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ENVIRONMENTAL CONFLICT RESOLUTION

B. BOWONDER
Administrative Staff College of India
Bella Vista : Hyderabad-500049
India

ABSTRACT

A conceptual analysis of structural variables encountered in environmental conflicts as well as issues in conflicts are examined. Using various conflict resolution models and knowing the national environmental protection climate and typology of conflict, an appropriate strategy for resolution can be identified. Two major environmental conflicts are analyzed. Conclusions indicate that unless the involved parties believe that although environmental conflicts exist, agreement is possible, no effective resolution can be implemented that will satisfy all parties.

Environmental conflict resolution [1] and environmental mediation [2-8] are becoming increasingly important as environmental planning becomes a part of the economic development strategy. This study is a conceptual analysis of environmental conflicts and their resolution characteristics. Using the conflict resolution models available in organization behavior, an insight into resolution modes has been provided.

ENVIRONMENTAL CONFLICT

Environmental conflicts are highly complex and intricate since our knowledge about them is yet to develop fully. Further, most of the environmental conflicts are intertwined with values, prejudices, fears, likes, dislikes, and beliefs, and once this happens other considerations determine the course of events. Since the existing knowledge base on environmental interactions is in the developmental stage, the decision making takes place under conditions of ignorance and uncertainty. Decision making under ignorance imposes serious penalties on the system.

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Environmental conflict resolution patterns under any system are a strong function of the national environmental protection climate. Further, economically poor people and nations place less emphasis on environmental conservation and more on satisfying the physiological needs of the people. Environmental degradation is severe in most of the developing countries striving to banish poverty [9, 10]. Hence, national environmental protection climate determines the nature of environmental conflict resolution patterns.

Environmental concerns are highly subjective since people respond in terms of perceptions and cognitions depending on attitudes, values, and beliefs, and hence they are highly biased. Most environmental conflicts are displaced, latent, misattributed, or false conflicts and this makes them non-responsive to quick resolution. A number of existing environmental conflicts are belief ridden since they are beyond facts, information, and knowledge. Lastly, many environmental decisions are made by elected representatives or bureaucrats with little long-term concern. With these aspects in mind, the structural variables that enter into environmental conflicts are identified.

MAJOR STRUCTURAL VARIABLES

Environmental conflicts are very complicated due to the large number of variables involved. One important variable is the influence of conflicting groups, since the strength of each involved group determines the nature of the conflict. Relationships between parties and prior relationships also influence the conflict. The intensity of the conflict will be dependent on the nature of the issue such as, conservation of resources, or preservation of species, or exploitation strategy. The time horizon is another major variable. Short-term objectives and short-term-oriented reward systems are in conflict with environmental conservation [11]. The national economic orientation will strengthen or weaken the environmental protection strategy since economically backward groups discount environmental concern when physiological needs are dominant. The national environmental protection climate – a combination of government's attitude towards environmental protection and tendencies toward exploitation – is a major determinant in environmental conflicts. There are four categories of national environmental protection climates:

1. conflict prone;
2. containment aggression;
3. accommodation; and
4. cooperation.

The next variable is the nature of conflict. Conflicts can be grouped as [12]:

1. pseudo conflict;
2. conflict of interest; and
3. common problem.

Pseudo-conflict refers to a condition where one party misunderstands the motives or actions of the other. Conflict of interest refers to a condition in

which involved parties have diametrically opposite objectives. Common problem refers to a conflict in which two groups try to achieve objectives that are not really diametrically opposite. The strategy adopted by the parties or strategy sought to be adopted will either intensify or resolve the conflict (i.e., revolutionary changes, regulatory changes, mediation).

Possible consequences or impact of a conflict also influence the nature of conflict. The behavioral stance of parties will also determine the nature of conflict; traditionalists, interactionists, and behavioralists view and seek resolution in different ways [13]. Behavioral constraints dampen or intensify conflict for belief-ridden and ideological conflicts are difficult to resolve [14]. Ignorance, secrecy, and limited public acceptance can complicate conflicts, as will "politicing" when the government is the mediating agency.

Uncertainty about the outcome of a proposed activity which is under conflict can be another characteristic. Unpredictable and uncertain consequences complicate issues since both parties will tend to maintain their positions. Pay-offs arising out of a conflict can polarize parties. Public awareness of the conflict will have either positive or negative effects on the conflict. The outcome of the conflict will generally depend on group characteristics of the conflicting parties (i.e., group rigidity [15], homogenity, or consensus orientation).

Confrontation modes can vary in various types of conflicts depending on whether confrontation is legal, technical, political, or mass media-oriented. There are two environmental ideologies [16], and, depending on the ideology adopted, the results of conflicts can be different.

Finally, characteristics such as personal parameters, data availability, and situation and strength of conservation groups also influence conflicts. A list of possible variables and their characteristics are given in Table 1.

ISSUES IN ENVIRONMENTAL CONFLICTS

The second set of factors that are to be understood is the issues that are likely to be encountered in environmental conflicts. Resource policy (i.e., the strategy of exploitation, conservation orientation, or pricing); environmental preferences (namely, preservation, or conservation, or exploitation); and intergenerational equity are major issues in resource utilization [17]. Beliefs strengthen attitudes and positions and are difficult to change [18]. Datum of decision can be an issue of conflict and can involve levels of impact, cost of control, or standards to be fixed. Risk is another issue of conflict [19], since multidimensional risks cannot be evaluated, quantified, or compared. The conflict can be on attitude which may be competitive, collaborative, or accommodative. Irreversibility of changes or whether an action is reversible or irreversible can be questions involved in conflicts, as well as horizon of planning, extent of nuisance or population policy, regulatory mechanism, mode of implementation, and incentives to be provided. The nature of effect is yet another major issue in

Table 1. Variables in Environmental Conflicts

Variables	*1*	*2*	*3*
Conflicting groups	Government	Conservation group	Pollution control agency
Prior relationship	Friendly	Adversary	
Relations of parties	Hierarchical	Decentralized	Centralized
Nature of issue	Conservation of resources	Preservation of species	Exploitation strategy
Time horizon	Short-term issues	Long-term issues	Short- and long-term issues
National economic orientation	Poverty reduction	Zero economic growth	Maximum economic growth
National environmental protection climate	Conflict prone	Cooperative	Accommodative
Nature of conflict	Pseudoconflict	Common problem	Conflict of interest
Strategy	Revolutionary changes	Regulatory changes	Mediations
Consequences of the conflict	Reversal of policy	Intensification of regulations	Mass movement
Behavioral stance of parties	Behavioralist	Interactionist	Traditionalist
Behavioral constraints	Belief pattern	Poor public acceptance	Politicing
Uncertainty	Unpredictable	Unknown and uncertain	Certain
Pay-offs	Long-term growth	Resource conservation	Career prospects
Public awareness	Well informed	Aware of issues but of no concern	Illiterate
Group constraints	Consensus-oriented	Group rigidity	Homogenity
Confrontation mode	Legal	Political	Public opinion
Environmental ideology	Technocentric	Ecocentric	–
Personal parameters	Personality of members	Maturity of the group	Ideological considerations
Data availability	Data not known or available	Data available but not reliable	Data scanty
Situation	Complex and interactive	Highly involved	Multiple order-oriented
Strength of conservation groups	Active and influential	Inactive	Active, participatory and advisory

Table 2. Type of Issues in Environmental Conflicts

Issues	*1*	*2*	*3*
Resource policy	Exploitative	Conservation-oriented	Pricing
Preferences	Preservation	Conservation	Exploitation
Intergenerational equity	No concern for future	Immediate concern	–
Belief	Shared beliefs	Latent beliefs	Misplaced beliefs
Datum of decision	Impact	Cost	Standards
Risk	Voluntary	Private	Involuntary
Attitude	Competitive	Collaborative	Accommodative
Irreversibility of changes	Irreversible	Reversible	–
Horizon of planning	Short-term	Long-term	Medium
Extent of nuisances	Air pollution	Climatic changes	–
Population policy	Population has no bearing	Population a resource	Population control needed
Regulation	Comprehensibility	Effectiveness	Cost of regulations
Mode of implementation	Participative	Authoritarian	Liberal
Incentives	Social	Monetary	Moral suasion
Nature of effect	Toxicity	Catastrophic changes	Cumulative
Discounting of consequences	Long-term and interactive	Economic and short-term	Unpredictable
Rates	Growth rate	Harvesting rate	Discount rate
Magnitude	Costs	Investments	–
Controllability	Controllable	Uncontrollable	–
Cost and benefits	Marginal	Substantial	–

conflict, since cumulative and catastrophic effect cannot be predicted [19]. Discounting of consequences, rates of various phenomena, magnitude of values, controllability, and costs and benefits can be issues in conflict. Table 2 gives a list of issues encountered in environmental conflicts.

The parameters involved in environmental conflicts are, thus, varied, interactive, multidimensional, biased, belief-ridden, value-based, and strongly subjective. They generate, sustain, and resolve conflicts.

ENVIRONMENTAL CONFLICT RESOLUTION

Though environmental conflicts involve a large number of variables and issues, they can be grouped into a number of classes to identify the effective conflict

resolution behaviors that are appropriate under various conditions. As mentioned earlier, there are three types of generic conflicts such as pseudo conflict, conflict of interest, and common problem [12]. Apart from this there are four types of national environmental protection climates, namely:

1. The environmental protection agency is aggressive, strong, powerful, and has little trust in other agencies and there is strong political support and public support for environmental protection activities. This climate can be generally called *conflict oriented.* When the other extreme stance of development without ecological concern exists the climate is conflict oriented.
2. The national environmental protection climate can be called *containment aggression oriented* when there are distrust and misunderstanding between political decision-makers and the environmental protection agency. The protection agency does not enjoy the complete support from the political system.
3. The national environmental climate can be named *accommodative* when there is neutrality between conflicting groups and they work together or offer mutual assistance. This occurs when the national system gives equal consideration to developmental activities and environmental protection.
4. The environmental protection climate can be called *cooperative* when environmental protection and developmental agencies work together towards a common goal.

There are four broad possible ways of resolving conflicts: information exchange, environmental mediation, distributive bargaining, and voluntary adjudication. The conflict resolution model developed by Gandz can be extended to environmental conflicts [12]. The most effective, partly effective, and least effective resolution modes for various combinations of national environmental climates and conflict types are given in Table 3.

In most developing countries where poverty is widely prevalent, there is very little concern for environmental protection. Under such conditions there is always a bias towards development and hence environmental protection agencies; if they exist at all, they are powerless because economic development is what is urgently needed. Hence, when the environmental protection climate is conflict-oriented and the conflict type is conflict of interest, the only effective resolution strategy is distributive bargaining. In developing countries where environmentalism is weak and the developmental urge is predominant, the national environmental protection climate may be containment aggression under which the environmental protection agency and development agencies do not trust each other. Under this condition (or when there is a conflict of interest), the only effective conflict resolution strategy will be distributive bargaining.

Information exchange will be the effective strategy if the national environmental protection climate is accommodative or cooperative and the

Table 3. Effectiveness of Conflict Resolution Strategies

Resolution Strategy	*Information Exchange*				*Creative Problem Solving or Environmental Mediation*				*Distributive Bargaining*				*Voluntary Adjudication*			
National Environmental Climate	*A*	*B*	*C*	*D*	*A*	*B*	*C*	*D*	*A*	*B*	*C*	*D*	*A*	*B*	*C*	*D*
Pseudoconflict	L	P	E	E	L	L	L	L	L	L	L	L	L	L	L	L
Common Problems	L	L	L	L	L	P	E	E	L	L	L	L	L	L	L	L
Conflict of Interest	L	L	L	L	L	L	L	L	E	E	P	L	L	P	E	E

Legend: A = Conflict; B = Containment Aggression; C = Accommodation; D = Cooperation; E = Effective; P = Partly Effective; and L = Less Effective.

conflict type is one of pseudoconflict. Environmental mediation or creative problem solving strategy will work if the national environmental protection climate is accommodative or cooperative and the conflict type is a common problem. Conflicts between energy users and environmental protection agencies can lead to energy conservation and the use of alternative energy sources if the climate is cooperative and accommodative. This is a condition to which developing countries can aspire. Such a resolution strategy will lead to the development of ecologically sound, long-term options. If the conflict type is that of conflict of interest and the national environmental protection climate is accommodative and cooperative, voluntary adjudication may succeed. Table 3 will help to identify successful resolution strategies and also explain why certain strategies have failed to resolve certain types of conflicts under specific national environmental protection climates.

The above model considers that the conflict is mainly between environmental protection and governmental agencies. The environmental conflicts become multidimensional when publically-sponsored environmental protection groups also come into play.

ROLE OF ENVIRONMENTAL CONSERVATION GROUPS

Environmental conflicts become institutionalized when the pressure of public opinion through environmental conservation groups increases. The conflict resolution behavior can thus be extended to include these as well. The Blake, Sheppard, and Mouton model can be extended to assist in the understanding of environmental conflict situations [20]. The strength of the conservation group and the nature of development needs can interact to give nine broad situations of conflict resolution. As can be seen from Table 4, if the decision situation is that "environmental conflict is inevitable and agreement impossible," there can be three situations depending on the criticality of the development activity, strength of the conservation groups, stakes of involved parties, and nature of activity. When government is strong, development needs are critical and when pressure from conservation groups is very small and there is little environmental conservation lobbying, no protection may be possible. This explains the prevailing low environmental protection profiles of developing countries. Win-lose struggle or third-party intervention or withdrawal will be appropriate outcomes under the dictum "conflict is inevitable and agreement impossible."

If the decision philosophy is "that although there is conflict – agreement is possible," then a number of conflict resolving patterns can be taken up which will result in environmental protection. Table 4 clearly indicates that environmental protection can be achieved only if the government and conservation groups both take this position. Developing countries have to move over to this state of environmental management through institutionalization of

Table 4. Environmental Policy and Conservation Groups

Environmental Policy Stance / Government's and Conservation Group's Role/ and Role of Involved Parties	*Conflict Inevitable/ Agreement Impossible*	*Conflict Not Inevitable/ Yet Agreement Not Possible*	*Although Conflict Exists, Agreement Is Possible*
Conservation group active Development activity critical Government has high stakes Involved parties have high stakes The activity is related to satisfaction of basic needs	Win-lose struggle	Withdrawal	Problem solving
Conservation group moderate Development needs moderate Government is ready to talk Involved parties have moderate stake and they are willing for moderation	Third-party intervention	Isolation	Compromise, bargaining, mediation
Government group passive Development activity not critical Government willing to give up Involved parties are willing to sacrifice The demand is only a commercial one and not an activity towards satisfaction of a basic need Conservation groups inactive	Withdrawal	Indifference/ignorance	Peaceful co-existance

conflicts. Deutsch has shown that any attempt to introduce a change in the existing relationship between two parties is more likely to be accepted if each expects some net gain from the change than if either side expects that the other side will gain at its expense [14]. Hence, agreement is possible only when both parties have mutual confidence. This requires changes in perception in most cases, which is very difficult. A group can change its perceptions only when it begins with the perception that the situation is one of mutual trust rather than when the group begins with the perception that the situation is one of mutual suspicion [14].

When conditions are such that both parties believe that agreement is not possible, then the belief systems become rigid. There are pathogenic side effects that are inherent in competitive conflicts such as perceptual distortion, self-deception, unwitting involvement, and emotional rigidity arising due to suspicions that tend to magnify and perpetuate conflict [14]. Through institutionalization of conflict [21, 22], research on conflict, intensive training in conflict resolution, and enacting proper environmental regulations, countries have to establish environmental protection agencies which can strengthen the attitude that environmental conflicts are natural but agreement is possible. As can be seen from Table 4, collaborative environmental protection strategy resulting in a policy "development with environmental conservation" can be effective only when all the groups believe that although conflict exists, agreement is possible.

In the following section, two examples are elaborated to examine the applicability of these models in the area of environmental conflict resolution.

Nuclear Power

Nuclear power is an issue of intense conflict with three major parties: nuclear power plant manufacturers, government, and anti-nuclear public groups. Conflicts relating to nuclear power may include:

Displaced conflict – Opposition against nuclear power is a displaced conflict against nuclear weapons [23].

Latent conflict – Nuclear power is opposed because it is clouded with secrecy. This conflict is a latent fear against information secrecy [24].

Veridigal conflict – Fear against nuclear power since it cannot be controlled if catastrophe occurs.

Contingent conflict – Nuclear power is not the only option for energy generation. Proponents of "soft energy options" oppose nuclear power stating that non-nuclear options are feasible [25].

False conflict – Opponents of nuclear power viewed the TMI accident as proof that nuclear reactions are unsafe whereas proponents claimed that it demonstrated the effectiveness of multiple safety.

Misattributed conflict – Human errors cannot be removed is misattributed since safety can be improved further [26].

Some basic propositions on nuclear power conflicts follow:

1. Conflict instigated by fears or aversions in the conflicting parties is more difficult to resolve cooperatively than conflict instigated by desires [14]. Fear against nuclear power is the fear against radiation death and other invisible factors [27]. Hence, conflict regarding nuclear power systems will continue unless the fears generated by it are removed.
2. Threatening prospects will be ignored no matter how serious, if no means for reducing that threat are defined along with the emergency warning [28]. Pro-nuclear lobby does not bother about the consequences of catastrophic effects, since methods are not available for control. This is a paradoxical situation of the pathologies of the short run [29].
3. Public debate is occasionally an aid in the mobilization of public interest, but extended public debate by the parties tends to harden their views [21]. Conflicts between pro-nuclear and anti-nuclear sections have become more rigid. Each group avoids situations and information that contradict what they believe and each seeks evidence to confirm decisions already made, by selective exposure to views that support their own stand [30].
4. Conflict that is resolved by a more powerful tendency suppressing or repressing a weaker tendency's underlying motives, leads the return of the repressed tendency in return of the repressed tendency in disquised form whenever the vigilence or defenses of the more powerful tendency are lowered [14]. This can precisely explain why the anti-nuclear and pro-environment policy of President Carter was revised when the President left office.
5. Progress of mediation is heavily dependent on an available group of knowledgeable and trusted mediators [21]. Though environmental mediation has been working successfully in the United States [2-7], mediators capable of resolving nuclear conflict acceptable to both the groups are yet to emerge in India.
6. In the case of the nuclear/anti-nuclear issue there is an informational overload which makes it difficult for the public to comprehend the issue. Without comparing the veracity of both versions, no conclusions can be made. This happens because the greater the variety of signals, messages, persons, purposes, viewpoints, cultures, and mixing, the higher the potential for "social noise" [30].
7. Hostile response, fear, and loss of trust inhibit perception and close the information uptake [30]. It has been shown that public education about nuclear risks has only increased the suspicions, fears, and fallacies about nuclear power [19]. Government's failure to accept technical opinion is construed as lack of veracity and usefulness of the presented information.

8. The conflict regarding nuclear systems has two major groups. In these groups, there is tendency among the members to overvalue their group's role [15]. A detailed technology assessment of nuclear systems must be performed before their development is halted.
9. Often, uncertainty is interpreted as ignorance and this complicates the public acceptance since the public has very little knowledge about implications of probabilistic estimates. Under certain conditions a structure will be imposed to resolve uncertainty not by probabilistic judgements but by categorical inferences [31, 32].

As can be seen, conflicts in the case of nuclear power generation is a highly involved and complex issue, due to the possibility of catastrophic effects. Education regarding nuclear power safety is essential.

Some conclusions can be drawn using the conflict resolution model given in Table 4. First, conservation groups can be moved to accept the dictum "although conflict exists, agreement is possible" by allaying their fears over accidents. Since, in most cases, opposition to nuclear systems is site related [24], nuclear parks situated away from human settlements can change the stance of anti-nuclear groups. Thus, siting nuclear stations far away from human settlements in the form of nuclear parks may be an acceptable solution [33], and this can be under the control of an international agency.

In a world full of political conflicts, nuclear weapons can have very serious implications and nuclear power under IAEA may be an agreeable proposition. Nuclear power systems will gain acceptance only through an incontrovertible long-term safety record, a regulatory system that is respected and trusted, and with a clear-cut appreciation of benefit [34]. It is neccessary to:

1. undertake detailed technology assessments on nuclear power option;
2. develop knowledgeable and trusted mediators;
3. launch public education programs;
4. strive for a peaceful world with minimum animosities; and
5. site nuclear reactors away from populated areas.

Destruction of Tropical Forests

Tropical forests are being decimated at a very fast rate due to population increase, fuelwood needs, demand for paper, demand for agricultural land, cattle grazing, and development of plantations in the developing countries [35-41]. In recent years, this destruction has become a major environmental conflict issue. In this case there are a number of parties to the conflict, including:

1. the rural poor who satisfy their fuel needs through illegal and unrecorded extraction;
2. private contractors who deplete forests;

3. forest departments which maintain the forest lands;
4. agencies like power generation boards constructing hydroelectric power stations;
5. government agencies looking after environmental protection; and
6. international agencies like UNEP, FAO, and UNESCO.

The major consequences that can occur due to indiscriminate deforestation have been reported in literature [35-38], especially local climatic disturbances. Tropical forests are rich in species. Fifty percent of the world's species are found in this 10 percent land area and indiscriminate felling of these forests can reduce the germplasm or genetic resources and lead to disappearance of species [42-47]. Disappearance of species is biologically irreversible and hence a permanent loss to humanity. Deforestation increases the soil erosion, siltation, and denudation. This affects streams, water flow, storage capacities of reservoirs, and the water retention of soils [48, 49]. Most of these consequences are multidisciplinary, highly interactive, and long-term in nature. Because of this, deforestation and its consequences are neglected, discounted, and unnoticed. Some special aspects of this conflict are analyzed below.

1. The larger the number of parties, the more difficult it will be to discover a common solution in which all parties can achieve at least some gain over their previous power position [4]. Since a large number of persons, organizations, and agencies are involved in deforestation, it will be difficult to arrest it. The example of sahel desertification is appropriate [50, 51]. When the action imperative is spread over a large populace corrective action will be very difficult since institutional arrangements for directing the corrective action towards a common and acceptable objective is difficult. This is especially true because corrective action to resolve the conflict does not help them to satisfy their immediate needs. The larger the number of subsystems or components in conflict, the more difficult will be resolution of the conflict [52].
2. Using Table 3, it can be inferred that this conflict is the conflict of interests and the only appropriate behavior is distributive bargaining. Because of the large number of people directly responsible for degrading forests, distributive bargaining can be expected to be a costly and impossible task. The only solution possible is to intensify agroforestry and social forestry to step up regenerative processes.
3. Dissimilarities in beliefs, attitudes, and values are not conductive to compatibility and hence make it difficult to resolve the conflict [22]. The beliefs and attitudes of the concerned parties are not only not compatible but they are also highly divergent. This makes it difficult to educate participants.
4. Segregation increases conflict among role players, and a higher proportion of adjustment processes must therefore be directed to resolving such conflicts, which means they cannot be devoted to advancing goals of the

system as a whole [52]. Forest management is highly segregated in most governments [41]. Further, illegal encroachers, private contractors, right holders, environmentalists, and forest officials work without a common goal. A major obstacle to a comprehensive approach to environmental protection is the traditional, functional, and hierarchical structure of public administration. This state of affairs will continue unless the topmost agencies coordinate and control the forest function. The objectives of government also are biased towards short-term exploitation [9] rather than sustained yield management. Without proper policy and direction at the highest national level destruction of forests will continue.

5. A society in which conflicts of values are severe must undertake internal adjustment processes to resolve conflict [21]. Forest resources are put to a number of competitive uses and each user views his objective as the prime one. Unless the positive adjustment processes predominate, the degradative extraction processes causing the destructive depletion of forest resources will continue. Forest resource management systems currently vogue in the Third World are highly fragmented and exploitive with little concern for regulatory and protective uses of forests [36].
6. When a management or control system receives conflicting command signals from several suprasystems, it intermittently being a component of each of them, the slower the decision making process [52]. Forestry systems receive different commands from: environmental conservation departments asking it to conserve resources; industry departments and industries asking them to provide raw materials for pulp and paper industries; agriculture departments asking them to release forest lands for agriculture; and political bosses asking them to regularize or legalize illegal encroachments into forest lands. These conflicting tendencies make forest departments slow decision makers.
7. Conservation of forest resources is an ideological issue since it involves clash of conceptions of the desirable and prescriptive norms, beliefs, and values. Ideological conflicts are more intense [21], and hence difficult to resolve. Further, the illegal extraction of forest resources for firewood purposes is related to a basic need and hence the conflict becomes an induced conflict forcing the rural poor to extract forests not for extraction sake but for livelihood. Induced conflict is likely to be more intense than realistic conflict because of the coincidence of group and personal values and hence are not readily susceptible to normal mediation procedures [14].
8. Non-institutionalization or low degree of institutionalization of conflict is marked by chronic recurrence of unsettled issues, by an absence of agreed procedures for review of relations, and by discontinuity of interaction or drastic shifts in the modes of resolution [21]. This once again corroborates the earlier proposition that when a large number of people are directly involved it may be very difficult to resolve the conflict.

9. To improve our environment it is necessary to take into consideration the factors that lead men to destroy environmental quality [53]. It has been reported that in many developing countries more than 90 percent of the wood extraction is used for fuelwood purposes [54-58]. This includes countries such as Nepal, Tanzania, India, Rwanda, and Thailand. In other words, unless an alternative fuel is made available to the population, they will continue to use firewood for energy purposes, since it is the most easily available fuel.

Forest destruction is a very complex issue since it involves a large number of organizations and individuals. The conditions are such that the prevailing philosophy is "conflict inevitable and agreement impossible," since there is basic need satisfaction involving the rural poor. Unbridled population growth intensifies this situation. In this case there are only three possible strategies as can be seen from Table 4:

1. win-lose struggle;
2. third-party intervention; and
3. withdrawal.

But, since the stakes are high for the people involved, the most likely form of resolution is win-lose struggle. This explains why the concerned parties are reluctant to compromise. Hence, rigid controls and strict regulations are not likely to be helpful and only stimulating forest plantations through social and agro-forestry are likely to be successful, i.e., by lowering the stakes of involved people.

CONCLUSIONS

Four major conclusions about environmental conflicts have been examined in this article. First, environmental conflicts can be amicably settled only if all the parties believe that although environmental conflicts exist, agreement is possible. Developing countries have to reach this stage through institutionalization of environmental conflicts and environmental mediation.

Second, when environmental conflicts reach a serious stage and the climate between the parties is intense or aggressive, then the only effective conflict resolution behavior will be distributive bargaining in which neither party will be satisfied. Pseudo-conflicts, contingent conflicts, false conflicts, and misattributed conflicts can be solved by communication and information exchange provided the relationship between the conflicting parties are accommodative or cooperative. Environmental mediation or creative problem solving will be effective only when the conflict is a common problem conflict like siting problems, fixing standards, pricing decisions, etc.

Third, the example of conflict over nuclear power is analyzed to show that it is a highly complex issue involving different types of conflicts. This is mainly a

belief-ridden or ideological conflict and hence difficult to resolve cooperatively. Here also, the attitude of proponents and opponents of nuclear power is that conflict is inevitable and agreement is not possible. The most feasible resolution path is through reduction of the stakes of involved parties in the conflict, leading to withdrawal from the conflict. This may be achieved by lowering the nuclear risk to the public in the vicinity of nuclear reactors or creating nuclear parks (i.e., siting a number of reactors together in an isolated place away from population under the control of international agencies). Adoption of multiple safety systems and safe containment methods at these nuclear parks will reduce the public opposition to nuclear power.

Finally, deforestation is a major environmental conflict in the developing world. It can have irreversible and unmanagable consequences on countries with large populations. Since deforestation is a consequence of the non-availability of fuels for the poor, only by stimulating forest regenerative operations can this conflict be resolved. Efforts must be made to institutionalize the conflict through regulation, public participation, public education, and environmental mediation. Here again, the stakes of the involved parties can be lowered by using these mechanisms employing simultaneous development of social and agroforestry programs.

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Direct reprint requests to:

Dr. B. Bowonder
Administrative Staff College of India
Bella Vista, Hyderabad - 500049
India