or other) will in their own way develop local training centers. Training must be backed up with support funds, material available, or to be made available: rock source, rock dust, grinders, tree nurseries, and organic material.
3. Encourage establishment of central training centers first for a region, draw from the region as much as possible, and then spread trainers out to develop local training centers. In the face of rapid climate change we need such spreading movements.
4. Technical advisors will come from local people to the extent possible. This is a very basic goal. One example comes to mind: a man named Perez, an educator and an exceptional leader, developed a network of schools and teachers among the Indian peoples of Bolivia in the 1930s. The teachers were developed from the local people. Their achievements were such that educators from other countries came to see what they had done, including from Mexico. The system was finally shut down by the government, as the ruling group considered it a threat to their control and repression of the population in general. Perez ended up living in Argentina and writing a book on the history of the movement.
5. Encourage rural, as well as urban, organizations, particularly in less industrialized countries, so that they keep gaining strength and can bring more support to the people as a whole. Here is much of the basic energy to bring change in bureaucracies or power centers insufficiently responsive to the needs of local social/environmental earth regeneration programs. Two types of action are required: peoples establish new laws and programs, or see that existing ones are properly carried out. As of now, the need appears almost beyond comprehension. But let us repeat, modern human society, grown to five billion strong over the last 10,000 years, has never faced the problem of stabilizing climate. We have never experienced the terrible onset of glacial conditions.
6. Encourage all countries, and through them the UN, to establish: (a) national CO<sub>2</sub> councils, plans and programs for optimal CO<sub>2</sub> reduction, soil, forest and energy work; (b) assistance groups, to work through the UN, to equalize national inputs and outputs: people, funds, technical equipment to be provided from a country, or go to a country, or both in some cases; and (c) a coordinating body to help develop plans and monitor global results.

We are now at the turnaround in social/environmental advance. Our banner: Jobs, food and climate.

It is the earth itself that is determining our course!

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References are indicated by Earth Regeneration Society Special Paper and number, e.g., (ERS-487). A full reference list and copies of the Papers (\$1.00 per paper) can be ordered from the Earth Regeneration Society, 1442A Walnut St. #57, Berkeley, CA 94709.

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Recommendations

Climate stabilization, jobs and peace

We urge the UN Special Session on Disarmament to request that:

1. Each member nation give recognition to climate change, to the full warming/cooling process leading rapidly into drought and famine in lower latitudes and snow, cold, storms and shorter growing seasons in higher latitudes (glaciation). That scientists support global programs of massive employment in soil, forests, conservation and alternative energy technology development to reduce atmospheric carbon dioxide in the attempt to stabilize climate before the point of no return. That physical and social scientists concentrate on the transfer of military resources to an earth regeneration program, in order to enforce articles 2.3 and 2.4 of the UN Charter which require that member nations settle their international disputes by peaceful means and do not use force or threat of force.
2. Each member nation shall develop climate stabilization/ earth regeneration programs on soil-forest-energy work, and corresponding employment and social support programs. This recognizes the need, particularly in less- industrialized and non-industrial nations, for evaluations of assistance necessary to initiate earth regeneration programs, and to enforce articles 55 and 56 of the UN Charter which state that "the UN shall promote: (a) higher standards of living, full employment, and conditions of economic and social progress and development."
3. UN bodies urge scientists to live by the Nurenberg principles, renounce work on nuclear weapons and give greater emphasis to the importance of soil-networks for the ecosystem, and thus for the development of world climate, soil erosion and yields as well as longevity of forest soils and farmlands.
4. The UN International Decade for Natural Disaster Reduction (IDNDR), and participating nations, emphasize the relation between disaster reduction, economic development in each region, well-being of the people, and the impact of accelerating climate change, in order to enforce articles 55 and 56.

Table 1

U. S. EMPLOYMENT PLAN — EARTH REGENERATION PROGRAM  
Employment by Industry Group

	Employment, Thousands of Jobs				
	(1) 1984 Actual	(2) 1989 Estimate	(3) Trans- fer	(4) New Jobs	(5) Total Cols. (2) to (5)
Agriculture	2 958	2 920		540	3 460
Remineralization			1 000	5 000	6 000
Forestry, and fisheries	80	90			90
Reforestation			500	2 400	2 900
Mining	657	650	<300>		350
Rock for remineralization			100	50	150
Manufacturing	19 962	20 290	500	1 130	21 920
Durable manufacturing	11 858	12 050	500	690	13 240
Nondurable manufacturing	8 104	8 240		440	8 680
Transportation, communication and utilities	5 636	5 720		420	6 140
Transportation	3 209	3 230		180	3 410
Communications	1 397	1 440		170	1 610
Public Utilities	1 030	1 050		70	1 120
Wholesale and retail trade	23 976	24 200		1 330	25 530
Finance, insurance, and real estate	6 291	6 400	<100>	340	6 640
Services	24 296	24 920	<600>	1 320	25 640
Construction	5 927	6 100	1 000	4 820	11 920
Government enterprises	1 485	1 510		80	1 590
Special industries	1 615	1 700		90	1 790
Sub-Total	92 883	94 500	2 100	17 520	114 120
Government (federal, state and local)	15 760	16 400	<100>	1 890	18 190
Foreign participation				500	500
Military	2 100	2 100	<2 000>	90	190
Total	110 743	113 000	—	20 000	133 000

1984 Actuals (down to Sub-Total) are taken from the Bureau of Labor Statistics, June 1985, 155 sector tab run "Time-series data for input-output industries — output, price, and employment (1972-SIC definitions). The estimates are those of the author.