

COMMON POOL RESOURCES

Future Prospects¹

ABSTRACT

A decade ago common property used to be considered as an anachrony, incompatible with the modern world. Now it is accepted not only as viable, but also as a desirable form of property for natural resource management. The emerging common property institutions are far different from the traditional local formations and have wider economic, even global relevance. Newer issues have emerged as problems of global commons. Once their future relevance has been established the task is to study their implications. This paper argues that this form of property is going to occupy a position of great importance in the next century. At one end the world is currently witnessing a shift from normally independent tenants towards international agro-industrial corporations. At the other, corporate organisations of farmers around the common property resources is also an emerging trend. The question of their impacts on the poor sharply differentiates the quality of the two emerging regimes. This form of property may be the rallying point against the dominance of international capital and alternative of the future.

¹ Nirmai Sanjivta, Professor, Macras Institute of Development Studies, 79, Second Main Road, Gandhinagar, Madras, India - 600 020. An earlier version of this paper was presented at International Congress on Agrarian Questions, Wageningen, May 1995.

CPR AND THE POOR

A decade ago common property (hereafter CPR) used to be considered an anachrony, incompatible with the modern world. By now it is accepted not only as viable, but also as a desirable form of property for resource management. It is now well known that common property resources occupy an important position in the economy of the poor. Their contributions to people's employment and income generation are substantial. Indirectly, through complementing private resource based activities, they contribute to asset accumulation. Significantly, the contributions of CPR attains greater importance to the household economies of those whose employment and income generation opportunities from private resources are limited. To the landless and land poor this is the resource to fall back upon during times of need. Proportionately more women workers have been engaged in CPR activities than men. Not only has their workload increased severalfold after degradation of CPR but they are also at the risk of humiliation by government officials asserting more and more control over CPR. The poor and depressed sections of the community therefore, have a keen interest in the rejuvenation of CPR. Developmental efforts have already matured enough to utilise this incentive. To meet the contingency of good management, the role of forests in benefitting people is also conjured. Subsequently there are numerous attempts to organise the poor under CPR relations.

The emerging common property institutions are quite different from the traditional local formations. Merely as an illustration I will cite some features of the sterling case of CPR success story in village Sukhomajri (Chopra et al. 1990 ; Roychowdhury, 1994). The project had begun in the mid-seventies as a soil conservation scheme. Previous attempts by officials were met with indifference, even hostility when officials wanted to restrict grazing. The department changed its approach. To help the people of the village two small tanks were built and water was released from them for irrigation. The principle of siltation was explained to them and grazing stopped. The forest department then leased forest land for grass production departing from its usual procedure of auctioning. Gradually oilier activities were added like stall feeding of cattle, fishing in reservoir, augmenting drinking water supply, construction of school building and roads. The economic betterment is evident from the fact that all the households have replaced their thatched dwellings with brick buildings, half of them own television sets. And so on. Lately, 400 hectares of forest of very valuable cicada *catechu* planted some ten years back has matured adding a net worth of about Rs. 1 crore (\$ 0.3 million). It may increase the current income of the villagers by five times.

Varieties of new possibilities exist within the CPR organisations. In the question of control of resources by the poor, in terms of sharing of benefits, in motivation of state/corporate/global entities, in productivity and potential. Sukhomajri received the attention from the government because of an environmental problem. Soil erosion in that area had assumed severe magnitude. In *turn* however, it opened up a whole alternative course of development. Control of land resources was relinquished by the agriculture and forestry departments. In terms of sharing of benefits unconventional approaches were adopted. Every family, landed or landless, was given equal share of water from the common resource. The shares could be sold and purchased. The poor also received their share from grass contracting. Thus motivation was high. Lately conflicts have arisen on the question of share of *Acacia catechu* plants. The forest department is willing to extend only 25 per cent of the sale proceeds. The villagers want more. Their legitimate argument is that the plantation would not have come up but for themselves. The government argues that the land belongs to it. These are the new set of problems which have to be solved. But the experiment shows tremendous promise.

The impact on the poor is not merely economic. It is of a far more profound nature. The poor participates here not merely as beneficiaries. It has been documented that many CPR are managed by the beneficiaries themselves, by contributing labour and resources for its maintenance. In general, the new atmosphere created by the environmental crisis is encouraging people to assert themselves. Their knowledge base is now regarded as important which partly liberates their moral degradation of being unscientific. Programmes abound in which active participation is sought for common good. In many programmes, like forest protection, they are even encouraged to act and protest. While enlisting the considerations that support the case for CPRs Jodha (1992 : 62) did not only identify the "rising concern to incorporate grass root democracy and traditional wisdom into the conventional development culture" as a factor but also classified it as a "more fundamental issue". The current shift from normally independent tenants therefore, is not only towards international agro-industrial corporations but also to corporate organisations of farmers around the common property resources.

Indeed, farmers have, on a few occasions, asserted their preference for the latter kind. Their struggles against commercial forestry in different parts of the world is a testimony to this. These programmes did not demand distribution of land as their private properties but settlement of the land as CPR with the people. In fisheries, traditional fisherworkers all over the world are engaged in struggles to defend their CPR rights against encroachment by commercial companies.

FROM LOCAL IMPACT TO GLOBAL

Case studies of CPR management have been amply documented. We will direct our attention to a little researched implication. A decade ago common property research was mainly directed towards finding whether "tragedy of the commons" is inevitable. But that question is now more or less settled. Once their future relevance has been established the task is to study their implications. A viable form, upon being extensive, also influences the social system. If CPR institutions multiply they will certainly not leave the current private property regimes as they are. Wider implications of CPR are therefore, deserving investigation.

Current interest in CPR originates from two different streams. One stream evolved as critical faculty to the theorisation of "tragedy of the commons" by Hardin. The other, more or less independently, developed from participatory approach in resource management. The three topics, environment management, participatory approach and common pool resources are closely connected. Environmental care is now believed to be impossible without peoples participation. For securing participation the right kind of incentive structure is sharing of resources as CPR. This interconnection has come to be well recognised and efforts to tackle global environmental problems have matured into developmental agenda for the poor. Forests are not seen any more, merely as carbon sinks to help check global warming. Participatory management models have become widespread for developing forest health.

A warning seems to be in order. Does participation always lead to conservation? Do the CPR forms ensure sustainability? We still don't have any clear evidence. Numerous cases of communal management of resources in the past and in many underdeveloped situations at present are often cited as examples of sustainable use. Methodically, such examples are suitable only to extract design principles (e.g. Coward, 1979; Berkes ed., 1989; Ostrom, 1990); the inductive implications are not valid in a different societal context. In any case, the test of sustainability being survival over time, only cases with a tradition qualify for being candidates. The current can be judged only when it becomes a tradition. Many CPR researchers are also aware of this pitfall. While introducing the studies of several traditional CPR societies McCay and Acheson (1990 : 14) warned that "It may be ethnocentric to assume that, where property rights are exclusive (to village, clans, chiefs, or individuals - N.S.) conservation is either the intent or the happy side effect".

It is therefore in order, to be aware that participation does not necessarily imbibe conservation motive. Instead, if conservation is the objective it is implementable through participation. Indeed, participation and its appropriate incentive structure CPR has brought with it a promise of tackling the environmental problems. The CPR studies bring out (Ostrom, 1994b):

If those who directly benefit from using a resource can communicate, agree on norms, monitor each other, and sanction non-compliance to agreements, they can substantially reduce overuse, conflict, and the destruction of natural resources.

Here is an alternative institutional possibility indicating that individuals have the capacity to engage in binding commitments and are able to devise new constraints in human interaction which are self-monitored and largely self-enforced. Since transaction costs in monitoring and enforcement is prohibitive in case of environmental problems this is a promising cost-effective alternative. Control of natural resources by state is frequently less effective and efficient than control by those directly affected. With increasing privatisation in socialist countries the alternative form of natural resource management through collectives have diminished in importance. Efforts to establish marketable property rights to natural resource systems have substantially increased efficiency in some cases but have encountered difficulties in implementation in others. Thus, the CPR form is the only known alternative form with a promise towards sustainability. **But** they have a promise which need to be attained through imaginative designing. We include such a precautionary note here, for we believe that CPR programmes need conscious planning towards sustainable goal.

How significant is it as an alternative? Natural resource experts include common property as one of the many ways of resource management (Rees, 1985). On the other hand, the very definition of sustainable development (e.g. WCED, 1987; also Rees, 1985: 247-250) - the developments that meets the needs and aspirations of the present without compromising the ability of future generations to meet their own needs - calls for an outlook, where every resource is a common property. Policy makers are also busy developing regulatory mechanisms like price policies or abatement cost which would effectively restrain the depletion within the existing market and political system. Are these likely to solve the problems?

If one's concern is limited merely to good intentions, then the rich are certainly not lagging with respect to environment management. In fact well-informed persons at the head of multinationals are probably more aware than common village folks about the dangers of environmental degradation. But translating such intentions into actions may be a problem. Guaranteeing sustainable extraction in any form within market mechanism needs at least implicitly, ecological pricing of the products of natural resources. Even attempts to calculate such prices are rare. In many cases like forests, these will be astronomical.

Under that circumstance many of the industrial products currently in use will be uneconomic. Thus, however sophisticated may be the estimations; their implementation within the existing social order is unlikely. In terms of institutional analysis of North (1990) the transformation costs (probably also the transaction costs) of the existing production process are increasing as a consequence of depletion of natural resources. As per his theory, this makes room for an institutional change. "Sources of (institutional) change are changing relative prices or preferences". "Fundamental change in relative prices are the most important source of institutional change" (pp. 83-84). A fundamental change in relative prices has again occurred.

III

CONNECTING LOCAL AND GLOBAL INSTITUTIONS

We have seen already that the high transaction cost make extensive peoples participation the only possible remedy of environmental problems. Because of the positive impact of CPR regeneration, the poor also has the right incentive structure for undertaking conservation. But there is a formidable question - how does the poor exert their will. Intuitively one understands that if environmental conservation efforts succeed in small areas like in Sukhomajri then the global environment problems can be solved. But researches have brought out that CPR succeeds in situations of common or complimentary interest, small number of actors and low discount rates (also described graphically as long shadow of future). In essence, the promise appears to be confined to small local units.

On the other hand researches (e.g. Keohane et. al., 1992) also show that on a global scale too CPR solutions are becoming widespread. At the regional level, governments have sought to cope with collective action problems by building international regimes to protect regional seas, to reduce the incidence of acid rains, to stop ozone layer depletion. Negotiations are on to contain global warming and desertification, for preservation of biodiversity and migratory fish stock. Analysts of these problems find that essentially the same explanations as that of micro levels fit here.

It is indeed, the intermediate area, the aggregation question, which is baffling. Very little is understood as yet about this part. In general, the micro analysts of CPR did not look into the aggregation question. Only some inkling is obtained through some researches (e.g. Sengupta, 1984 ; Bates, 1989) and a couple of design principles enlisted by Ostrom. In particular, we draw attention to the principle of nested enterprises (Ostrom, 1992 : 75). She describes, with respect to irrigation, that large systems of user organizations are organized into many tiers running from small work teams to the whole system level. She also indicated that these irrigation organizations may benested in externally organized political jurisdictions. Other design principles like conflict resolution mechanism outside the local group or minimal recognition of rights to organize also describe the aggregation procedure.

Elsewhere, McGinnis and Ostrom (1992) have pointed out the problems : Once we move from the local to the global commons, in addition to the millions of individuals who make choices, we add many corporate actors who are designated as the agents for complex publics and their behaviour is far more complex. Considerable caution has to be exercised in moving from micro to macro level, since a change in scale frequently changes the structure of situation dramatically. In nested regimes most actors serve both as agents of some larger principal and principals delegating authority to some set of agents. Incentive structures have to be so designed that the interests of agents correspond to the interests of principal. Successful management of resources by some local groups often impose negative externalities on other groups. In such circumstances some means must be found

by which representatives of affected groups can come together to establish mutually beneficial institutional arrangements. Nesting cannot happen automatically.

Many global problems are themselves the result of inadequate solutions at a micro-level. Also, no global regime can be effective if it neglects to take into account local circumstances or the conflicting interests of smaller-scale collective action organizations. Sustainable global regimes must make sense at all levels of aggregation : local, regional, national, transnational and global. Institutional arrangements at these multiple levels must be nested in such a way that the institutions at each level are robust to the type of challenges that are likely to arise at that level (McGinnis and Ostrom, :36-37).

Institutional analysts like North (190 : 83-86) describes stability and change in this perspective as :

Stability is accomplished by a complex set of constraints that include formal rules nested in a hierarchy, where each level is more costly to change than the previous one. They also include informal constraints They allow people to go about the everyday process of making exchanges without having to think out exactly the terms of an exchange at each point and in each instance

The process of institutional change can be described as follows. A change in relative prices leads one or both parties to an exchange whether it is political or economic, to perceive that either or both could do better with an altered agreement or contract. An attempt will be made to renegotiate the contract. However, because contracts are nested in a hierarchy of rules the renegotiation may not be possible without restructuring a higher set of rules (or violating some norm of behaviour). In that case, the party that stands to improve his or her bargaining position may very well attempt to devote resources to restructuring the rules at a higher level. In the case of a norm of behaviour, a change in relative prices or a change in tastes will lead to its gradual erosion and to its replacement by a different norm. ... This very simplified story can be complicated in many ways - by agenda power, by the free-rider problem, or by the tenacity of norms of behaviour.

McGinnis and Ostrom (1992 : 38) hopes for a collaborative solution to the problem. "Perhaps the most important nesting principle is that the interests of all relevant groups must be incorporated in the ultimate agreements, or else the regimes's sustainability will be undermined by those groups whose interests are excluded." The class analysis point of view, followed not only by Marxists but also by new Institutionalists (e.g. Bates, 1989) suggest that in such circumstances, conflicts are also resolved in the political arena by exclusion of some. North (1990 : 89-90) too differs from universality of compromise solutions. "The process of change is overwhelmingly an incremental one" (1990 : 83). "Continuous marginal adjustments is the dominant way by which societies and economies have evolved" (North, 1990 : 101). But discontinuous or radical changes in formal rules, as a result of conquest or revolution, also occur. North also notes that revolutionary changes are the aggregation of thousands of specific small changes which in total made for fundamental changes in society.

But for the classical Marxian approach, there is not as yet any social science methodology that help predict discontinuous changes (Oskar Lange, viz Hochfeld, 1965; Pinyue, 1984; Loasby, 1993). Some Idea may be obtained however, If we borrow the Images from the recent studies of phase transitions in physical and biological sciences (Sengupta, 1984 ; Prigogine, 1986). In their celebrated study Nicolis and Prigogine (1977) Identifies the preconditions of phase transition in macro- systems as :

- (a) if the present system becomes unstable experiencing wide fluctuations (from the stable and Ideal structure), and
- (b) if there is a structurally stable solution In the vicinity of fluctuations.

A system consists of numerous micro-units bound together in some order (rales). In system analytic methodology the essence (a structure) and the deviations from it (called fluctuations) describe a system. Even in a stable system deviations from its essential structure always occur in varying degrees. Notably, this is the fundamental difference of system theories from equilibrium approaches to analysis. Figuratively speaking, these fluctuations continuously explore wider space of forms different from the existing structure. One of these alternative forms in the vicinity may also have potential for being structurally stable (a candidate for being a system). But as long as the parent system is stable fluctuations are less numerous and not so wide. Consequently only a few of them explore this alternative. Only when a particular system becomes unstable the deviations from the structure become far more numerous and wide. It may so happen that sufficient number of deviations embraced the alternative to constitute a nascent system and stabilise there. Thereafter more and more of deviations in the parent system are absorbed by the new macro- system. The threshold level is an important concept in the theory of Nicolis and Prigogine. Let me also draw attention to another theory of transition, that by Axelrod (1984 ; also see Sengupta, 1991), where this threshold level is again of crucial importance. In essence, if the crisis of the current system is so severe that more and more efforts are being made to explore wider space, and if an alternative stable system is not unattainably distant, then the transition is inevitable.

The second condition of transition Indicated by Nicolls and Prigogine, the existence of a suitable stable alternative is probably met by the emergence of CPR possibilities. Until a transition actually occurs one cannot be sure about its being a stable form. But pointers are there. An interesting case is that ant-company struggles have started asking for CPR not privatisation and distribution to them. We will like to see whether the first condition Is also met, whether the present system has become unstable.

IV

THE CRISIS OF THE PRESENT SYSTEM

The end of the nineteenth century resembles the present one in many ways. Colonial domination, though an old phenomenon, was undergoing qualitative change consequent upon the massive industrialisation of the "western" countries. New territories were opened up. Where in all earlier periods merchants did not know beyond the coast, in this period the interiors of Africa were penetrated. Old empires like the Indian subcontinent found rapid growth of infrastructure for expanding markets. To the suffering people of the world the immensity of imperial power structures appeared to be unshakable. Yet later history shows that it was not. Crisis arrived, first in the form of territorial expansion limit. When there was no further avenue for colonial development inter-imperialist rivalry intensified. In turn, this helped the people of the colonies to further their aspirations and ultimately win their freedom.

The end of the twentieth century looks very similar. The world has witnessed another rapid expansion in industrialisation. But a crisis has already arrived. During the last few years the growth of the world economy has remained almost stagnant. Leaders like Thatcher and Reagan had hoped to accelerate the growth through economic means. But they failed. Lately international bodies like IMF, World Bank or GATT have floated new formulae for rejuvenation. The New World Order envisaged by them is the topic of discussion in many fora including in this workshop. In essence the future order depicted is linear projection of the current state of affairs. The question is, do the social systems change in such linear manner? The overall stagnancy of the world economy and intensification of rivalries among the industrialised countries - including that of the Newly industrialised countries - closely resembles the crisis of the late nineteenth century. The resolution may come not in the trivial way, *but* like the earlier one, through a more complex interaction of forces.

Like the territorial limit reached a hundred years back, today a limit has been set by the environmental factor. It is a moot point whether the multinationals or the developing countries will be able to prosper more in the WTO-regional trade regimes dictated order. Whatever be the character of the growth, the very growth and recovery from stagnation will further aggravate the environmental crisis. No doubt, the International agenda also **includes a technology development programme to check further worsening of environment**. However, few will argue today that purely scientific and technical solutions to these problems are possible. The causes of environmental degradation rest in the economic and social structures of the world (WCED, 1987). One can study it meaningfully only in a political-economic framework. That the Global Environment Facility (GEF) has been able to receive only paltry financial support, that the Newly Industrialised countries have destroyed their environment almost with a vengeance and the aspirants are closely following their models, that any discussion to reach an agreement in this area almost invariably reach into severe bargaining between the North and the South (Williams, 1993) are only reflections of the primacy of political economic forces. If this crisis is to be solved it will be solved primarily in the political economic arena. If the World survives it will have to solve the environmental crisis; for Nature will not allow unthoughtful industrialisation either to satisfy the multinational ambitions or to meet aspirations of the poorer ones.

Is the environmental crisis one of the many crises? How significant is this crisis to pose an alternative World order from such a perspective? Instead of an eclectic argument in favour let me bring out how the modern world has undermined its real significance. We will set our example from the dominant intellectual current of the world order- economics. The classical economists of Western Europe **had** conceptualized aggregate production function as:

$$Y = f(D, K, L) \quad Y = \text{Output}$$

D = Land

K = Capital

L = Labour

Land was broadly defined and synonymous with "the natural endowment" and could be understood as totality of natural resources. The neoclassical economists later refrained from any explicit treatment of land or natural resources. To them it could be absorbed in "capital" and there was no need to accord any special position to it as a factor of production. Randall and Castle (1985) describe the material origin of this intellectual shift. The classical economists at the first phase of agrarian and industrial revolution were still aware of the ever-present threats of famine, were a member of a society where the immense significance of enclosures and corn laws were still very obvious. While the supplies of capital and labour were far more elastic, land was a distinct third factor of production characterised by fixed supply. It was this factor which explained the diminishing returns from other inputs and thus, imposed limits to growth, also expressed as Malthusian cynicism. As the industrial revolution unfolded and there was no end in sight for about a hundred years, the question of limits and restrictions were set aside. Ultimately it reached a stage when economists would be confident of replacing one factor of production by another (e.g. Solow, 1974a, 1974b). But the optimism does not appear to be well-founded. Since the seventies of this century the critical limits have become manifest

In the last century, when the territorial limits of expansion were evident, the imperialist powers had first tried to negotiate how to divide the world "peacefully". But they did not succeed and were *not* able to avert the World Wars. At present the agri-business interests of USA, Europe, Japan and even developing countries are engaged in intense lobbying in trade fora to demarcate their respective spheres of operations. But this syndicate approach to redesignate the world environmental-impact domains may not be able to avert direct conflicts for ever. The exact line up during such a conflict and the expressions of antagonism cannot be foreseen. *But* these will, like in the past, weaken the dominant forces and let people assert themselves more and more.

V

TOWARDS A RESEARCH AGENDA

How does one assess the impact of recent Interventions on the poor ? If the apparent, the current trend, is regarded as the certainty, then the poor of the world, and the world itself, cannot but face a bleak future. We have adopted an optimistic position by avoiding linear forecasting method. Whether societal growth follows Newtonian laws of motion or not is not a question that can be decided by argument. Future alone can confirm which stand is correct. At present the choice can atmost, be dictated by philosophical leaning of Individuals. My effort here was directed to show that In pursuing a sustainable and pro-people objective one most differ in paradigmatic choice and would then find a discontinuous change as a strong possibility for the future. In the final section I will introduce some recent findings *that* may help develop a research agenda consistent with this non-linear, non-trendy alternative.

A new property regime does not necessitate complete abolition of private property. *In* fact, current researches on property systems, far more detailed than in the past - establish the conceptual limitations of such radical theories. Following Bromley (1989: 875):

Common property relations are many, occupying the continuum of choice and control ranging between complete individualization and total collectivization.

The current system is close to the individualistic end of this continuum and the currently dominant Ideology is In favour of greater purity. The Impending change Is likely to be towards the centre instead of the extreme. Interestingly, the CPR programmes are carried out sometimes as "privatisation" of public assets and sometimes as "association formation" of individual properties.

In fact, In the modern world too, private property is omnipresent as is often depicted. Family for example, is a different form. Modern corporations are CPR (Ostrom, 1994a). if we analyze the technology composition of societies (Sengupta, 1984) we find that every society contains some productive forces better adapted to individual property and some others which correspond to communal ownership of property. Indeed, the complexity is **even more. Within the latter, different forces adapt to different scales and different types** of socialization. To each of these distinct property relations correspond different types of superstructure and consciousness. But only one of them enjoys the dominant status in any society at a particular time. As a result, in any society at a particular time, only one form of property and the corresponding productive forces enjoy a climate congenial to its development. But many other productive forces and productive activities suffer adversely. A long-term strategy in such societies is to replace the incompatible productive forces with innovations compatible with the dominant type of property. But such alternatives are not readily available and every society has to accommodate type- and scale-incompatible productive activities, all the time witnessing their gradual deterioration. If however, the product of one of these deteriorating activities is significant and essential for the society, the decay sends an alarm. Efforts are then made to regenerate the activity in a planned manner, an artificial support nevertheless. If that proves insufficient, the whole society must now adjust to the required form of property, and prosper until a next crisis occurs and a next change becomes necessary. If it shows rigidity, it must face the consequences of the decay of an essential activity. In face of the environment crisis and the alternative possibility through CPR, what is likely therefore, is reversal of the trend towards increasing individualisation of rights over natural resource. The future world may practice restrictions on usufructuary rights over resources and a shift from the current property regimes towards realisation of global commons.

Similar observations must also be made about markets and CPR. It is worth noting that CPR forms do not necessarily contradict market. In fact, many traditional CPR like fisheries or collection of minor forest products have been important market-oriented activities in the past. Earlier we have noted the case of valuable *Acacia catechu* planting by villagers of Sukhomajri, certainly for marketing. Nor are the markets as portentous for the current economies as are depicted to be. Recently, Herbert Simon (1991) used an excellent allegory to question the tendency of placing markets at the centre of the stage undermining organizations. What is likely is a change in market characteristics, tending more towards localised segmented markets than global integration. From natural resource exploitation point of view such an alternative is far more efficient. I feel it is the discount rate feature, not exchange or market, which determines the sustainability. In a setting, when the "shadow of the future" is long, production is sustainable. If the future is less relevant even CPR members will not act towards sustainable goal. But this area needs further research.

Dominant property form regulates the incentive structure hence determines the nature of society, including production, consumption, distribution, exploitation of natural resources etc. If the change is directed towards containing the environmental crisis the societal activities will be geared to that. From this perspective it will be possible to get some idea of the kind of changes to come in different spheres (viz Sengupta, 1993). For research guidance we draw attention to one aspect. The technology choice mechanism of

a society reflects its current concerns (Sengupta, 1984 ; 1991 : 55-77 ; 1994). Measurement criteria for productivity, performance and economic efficiency change according to the societal goals. Already, questions have been raised about the existing criteria and revisions are on way. Environment impact assessment (EIA) has made its inroad into Cost-Benefit Analysis methodology. Natural Resource Accounting have come to feature as satellite accounts in National Income Accounts. Energy accounting is not yet adopted as an Integral part of project selection criteria. But demand for its inclusion is rising. Performance criteria for irrigation systems are tending to *be* more comprehensive as to include contributions to environment, health etc. apart from agriculture production. Although the correct procedures are still being debated, researchers should take serious note of these indicators. These are the selection criteria which will help them identify what technology is on the wane *and* what nascent ones have a future

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