

WIPO/ECTK/SOF/01/2.9

ORIGINAL: English

DATE: May 2001



THE PRESIDENT OF THE
REPUBLIC OF BULGARIA



WORLD INTELLECTUAL
PROPERTY ORGANIZATION

**INTERNATIONAL CONFERENCE ON
INTELLECTUAL PROPERTY, THE INTERNET,
ELECTRONIC COMMERCE AND TRADITIONAL KNOWLEDGE**

organized
under the auspices of
His Excellency Mr. Petar Stoyanov, President of the Republic of Bulgaria
by
the World Intellectual Property Organization (WIPO)
in cooperation with
the National Intellectual Property Association of Bulgaria

**Boyana Government Residence
Sofia, May 29 to 31, 2001**

RECENT DEVELOPMENTS AND CHALLENGES IN THE PROTECTION OF
INTELLECTUAL PROPERTY RIGHTS (IPRS)

WILL PATENTS PRESERVE THE EXPERIMENTAL AND INNOVATIVE
SPIRIT AT GRASSROOTS?

*Contribution by
Mr. Anil K. Gupta, Executive Vice-Chairman, National Innovation Foundation, Ahmedabad*

THIS PAPER WAS SENT AS A CONTRIBUTION TO THE CONFERENCE PROGRAM

BY

PROFESSOR ANIL K. GUPTA, INDIAN INSTITUTE OF MANAGEMENT,
AND COORDINATOR, SRISTI, EDITOR, HONEY BEE,
AHMEDABAD

*e-mail: anilg@sristi.org / <http://www.iimahd.ernet.in/~anilg/>
<http://www.nifindia.org>*

The views expressed in this paper are those of the author and do not represent an official position of the organizers of the conference. The fact of publishing this paper does not represent an endorsement or support of the views, facts or positions expressed therein.

1. The growth of biotechnology, seed and drug industry relying primarily on biodiversity and in many cases, associated knowledge systems has alerted the biodiversity and traditional knowledge rich communities and countries around the world. There is a feeling that the outside users of local and traditional knowledge as well as genetic resources have not fulfilled their ethical, institutional and economic responsibilities towards knowledge and resource providers. In the wake of globalization, most developing countries need considerable access to international capital for which they have to deregulate and also liberalize their economy. The pressure on natural resources is increasing but the livelihood options of the local communities and disadvantaged people in many cases have not increased. Under such a situation, the concerns about asymmetry in sharing of benefits through the use of traditional knowledge and biodiversity resource are bound to become more acute and urgent. The charges of bio-piracy against various international companies and research organizations continue to be leveled by the NGOs and other civil society actors because of lack of reciprocity in sharing of benefits. At a time when need for international cooperation to enhance the incentives for conservation is highest, we notice the degree of mutual faith at its lowest ebb. There are several reasons for lack of faith in the current institutional arrangements particularly existing system of intellectual property rights such as, (a) lack of explicit recognition of the rights of communities and individuals in their knowledge produced in past and/or recent times through collective or individual efforts, (b) absence of any obligation on the part of those seeking intellectual property rights protection to disclose the ethical, material and institutional propriety in using local knowledge, (c) lack of institutional arrangements involving very low transaction costs to register local knowledge, innovations and practices at national and international level to get recognition, reward (material as well as non material for individuals as well as groups), and attract potential investments, (d) lack of national and international funds for supporting the protection of intellectual property rights of small innovators, (e) modification in the IPR instruments and policies to deal with the vexing issues of prior art, public domain, traditional knowledge, local varieties or land races, collective or community knowledge, etc., and (f) lack of non-IP based reward systems to supplement IP based incentives.

2. In this paper I describe in part one the boundaries of various knowledge systems and the inherent tensions as well as complexities in dealing with traditional knowledge and contemporary innovations. The experience of Honey Bee network is summarized in part two. The discussion on modifications in various IP instruments is given in part three.

I. UNDERSTANDING TRADITIONAL KNOWLEDGE, ACCESS TO GENETIC RESOURCES AND FARMERS' RIGHTS AND INCENTIVES FOR INNOVATIONS: CONCEPTUAL FRAMEWORK

3. Many times researchers have tried to portray traditional knowledge systems as totally different and opposed to the so-called modern and western knowledge systems. Nothing could be further from the truth. Some aspects of traditional knowledge systems contain most of the elements that make a scientific proposition valid. At the same time, many scientific institutions use traditional cultural symbols and practices to generate an extra ounce of confidence or certainty. For instance, when a farmer decides to sow his crop at a particular time, taking various factors such as meteorological conditions, soil, moisture, temperature, etc., he is using his empirical knowledge, which generates replicable, refutable, and verifiable results. No matter who sows crops at that time under the given conditions, other things remaining the same, he or she should get the same result. Likewise, every time the same crop is sown with similar conditions, it should give similar results and if one wanted to prove this

wrong, it should be possible to sow early or late and get different results. The scientific nature of much traditional knowledge formed the basis and philosophy of grassroots innovators' own initiatives for benefit sharing in their traditional knowledge. For example, the Honey Bee philosophy about the scientific nature of local innovations was the basis for the creation of the Honey Bee Network a twelve years ago. At the same time, I and other members of HB network realized that there are cultural codes and institutional mechanisms associated with some of the traditional knowledge systems which ensure that the knowledge, innovations and practices are understood and explored in a given context. This is not to say that all the elements of this context are scientific in nature. Cultural contexts based on shared beliefs may provide a basis for dealing with a whole range of uncertainties and at the same time provide a common understanding of social, biological, cultural continuities.

4. Whenever some members of a community recognize the need for a discontinuity, a major transformation takes place. A new crop is introduced, a new implement is invented, a new variety is developed through selection or sometimes through grafting or budding -- an innovation takes place. Some of these innovations over a period of time get embedded in the socio-cultural contexts. While constructing a modern building, setting up a laboratory, installing a new machine, prayers are routinely held in many parts of the world as if the technological insurance is not sufficient, a kind of spiritual assurance is sought even in most of the modern institutions. It is true that causal explanation of modern scientific proposition is sought and provided in the material structures of science, i.e., verifiable principles governed by universal laws and which can be tested and measured. In certain aspects of traditional knowledge systems, non-material beliefs and cultural codes are supposed to explain or guide the consequences of material transactions. For instance, a healer may not reveal his or her knowledge lest it loses its significance on being told. It is possible that this belief seemingly unscientific might have been a means of ensuring that a complex or risky recipe is not pursued or practiced by someone untrained or untutored in the art. It is also possible that it is just a superstition, but in any case it lends coherence to the knowledge system and the surrounding context. It is not my contention to argue that traditional knowledge systems and associated institutional arrangements cannot be dismembered at all. However, in many cases, when we take a plant or some other element of local knowledge systems out of its institutional context, even if a scientific relationship between cause and effect does not get adversely affected, the institutional context in which the plant is collected (for example, only when necessary and only in limited quantities) may get affected. Therefore, we may be able to develop a good and effective drug by just dealing with the utilitarian part of the traditional knowledge systems. But we may not necessarily maintain the restraint that may have been kept in place by some of the traditional institutions for conservation of that plant. That is the reason why many groups oppose bio-prospecting by outsiders in order to avoid the risk of over exploitation of the resource itself. What they however, miss is that the problem is not so much with bioprospecting as with the institutional arrangement.

5. The context of local knowledge systems combining traditional skills, culture and artifacts with modern skills, perspectives and tools is not something that has happened only in the recent past. From time immemorial, new crops were introduced from one part of the world to another and cultural and ecological knowledge systems evolved while adapting these crops, animals, trees, tools, etc., into their new contexts. This is an ongoing process. What may set the traditional ways of dealing with local resources and external knowledge and inputs apart, may be a slower trial and error approach, which may not necessarily be unscientific. But, it may not be fully compatible with modern methods of experimentation, validation, and drawing inferences. In some cases, the correspondence is close but in many cases it may not be. However, it is possible that through flexibility, modification and mutual

respect and trust, traditional knowledge experts can and may work with the experts from modern scientific institutions to generate more effective solutions for contemporary problems. After all, the "tool view" of science implying excessive reliance on specific methods of solving problems has never helped in taking scientific research very far. Traditional contexts reflect and embed certain rules about how we relate to nature, to each other and to our inner selves, which can help in generating sustainable and compassionate approaches to solving problems. Incentives for creating a sufficiently strong desire for experimentation will become embedded when modern institutions recognize, respect and reward the experiments done in the past. The experiments and innovations have led to very significant and identifiable advances in our knowledge about biodiversity and other natural resources and their application in our day-to-day life. One can make an equally strong case for recognizing traditional art and craft forms, music and other kinds of expressions of local creativity of individuals as well as communities based on traditional as well as modern materials. However, in this paper, we are not dealing with other forms of creativity, but only those, which deal with biological materials.

Contested domains of local/traditional knowledge

6. The conceptualization of indigenous knowledge as an autonomous subset of local knowledge evolved through interaction among local communities, individuals, and their environment over a long period of time, is problematic on two accounts: (i) there always are interactions with other knowledge systems through trade and other exchanges from time to time incorporating elements of these outside systems with or without their contextual incorporation, (ii) knowledge is not produced only collectively and is not only inter-generational in nature. I have argued (Gupta, 1980, 1984, 1987, 1988, 1989, 1992-99) that knowledge is produced locally and sometimes indigenously by individuals without any interface with the community or outsiders. Just as it is also produced otherwise. The contemporary knowledge could build upon traditional knowledge but may also be developed autonomously. Merely because a particular innovation builds upon traditional reserve of knowledge produced within the community or outside does not invalidate or minimize the contribution of individual in the contemporary context. The possibility of such contributions being recognized by modern IPR systems is obvious, notwithstanding the transaction cost involved therein. The problem arises when (a) knowledge is produced over a long period of time by a community in isolation (a1) or in conjunction (a2) with other communities, (b) knowledge is produced by some individual experts in the community sanctioned, authorized, recognized or legitimized by the community formally or informally, (c) knowledge produced in long past and codified in some texts (c1) or retained in oral traditions having continuity through informal institutions or rituals (c2) or recalled by some individuals without any continuing tradition of practice in real life through rituals or otherwise (c3), knowledge produced over a long period of time but practiced and specialized by a few individuals (c4) and knowledge produced in recent past with author known (c5) or unknown (c6) with limited or wide diffusion; (d) knowledge produced in contemporary times by the community in the wake of some crisis or through some common institution and (e) knowledge produced by individuals (e1) or groups (e2) or associations or guilds (e3) based on some external resources introduced by state, markets, NGOs or simply through some individual exchange with outside world (for instance, local knowledge about use of neem developed in some African countries where it was introduced in mid 70s or similar knowledge produced by local communities to use tyres of automobiles as fish reefs or in the boats or as flower pots, etc).

7. In figure one, I have described three circles, which signify the domains of private or individual knowledge, community knowledge and public domain knowledge. It is possible

that individual produces or discovers a specific bit of knowledge which he or she shares with the community. The feedback from the community helps in improving it. Eventually, through a word of mouth or otherwise, several other communities come to know of it and this knowledge becomes well known. In the process it comes in public domain. The interface between individual and community has been captured in the points b, c, c1 to c6 and e1 to e3 above. The important issue here is that the complexity of traditional knowledge system requires a contingency approach to intellectual property protection. We should not assume that every bit of knowledge, innovation and practice can be protected by the same instrument.

8. There could be many other variations in production and reproduction of knowledge by individual or communities. For instance, knowledge produced by some individuals in past (a variety selected by some specific farmers) may be reproduced by a community (which grows this variety and provides/does not provide feedback to the original developer). Likewise, a landrace may be developed through collective effort of a community but may be reproduced by only one or two individuals for whatever reasons. The assignment of intellectual property rights in these varied situations will have to follow different kinds of modalities and institutional arrangements. Just as variations have already taken place in the evolution of Plant Variety Acts through acceptance by UPOV of new concepts such as, “wild discovered plants” having DUS property as the new variety (Gupta, 1999). There is a similar need for modifications and adaptations in the IPR laws to reward different kinds of contributions by individuals and communities in long past or recent times through improvement or innovations in local materials, knowledge systems, or external materials or knowledge systems or a combination of these.

A. Incentives for Conservation and Value Addition

9. To overcome many of these constraints, four kinds of incentives have been proposed (Gupta, 1991, 1995, 1997). The matrix resulting from the interaction of two variables (a) nature of benefit, whether material or non-material and (b) target of benefit, whether individual (including group of individuals) or community provides the framework for designing these four incentives for rewarding innovations.

Forms of Benefit

	Material	Non-material
Individual		
Target of Benefit		
Collective		

a. Individual - Material

These rewards are in material form such as royalties from patents, copyrights or trademarks, biodiversity user fees, monetary rewards, fellowships, land assignment or equipment, etc., to individuals. These could arise from those who license technologies of herbal- or animal-based recipes by local individuals or educational or research grants etc.

b. Individual - Non-Material

Documentation, press coverage, TV and other media, public felicitation, invitation to lecture in schools, centers of learning and research. Invitation to conferences, workshops attaching the name of the innovator to the innovation (an incentive frequently used by the local communities themselves), photographs being placed in village or district councils, access to new skills. For example, SRISTI has been giving the SRISTI Sanman (honor) for the last five years to outstanding innovators at grassroots level.

c. Community - Material

These are quite relatively important. The rewards in material form to communities or groups of people help to generate the right signals for mobilizing the collective action, which is so important for conservation. The instruments of such rewards could include risk funds, trust funds, priority in the development or allotment of infrastructure such as schools, health care system, access roads etc. free or easy access to data banks, access to external expertise, community awards, community grants/risk funds, external aid in developing common property assets, marketing intervention for organic produce, etc.

d. Community - Non-Material

These are rather difficult to implement but may have quite an enduring impact particularly when the rewards change the values of the communities positively. Rewards include policy changes to ensure greater control over local natural resources, removal of perverse incentives (that is indications which encourage non-sustainable use of resources) for conservation, favorable policy environments for eco-friendly products, conservation practices, media attention, community awards, capacity building through transfer of technology, building up of negotiation skills, pedagogy changes, inclusion in the curriculum of lessons which raise social esteem for local, eco-friendly practices and innovations, etc.

10. The magnitude, manner and form of incentives or benefits may influence the degree of involvement of the local communities or individual innovators in future projects of biodiversity conservation.

- Incentives could be in cash or kind, conditional (linked to research) or unconditional.
- Community incentives could be of a direct nature or they could be indirect. They could be provided at one point in time or over an extended period of time.
- Incentives could be provided by external agencies or by the local communities themselves. The improved status of the innovators on account of social recognition

may or may not be associated with a greater say in decision making at the societal level.

11. Incentives may focus on empowerment of local communities so that they may have better negotiating skills and better knowledge for conservation of local resources. Alternatively, the incentives may be targeted directly at conservation. Incentives targeted at the community may lead to action either at the community level or even at the individual level.

B. Reforms Needed in IP Instruments and Perspectives

12. There are ten issues which need to be tackled while revising TRIPS and associated procedures from the point of view of agrobiodiversity and associated knowledge systems, (i) the land races and their unique uses need to be protected through a registration system at national and international level so that there are incentives for local communities to disclose various properties that they have identified in these plant varieties or local herbs; (ii) the community knowledge should be subject to protection by the communities represented by the village councils or their federation considered for the purposes of the property rights as body corporates; (iii) in cases where the land races and/or the local plants have been documented and incorporated in the national or international gene banks, the responsibility of the biodiversity users to share part of the benefits must be acknowledged so that incentives for conservation are available to the communities; (iv) the new uses of existing diversity should be subject to registration and availability of 'use' patents. Many countries do not permit 'new use' patents. They should reconsider their position if they want to empower local communities to draw benefits from this provision; (v) the duration of protection for land races so far as the right to share benefits from commercial use is concerned, one could consider a longer duration than twenty years; (vi) The farmer breeders may not be able to provide data required by the Plant Variety Authority. It should be necessary for the authority to fund generation of this data whether in farmers' fields or on research stations. Pending that stage, the claims of the farmer breeders may be accepted provisionally. (vii) The requirement of uniformity and stability may not be necessary for composite varieties designed to deal with fluctuating environments. This requirement may need modification in specific cases. (viii) Any applicant seeking plant variety protection must declare that s/he has not used any variety developed by a farmer / community without their authorization. (ix) Applicants seeking protection for varieties that have incorporated characteristics from public domain agrobiodiversity must be willing to contribute a specific part of the sales or licensing fees towards national gene fund and in case of international companies, International Gene Fund proposed under FAO. (x) The farmers right to exchange, store, sell or distribute protected seed material without brand name should be allowed since more than sixty to seventy per cent of seed materials is obtained through such exchanges or storage.

13. Other modifications needed in the Implementation of TRIPS are:

- i. The developing countries must recognize that 'first to invent' system as used in US is far more favorable to small, scattered and disadvantaged innovators than the 'first to file' system. It is necessary to review this provision in the process of harmonization of IPR procedures and ensure that we provide liberal opportunities to small innovators.
- ii. Every patent applicant must declare that claimed invention is based on material/knowledge obtained lawfully and rightfully ensuring due compensation to the providers. The 'lawful' implies compliance with the laws of the country from

where the knowledge/resource is accessed. The 'rightful' implies moral duty to have prior informed consent of the provider ensuring equitable benefit sharing, even if the law of the country did not require it.

- iii. The community or individual knowledge, which is not reasonably accessible, i.e., which has not been coded and/or catalogued in publicly accessible databases should not be considered prior art. Such knowledge should also be considered a patentable subject so long as it meets the novelty criteria.
- iv. Grace period. The traditional knowledge shared in good faith by the local healers and herbalists after 1995 should be considered patentable subject by providing a special grace period for the purpose. Generally, only one-year grace is provided in US in case the innovation has been published or disseminated.
- v. The public domain traditional knowledge be put in a digital library by every country in the region so that issuance of patent to third parties on knowledge already in public domain is avoided. India has already started TKDL (Traditional Knowledge Digital Library) project to avoid issuance of frivolous patents.
- vi. Just as collective management systems have been developed for protecting IP in music, songs, performances, etc., institutional innovation is required for collective management of individual product and process patent applications on behalf of small innovators, tribals, local communities so that their transaction costs for seeking such protection can be reduced.

II. EXPERIENCE OF HONEY BEE NETWORK IN AUGMENTING INNOVATIONS

14. The Honey Bee Network evolved twelve years ago in response to a personal crisis. While I had grown in my career, received awards¹, recognition and remuneration for writing about knowledge of innovators and other knowledge experts at grassroots, very little of this gain had actually been shared with the providers of knowledge in concrete terms. Much of my work was in English language till that time. I had tried to share the findings of my research with people; it had not been institutionalized in local languages. Likewise, I had tried to acknowledge the knowledge providers; they still had remained broadly speaking, anonymous. It was obvious that my conduct was not very different from the conduct of other exploiters in society. They exploited in land, labor or capital markets. I exploited the poor in knowledge market. It is at this stage a realization dawned that something had to be done to overcome this ethical dilemma. The Honey Bee as a metaphor came to rescue one day. Honey Bee does what we, intellectuals, do not do. It pollinates the flowers and takes away the nectar of flowers without impoverishing them. The challenge was, to define the terms of discourse with the people in which they will not complain when we document their knowledge, they will have the opportunity to learn from each other through local language

¹ The Honey Bee network has also received many awards and recognition. Apart from Pew Conservation Scholar award to Prof. Gupta in 1993, the Far Eastern Economic Review chose SRISTI and Honey bee network for Asian Innovation Gold Award in 2000 (9 Oct 26, 2000).

translations, they will not be anonymous and they will get a share in any wealth that we may accumulate through value addition or otherwise. Honey Bee Network has brought lots of volunteers together who share this philosophy partly or completely and who want to link up with an immense source of energy and inspiration available with the grassroots innovators².

15. The asymmetry in relative weight which contemporary society places on this resource of grassroots innovations and informal knowledge vis-à-vis formal knowledge and technologies in devising developmental options almost always is skewed in favour of formal science, technology and other linked knowledge systems.

16. I will present some evidence of this bias and also share the lessons of Honey Bee Network.

a) poverty because of generosity, and consequent knowledge erosion

17. Unethical exploitation of the local knowledge continuing for centuries leading to capital accumulation in the formal sector without any reciprocity, can not continue for long. Since many of the grassroots innovators conserve nature particularly biodiversity despite remaining poor themselves, share their knowledge with outsiders generously and do not assert their rights, an anomaly has emerged. The youth in the same societies do not want to emulate in the footsteps of their elders. They do not want to be penalized because of superior ethics of their elders who shared their knowledge and remained poor. If some thing was given, it was accepted but a payment for services was not demanded. There are several consequences. One, the erosion of knowledge is taking place at a very rapid rate, the building block of healing and herbal tradition is getting lost. Many plants are becoming weeds. Just as one cannot locate a book in a library if the catalogue is lost or misplaced, likewise if the knowledge about the plants, their place in nature and uses is lost, one cannot accord them the value they may deserve. There are several other forces accentuating the knowledge erosion such as loosening links between grand parent and grand children generation. But the crucial issue is the loss of respect for this rich source of traditional knowledge. It is taking place precisely because younger generation, exposed as it is to media, and everyday news of upward mobility of some ordinary people, does not perhaps want to remain poor because of their superior ethics.

b) Articulation of social versus ethical capital

18. The question then arises, how do we harness this ethical capital for social transformation? I differentiate ethical capital from social capital because trust and goodwill exists among members of mafia also. We cannot obviously interpret the trust among various segments and networks in society as an unmitigated good. Trust is very valuable when it is also mediated by desirable social purpose and helps in reducing transaction costs of disadvantaged. If it increases the transaction costs of the poor because the well off forces in a social situation have tremendous trust among themselves (such that nothing would disturb their privileges and resource wasting life styles, no matter what), how could such trust be considered social capital. In such a case the trust among the social networks that do not

² The Honey Bee network was founded with the help of Prof. Vijay Sherry Chand, Jyoti Capoor, and many other friends. Later Kirit Patel joined and made an immense contribution. Kapil Shah, Rakesh Basant, Amrut Bhai Agrawat, Chiman Parmar, Praveen, Mahesh Parmar, Hema Patel, Shailesh Shukla, T N Prakash, P Vivekanandan,, Sudhirender Sharma, and many others have contributed to the growth of Honey Bee network.

necessarily contribute to the creation of common good cannot be called as social capital. The debate on the subject has included this divergence but the resolution has eluded so far. My contention is that trust accompanied with reciprocities in a social network bound by pursuit of a common good in the larger social interest does constitute social capital. However, when this good is pursued through ethical means and for non-sectarian interests, one could argue that it constitutes ethical capital. There are many other sources of ethical capital such as the norms of ecological ethics, social and professional ethics, and eventually the individual ethics, which permeates all kinds of organizations whether formal or informal and political or public or private or civil society organizations.

19. Honey Bee Network is an attempt to articulate ethical capital of our society, guided as it is, by the spirit of innovation, sharing and networking for generating eco-compatible technological and institutional solutions for natural resource management problems.

c) Ecological ethics

20. There are several ways in which ecological ethics has been articulated in the Honey Bee Network constituting ethical capital. Our first encounter with this phenomenon took place seven years ago when we were making a small film on grassroots innovations and outstanding traditional knowledge with the help of Indian Space Research Organization. The photographer and the director of the film, Jayantibhai had accompanied us to a village in north Gujarat to meet a herbal healer namely, Karimbhai. He was extremely poor economically but was very rich in his knowledge and ethical values. When Jayantibhai plucked a particular plant on the roadside growing abundantly and asked Karim Bhai to hold it in his hand facing the camera, Karimbhai suddenly became upset. He asked as to why was this plant plucked when there was no immediate need for using it. He could have held this standing plant in his hand. We realized importance of the notion that even a roadside plant (which was not endangered or scarce) should not have been plucked unless there was a need for it. This was the value unknown to us till that time. Likewise, we have had many examples of ethical capital manifesting in our network. In drought prone regions, a large number of villages have institutions to collect greens from every household to feed the birds. Despite the fact that birds attack the crops and cause loss, I have never come across farmers killing the birds by poisonous baits or shooting. On the contrary they would rather sit on a raised platform under the scorching sun and scare the birds to save their crops. Variety of birds scaring devices have been developed by the farmers but the taboo on killing birds is widely prevalent. Occasionally, one does come across a single dead bird hanging on a pole to scare the other birds but killing the birds in general does not happen, though there are other tribal communities which do kill the birds and eat them.

21. There are fishing communities which have common property institutions to ensure that nobody would use a gillnet of mesh size smaller than four inches. This is done to ensure that small sized fishes do not get caught. All these examples indicate that institutional innovations help in articulating ethical values and accumulating ethical capital in societies trying to live in harmony with nature. It is obvious that this capital base is narrow as evident by the extraordinary serious situation with regard to environmental externalities and many irreversible damages caused by human actions. So long as there remains a hope through continuing living wisdom, one is challenged to explore opportunities for expanding such capital base.

- d) Technological innovations to overcome inertia and improve efficiency at grassroots

22. Honey Bee Network has documented more than ten thousand innovations either of contemporary origin or based on outstanding traditional knowledge primarily from India but also from all parts of the world. Many of these innovations are extremely simple and can improve efficiency of farm workers, women, small farmers, artisans and others a great deal. However, the diffusions of these innovations across language and regional boundaries has been extremely slow despite the fact that Honey Bee newsletter has been coming out in six languages for a decade or more. There are many barriers to the evolution and diffusion of these innovations. (i) Lot of people have learnt to adapt and adjust to a constraint rather than transcend it. In case of women based technological problems, this constraint has been a consequence of cultural institutions, which prevented them from acquiring black smithy or carpentry tools. Women are very creative in coping with the constraints and sometimes transcending them but relatively speaking, except in health, childcare and animal care, the innovations by the men have outnumbered the ones by women in our limited sample. We have to look deeper to understand the dynamics of such engendering of particular kind of creative capacities. (ii) There is a contempt in society for someone who breaks out of the mold. Despite upsurge of entrepreneurial spirit in different parts of the country in recent times, by and large a social deviant who is trying to do something new is often a butt of ridicule. Only those innovators who can withstand sometimes the indifference and occasionally the hostility of their peers can succeed in developing lasting solutions. (iii) The lack of social networking among the innovators has prevented them from faster collaborative learning or from provision of moral support in the times of crisis or failure; (iv) lack of access to formal scientific institutions accompanied by lack of general responsiveness on the part of scientists has also prevented grassroots innovators in optimizing their solutions and in some cases even pursuing their innovations to logical conclusion. (v) The formal scientific institutions at national and international level have failed to build upon grassroots innovations thereby weakening the momentum for even articulating the innovations. (vi) The educational systems at different level ranging from primary to higher education have ignored this subject and have almost never included profiles of grassroots innovators in the curriculum or pedagogy. The result is that young people of ten grow with assumption that technological solutions to their problems would come from outside and generally from west and rather than evolving from within. The defeatist mentality and pervasive cynicism add to the problem. (vii) The lack of micro venture capital prevents transition of small innovations into enterprises. The incentives therefore, remain limited for those who innovate. While micro finance facilities are now available around the world, micro venture finance for small innovations has almost been totally absent. This institutional gap shows the lack of appreciation by the global as well as national public policy institutions of the potential that grassroots innovations have for generating employment and overcoming poverty. (ix) The lack of intellectual property protection through specific instruments and legal frameworks designed for helping small innovators may also inhibit the articulation or sharing of innovations.

23. Despite all these reasons, innovations have indeed been scouted, documented and disseminated by Honey Bee Network and SRISTI (www.sristi.org) over last twelve years. Innovations such as a modified pulley to draw water, a gum scrapper to enable women to gum from thorny bushes or tress, or large number of small machineries, herbal pesticides, veterinary medicines, new plant varieties, agronomic practices or other products have been developed by the unsung heroes of our society without any outside help (www.sristi.org).

e) Linking innovation, investment and enterprise: Micro venture promotion fund

24. As a follow up of first International Conference on Creativity and Innovations at Grassroots held in January 1997 at IIMA, a regional fund was created in collaboration with Gujarat state government to convert innovations from Honey Bee database into enterprises. GIAN (Gujarat Grassroots Innovation Augmentation Network, www.gian.org) was set up in 1997 to link innovations, investment and enterprise. The idea is that innovators sometime may not like to become entrepreneurs themselves. And even if they want to become entrepreneurs they may not have access to risk capital, technical know-how or design input for making their innovations into a product, which can be commercialized or diffused through non-commercial channels. GIAN has filed patents on behalf of grassroots innovators, incubated several innovations into products, and licensed some of the innovations to entrepreneurs on district wide basis with the license fee going to the innovator (even when patents for the licensed innovation have only been filed and not granted). Why are there not many GIANS within the country or around the world? The possible reason could be that the development planners and international aid and investment agencies have failed to see the potential of knowledge intensive approach to development. It is useful to summarize some of the lessons of incubation process. Many times, the innovators do not prove to be good entrepreneurs. They seldom realize that by not making any two machines or products alike, they generate a doubt in the minds of the customers that some people get more features than others. Likewise, there are innovators who do not think they can learn very much from other experts particularly from formal sector. It is a different matter that many times, the experts in the formal sector also fail to see the merit of the local innovations. The lack of incubators, labs and other science and technology institutions dedicated to adding value to local innovations make the tasks of these innovators even more difficult. The lack of venture promotion capital and R&D funds constrain the pace and scale of technology upgradation of the innovation. The lack of mentors affects the moral of budding entrepreneurs who often need a shoulder to cry on. The lack of certification facilities at concessional rates for the products based on local innovations delays and sometimes inhibits the diffusion of innovation. Finally, the lack of media support prevents the horizontal networking among the innovators and generation of the demand for their products.

25. While Honey Bee Network is experimenting with the use of information technology through multi media multi language databases accessible through touch screen kiosks, we are conscious of the limitation information technology has at the current level of infrastructure in making major impact on society.

f) National and International Register for Innovations and a Clearinghouse for Horizontal Networking and Innovation Market

26. The transaction costs for innovators around the world to learn from each other and thereby improve the livelihood options, are very high. The popular media and other channels of communication do not pay attention to this source of creativity. Unless we have a clearinghouse in multiple languages and easily accessible in remote areas through Internet as well as radio, it will be very difficult to create horizontal networks of grassroots innovators. A step in this direction was taken in India recently. National Innovation Foundation (NIF, WWW.nifindia.org) was set up in March 2000 with a corpus of US 5 million dollar by Indian Department of Science and Technology at Ahmedabad essentially to scale up the Honey Bee model all over the country. NIF will develop a national register of inventions and innovations, link innovation, investment and enterprise, connect excellence in formal and

informal sciences, set up incubators and help in changing the mindset of the society to ensure respect, recognition and reward for the grassroots innovators. SRISTI has moved a proposal for Global Innovation Foundation primarily to create multi language multi level clearinghouses for networking innovators. However, one of the problems that remain is the protection of intellectual property rights. It will be impossible for traditional knowledge experts and contemporary innovators to pursue standard patent protection where the average cost is about 15–20,000 dollars per international patent. The cost of validating the patent in each country every year is extra. There is a provision in the TRIPS as a part of WTO that an international negotiation be initiated to develop a global registry of wines. Obviously, it was done to persuade France to the sign the GATT treaty. There is no obvious reason as to why international registry should be restricted only to wines. It should be considered possible to develop track two system of intellectual property protection. Under this, any inventor from any part of the world should be able to register one's innovation or traditional knowledge and get at least 8 to 10 years protection with 3 to 5 claims at a very nominal cost to be paid in national currency at the national IP office. This registry will provide incentive to the millions of knowledge rich, economically poor people to disclose their innovations and at the same time explore the possibility that investor or entrepreneur from one part of the world will join hands with them to set up an enterprise in their own country or in another country. Thus, the grassroots creativity can harness global capital and entrepreneurial support for decentralized development. This is the only way I can imagine forces of globalization can be mobilized in support of autonomous development at grassroots level.

Reforms needed in TRIPS and Associated IP instruments

27. There are ten issues which need to be tackled while revising TRIPS and associated procedures from the point of view of agrobiodiversity and associated knowledge systems, (i) the land races and their unique uses need to be protected through a registration system at national and international level so that there are incentives for local communities to disclose various properties that they have identified in these plant varieties or local herbs; (ii) the community knowledge should be subject to protection by the communities represented by the village councils or their federation considered for the purposes of the property rights as body corporates; (iii) in cases where the land races and/or the local plants have been documented and incorporated in the national or international gene banks, the responsibility of the biodiversity users to share part of the benefits must be acknowledged so that incentives for conservation are available to the communities; (iv) the new uses of existing diversity should be subject to registration and availability of 'use' patents. Many countries do not permit 'new use' patents. They should reconsider their position if they want to empower local communities to draw benefits from this provision; (v) the duration of protection for land races so far as the right to share benefits from commercial use is concerned, one could consider a longer duration than twenty years; (vi) The farmer breeders may not be able to provide data required by the Plant Variety Authority. It should be necessary for the authority to fund generation of this data whether in farmers' fields or on research stations. Pending that stage, the claims of the farmer breeders may be accepted provisionally. (vii) The requirement of uniformity and stability may not be necessary for composite varieties designed to deal with fluctuating environments. This requirement may need modification in specific cases. (viii) Any applicant seeking plant variety protection must declare that s/he has not used any variety developed by a farmer/community without their authorization. (ix) Applicants seeking protection for varieties that have incorporated characteristics from public domain agro

biodiversity must be willing to contribute a specific part of the sales or licensing fees towards national gene fund and in case of international companies, International Gene Fund proposed under FAO. (x) The farmers right to exchange, store, sell or distribute protected seed material without brand name should be allowed since more than sixty to seventy per cent of seed materials is obtained through such exchanges or storage.

28. Other modifications needed in the Implementation of TRIPS are:

- (i) The developing countries must recognize that 'first to invent' system as used in US is far more favorable to small, scattered and disadvantaged innovators than the 'first to file' system. It is necessary to review this provision in the process of harmonization of IPR procedures and ensure that we provide liberal opportunities to small innovators.
- (ii) Every patent applicant must declare that claimed invention is based on material/knowledge obtained lawfully and rightfully ensuring due compensation to the providers. The 'lawful' implies compliance with the laws of the country from where the knowledge/resource is accessed. The 'rightful' implies moral duty to have prior informed consent of the provider ensuring equitable benefit sharing, even if the law of the country did not require it.
- (iii) The community or individual knowledge, which is not reasonably accessible, i.e., which has not been coded and/or catalogued in publicly accessible databases should not be considered prior art. Such knowledge should also be considered a patentable subject so long as it meets the novelty criteria.
- (iv) Grace period. The traditional knowledge shared in good faith by the local healers and herbalists after 1995 should be considered patentable subject by providing a special grace period for the purpose. Generally, only one-year grace is provided in US in case the innovation has been published or disseminated.
- (v) The public domain traditional knowledge be put in a digital library by every country in the region so that issuance of patent to third parties on knowledge already in public domain is avoided. India has already started TKDL (Traditional Knowledge Digital Library) project to avoid issuance of frivolous patents.
- (vi) Just as collective management systems have been developed for protecting IP in music, songs, performances, etc., institutional innovation is required for collective management of individual product and process patent applications on behalf of small innovators, tribals, local communities so that their transaction costs for seeking such protection can be reduced.

[End of document]