2001-11

WORKING PAPER

Environmental Justice and the Quality of Life: a Paper Prepared for the International Symposium for Sharing Productive Welfare Experience

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ISBN 89-8187-074-8 93330

CONTENTS

Environmental Justice and the Quality of Life: a Paper Prepared for the Interantional Symposium for Sharing Productive Welfare Experience[1)]

Environmental justice refers to those cultural norms and values, rules and regulations, behaviors, policies, and decisions that support sustainable communities where people can interact with confidence that their environment is safe, nurturing, and productive. Environmental justice is served when people can realize their highest potential.... Environmental justice is supported by decent paying and safe jobs; quality schools and recreation; decent housing and adequate health care; democratic decision-making and personal empowerment; and communities free of violence, drugs, and poverty. These are communities where both cultural and biological diversity are respected and highly revered and where distributed justice prevails (Bryant, 1995b:6).

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1) This paper was prepared for the Korean Ministry of Health and Welfare, the Korean Institute for Health and Social Affairs, and the World Bank. In 1997, the Republic of Korea had a financial crisis that showed that existing welfare policies that depended on economic growth were inadequate, particularly in the face of economic downturn. The Government felt that the market and democracy were not enough to maintain social and political stability. In order to provide stability, a different and more responsive and effective welfare system was needed based upon the premise that individuals in the Korean society should be guaranteed as one of their rights a basic livelihood and a chance to develop to their highest potential through education and meaningful work opportunities (Chung, 2001:2). I was asked to write a paper on environmental justice and quality of life to be included as a part of the discourse on productive welfare experience. In writing this I consulted Korea's Green Vision 21 and Eco-2 Protect.

The world is a much different place than it was 100 years ago when pollution took up a smaller space and the Earth needed less time to heal itself. Today we pollute larger areas, and consequently the world takes a longer time to heal. Increased consumption, pollution, and population growth mean that human beings collectively and as individuals are wreaking havoc upon the planet at an exponential rate. Our growing consumption of energy and materials and our discharge of waste for disposal are limited by a finite amount of land and water. Communities of color and low-income communities bear a disproportionate amount of toxic and hazardous waste compared with more affluent communities[2]. Nonetheless, environmental justice advocates must be most concerned with the reduction of pollutants in the aggregate as well as the specific. In the aggregate, global warming differentially threatens people of poverty and people of color. These people will be the most vulnerable to disease, drought, coastal flooding, and other problems resulting from global warming. No one should be exposed to toxins or dangerous weather conditions resulting from global warming. We must pay

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2) The proposition that environmental hazards impact everyone in America equally has been challenged empirically over the years. Many studies have examined the social distribution of pollution over the last three decades. The evidence has shown quite decisively that communities of low-income and particularly communities of color are more significantly impacted by such hazards than are their white and more affluent counterparts (Asch and Seneca, 1978; Berry, 1977; Bryant and Hockman, 1995; Bryant and Mohai, 1992; Commission for Racial Justice, 1987; Council on Environmental Quality, 1971; Freeman, 1972; Gelobter, 1988; Gianessi et al., 1979; Goldman, 1994; Harrison, 1975; Kruvant, 1975; Mohai and Bryant, 1992; U. S. General Accounting Office, 1983; West, 1992; Zupan, 1973). The disproportionate impact of environmental insults on people of color and low-income groups is environmental injustice. When only people of color are disproportionately impacted (meaning that a much higher percentage of them are overexposed to toxins as compared to their white counterparts), it is often referred to as "environmental racism" (Bullard, 1994, 1993; Bullard and Wright, 1986).

particular attention to those groups who are most vulnerable in society. Additionally, pollution and environmental degradation are most serious in developing countries that do not have environmental protection laws or the infrastructure or expertise to handle toxins and hazardous waste. Also, developed countries often extract resources from these developing countries and use their land for waste disposal sites.

We must learn to "think outside of the box" to rid ourselves of these problems, many of which have global dimensions. This will unquestionably challenge our creativity and our resolve. We may have to look at our interactions with the world in a different way. Too long we have plundered the Earth for its treasures without serious consideration of long-term environmental effects. We must view the Earth and its inhabitants, human and non-human, as friends rather than as enemies; we must celebrate the diversity bestowed on us rather than destroying it. What we do to the complex web of life, we ultimately do to ourselves.

Although creative environmental and market strategies may be "good", they may not be enough to offset environmental problems and conditions of environmental injustice. This paper includes discussion on the shortcomings of knowledge and of the market along with creative environmental solutions. This paper also comments upon the Republic of Korea's Green Vision 21 and its Eco-2 Project. In addition, this paper comments on environmental solutions that are often designed to impact the aggregate while leaving specific situations of low-income communities unaffected. Furthermore, three phases are recommended to provide environmental protection in both the aggregate and specific. These three phases point us in the direction of an environmentally just society where all people are protected against environmental harm regardless of their income or where they live. Moving toward an environmentally just society requires developing an environmentally just income and the support

of government and educational institutions. This paper is not designed to be inclusive regarding ideas for an environmentally just society, but rather it presents proactive ideas for stimulating our creative juices beginning with the role of knowledge.

1. The Role of Knowledge

Sustainable knowledge[3] has been used throughout generations to help societies adapt to harsh environmental conditions and to improve our quality of life. For the most part we have seldom questioned knowledge or its producers in any fundamental way because the assumption was that the creation of knowledge was for useful purposes or for the greatest good. Sometimes knowledge is created to defend us in war regardless of the short- and long-term consequences. If we are successful in defending ourselves, we often view this knowledge as "good" and "worthwhile" knowledge. But how do we effectively determine "good" versus "bad" knowledge? How do we determine whether or not knowledge is sustainable long term? "Good" or "worthwhile" knowledge is determined through the scientific process. "Good" knowledge is also determined through a rigorous peer review process where knowledge is or is not published. In the marketplace we buy things that reflect "good" knowledge and boycott other items that reflect "bad" knowledge. In other instances we determine "good" or "worthwhile" knowledge through trial and error. However, these methods for determining "good" or "bad" knowledge may not be adequate. What appears to be "good"

3) Knowledge is manifested or embodied in cultural symbols. Knowledge or its by-product in the form of pollution may disproportionately burden communities of color and/or low-income communities. We refer to this knowledge as "bad" knowledge or knowledge that is not sustainable for people of color and low-income communities because of its devastating effects.

knowledge today may not be good or adaptive knowledge 20 to 50 years from now. "Bad" knowledge embodied in commodities we create and in its by-products often end up in communities already overburdened with toxic waste facilities and polluting industries.

We are beginning to question whether certain kinds of knowledge are adaptive or sustainable.[4] To speak to the issue of sustainable development implies that there is also development that is not sustainable. In either case the basis of development is knowledge. We cannot develop sustainably or even non-sustainably without knowledge. Situations that are not sustainable may speak to the issues of environmentally unjust conditions. Are we producing sustainable knowledge?[5] Is the academy producing sustainable knowledge?[6] What are the long-term effects of knowledge? How

4) In 1986 during a lecture on culture held in the School of Natural Resources and Environment, Roy Rappaport stated that culture is man's greatest invention because it allows knowledge to be transmitted over the generations and allows humans to accumulate knowledge to adjust to any place on the planet no matter how harsh the environmental surroundings. He reported that while culture has been adaptive for most of human existence, this may no longer be the case. He said culture has possibly become maladaptive because of the social and environmental threats posed to the Earth and to our existence. Culture cannot exist without knowledge. My question of whether we are producing sustainable knowledge is similar to Rappaport's hypothesis that culture may become maladaptive.

5) Some would argue that it is not the knowledge but the use of certain knowledge that is the culprit. In this paper I do not make the distinction between knowledge and its use or between knowledge and its by-products. Knowledge that is non-sustainable can have catastrophic effects. Also, making the distinction between knowledge creation and its use absolves the creators of knowledge of any responsibility for the use of that knowledge. Perhaps those who produce or create knowledge should be held accountable whether that knowledge is sustainable or not.

6) Questioning whether academics are producing sustainable knowledge raises many issues that threaten academic freedom. If the academy is not producing sustainable knowledge, then how should we address the problem? What are the

does knowledge or its by-products create environmentally unjust conditions for some and not others? How do we define sustainable knowledge? More importantly, we must question how we know what we know and what we do choose to do with what we know. The use of knowledge for solutions to problems in one area may actually create problems in another area. As Barry Commoner stated:

But each effort to solve one crisis seems to clash with the solution of the otherspollution control reduces energy supplies; energy conservation costs jobs. Inevitably, proponents of one solution become the opponents of the others. Policy stagnates and remedial action is paralyzed, adding to the confusion and gloom that beset the country (Commoner, 1976:1).

2. The Role of Markets

Although the markets, including science and technology, have brought us riches, they have also brought global warming, acid rain,

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implications of academic freedom? Should we produce knowledge for the sake of knowledge regardless of its consequences? Should we produce knowledge knowing that it and its by-products may negatively affect people based on where they live or the color of their skin? The University of Michigan Senate Assembly is one example where knowledge constraints have been attempted. In the 1980s it adopted the End-Use-Clause stating that no faculty or researcher at the University should engage in research with the end use of killing or maiming people. This clause was created to stop war research on campus. The majority of the 70 faculty cast their votes in favor of this clause. However, the Board of Regents of the University rejected it because they felt that this would place the University at an unfair disadvantage with other institutions. In other situations faculty members commonly go before the Human Subjects Review Committee to make sure that their research is ethically sound. Are there other ways to curtail the creation of non-sustainable knowledge? These are indeed hard questions to answer.

nuclear and toxic waste, endocrine disrupters, and a host of toxic-induced and aggravated disease that threaten the quality of people's lives the world over. Pollution fails to respect geopolitical boundaries; the by-products from one country affect the ambient land, air, and water quality of surrounding countries. Though science and technology have been bountiful, the harvest from the cornucopia of resources has been poorly distributed. While one in every five people in developing countries is chronically undernourished (Miller, 1999), the population of the North controls most of the world's wealth (Hawken, 1993). This situation threatens to become worse because people are breeding and using highly cherished resources exponentially.

Markets are superb at setting prices, yet are incapable of recognizing the true cost of production which is seldom reflected in market prices. The cost of toxic-induced and aggravated disease is usually excluded from commodity prices. The market is designed to benefit humankind but not nature, as evidenced by the environmental destruction of our biophysical environment. Economic success is often tantamount to biological destruction. Companies often act to externalize all or part of their costs associated with production by passing on to society the brunt of the expenses and therefore creating a misallocation of resources (Daly and Townsend, 1993). The more a company externalizes its costs, the greater the return on capital, and the more a company externalizes its pollution costs, the more vulnerable low-income people and people of color are to environmentally unjust conditions. If certain industries can internalize a considerable amount of their costs, then perhaps they can be subsidized to help make the market more environmentally responsive. We must find ways to protect people and the environment in which they live.

Markets often times with the support of the government have

created conditions where low-income people often live on the margins and have little experience with living in safe, productive, and nurturing communities. They have little experience in holding decent-paying and safe jobs or living in communities with quality schools, recreation, housing, and health care. Markets are extremely good at what they do, and they harness potential motives such as greed and envy. Runaway and indiscriminate growth, including growth that degrades our biological capital and communities, results from successful markets (Hawken, Lovins, and Lovins, 1999). A broader perspective and a complete rethinking and restructuring of the market are needed to be more responsive to the needs of society as a whole. Closing one polluting facility in a neighborhood that has several other polluting facilities or ignoring areas where poverty is rampant fails to address the issue of environmental injustice.

3. Creative Use of the Market and Taxes: a Short-Term Solution

Several solutions have been recommended to solve our environmental crisis. Emissions trading allow companies to use the market to buy pollution reduction credits from one another in order to reduce the amount of pollutants emitted in a given area (Stavins, 2000; DeSimone and Popoff, 1997).[7] While emissions trading is the mantra of many policymakers, the environmental justice community is highly suspicious of such programs. They feel it's the market that

7) Many academics and policymakers state that the market (emissions trading) can be used for environmental protection even though the market may have helped cause ambient air, water, and land quality to decline. Environmental justice activists fear that people living in close proximity to the company that obtains the credit may be differentially exposed.

got us into this situation in the first place. Environmental justice activists point to the fact that while emissions trading has reduced pollution in the aggregate, it has not reduced pollution in specific areas. For example if Company A purchases pollution reduction credits from Company B so that Company A can maintain or increase its level of pollution, the communities in the immediate surrounding area of Company A will fail to get relief. The environmental justice community refers to these areas as "hot spots". In addition, considerable conflict has ensued between government regulators, industry, and environmental justice groups in the United States. The former two believe that command and control strategies stifle creativity and that environmental justice would be better served if the market were allowed to take its course. Environmental justice activists are skeptical of the accounting procedures companies use in calculating the number of pollution reduction credits. Environmental justice activists find more comfort in applying command and control strategies to environmental problems than to the market. Perhaps the Republic of Korea can use a combination of strategies. Emissions trading should not be the only strategy used alone. Emissions trading should be a part of a mixed strategy for environmental protection and Korea's productive welfare experience.

Shifting taxes from income to emissions, effluents, or solid waste disposals released into the environment; from inputs or materials known to be sources of environmental pressures; and from income to products linked to environmental degradation (Jenkins and Lamech, 1994) may be a viable strategy to offset conspicuous consumption and planned obsolescence and environmental destruction.[8] To increase the quality of

8) The introduction of green taxes into the market helps ensure sustainable development. We must obviate acts of environmental destruction by making these acts expensive, and we must reward restorative acts. Green taxes attempt to provide those in the marketplace with the true cost of production. The purpose of green taxes is not to increase tax revenue, but to shift from

life of Koreans through a productive welfare experience and to protect our biophysical environment against wanton destruction will require a tax structure that is radically different from the one found in Korea and in most industrialized countries. Taxing payroll and incomes fails to provide any positive incentives. In fact it is a perverse incentive to cheat in order to save money (Hawken, 1993) and has a tendency to undermine the emotional support of government. Why should some people pay taxes and not others? Why should some people pay more than others when they are making the same amount of money or less? Collecting taxes from those who refuse to pay or to pay their fair share costs the system billions of dollars in lawyer and accountant fees, paperwork, administration and waste. This is lost money that could be used to support a productive welfare experience. In the U.S. it is estimated that for every dollar collected in taxes 65 cents is spent on compliance, forms, litigation, and data collection (Hawken, 1993). Green taxes would be more efficient because they would circumvent the large government bureaucracy of compliance. Everyone who engages the market would have to pay a tax. No one would be exempt.

Because green taxes are incorporated in the price of the commodity, manufacturers will have a powerful incentive to revise and improve methods of productions in order to avoid the green ta x.[9] If social "bads"-such as the variety of pollutants, environmental

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taxing income to taxing the purchase of commodities, pollution, environmental degradation, and non-renewable energy consumption. The purpose of a green tax is to give people and companies powerful incentives to avoid environmental destruction (Hawken, 1993:171; DeSimone and Popoff, 1997; Ayres and Weaver, 1998). Positive incentives such as a green tax can encourage energy consumers to use more efficient combustion methods and alternative forms of energy where possible. A green tax could also be used to raise the price of energy sources proportionately to the emission of hydrocarbons.

9) Green taxes could motivate industry to increase its profits since taxes can be avoided by making more energy efficient products. Inefficiency and pollution

degradation, and non-renewable energy consumption-were taxed, citizens and industry would have an incentive to avoid exposure to the taxes. Giving people and companies the right incentive is a purpose of the green tax. The incentive would be to save money and thus reward both the customer and the environment. For example if gasoline were taxed to a greater degree than it is now, then the car industry would perhaps be motivated to produce high mileage automobiles and increase citizens' use of car pooling, mass transits, and bicycles. But the green tax is regressive. Dealing with the issues of fairness, quality of life, and a productive welfare experience requires a mixed strategy and an income tax levy on high-income people and companies. Simultaneously, it requires subsidizing the income of the poor so they can participate in society productively. A smaller bureaucracy could perhaps handle such a program freeing government to reduce the number of tax collectors by making direct payments to those most in need.

Raising taxes in any country could be political suicide for the governing party; people resist paying higher taxes even if it is in their long-term best interest. Having money to control their immediate needs is of more interest than paying taxes for some future need. It is difficult for society to exist without taxes to support the general welfare. Yet the Republic of Korea must design a tax system that will not only satisfy a productive welfare experience, but one that will support the general welfare of the biophysical environment. To exponentially exploit our biophysical environment will only undermine our social, political, and economic institutions, as well as Korea's new productive welfare program. No society can exist no matter how complex or civilized if it destroys the bedrock of the biophysical environment. Nature provides the air we breathe, the water we drink, and the land to grow food to provide nourishment

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are often a sign of lost profits.

for our bodies. We must fashion an environmental policy that internalizes the costs of pollution and of environmental degradation. No one, no matter how poor, should subsidize the external costs of production with toxic induced and aggravated disease or medical health care costs.

4. A Flawed System—More So Than a Management Problem

We must also rethink our lifestyles and the ways in which we live. Individual consumption habits fuel a market economy based on greed. The market is adept at using the electronic media to program people's needs and buying habits. We are programmed to consume commodities we do not need or want. In some developed countries, namely the United States, the economy is based on planned obsolescence and conspicuous consumption (Packard 1960). Products are designed for a short lifecycle, and people are encouraged to buy new things even when what they have is satisfactory. Billions of dollars go into cultivating consumer taste while unnecessarily exploiting biophysical resources and increasing the waste stream. Tremendous amounts of energy are used each time something is manufactured, and huge volumes of waste are created as well. Business in its myriad forms plays a major role in plundering the Earth so we must call for a change in the way business views the world and for a paradigm shift that will make business more socially and environmentally responsive. Business should play a key role in increasing the quality of life for all Korean citizens regardless of their income or where they live.

Even if the Republic of Korea adopted the best environmental practices known to date, it still might continue to experience

environmental degradation at a rapid rate. Better management of an imperfect system may not in the long run achieve environmental justice and a better quality of life for the people of the Republic of Korea. This imperfect system is based upon a flawed design of our production system more so than a flawed management system.[10] Business as practiced throughout Korea and other parts of the world designs and produces commodities and services that are antithetical to sustainable and environmentally just societies. For too long the focus has been on cleaning up toxic waste sites and using end-of-the-pipeline solutions such as pollution abatement and control technologies. Pollution abatement and control is a short-term answer to a flawed system that threatens the quality of life in Korea, particularly for those least served by the geopolitical system. We may find ourselves on the brink of ecological collapse due profit-focused goals of business. The purpose of business should be to increase the quality of life for all humankind through service, creativity, and an ethical philosophy that respects Mother Earth. Making money simply for the sake of making money is destructive in the grand scheme of things particularly when those money-making activities contribute to environmentally unjust conditions and rob people of their ability to develop to their highest potential within the context of a sustainable and just society. Wherever one finds extreme wealth, one often finds extreme forms of poverty, crime, delinquency, and environmentally unjust conditions. Wherever one finds extreme wealth, one may also find alienation, despair, and free-floating anxiety. Extreme wealth in many instances has failed to

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10) I compare this imperfect system to a sinking ship. No matter how skilled the management, the ship will eventually sink. Skill managers may delay the inevitable for a while, but the ship will be lost. However, if the ship is not sinking, skilled managers would be important to get us where we want to go efficiently without worrying about a sinking ship. Hawken (1993) also believes that the system is flawed more so than management.

bring meaning and satisfaction to people's lives.

The business community must transform itself to promote action-based knowledge that supports an environmentally just commerce. With vision and creativity, we have the capacity and ability to create a very different economyone that restores ecosystems and protects the environment while bringing forth innovation, prosperity, meaningful work, and secure, safe, and environmentally just communities. We must disregard progress that fails to consider evolution, biological diversity, carrying capacity, health of the commons, environmental justice, and quality of life. With the evolutionary thrust of today's economy, the Republic of Korea may be subject to economic turmoil and upheaval if these concepts are not taken into consideration. Failing to transform the economy means conditions will continue to worsen in the long run for some people and eventually for all people including future generations. The conspicuous lack of ecological principles may mean what is "good" for business may be "bad" for nature, "bad" for people, and ultimately "bad" for business. We must not only become more concerned with the impact of business upon the environment, but we must go one step further and develop a restorative economy that is environmentally benign and supportive of just and sustainable social goals.

5. Thinking Creatively

The mantra of eco-efficiency has been duly noted as a key to energy efficiency and pollution reduction. This includes letting go of ownership so that a person never owns a large ticket item such as a refrigerator or a washing machine, but rather leases these items from a company that must collect them at the end of their life-cycle in order to recycle or dispose of them properly.

Although eco-efficiency and letting go of ownership are exciting concepts, we need to dig even deeper. These measures spring from "within-the-box thinking", but fail to bring about the basic changes needed to solve the long-term problems of social and environmental injustice. We must redesign the whole production system and the way in which we relate to environment and to each other. Our confusion will continue as long as we view environmental and social crises as specific and unrelated problems or questions. Specific solutions to specific problems may raise more questions than they answer. Other equally important questions are: Does global climate change really exist? Will global climate change differentially impact low-income communities and communities of color? Do automotive catalytic converters filter out toxic emissions or do they cause more damage than freon? Is economic growth harmful or does it provide resources for healing the planet? Will the costs of phasing out non-renewable energy sources outweigh the benefits? Do incinerator emissions cause cancer in humans? Do the benefits of chemicals outweigh their negative effects?

The questions posed above result from linear production processes. For the past 100 years humans have been disrupting the Earth's cyclical patterns at an accelerating rate, thus transforming our resources into useless garbage, some of which is obvious to the naked eye and some of which is microscopic. Rarely is garbage recycled back into society, nature, or industry. The volume of garbage is too large for nature to reuse, and some waste such as toxic metals and stable unnatural compounds cannot be recycled. Determining how one toxin reacts with another is difficult because the toxic levels for thousands of kinds of molecular garbage are unknown. Furthermore, their consequences may not appear for a long time. The full effect of today's pollution will not become evident until tomorrow. We must find creative ways to move far beyond our actions to protect the planet for future generations.

6. Critique of Korea's Green Vision 21 and the Eco-2 Project

In order to speak to productive welfare experience and quality of life, we must also speak to the productive welfare of the environment. Maintaining productivity and protecting the general welfare of people necessitates the care and nurturing of our biophysical environment. The market, democracy, or a productive welfare experience cannot be maintained in an environment that is degraded continuously by the production system. We must protect the general welfare of nature if we expect to survive on planet Earth. If we fail to protect the biophysical environment, we can expect to experience an increase in catastrophes of global warming, acid rain, endocrine disrupters, and toxin-induced and aggravated disease. If we fail to protect the biophysical environment, we will experience the undermining of our political, economic, and social systems. We must protect and use the bounty of nature wisely if we expect national stability and an enhancement in the quality of life for all Korean people.

In order to adequately address environmental justice issues, we must focus on both content and process. The latter may perhaps be more important than the former. The goal of many environmental justice activists is to be an integral part of the decision-making process to help define their destiny. Green Vision 21 makes a strong appeal that the government share environmental information with local residents and calls for greater participation by residents in environmental policy decision-making procedures. Green Vision 21 speaks to the community's right to know, particularly with respect to the discharge of toxic substances. It states that the government will encourage local community residents to organize citywide or countywide private supervision coalitions. The vision goes on to state that community organizations and schools will play a central

role in supervising pollution in each water system. All of the concepts are on the right track, and Green Vision 21 must continue to be visionary in breaking new ground.

Although Green Vision 21 speaks to the issue of public participation, this important area should be revisited because oftentimes public participation is perfunctory. This means that decisions have already been made thus giving people only the appearance of being influential. To be effective, government and corporate entities must involve the community in a meaningful decision-making process. This is important because as professionals become more knowledgeable and specialized, they have a tendency to move the decision-making away from the village square. Because of their many years of-training, they feel they are in the best position to make decisionsnot the community. In the U.S., public participation in research endeavors is partially the result of traditional research which often fails to provide the answers needed for speedy identification and solution to problems. Researchers and policymakers cannot respond with confidence to questions of certainty and demands for immediate solution put forth by citizen groups. "Will my child get cancer from playing on a playground that was once a toxic dumpsite?" "Is my child's rash related to his playing on the school's playground?" "Is my coughing related to where I live?" Often questions like these cannot be answered to community people's satisfaction.

Professionals do have special knowledge, but to accomplish environmental justice goals policy decisions must be made in the village square, or they will most likely fail. When professionals make assumptions that people are irrational and lack the intelligence to understand complex issues, this often results in frustration and anger on both sides and thwarts any meaningful outcomes. When professionals make assumptions that people are smart and capable of understanding complex information, this can be an asset for solving

local and national environmental justice problems. In the U.S. when communities were involved in the planning from the beginning and when they felt they had legitimate influence, the outcome of siting a facility or the cleanup process was much more civil, leaving people much better off. Additionally, when community groups understand the science and are motivated to participate, they can be very helpful. If they fail to understand the science and distrust the decision-makers, they can effectively thwart and frustrate officials attempting to site a facility in their community no matter what the advantages may be. To enhance their effectiveness in the decision-making process, lay people often consult with scientists, professionals, and the electronic media for different opinions. While Green Vision 21 and Eco-2 Project focus on many environmental content issues, environmental activists must be integrally involved in the discussion and the decision-making process. One of many roles of the productive welfare experience program is to advocate the training of new professionals in both content and process to work effectively with community groups. It is important that the community be involved throughout the process. They need to be involved in problem identification, questionnaire construction, data calculations, and analysis. This would be a bottom-up approach to policymaking rather than a top-down approach. Technical and top-down solutions to environmental justice problems are rarely effective, i.e. in the U.S. Community-based research provides opportunities for community and professional groups to work together effectively.

Both the Green Vision 21 and the Eco-2 Project are steps in the right direction, and the Republic of Korea should be commended. Green Vision 21 and Eco-2 Project represent a number of win-win strategies for building a just and sustainable Korea. While the implementation of many of these policies may yield cleaner results in the aggregate, they may have the opposite effect in specific areas. For example, the location and manufacture of new environmental

technologies and their by-products could expose people disproportionately in surrounding areas. The development of clean fuels, advanced technology for water purification, new factories that produce low or zero-pollution vehicles, and new sewage treatment plants may also cause environmental problems for people in surrounding areas, even though most people in the larger aggregate will enjoy the benefits of these new and clean technologies. Where will new fueling stations for buses be located? Where will low sulfur fuel plants be located? How will the waste from the manufacture of these new technologies be handled? What impact will they have upon the people that live close to them? The government of the Republic of Korea should monitor and where possible ameliorate these potential "hot spots" so no one will be overburdened with environmental toxins. People should not be sacrificed on the basis of income or where they live.

To prevent disproportionate exposures to environmental hazards, an interdisciplinary team of people, including local residents or high-risk populations, should be involved in formulating environmental justice indicators by considering the following questions: What are the indicators that would suggest environmentally unjust conditions? What is the income level and proximity to environmental insults? What is the health status of people who are differentially exposed to environmental toxins in an area with polluting facilities? To what extent are people suffering from asthma, cancer, and other toxic-induced and aggravated diseases? What is the percentage of welfare recipients in the area? Without these environmental justice indicators, certain populations may be overlooked if the focus of environmental protection is only upon the aggregate or majority.

Green Vision 21 firmly supports environmental impact statements. To date, environmental impact statements often fail to speak adequately to environmental justice concerns. Such statements often

calculate the potential environmental destructiveness or impact of a single industry. While these statements may be appropriate under certain conditions, they usually fail to take into consideration cumulative impacts. For example, before company A can move into an area, it must access the pollution levels of other companies within the area. If the aggregate pollution levels are too high, then Company A does not move in unless it can get the other companies to reduce their overall pollution levels, or company A must reduce its pollution potential to some predetermined level acceptable to government regulators. Companies and local governments in the States have resisted cumulative impact strategies because of their disincentive to investments and because environmental rules and regulations take time away from production. Research has shown, however, that environmental regulations have increased the number of jobs. Although some jobs may be lost because of the expense to retrofit antiquated production systems, thus forcing them to close down, there is an overall net increase in jobs and investment in industries that produce new and cleaner technologies. Industry can be very creative and can rise to the occasion when necessary. In the U.S.A. we expect money spent on pollution control and abatement technology to equal the amount of money spent on defense. During an earlier downturn in the U.S., researchers found that jobs in the pollution abatement and control industries were more stable and survived economic slumps (Bezdek, 1995).

7. Science and Technical Solutions

We live in a fact-fascinated, highly technological society. We expect technology to solve all our problems, but as mentioned before technical solutions to problems often become problems within themselves. In addition, while we think that "good" science will

solve the problem, this is not always the case. "Bad" policy decisions are often made in the face of "good" science. To be successful in the application of science and to solve environmental justice problems consensus has been that politics must be align with science. In other instances policies based upon "good" science have not been enforced. Getting government to apply equal protection of the law in the United States means environmental justice groups have had to confront and protest governmental inaction. Is the government of the Republic of Korea willing to hold itself to the same standards as it does with business? More specifically, is it willing to evaluate itself and the contributions it makes to environmental degradation? Governmental credibility will be enhanced if it takes stock of its own contribution to environmental degradation and applies the policies it applies to others to itself. It is important that where necessary the Republic of Korea increases the number of laws and provides equal protection of the law in order to protect the environment and to enhance the quality of life of its citizens. If equal protection is not provided, this could result in contempt and public distrust of government.

8. New Environmental Technologies

With its technical know-how the Republic of Korea can become even more of a world leader in the production of pollution control and abatement technology than it is today. The Republic of Korea is already speaking to the possibility of creating an environmentally friendly production pattern for industry, one that includes cleaner production systems, advanced environmental technologies, and environmentally friendly substitutes for harmful raw materials. To cater to the country's environmental needs, the government should subsidize and nurture small and medium-sized environmental

enterprises to produce environmental protection technology for the 21st Century. The manufacture of such technology in the short and intermediate term will help reduce Korea's balance of trade deficit. There is the need for such technology, particularly as developing countries move into the 21st century.

9. Precautionary Principle

Below are three recommended phases that the government should implement to move the country toward a more environmentally just and sustainable society. During each of these phases or sub-phases, the precautionary principle should be considered. The precautionary approach is the principle of avoiding harm even where there is no absolute scientific certainty as to the cause of the particular harm. This approach is particularly important because it gives policymakers a tool to use other than the cause-and-effect model used in science. The causality model is based upon satisfying three conditions:

1) The cause precedes the effect in time,
2) The two variables are empirically correlated with one another, and
3) The correlation cannot be explained away as being due to the influence of a third variable that causes both of them. (Babbie, 1989: 63, 64)

Often this model of causality has failed to serve environmental justice advocates in good stead because in many instances causality is difficult to prove. Attempting to prove causality often leads to the paralysis of analysis and inaction. In addition, people concerned about their health are demanding "certainty" of whether a given chemical or toxin will cause them and their children health problems

and/or they want an "immediate solution" to these problems or perceived problems. Continued debate regarding causality and the inability of scientists or policymakers to respond to the immediate demands of the community often creates even more resentment and community hostility toward decision-makers. Causality debates also cause resentment on the other side as companies defend themselves against blame by using scientific-sounding language such as "no proof of harm" or denying that their actions harm the environment. Another troubling point with causality is that the proof of cause and effect comes after the damage is already done, and thus high-risk populations must wait for scientific proof before a harmful practice or chemical is banned. This is morally wrong, particularly where humans are involved. Cigarette smoking is a case in point. After approximately 30 years of debate and numerous studies showing the association between smoking and lung cancer, the Surgeon General of the United States finally decided to state officially that smoking was harmful to one's health. In the meantime millions of people became ill or died from cigarette smoking. Let me be clear. I am not suggesting that science is not important. It is, but we should be aware of its limitations. When possible, we should use both science and the precautionary principle. When science fails to give us the answers within a certain prescribed time, then we must be prepared to use the precautionary principle and err on the side of caution rather than on the side of illnesses and death. Constructing an effective environmental justice program without the use of the precautionary principle would almost be impossible.

10. Three Conceptual Phases for Community-Based Research

The three conceptual phases of community-based research could be used to advance the goals of environmental justice. Although each phase should be from one to ten years, they may not always be distinct because of potential overlap. In some instances we may be moving forward while in other situations we may move backwards. In other instances, we may skip a phase that is not relevant. However, the overall thrust will be to move forward. These phases are useful for conceptual reasons and for taking stock of where we are and where we should be at any given time. They provide a framework for thinking about broad-based intentional changes, and each speaks to different needs and different resources for problem-solving purposes. Programmatic ideas that may work in one locale may not work in another. Individuals and groups will be required to fill in the specifics and use their creativity to help craft local and national environmental justice policies that are meaningful. In any event, we must always keep our eyes on the prize for a more environmentally just and sustainable society.

Phase I: The Teach-In

This should be an educational phase about environmental injustice and its threat to the planet. A series of National Environmental Justice Teach-Ins should be held involving citizens, corporate leaders, university professors, and students. People from health departments, universities, and nonprofit organizations would work in teams with community groups to educate themselves about environmental injustice. The teach-ins would take place in public universities, schools, and community centers across the country. Discussion should point out the varying effects of climate change on

people based upon their access to resources and where they live. How does each individual contribute to global climate change? What is the implication of global climate change? Will everyone be impacted equally during these changes? More specifically, the teach-ins would focus considerably on local issues, problems, and possible solutions. Discussions should include energy inefficiencies, individual contributions to environmental injustice, and the impact of pollutants on various communities, particularly those of low-income. The teach-ins' objective would be partially to understand the lifecycle analysis of products and materials so people become more aware of the energy inefficiencies and resulting disposal problems. The teach-ins' curriculum would include focusing not only on the environmental harm that results from production practices, but also on the health, economic, and social effects, particularly of those disproportionately impacted by environmental insults. The teach-ins would also educate people about clean and safe alternatives to the present modes of production that improve the quality of life for everyone. During this phase participants will take stock of the resources they have at their disposal in order to become effective problem-solvers. Environmental justice teach-ins can help people become more aware of their surroundings and their contributions to waste and energy inefficiencies. Often we become psychologically numb to environmental disasters, particularly those that evolve slowly. We become oblivious to the toxic dumps; sewage treatment plants; the incinerators poisoning ambient air, water, and land; and the waste on the streets and in the alleys. We ignore life-threatening toxins that are often invisible and odorless. People quickly adjust to such conditions as a normal part of life. This initial phase should call upon the nation to clean its landmass, rivers, and streams, and improve the quality of its air. Both the government and the private sector should call upon volunteers to do environmental clean-up. Young people and senior citizens could work side-by-side restoring

their neighborhoods to be beautiful, clean, and safe. Technical clean-up jobs involving certain toxins, however, should be reserved for those with specialized training.

Phase II: Community-Based Research Teams

Phase II is characterized by three sub-phases: data collection, data analysis, and intermediate solutions. This phase is cyclical; community-based research teams in many instances will be involved in a revolving process of data collection and analysis until the right solution is found. People in different communities will start and end these phases and sub-phases at different times. Dealing with more complicated environmental injustice issues requires a community-based research approach. In this phase a number of community-based research teams should be formed and trained to collect and examine information or to operate the necessary technology for retrieving relevant information. Solving problems of environmental injustice requires not only an interdisciplinary approach, but also interagency coordination because government agencies are often specialized and work at cross purposes with one another or the right hand doesn't know what the left hand is doing. The lack of interagency coordination often confuses, frustrates and angers people who receive contradictory information. Government bodies at varying levels can save a considerable amount of time and frustration by effectively coordinating their efforts.

To help develop and carry out community-based research for building an environmentally just and sustainable society, the government of Korea should look to universities for help in training interdisciplinary research teams and finding ways to more effectively coordinate government agencies. These community-based research teams would consist of leaders from non-government organizations (NGOs); grassroots organizations, particularly from the community

affected; professionals from the Ministry of Health and the Ministry of the Environment; faculty and students from colleges and universities; and teachers and students from high schools. Occasionally these teams would consist primarily of high school students[11] and teachers, and in other cases they would be primarily community people. Heterogeneous groups would be ideal.[12] The majority of team members should be community people with many from the affected area of concern. The Republic of Korea should mobilize citizens to formulate an assessment[13] of ambient air and

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11) Community-based research is a unique opportunity to use the community as a laboratory. Students learn about chemistry, biology, geography, sociology, and civics by testing ambient air and water quality. They learn how to problem-solve and how to hold government agencies responsible for environmental protection and health. The results of this research may strengthen their community for greater environmental justice protection.

12) Where possible, any heterogeneous group that includes community people should be in the majority so community people won't be politically impotent or disquieted. Community people should not feel intimidated by professionals and should feel comfortable participating in group discussions.

13) Many countries do not have the technology to conduct the assessment required. However, some simpler technologies can be useful. Water quality and soil testing kits are available at reasonable prices. For more information on monitoring rivers and streams contact Earth Force, 1908 Mount Vernon Avenue, Second Floor, Alexandria, VA 22301, USA. www.earthforce.org. This organization does water monitoring work with students and teachers in over 135 countries. The Bucket Brigade Manual gives instructions for combining a bucket with a vacuum cleaner part to sample air quality. The cost to build one for sampling ambient air quality is about $100. The bucket can provide samples for a number of organic and inorganic gases to be analyzed in health departments. The manual can be purchased from Communities for a Better Environment, 500 Howard Street, Suite 506, San Francisco, CA 94105, USA. www.igc.org/cbesf/ or www.bucketbrigade.org. Both the water monitoring and the bucket device have limitations, but it is a start for countries without resources. Both the water monitoring kit and the Bucket Brigade Manual are used in the U.S. Using common sense in making and using these technologies is advised. Avoid exposure to

water quality, the number and condition of brownfields as well as other environment insults that disproportionately impact low-income communities.

Sub-Phase A: Data Collection

Community-based research teams of diverse skills are to collect information on point- and non-point-source pollutants of lakes, rivers, and streams. This would also include examining point-source pollutants from pipes, ditches, channels, tunnels, wells, containers, concentrated animal feed organizations, landfill leachate collection systems, vessels, and other floating crafts from which pollutants may be discharged. Information should be retrieved from large industrial plants, sewage treatment plants, utility companies, incinerators, landfills, dry cleaners, and gasoline stations. Information should be collected on mobile sources such as off- and on-road gasoline and diesel fueled vehicles including aircraft, locomotive, construction equipment, and two-cycle motor engines. Pollutants from non-point sources should be collected as well.

Data from these sources should either be put into a Geographical Information System (GIS) for spatial analysis or be mapped out manually. GIS has the capability of mapping out ambient air plumes, polluted water sources, brownfields, polluted land mass or soil structures and their close proximity to low-income communities. Data collection of environmental degradation is only half the battle. The Republic of Korea must also collect data on the potential and actual health risks to its citizens. The identification of health risks must include not only risks to adults, children, infants, and pregnant

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suspected unhealthy or toxic conditions. Laypeople can do a lot to collect, analyze, and help clean up contaminated areas, but experts with the proper equipment should be called when necessary.

women, but also to any population that is differentially impacted by environmental hazards based upon level of income. Identifying pockets of people disproportionately impacted by environmental hazards is important.

Sub-Phase B: Data Analysis

This sub-phase begins when all the relevant data have been collected. When the results are in from the laboratory, the teams will engage in data analysis to determine the meaning of the data and whether or not additional data are needed. The data analysis outcome should be written up as a discussion document or made as a PowerPoint presentation using charts and graphs as needed. Although not inclusive, the following questions should be considered to help out with the environmental justice analysis: 1) Are certain people bearing the cost of environmental burdens because they live in close proximity to polluting facilities? 2) To what extent are people who live in close proximity to hazardous waste facilities experiencing physical health problems? 3) More specifically, to what extent are people living close to hazardous waste or polluting facilities experiencing toxic-induced and aggravated disease? 4) To what extent are people living near hazardous waste or polluting facilities experiencing psychological stress? 5) What are the historic, scientific, cultural, legal, and political complexities that determine where people live and their exposures to environmental burdens? Following the data analysis, one- to three-day workshops or several conferences involving the larger community should be organized to discuss the results of the community-based research teams. These discussions could take place in a local school, community center, or a neutral place. If information is incomplete then more data must be collected.

11. Sub-Phase C: Intermediate Solutions and Choosing Alternatives

The next step in the process requires informed solutions once the data have been collected, analyzed, and disseminated. Another set of workshops should provide opportunities for community-based research teams to learn about possible short- and long-term solutions. This phase may be the most difficult as it requires people to choose among many alternatives. To make choosing among alternatives easier experts must be available for community researchers to consult. Several strategies should be considered. Energy conservation and energy efficiency strategies[14] can reduce the waste stream significantly. Significant amounts of material can be reused or recycled. Recycling, reducing, and reusing can save millions of gallons of oil and tons of coal per year since many of the products we consume are not really necessary. Product lifecycle analysis, where industry finds ways of cutting pollution from the beginning of a product to its end disposal, can save considerable energy. A green tax or command and control strategies may be recommended, through which the government would tax "social bads" and "social goods" and relieves workers from a payroll tax deduction. Industry in the United States has championed emissions trading in favor of command and control strategies.[15]

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14) High efficiency appliances ranging from light bulbs to heat pumps use only a fraction of energy required by conventional versions. Saving energy also reduces pollution because the cleanest fuel is that which is never burned. Fuel cells are compact, quiet, super-efficient, and super-clean devices for converting fuel into electricity chemically rather than through burning.

15) From the very beginning of the environmental movement in the United States, industry has fought against environmental regulations. Industry fought against the 1970 Clean Air and Water Acts and subsequent acts claiming that environmental rules and regulations place it at a disadvantage with overseas

Phase III: The New Environmental Justice Revolution

This is perhaps the most important phase and a very difficult one as well. Quibbling over the many environmental issues would be unnecessary if the production of "goods" and "services" was changed to be consistent with the Earth's lifecycle. We often attempt to create knowledge to help us operate beyond the laws of nature by producing commodities inconsistent with nature's lifecycle.[16] We must

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competitors. Manufacturers contended that environmental regulations were too time consuming and cut too deeply into profit margins. They blackmailed workers by threatening plant closures if the workers failed to side with industry against environmental regulations and environmentalists. Yet countries like Japan and Germany have some of the most stringent environmental regulations in the world, and they have experienced booming economies. In the United States, the State of California has the highest number of and most stringent environmental regulations, and yet seems to prosper (for more information on this see Moore and Miller, 1994). Even now, the U.S. economy with all of its up and downs over the last 30 years is at an all-time high. Command and control strategies or environmental regulations help create jobs; they force industry to be more creative. Nevertheless, industry is in favor of letting the market take care of ambient air quality through emissions trading, arguing that this approach allows for more flexibility and creativity in solving the problem. Environmental justice advocates question the effectiveness of such trading because it creates "hotspots" in areas where people live and where companies are allowed to maintain their present levels or even increase their levels of pollution. Environmental justice advocates feel the market got the country into this situation, and they don't trust the market to get us out.

16) Karl Henrik Robert, one of Sweden's foremost cancer researchers, observed that often the scientific community was divided on the safety of chemicals. Some scientists claimed that certain chemicals were safe while others disputed this. Robert posited that if the safety of these chemicals was confusing to the scientific community, then certainly the layperson would be confused as well. How could the layperson be certain about the safety of these chemicals if the scientific community was confused? To address this dilemma, Robert called together a number of people in the scientific community for a

look to nature to solve problems of environmental injustice because in nature there is little waste, if any. We need to understand how whole forests work and apply the myriad of relationships found in nature to the design of the industrial system (Anderson, 1998), thus enabling us to build and operate factories on solar energy. The technology of the future will allow factories and communities to recycle raw materials that come from harvesting billions of square yards of waste from some other company. Not another drop of oil should be taken from the Earth, nor should another ton of coal be mined (Anderson, 1998). No waste should go to the landfills nor should pollution go into the air. We must design buildings and other structures in such a way that by their very existence, they demonstrate and teach environmental principals[17]. When we began

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conference to formulate questions that would guide research and production practices. Providing guidelines for research and production would enhance the confidence of the scientific and lay communities that chemicals or materials for human consumption or use are safe. From this conference four questions were articulated: 1) Is the material or chemical naturally found in nature? If not, then should it be manufactured? 2) Is the chemical or material persistent? If the material is going to be around for a long time, should it still be manufactured? For example, nuclear waste plutonium 239, one of the most toxic substances known to humans, has a half-life of 24,000 years. 3) Is it biodegradable? As with the above example, plutonium 239 is linear and inconsistent with the Earth's lifecycle and is therefore not biodegradable. 4) Can its tolerance level be predicted? If the substance is too poisonous, should it be produced?

17) Commercial buildings, homes, and communities can be designed to be more efficient. Designing and planning communities can also be used as an opportunity for community organizing involving the people in designing eco-efficient homes and communities. A cost accounting of each building or home should be made. For example, where did the materials come from? How much energy was involved in the making and transporting of the materials? What was the energy saved in recycling materials? How much energy did using recycled rainwater and using trees as natural cooling systems save? Each building or home should be a curriculum for education

to build systems that mimic nature, then we will be well on our way to producing sustainable and just communities. This requires using regenerative rather than depletive knowledge, conceiving designs that support interdependence with other living organisms and cradle-to-cradle lifecycles rather than a cradle-to-grave cycle (McDonough and Braungart, 1998). This also requires using sustainable knowledge to enhance the quality of our lives and to prolong our survival on the planet. Knowledge based on a fossil fuel economy cannot be sustainable in the long run.[18] We must use knowledge to produce "goods" that are cyclical in nature and not linear in character, and we must use sun power to build and operate factories and whole communities.

The activities of the three phases described above are by no means conclusive. While these phases unfold, other activities above and beyond these phases should be considered. Environmental justice goes beyond hazardous waste protection by taking into consideration social and political issues as well. An overall coordinating committee may be helpful where several community-based research teams are operating within a city or town so that each team can

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within itself. Buildings and homes should teach the older and younger generations about energy, the environment, health, and environmental justice. For more information on this subject see Orr, 1994. The outcome will mean much more to people who are integrally involved in the planning of their communities.

18) Many experiments and projects at varying levels of development are in progress. Clean technology includes fuel cells that will make the combustion engine obsolete. Cars are being designed to run on compressed air or recycled vegetable oil. Cow dung is being used to fuel a commercial power station in England, and houses are being built from straw. Energy is obtained from the sun and from tidal waves. Although it's too early to tell, the projects mentioned here may fall under the category of sustainable knowledge. For more information on the above see The Millennium Debate. www.millennium-debate.org/alternative.

share information and learn from one another's research. Additionally, teams should be formed within local industry to work on developing environmentally benign products. Representatives from these industries should be included at the citywide and/or higher coordinating level.

12. Addressing the Biophysical Environment Is Not Enough

Addressing the biophysical environment is not enough. In order for environmental justice to be served we must address the issues of poverty[19] and income disparity. As previously noted, in countries where there is extreme wealth, there is also extreme poverty, crime, delinquency, and environmental injustice. In countries where wealth is distributed more equitably, there are usually significantly lower crime and delinquency rates, and more environmentally just situations. Barry Commoner raises the issue in one of his articles as to whether poverty breeds overpopulation or whether overpopulation breeds poverty. He found that when countries reach a certain level of economic well-being, population growth declines. People are better educated, more affluent, have better access to health care, are healthier, and live in better environmental conditions. Sharpe (2001) supports Commoner's findings when she states that population growth is the consequence of underdevelopment and could be curtailed by several factors including the eradication of inequities in income. Additionally, poverty may be a greater causal agent to one's health than any other virus or microbe. To achieve environmental justice as defined in the introduction of this article, we must make both the

19) In some instances urban land trusts and a variety of cooperatives with an environmental justice focus should be used to offset poverty.

biophysical and human built environment livable, productive, and sustainable. To achieve these goals, poverty and racism, perhaps the worst forms of pollution, must also be addressed in order to ensure that no one group will be required to shoulder the social or economic burden for others.

13. Additional Short- and Intermediate Programs

For all too long economic development has failed to take into consideration the effects of the environment upon our social, political, and economic institutions. Until recently environmental phenomena were seldom used to explain social phenomena or to account for the way we lived. Surviving here on planet Earth ultimately depends on whether social policy will take into consideration environmental concerns. To deplete and destroy our environment or to pass on what economists call "externalities" to society, particularly the poor, does not bode well for the future. Socializing environmental burdens without socializing the benefits is not in the long-term interest of the country. An unhealthy environment will result in an unhealthy people, numerous sick days lost, high mortality rates, and an ailing and inefficient economy. Therefore, a clean and healthy environment makes good business sense. The role of any social or environmental policy is to prevent the short-term destructive economic interests from superseding the long-term sustainable and productive interests of the country.

14. Redefining Work for an Environmentally Just Income[20]

One goal should be to extricate ourselves from work that is akin to slavery, and work that is boring, competitive, and destroys the Earth's treasures. Work can stifle creativity causing people to self-medicate as a way to combat boredom or to find relief through conspicuous consumption, much of which is often beyond their means. We should redefine work to be an environmental justice income by working a four-day rather than five-day week. On the fifth day people could have the option of working at a charity of their choice. This day would be set aside for creativity, teaching, learning, and healing the planet to ensure that environmental justice is served[21]. Helping people in need to increase the quality of their lives takes considerable effort. Those who choose to work a five day week could be eligible to receive a tax reduction for work completed above and beyond their full-time work by working in an accredited service organization that contributes to the greater good (Rifkin, 1995). Another form of environmentally just income would be for the government to provide jobs for the unemployed to clean up the environment. In other instances the Korean government could

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20) An environmental justice income would be consistent with a Productive Welfare Experience because healing the Earth requires ridding society of conditions that foster toxin-induced and aggravated disease. People have fewer opportunities to move toward self-actualization if they must support externalized costs of production practices that threaten their health and livelihood.

21) For more information on the subject of work and income see Robert Theobald's guaranteed annual income or Milton Friedman's negative income tax. While these income programs do not ask people to work in exchange for income, the environmentally just income would. Work is the rearrangement of space and the transforming of energy into both useful products and waste. Much of today's work creates considerable amounts of environmental harm. People need work that is creative and restorative.

offer tax credits to businesses that hire unemployed people for environmental clean-up.

15. Secondary Schools and Universities

Students in public and private schools should be required to enroll in environmental justice courses to become environmentally effective citizens. They need to learn how to walk softly upon the land and leave as few footprints as possible. Students should be required to examine historic, scientific, social, legal, cultural, and political conditions that give rise to environmental injustice and the actions that could ameliorate these harmful environmental conditions. Universities should require such courses and should also establish a Vice President for Sustainable and Just Knowledge to encourage research and the teaching of environmental justice. Secondary schools and universities could use their procurement power to purchase environmentally friendly products, thus sending a message to the community and the general public about the importance of environmental protection. For example, public institutions could purchase natural gas powered cars and recycled paper, and build and retrofit buildings to be environmentally benign. (For more on buildings see David Orr or the University of Michigan School of Natural Resources and Environment at www.snre.umich.edu.)

16. The National Government

The government of Korea must help to initiate and support an environmental justice movement to protect all of its citizens from the devastating effects of pollutants. Environmental degradation and

injustice must be viewed as the moral equivalent of a natural disaster of the highest magnitude. Considerable resources must be available to universities and the private sector for researching, designing, and building an environmentally just society. Resources should be provided for moving families from contaminated sites that may pose potential dangers to their health.

Eco-2 Project and Green Vision 21 seem to be on the right track with their environmental cooperation projects with China, Japan, other Southeast Asian countries, and Europe. This includes Korea's transfer of environmentally clean technologies to other countries, joint science projects to study environmental effects such as global climate change, and participation in major international conventions that deal with environmental problems. It is critical that Korea follows through with these international environmental strategies as outlined in Eco-Project and Green Vision 21 because environmental pollutants fail to respect geopolitical boundaries. To effectively solve the pollution problems, Koreans must help their neighbors solve their environmental pollution problems as well.

Some developed countries are looking to foreign ports for waste disposal.[22] Although the Basel Convention managed to ban

22) Because of increased environmental regulations, fewer disposal sites, and increased prices for hazardous waste disposal, developed countries have targeted developing countries in dire need of foreign exchange for waste disposal sites. This has caused a considerable amount of controversy as developing countries, which lack experts for monitoring the handling of waste disposal or suitable places for disposal, have begun to trade off the health of their communities for foreign exchange. While governments in some developing countries allow their countries to be waste depositories, African politicians and journalists speak of "toxic terrorism," "garbage imperialism," and "neocolonialism." As a result, these developing countries under pressure from citizens and international environmental organizations have taken action. In some cases people have been jailed for participating in international waste trade. Shipping countries or countries of origin have been ordered to remove

North-South transportation of hazardous waste, the Convention has yet to define hazardous waste. Furthermore, the Convention does not regulate South-South agreements or bilateral agreements. The Republic of Korea must have the goal of protecting its borders by refusing to allow commodities into the country unless the manufacturing and disposal of goods and services are consistent with the Earth's lifecycle. The Korean government can be even more of an international leader by championing the cause of global climate change and environmental justice. The world must know that all nations and all people are not impacted equally by global climate change. The Korean people can help the world move into the 21st Century with vision and with hope. It can be done.

17. Summary

In this paper I raised several development and policy issues regarding environmental justice. Critics of growth and development support sustainable development, yet a more fundamental question should be asked. Are we, along with the academy, producing sustainable knowledge? This question raises considerable controversy and should be seriously debated. Markets have played a role in producing wealth and improving the quality of life for some, but have failed to improve environmental protection and quality of life for the masses to any significant degree. Environmental justice

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their waste. Sometimes ships carrying hazardous waste cannot find ports and consequently have wandered the seas for months before finding a disposal place. For more information on this see Bartz, 1989; Duflour and Denis, 1988; Hackmann, 1994; Hiltz and Ehrenfeld, 1991; Rublack, 1989; Vilcheck, 1992. The Basel Convention states that countries, primarily developed, must discontinue sending shipments of waste to developing countries. For other shortcomings of the Convention see Clapp, 1994; Puckett, 1995.

activists place very little faith in the strategy of using tradable emissions either to right the "wrongs" of the market or to improve environmental protection because they create "hot spots." Also, there is the likelihood of dishonest reporting of emission trading by firms seeking emission reduction credits. We have designed a flawed system, one that is fundamentally difficult to correct even by excellent management. Eco-efficiency and letting go of ownership are reforms headed in the right direction, but this is not enough. We must "think outside the box" and design a system that mimics nature, and we must turn waste from one production system into raw materials for another. We must build cities and systems based upon solar energy.

Reaching our goals of an environmentally sustainable society means going through several phases and sub-phases. These phases and sub-phases are not carved in stone; some may overlap or even be skipped, but the overall intent is to move forward and change for the better. Community-based research is key in solving environmental justice problems, yet even that may not be enough. In addition, several other things must be done. We must redefine work so as to provide an environmentally just income. Public schools and universities must assume the responsibility to teach and create knowledge that is consistent with the Earth's lifecycle. The national government should actively support environmental justice efforts and keep products out of the country that cause social and environmental harm. We must deal with the population problem by encouraging sustainable growth and development to reach a certain threshold where population levels off.

Can all of these things be done? I hope so because hope gives meaning to our lives and fuels our ability to be creative. We must be creative and visionary. Failing to be visionary means we may be heading into a future where environmental injustice is magnified

rather than reduced. It could be a future of environmental degradation, increased population growth, poverty, toxic-induced and aggravated disease, extinction of species, and the whole alphabet soup of problems. Failing to conduct the necessary research and to plan for the future could lead to an increase in crime, delinquency, and war as people compete for scarce resources. People could experience more free-floating anxieties, oppression, and uncertainty.

Actors upon the world stage have placed emphasis on developing the left side of their brains--the part that is more rational. Now these actors must spend time developing the right side of their brains--the part that is more creative. As the future unfolds, our work should focus on creativity, teaching, learning, and healing the Earth. We must develop a more spiritual connection to the Earth and to one another. If we plan for the future, we can open up some exciting possibilities. The 21st Century will bring forth some intriguing challenges for you. I'm sure the Republic of Korea and the Korean people will rise to the occasion.

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