

IV Biennial International Workshop Advances in Energy Studies
“Ecology-Energy in Latin-America”
Campinas, SP, Brazil. June 16 to 19, 2004

It is important to stress that the Local Organization Committee forwarded an extensive draft, whose contents follow, to be read and worked out as a strong statement from the participants, as a subsidy for energy policies envisaging a sustainable future.

MANIFESTO: “PROPOSAL FOR A NEW CONSENSUS”
Global Society in search of Sustainable Development

Antecedents

Latin American people are facing a destructive globalization process, this economic model is ecological and energetically unsustainable, socially unethical and will be historically temporary. The global economic system is currently based on the use of non-renewable energy resources whose limits are now more evident. Furthermore, globalization it is based on the appropriation of natural resources whatever their location without any concern to whom they belong or whether they have environmental or social important functions.

- (a) The basic globalization paradigm involves the promotion of industrial growth to increase monetary gains of enterprise stakeholders. There is no concern with understanding carrying capacity, environmental quality, renewal of natural stocks, emission of pollutants, atmosphere degradation, loss of soil, renewable use of water resources, substitution of manpower by machines, rural exodus, human population overgrowth and marginalization. As a result, the Biosphere has become jeopardized as well as the future of mankind.
- (b) Almost everyone is aware that globalization has been increasingly detrimental for the environment and that we face a global crisis. There is a feeling that we need a cultural change but people do not know how to do it, simply waiting for coherent actions from public national agencies and international entities. Even so, many political leaders insist on economic growth as the only way to solve social problems and as part of this solution, they obliterate environmental issues; traditional politicians are a minority with a powerful voice magnified by major amplifying media (press, video).
- (c) In its present form globalization increased the “inequalities between and within nations, drains local traditions and cultures and increases the disparities between the rich and the poor, thus marginalizing great numbers of people in urban and rural areas.”
- (d) But, together with the global population, many scientists point out a new focus. Our planet lives under the sign of Change towards the use of Renewable Resources. In other words: learning quickly how to use natural resources in a renewable way is a global priority. Humankind will have to move to another stage of Civilization with a lower availability of resources. This means new forms of production and consumption.
- (e) In addition to other decisions, this human generation will have to make choices, mainly in relation with renewable energy production. These choices will affect its future and the future of next generations. Since these solutions require decades to be implemented, it is due time to study new technical alternatives. But, the technological studies will need to be conducted together with social and cultural projects, intertwined in a strategy for the transition towards a Sustainable Civilization.

- (f) Humankind can take profit from all scientific knowledge to analyze the possibilities for sustainable production and consumption systems all over the World. In this effort, part of the still remaining valuable non-renewable energy resources can be used.
- (g) Energy is power. But that usually means power in the hands of a few people! The search for alternative energy sources is a priority for Science and Politics. It is so important that cannot be left to a few politicians, scholars and entrepreneurs. Because, it could be used to sustain privileges, expropriate other countries' resources, concentrate wealth for the benefit of over-wealthy people and lead to a dangerous menace to the Earth's system. Instead, democratic procedures can reduce errors in this critical issue. So, let the global problems be discussed by people affected by them. Concerned scientists have to broaden communication channels with people. And people have to be mature to afford its renewable destiny.
- (h) People can be misled. Some energy projects are built without the responsibility to change the consumption pattern; their sole objective is to substitute petroleum without any commitment to the environmental and social impact or cultural change.
- (i) It is necessary to develop technologies to supply energy to society but there will be no conditions to maintain growth as it was in the past.
- (j) Today there is a new imperative: resources have to be reserved for next generations, which also means making an effort to recover nature and rebuild certain social links. It is not a simple replacement of a fuel by other one: the transition has to consider a change in cultural paradigms.
- (k) Even if the global need to implement a new productive era is assumed, there is still a question of which way this technological revolution will take. Are we in a process of democratization that will offer everyone the possibility to produce clean and renewable resources or is it the opposite: the power will be concentrated in a limited number of countries or enterprises? Will we see the maintenance of inequity and injustice?
- (l) If stability is intended, the proposed global change will require a spirit of solidarity and cooperation among central and peripheral countries, never seen before. In a *post-petroleum civilization* development needs to be shared. If a global partnership is possible, then the effort could create a *Transient stage to a Sustainable Civilization* and, in the middle of this century, the sustainable civilization could be achieved.
- (m) Some countries are identified with high technology and modernity concepts; for those, the Hydrogen Technology opens interesting perspectives. But nowadays, life cycle analysis shows that it is not completely evident that Hydrogen can offer clean and economic solutions. The production of its raw materials and machinery involves heavy metals disposal and energy-intensive processes. If more studies prove that Hydrogen is really a energy yielding system, then the Hydrogen Technology can lead to a social process aimed at more Sustainability. We should never forget that Hydrogen is not a new source of energy, but that it is a new form of energy that can be partially stored (an energy vector). This peak technology needs to be supported by a network of renewable resources systems. A greater research effort has to be made to develop the agroecological rural systems that could support Hydrogen, as a top level energy sub-system.
- (n) The Hydrogen alternative should be considered in a political strategy that could join efforts and concessions from countries with very different economic infrastructure. For European Union countries and USA the Hydrogen Economy sounds very attractive because it represents the possibility of using their technological potential in a common effort to promote social changes and new approaches in relation with the

Environment. It is a possibility to promote sustainable development in parallel in North and Southern countries. Latin America offers an interesting place to apply these new proposals. Hydrogen Economy is, at least, a worth-thinking idea because it incorporates social and environmental concerns. However, there is a weakness in the proposal: it is not explicit in relation to social changes. In Latin America, society characteristics are very different from Northern countries; here property and income are poorly distributed.

- (o) For Latin America the adoption of Hydrogen (or any other high technology solution) is not easy. The choice demands a lot of discussion because some Latin American countries have good quality renewable energy resources cheaper than Hydrogen. Time and effort are required to study energy alternatives that could incorporate social justice, ecological sustainability, energy yield and economic science.
- (p) The Latin America strategy should be to discuss not only energy technology but other important issues for Sustainability as: balance in international exchange, the development of self-sustaining systems in Northern countries as a condition for the development of self-sustaining systems in Southern countries in a planned path to decrease dependency between faraway systems, use of ecosystem's energy analysis to establish fair prices that can really contribute to transition to Sustainable Development. Other topics to be considered for agreements are: biodiversity recovery, food safety, aquifer recovery. They all depend on the adoption of a systemic approach in relation with international trade in common public policy.
- (q) In the past centuries, Latin America experiences with foreign solutions were generally bad, many of them caused ecological and social disasters whose debts were not assumed by the governments or enterprises involved. Therefore, for Latin America the best attitude is to look inside their frontiers and discover sustainable projects developed locally. Some of these include very interesting social proposals. Parts of these projects were financed from outside and, unfairly, the interest rates are fixed externally. Several studies show that this debt was already paid several times. Nevertheless, every year the debt service extracts big part of the wealth from Latin America just to pay interests without reducing the principal. Commitments with the economical debt signed by the government define the main public policy in the region. Agreements involving ecological, social and economic debts have to be made in the framework of a global transition to Sustainable Development.
- (r) Sustainable Development projects have as main characteristic the diversity, all of them are different, and all of them have to be adapted to the ecosystems resources. If resources are scarce the intensity of growth will be low and vice-versa. On the other hand, in the present unsustainable development, usually the ecosystem limitations are overcome by introduction of non-renewable resources from distant regions, so doing human systems could become very similar in very different regions. And also these inputs are under-priced by the incorporation of subsidies and low price of oil,
- (s) Even with difficulties and without government support, many sustainable projects are carried out in Latin America and they are adequate to biological and geophysical characteristics of ecosystems of Latin America: Desert or Semi-Arid; Tropical Forest; Mountain Rain Forest; Savannas; Meadows. Sometimes the better solutions are not big concentrated investments but networks of small scale ecological projects that are able to use scarce resources, in many of them, water is the limiting factor.

All these ideas were taken in consideration when preparing the program for this Workshop. We assume that they represent the main research objectives of participants. The organizing Committee organized a Brazilian Seminar and became involved in an European Seminar on Hydrogen Civilization last February in order to write a set of ideas that can be considered

as subsidies for the preparation of Workshop Conclusions. These ideas will be transmitted to Governments and social movements in Europe and Latin America in order to promote the discussion of a Post-Petroleum Civilization and leverage Agenda 21.

Recommendations:

1. Nowadays, many energy experts declare that petroleum will become scarce in the next decades and prices will no longer be stable but will rather increase. Therefore it is time to develop efforts to make new energy sources available. For better social and environmental purposes, these new energy sources should not produce irreversible impacts to nature, could not be monopolized and should be renewable. Based on these criteria, nuclear options are excluded; e.g. nuclear fission because of the high risk of installations, dangerous wastes. Nuclear fusion due to its high costs and uncertainty of its technology. Renewable energies emerge as a feasible option to enter into a new stage of civilization. The European Union and Latin America can join efforts and assume a leading role to conduct the transition to Sustainable Development.
2. Petroleum was the main energy resource used during the last twelve decades and its use allowed a very innovative stage for humankind, but it is also true that its use led to an enormous unbalance among nations, jeopardized biodiversity and had an impact on the atmosphere quality of the Biosphere. The conservation of the remaining natural inheritance is, without any question, a central value that humankind assumes to defend and promote. The energy transition should take into account the recovery of environmental quality.
3. If the new *post-petroleum civilization* claims the *right to energy*, it will open the possibility of common adoption of social objectives and environmental Ethics. It should allow democratization not only in terms of energy, but should also allow the establishment of a new social and economical model dedicated to reduce historical differences between North and South and to support ecologically sustained development.
4. The future energy system can be achieved in a vast and complex political project of collaboration between European Union and Latin America. It requires the establishment, on due time, of a coherent strategy that should take into account all system stages: production, transportation, distribution and use of new energy resources. However, it should also consider the effort and time needed to diminish technological, social, economical, political, and cultural barriers.
5. Europe and Latin America should jointly commit, within the framework of a long-range project, to establish a proper research system and a schedule of actions that will allow common access to a post-petroleum civilization. One possible goal will be to develop technology based on the extensive use of non-conventional resources; e.g. in biological agriculture, the use of biodiversity to obtain soil nutrients, water and biological services, urban waste recycling to feedback nutrients after use in cities, biomass production for fiber, energy and several other objectives, the use of solar and wind forces as sources of energy. This framework could incorporate similar efforts of other regions of the planet.
6. An agreement between the European Union and Latin America should consider the Hydrogen Economy as a democracy project, but with strong environmental concerns considering nature as a third economic factor along with capital and human work. By choosing energy from renewable natural sources, Hydrogen Economy can be integrated into a network of diversified energy support. The choice of Hydrogen Vector should be explicitly committed to a renewed concept of the World and relationships among countries. Thus, we could establish a pact of clean energy

production without generating hazardous wastes to promote a Sustainable Civilization in the long run, which would allow Humankind to enter into a stage of *Post-Petroleum Civilization*.

7. Far from being a planetary utopia, the “*Hydrogen Economy*” could be fallacious if the social context of Third World Societies is not properly taken into account, because in those societies, differently from Europe, economic and social inequities prevail, which keep the population without any means to live life with dignity.
8. It will not be possible to experience a change in economic, political and social structures in Latin America if only one productive factor (technology) is taken into account as it is usually done. It will be necessary to establish a global conscience regarding the responsibility of humankind to establish an harmonic and sustainable relationship with its environment. Human dignity and respect to Earth should be more important than economic interests of small groups that retain power and are responsible for Biosphere damage and huge and unsustainable differences among populations of central and peripheral countries.
9. An important alert is being made here to avoid the imposition of a technological model without conducting enough economical, social, ecological and energy studies and without transferring good quality information to people so that decisions can be made in a democratic way. The population has to be aware of all these new perspectives and discuss them, as well as time and conditions to incorporate new cultural paradigms; otherwise, there is a risk that solutions adopted could lead to more problems than those that we tried to solve. These new technologies could empower traditional hegemonic groups (without social and environmental concerns) that have always had access to foreign technology to intensively exploit natural resources and local populations.
10. Great support has to be given to local technological innovations that are fit to a transition stage towards Sustainable Development. Many of these projects are now under development in Latin America and also in Europe (Ecolink, Via Campesina and other networks). Some of these projects were identified and will be presented to the participants of the Workshop. Their titles are: (a) agroforestry model integrated to small animal husbandry for mountain region in the southern part of Brazil; (b) proposal for integrated, medium-scale, ethanol distillery with electric power co-generation and food production in São Paulo; (c) new methods for enterprise accounting that take in consideration nature contributions and negative externalities; (d) new certification procedures to ensure food quality, safety, sustainability and total energy used in the life cycle of products; (e) new farm behavior appraisals considering biocomplexity and biodynamics for watershed planning; (f) new indicators of ecological-energy and social performance; (g) new methods for modeling and simulating ecosystems behavior; (h) small sub-soil permeable and economic dams to optimize rain-water use in semi-desert areas in the north-eastern part of Brazil; (i) theoretical basis and practices for sustainable forestry in Amazon region; etc.
11. Not only solutions but also problems were identified and will be discussed in the Workshop: (j) analysis of intensive corn-swine-fish production systems in the southern part of Brazil; (k) the point of view of small farmers’ movements, since many of them were excluded by the construction of large dams; (l) point of view of workers unions regarding Ecology and Energy; (m) a study on social and ecological debts and their inclusion in the economical debt discussion; (n) study on the social and ecological impact of adopting transgenic soybean seeds in Argentina.
12. Among the proposals and projects presented by invited researchers from Northern countries we have: (o) planned decentralization of urban systems in accordance with the objectives of Agenda 21; (p) methodological basis to discuss prices in common

markets; (q) new scientific disciplines to empower professionals to deal with Sustainability issues; (r) social and environmental impact of fuel cells; (s) inclusion of carrying capacity in project appraisal; (t) measuring the economic growth dependence on petroleum consumption; (u) conscious ways for a transition to an ecologically sound development.

13. The group that has met in Campinas believes that a common priority is to support efforts developed in the South and also in the North hemisphere to develop self-sustained integrated food-fiber-water-energy projects. These kind of projects are strategic for both Hemispheres. Moreover, it shows the possibility to enhance interactions within the group and with society to provide information and discuss new ways to work with social movements, universities, high school teaching systems, universities, governments and enterprises interested in the perspective proposed during the Workshop.