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Meeting the Millennium Development Goals with Imagination and New Energy

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“Some men see things as they are, and say, ‘Why?’ I dream of things that never were, and say, ‘Why not?’”

—Robert F. Kennedy (with a tip of the hat to George Bernard Shaw)

Not long ago I was sitting on a beach in Jomtien, Thailand, looking at the waves and trying to relax. As I was looking out at the beautiful ocean scene in front of me, a young Thai boy, about eight years of age, walked down to the edge of the ocean near where I was sitting. In his hands, he carried a long stick. A rope was fastened to one end of the stick. Attached to the other end of the rope was a large brick. In other words, the boy had made himself a fishing pole complete with a “brick fish.” Curious about what he was going to do next, I watched him as he threw his brick into the ocean. The boy stood there, pole in hand, patiently waiting for something to take his bait. Suddenly the boy’s fishing line went taut. He became excited knowing that a “fish” was on the line. And pulling with all his might he somehow managed to bring his catch to shore. Then he turned around in my direction and looked at me with an excited expression on his face that seemed to say, ‘Can you see it?’ ‘Can you see this huge and magnificent fish that I just caught?’ Well, I could see it. I could see it because I did the same thing when I was his age. And I used the same method to do it: IMAGINATION.

Imagination is one of the greatest gifts our species possesses. Only our species has the ability to imagine things that are not yet part of reality. This special gift allows us to dream of new possibilities. It allows us to envision the future and take corrective action to avoid future mistakes. It is what leads to new inventions, innovative art, and progressive social developments. It is what allows us to rise above mediocrity. It is one of the primary reasons underpinning our advance as a species. When imagination and action meet, great things can happen. Perhaps the most important example of this in the 21st century is the United Nations Millennium Declaration. What is this document if not the product of collective imagination? After all, the sustainable world that it is designed to create is clearly more of a dream than reality, existing primarily in the imaginations of men and women of good will.

The shared values and principles contained within the Declaration gave rise to the Millennium

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Development Goals (MDGs): *eradicate extreme poverty and hunger; achieve universal primary education; promote gender equality and empower women; reduce child mortality; improve maternal health; combat HIV/AIDS, malaria, and other diseases; ensure environmental sustainability; and develop a global partnership for development.* These time-bound goals, with a target date of 2015, are currently guiding sustainable development efforts worldwide. They are designed to generate responsible reproductive behavior, eliminate poverty in all its forms (including income poverty, hunger, disease, lack of shelter, and lack of opportunity), address the challenges of gender equality and universal education, and promote environmental sustainability. From a broader perspective, they are designed to set the stage for 21st century sustainability by creating a more peaceful, secure, prosperous, humane, equitable, and environmentally sound global community. The Declaration and Goals reflect the best qualities of our species. They are an example of what good and decent human beings can do when they choose, deliberately, to rise above petty differences and selfish instincts.

All of us would like to see each of the Goals met by the target date of 2015. And those of us working to meet the Goals are committed to doing our best in this regard. Progress is being made on many fronts. Some developing countries, such as Thailand, have already met many of the goals. But it is becoming clear that the majority of developing countries, particularly those in Sub-Saharan Africa, will not be able to meet the goals by the target date. According to a recent estimate by the Worldwatch Institute, less than one fifth of all countries are currently on target to reach the Millennium Development Goals. There are numerous reasons for this. Some of the most salient are: insufficient official development assistance (ODA) from donor countries; lack of transparency and good governance in recipient countries; the rapid spread of HIV/AIDS; massive economic inequality in the developing world; widespread environmental degradation; population growth accelerating faster than economic growth; and economic growth being underpinned by unsustainable patterns of production and consumption.

If one starts from the premise that every problem has a solution, then meeting the Goals is clearly a problem in need of a new solution. The history of scientific discoveries has shown us that the search for new solutions is frequently related to the ability of the researcher to use his/her imagination to “think out of the box.” Einstein’s imaginary journey into space while sitting on top of a photon moving at the speed of light is a classic example of imagination leading to discovery—in this case, the discovery of relativity. In retrospect, it is understandable why Einstein was fond of saying that “Imagination is more important than knowledge.”

There is no simple policy change or discovery that will lead to a perfect situation where all of the Goals will be met by 2015. The problems standing in the way of sustainability are too complex and entrenched. But this does not mean that we do not have an obligation to both present and future generations to rethink the problem to see if something is missing from the MDG-based development plans that could potentially maximize the probability that the Goals will be met at some point in the near future. I think something is missing: *the promotion, by the United Nations, of a globally shared research and development project to develop and deploy, by the year 2010, a new energy system (new energy) that can meet the energy demands and requirements of sustainable development on a global scale.*

What do I mean by new energy? I mean an energy system that is *small scaled, environmentally sound, portable, powerful, reliable, inexpensive, consumer friendly, safe, virtually inexhaustible, and decentralized.* This would be an easily transportable off the grid energy system that could be scaled up (for commercial use) or down (for personal use) as necessary. Because it is inexpensive, portable and decentralized, it would empower people and lead to economic self-sufficiency and independence. Existing alternative energy forms—commercial biomass, wind, solar, hydroelectric, geothermal, fuel cell, and nuclear fission—do not fit the definition of new energy. New energy is, therefore, “new energy.” It is the sustainable energy system of the future, perhaps related in some way to nuclear fusion. There is no question that at some point in the future the human species will develop new energy and deploy it worldwide. What I am

suggesting is that, given the gravity of our present situation, we develop and deploy new energy now, not 50–100 years from now when conditions on the planet will surely be so grave as to make its development useless.

If new energy will enable us to create sustainable population, economic and environmental conditions—and because of its special characteristics it will—then its development and deployment will go a long way towards consigning poverty to the pages of human history. Discovering and deploying new energy should be, therefore, one of the most important goals of both the United Nations and humanity in general. Make no mistake, bringing new energy to life is not simply the wild idea of a lone dreamer. It is consistent with recommendations put forth at several major UN conferences on global issues, including: the 1992 Conference on Environment and Development in Rio de Janeiro, the 1994 Cairo Conference on Population and Development, the 1994 Global Conference on Small Island Developing States, the 1995 World Summit for Social Development in Copenhagen, the 1995 Beijing Fourth World Conference on Women and Development, the 1996 Habitat II Conference in Istanbul, and the 2002 International Conference on Financing for Development in Monterrey. All of these conferences touched on the relationship between energy and sustainable development. The platforms of action from these conferences were unanimous in calling for movement in the direction of energy sustainability. None of these conferences was organized to specifically address the problem of energy sustainability. Nevertheless, from the discussions of energy at these conferences a central conclusion can be drawn: current energy production and consumption patterns are unsustainable and must be changed to meet the economic demands of a growing human population.

In a speech delivered on March 14, 2001, in Dhaka, Bangladesh, Secretary-General Kofi Annan asserted that energy is at the very heart of development (Bangkok Post, March 25, 2001, p. 5). Energy is at the heart of development because the development of human capital (e.g., an educated, healthy, and productive individual) usually lags behind the development of physical capital (e.g., basic infrastructure). This is particularly true in the most impoverished areas of the world where modern infrastructure is often non-existent. It is important to understand that energy is the essential component of physical capital. It is the foundation around which all other components of key infrastructure, such as transportation, housing, communications, sanitation, water transport and storage, health care, and education are constructed. If one thinks of development as a house, energy is the foundation. If the foundation is unsustainable, there is a high probability that the house will also be unsustainable. That our “house” is unsustainable is clear. That it is unsustainable in large part because the energy foundation it rests upon is unsustainable is only now beginning to be widely appreciated. Sustainable development must, therefore, begin by putting *sustainable energy* at the heart of development, not unsustainable energy.

What impact will new energy have on the Millennium Development Goals? One way of answering this question is to speculate on how new energy might impact the lives of people living in what some would argue is currently the most difficult place for development: an impoverished village in Sub-Saharan Africa. In a typical village of this type, there is no energy system other than wood for cooking and heating, no clean and running water supply, and no sanitation. Houses are unsafe, poorly constructed, and provide little in the way of protection from the elements. Inside the houses insects abound. Poverty, disease and hunger are rampant. Women are disempowered and over-burdened with a heavy work load—caring for children and spending long hours gathering wood, hauling water, processing and cooking food, and working in the fields. Fertility rates, along with child and maternal mortality rates, are high. Children are uneducated because they must help their parents secure basic necessities. There are no jobs for the villagers except those related to subsistence farming. The soil is exhausted and food production is inadequate to meet basic caloric needs. Virtually everyone in the village is sick, poor, and hungry. Hope for a better life is non-existent because there is no time to think about what might be. All of the villagers’ time and energy is spent just trying to stay alive.

How will new energy improve the quality of life of these people? At the outset, it must be said that new energy will have no impact on the villagers unless accompanied by a development plan that can make the best use of it. It would be foolish to think that you could just go into this village, drop off new energy, and leave it up to the villagers to decide what to do next with it. To take advantage of new energy, massive improvements to physical capital must be made. This must be accompanied by massive improvements to human capital. But with a proper plan of action in place, new energy could solve many of the problems in this village. The most obvious benefit is that new energy would provide the basis of an inexhaustible, inexpensive, clean energy system for all of the people in the village. For the first time in their lives, the villagers would have proper lighting in their homes and a safe source of energy for cooking and heating. In addition, it would provide the power source for all of the machines and tools necessary for infrastructure development.

With the assistance of specialists in infrastructure development, new energy would facilitate the construction of a sustainable water system that could be used for both personal and agricultural use. Energy-driven water pumps could be used to tap into underground fresh-water aquifers, and fresh water could be transported to the village from distant locations. A water storage and purification system could be constructed. New energy could provide the necessary power to pump clean water to all of homes in the village. It could also facilitate the construction of a proper sanitation system for wastewater. With fresh water and sanitation systems in place, the health of the villagers would vastly improve. Excess water could be used for irrigation purposes. Irrigation, in combination with outside assistance in the form of free fertilizer and improved seed varieties, would greatly raise productivity and stimulate a shift from unproductive subsistence farming to productive market-oriented farming. This would lead to a food surplus and the elimination of extreme hunger. With any luck, excess agricultural produce could be sold to others outside of the village, and small food shops would start to sprout up, providing a much-needed source of income.

Over time, and with the assistance of small-business loans and targeted educational programs, a set of local micro-entrepreneurs would surface to create businesses that take advantage of new energy. This development would lead to employment opportunities outside of the agricultural sector. Empowered with infrastructure, loans, and new information, small businesses would start to proliferate and the economy would start to diversify leading to a more stable economy. The income poverty problem would begin to be addressed. With each increase in entrepreneurial activity, production and consumption patterns in the village would increase along with energy use. And because energy use per capita is positively associated with income (for supporting evidence, see the Human Development Index), poverty would start to decline. At this stage of development, self-sustaining economic growth would take root and the transition from an unproductive to a productive economy would accelerate. A solid foundation for eradicating extreme poverty would be in place.

The plight of women and children in the village would also be positively affected by new energy. Access to new energy would make the time-consuming tasks of collecting water and wood obsolete. Access to fresh and clean water for drinking, cooking and washing, coupled with improvements in wastewater management, would result in a significant reduction in child and maternal mortality. And because children would no longer be needed to work as unpaid laborers to support their families, they would, for the first time, be able to attend school. With the quality of life radically improved, women would choose to have fewer children, initiating a critical transition to sustainable reproductive behavior. Falling fertility would lead to greater investments in the health, nutrition and education of each child. Fewer children would mean more wealth and leisure time for women. Independence and self-sufficiency would begin to take hold. And for the first time in their lives, women would begin to think about empowering themselves by starting a business of their own.

The benefits of new energy would not stop at the edge of this village; they would extend over the face of the globe. The benefits associated with new energy are almost endless. It is impossible to detail all of them here. However, it is possible to list some of the most important benefits. Because it is an environmentally sound source of energy, new energy would create sustainable production and consumption patterns worldwide, thus enabling the globalization process to continue in the face of a growing human population. New energy would make the internal combustion engine obsolete. In so doing, it would go a long way towards solving the problem of global warming. It would also eliminate the problem of photochemical smog and other forms of air pollution in our large urban areas. And if accompanied by a massive increase in recycling programs worldwide (something that is critical in the face of increased economic activity), it would minimize the impact of our ever-increasing “human ecological footprint” on the life systems of the planet. Because it is inexpensive, new energy would reduce the cost of living by lowering the cost of production, thus making everything more affordable for the poor and middle-class. It would start to reverse the pattern of rural to urban migration, leading to the decentralization of our grossly overcrowded urban areas. New energy would foster the creation of small-scaled sustainable communities virtually anywhere on the planet. Relatedly, with the assistance of new energy, areas of the planet that are now considered to be uninhabitable could be transformed into desirable locations to live.

More benefits would ensue. New energy would create conditions that would allow billions of impoverished people to participate as viable partners in the global economy. This would increase global GNP, increase profits for all producers of goods and services, and alleviate poverty. It would also enable vast amounts of fresh water to be created from salt-water in an economically feasible manner, thus reducing the probability of future water wars in regions like the Middle East. And it would enable food to be grown virtually anywhere on the planet. Hunger would be a thing of the past. Because it is off the grid, new energy would eliminate the problem of regional energy blackouts due to grid failures. It would also allow people to meet their material needs with less time and effort, enabling them to work fewer hours should they choose to do so. This would allow for early retirement for those in middle-age, and that would lead to an explosion of much needed new employment opportunities for unemployed and underemployed young people whose futures now look grim. Because new energy would allow everyone to meet their basic material needs, the level of frustration, conflict and violence in the world would be reduced. This would create a multi-billion dollar peace dividend that could be used to make improvements to education and fight the scourge of HIV/AIDS, among other things. It would also greatly improve the security and quality of life for women, leading to an acceleration of the demographic transition to low mortality and low fertility rates. Because it is easily transported, new energy would bring a much-needed energy source to isolated populations living in remote areas, a development that would be particularly beneficial to small-island nations. And new energy would allow developing countries to leapfrog over unsustainable and increasingly expensive energy systems. Finally, because virtually everything that requires energy input for its operation would have to be redesigned, new energy would generate a plethora of high quality jobs in the engineering and high-tech sectors.

The potential benefits of new energy are simply too widespread and significant to ignore. Accordingly, a plan of action that will lead to the development and deployment of new energy is in order. As an initial step, I propose that an assessment team be commissioned by the UN to assess the energy requirements of attaining the MDGs. In addition, the team should address the feasibility of developing and deploying new energy, assess its probable impact on the MDGs, carry out a financing and cost evaluation, and identify potential problems associated with its deployment. With regard to the latter point, specific attention should be given to the impact of new energy on the global stock market and job creation. The assessment team should also attempt to devise a strategy that will create a win-win situation between, on the one hand, proponents of new energy, and, on the other, global conglomerates, associated stockholders, and

nations that have a financial stake in maintaining dependence on fossil fuel energy. If the team's recommendation is to move forward to the developmental stage, the UN should act as an advocate for a globally shared research and development project designed to develop and deploy new energy by 2010.

The UN has already encouraged the development of new forms of sustainable energy. The following recommendation from Agenda 21 (p.76, 9.12.d) is clear on this point: "Promote the research, development, transfer and use of technologies and practices for environmentally sound energy systems, including new and renewable energy systems, with particular attention to developing countries." The recently completed UN Millennium Project, commissioned by the UN Secretary-General to identify the best strategies for meeting the Millennium Development Goals, contains a similar statement (Recommendation 9, p. xvi): "International donors should mobilize support for global scientific research and development to address special needs of the poor in areas of health, agriculture, natural resource and environmental management, energy, and climate" Both of these statements are an invitation to develop and deploy new energy. Promoting a research and development project to develop and deploy new energy is, therefore, entirely consistent with existing UN policy.

For those of you who think it can't be done, allow me to take you back in time to the year 1961. On May 25 of that year, John F. Kennedy, then president of the United States, told the US Congress that by the end of the decade the United States would send a man to the moon and return him safely to earth. What most people did not know at that time, but what President



***President John F. Kennedy addressing the U.S. Congress in 1961 about his proposed mission to the moon.**

Kennedy did know after consultations with his science advisors, is that we only had a vague idea about how to actually accomplish the mission. The technology was not there. Many pessimists said it could not be done. The Apollo Project was the product of the imagination of President Kennedy and his close advisors. It was a vision, a dream; it was imagination colliding with massive action. *And it was successful.* Before the end of the decade, Neil Armstrong stepped on the surface of the moon, and the three-man Apollo team returned safely to earth. Kennedy's dream had become a reality. And what a magnificent day that was for the human species. At that moment in time the people of the world were united like never before. Time seemed to stand still. Wars ceased. We all held our breath as we watched the awesome events unfolding before our

eyes. It was perhaps the greatest moment in our history. And what do we owe that moment to? Imagination.

The poet Shelley once wrote, “The great instrument of moral good is imagination.” Imagination, of course, does not always lead to that which is good in any moral sense. But it often does. New energy is clearly a “moral good” whose time has come. It is, in my view, the missing key to meeting the Millennium Development Goals. Given our advanced knowledge of physics, it is within our reach to develop new energy. And, unless proven otherwise, we should proceed under this assumption. Once the benefits of new energy are explained to the majority, just the thought of pursuing it will bring hope to the billions of people who currently have none. And even if we suffer a temporary setback, and we surely will, what we will discover along the road to new energy will far outweigh the costs. With the development and deployment of new energy, poverty, in all its forms, will be removed from the face of the earth. The human species will be forever changed for the better. But we must act now. The time for fine speeches and international meetings has passed. The next major step on the ladder of human evolution that new energy represents will not take place until we develop and deploy it. Absent this, we will spiral downward into an abyss characterized by poverty, injustice, violence, environmental collapse and social disintegration. Surely all of the people on the planet deserve to live out their lives in dignity. Because the potential benefits to humanity are so widespread and significant, we owe it to both present and future generations to develop and deploy new energy. And we should “spare no effort” in this regard.

*“We will **spare no effort** to free our fellow men, women and children from the abject and dehumanizing conditions of extreme poverty, to which more than a billion of them are currently subjected. We are committed to making the right to development a reality for everyone and to freeing the entire human race from want.”*

—Millennium Declaration, III.11 (emphasis not in the original)