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Equity and Sustainable Development

Sharon Beder

There is a clear inconsistency between the central ethic of sustainable development, as espoused in many government policy statements and intergovernmental agreements, and the means proposed by environmental economists to achieve sustainable development—valuation of the environment and the use of economic instruments.

The central ethical principle behind sustainable development is equity and particularly intergenerational equity. The Brundtland Commission, which played such a prominent part in popularising the notion of sustainable development defined it in equity terms as: “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”ⁱ Subsequently the Commission’s 1987 report, Our Common Future, was endorsed by the United Nations and its definition was adopted by nations all over the world. Since then the rhetoric of equity has been incorporated into numerous sustainable development strategies and policies.ⁱⁱ The Earth Summit in Rio in 1992 reaffirmed the centrality of equity in its Agenda 21 and the Rio Declaration.

Equity is about fairness:

Equity derives from a concept of social justice. It represents a belief that there are some things which people should have, that there are basic needs that should be fulfilled, that burdens and rewards should not be spread too divergently across the community, and that policy should be directed with impartiality, fairness and justice towards these ends.ⁱⁱⁱ

In the narrowest terms it means that there should be a minimum level of income and environmental quality below which nobody falls. Within a community it usually also means that everyone should have equal access to community resources and opportunities, and that no individuals or groups of people should be asked to carry a greater environmental burden than the rest of the community as a result of government actions. It is generally agreed that equity implies a need for fairness (not necessarily equality) in the distribution of gains and losses, and the entitlement of everyone to an acceptable quality and standard of living.

The concept of equity is well entrenched in international law. The Universal Declaration of Human Rights states that the ‘recognition of the inherent dignity and of the equal and inalienable rights of all members of the human family is the foundation of freedom, justice and peace in the world’.^{iv}

Intergenerational Equity

Intergenerational equity is a concept that says that humans ‘hold the natural and cultural environment of the Earth in common both with other members of the present generation and with other generations, past and future’. It means that we inherit the Earth from previous generations and have an obligation to pass it on in reasonable condition to future generations.

The idea behind not reducing the ability of future generations to meet their needs is that, although future generations might gain from economic progress, those gains might be more than offset by environmental deterioration. Most people would acknowledge a moral obligation to future generations, particularly as people who are not yet born can have no say in decisions taken today that may affect them.

There are two different ways of looking at the need to ensure that future generations can supply their needs. One is to view the environment in terms of the natural resources or natural capital that is available for wealth creation, and to say that future generations should have the same ability to create wealth as we have. Therefore, future generations will be adequately compensated for any loss of environmental amenity by having alternative sources of wealth creation. This is referred to as 'weak sustainability'.

The other way is to view the environment as offering more than just economic potential that cannot be replaced by human-made wealth and to argue that future generations should not inherit a degraded environment, no matter how many extra sources of wealth are available to them. This is referred to as 'strong sustainability'.

There are various reasons why strong sustainability may be preferable to weak sustainability. Closely related reasons are 'non-substitutability', 'uncertainty' and 'irreversibility'.^{vi} There are many types of environmental assets for which there are no substitutes: for example, the ozone layer, the climate-regulating functions of ocean phytoplankton, the watershed protection functions of tropical forests, the pollution-cleaning and nutrient-trap functions of wetlands. For those people who believe that animals and plants have an intrinsic value, there can be no substitute.

We cannot be certain whether or not we will be able to substitute for other environmental assets in the future. Scientists do not know enough about the functions of natural ecosystems and the possible consequences of depleting and degrading natural capital. And 'if we do not know an outcome it is hardly consistent with rational behaviour to act *as if* the outcome will be a good one'.

The depletion of natural capital can lead to irreversible losses such as species and habitats, which once lost cannot be recreated through man-made capital. Other losses are not irreversible but repair may take centuries—for example, the ozone layer and soil degradation. Losses of species and ecosystem types also reduces diversity. Diverse ecological and economic systems are more resilient to shocks and stress.

Weiss argues that not only can resource consumption increase the real prices of those resources for future generations, but that resources may be depleted before they are identified as useful or before their best use is discovered. She gives the example of helium-bearing natural gas. Developing substitutes may well be more expensive than conserving existing supplies.^{vii}

All these considerations suggest that future generations may not be better off with wealth rather than a rich environment; that environmental quality is not something that can be swapped for other goods without a loss of welfare^{viii} and that natural and human-made capital are not perfect substitutes for one another.^{ix}

When resources are depleted and species extinct, the options available to future generations are narrowed. Weiss points out that ‘conservation of options’ is a principal criterion for intergenerational equity. Current generations should not try to second-guess what future generations will need, but rather should let future generations choose their own goals by allowing them the flexibility through keeping options open and maintaining diversity.^x

The exchange of environmental benefits for human-made assets also involves another equity issue; that is the substitution of shared environmental amenity with private capital. Poorer people tend to suffer the burden of environmental problems more than others do. This is because more affluent people have more choices about where they live: they can afford to pay more to live in areas that have not had their environment degraded. Also, more affluent people are better able to fight the imposition of a polluting facility in their neighbourhood because they have better access to financial resources, education, skills and the decision-making structures.

Similarly workers in certain industries are often exposed to higher health risks than the rest of the community—as, for example, are workers in mining or mineral processing and the chemical industry. Often, the work-forces in very hazardous industries are made up of large numbers of migrants or ethnic minorities. A substitution of wealth for natural resources does not mean that those who suffer are the same people as those who will benefit from the additional wealth.

Weak sustainability involves the replacement of natural resources and environmental assets—that are currently freely available to everyone—with human-made resources that have to be bought and may only be accessible to some people in the future. Weiss points out that the principle of ‘conservation of access’ implies that not only should current generations ensure equitable access to that which they have inherited from previous generations, but they should also ensure that future generations can also enjoy this access.

Clearly intergenerational equity is not compatible with the concept of weak sustainability, a concept that assumes that future generations will not suffer from environmental losses as long as it is compensated for this loss by wealth creation.

Intragenerational Equity

Equity can also be applied across communities and nations within one generation. The reason that intragenerational equity is a key principle of sustainable development is that inequities are a cause of environmental degradation. Poverty deprives people of the choice about whether or not to be environmentally sound in their activities. The Brundtland Commission stated:

Those who are poor and hungry will often destroy their immediate environment in order to survive: They will cut down forests; their livestock will overgraze grasslands; they will overuse marginal land; and in growing numbers they will crowd into congested cities. The cumulative effect of these changes is so far-reaching as to make poverty itself a major global scourge.^{xi}

High levels of affluence are perhaps even more damaging to the environment as they are accompanied by high levels of consumption, which lead to resource depletion and waste accumulation. Many environmental problems—such as global warming and chemical contamination—are the result of affluence rather than poverty. Inequities can also affect the environment in other ways. For example, the inadequate access to public transport and local services that often occurs in the outer suburbs of Australia's larger cities can result in greater use of cars, with their attendant environmental drawbacks including noise and air pollution, congestion and accidents.

The other reason for an emphasis on intragenerational equity in sustainable development policies has been as a rationale for economic growth. In the past environmentalists tended to oppose economic growth. Sustainable development advocates asserted that economic growth and environmental protection were not only compatible but also necessary to each other. However the ethical argument for continued economic growth in a limited world where affluent countries had more than their fair share was that only economic growth could eliminate poverty:

Poverty is not only an evil in itself, but sustainable development requires meeting the basic needs of all and extending to all the opportunity to fulfil their aspirations for a better life ... Meeting essential needs requires not only a new era of economic growth for nations in which the majority are poor, but an assurance that those poor get their fair share of the resources required to sustain that growth.^{xii}

Yet the Brundtland report, and much of the government policy-making that has followed, have unashamedly used the needs of the poorest to argue for economic growth in even the most affluent countries. This was based on the idea that if the whole pie were bigger then each person's share would be larger and even the smallest portions would be adequate to meet a person's needs. The need for a growing pie avoids facing up to the ethical questions about how the pie is distributed. If the pie is not growing then either some people will remain in poverty or others will have to give up some of their share to them. As William Rees has said "economic growth is a major instrument of social policy. By sustaining hope for improvement, it relieves the pressure for policies aimed at more equitable distribution of wealth."^{xiii}

Other equity concerns that are of particular concern in the implementation of sustainable development policies include inequities in the impacts of environmental policies and inequities in decision-making processes. Measures to improve environmental problems may impact more on some sectors of the community than others through imposing additional costs on industries that then find they cannot compete internationally or by imposing additional costs on individual companies who may have to cease business or reduce their workforce as a result. Environmental policies can also impose burdens on individuals by increasing the prices of certain goods and by shifting the environmental problems from one area to another.

Inequities in power lead to inequities in people's ability to influence decisions affecting their environment. Robert Bullard argues that environmental racism in the USA involves excluding coloured people from decision-making bodies, such as boards and city councils

and industrial commissions.^{xiv} Valerie Brown and Margaret Switzer have argued that the debate on sustainable development in Australia has left women out by ignoring women's industries, paying scant attention to the household sector and having very few women on the ESD working groups.^{xv} Additionally, some decision-making processes give more power and influence to certain sectors of society and this a theme that will be returned to in this paper.

The Dominance of Economic Solutions

A central theme of sustainable development is the integration of economic, social and environmental concerns. Like equity this principle is at the heart of the Brundtland Commission report, the Earth Summit agreements and various national policies and strategies. Achieving this integration has been largely turned over to economists in countries where the influence of neoclassical economics is strong: termed 'economic rationalism' in Australia and 'economic liberalism' in Britain. Elsewhere environmental economists, whose roots are in neoclassicism, are also having some success in framing sustainable development policies to suit their own perspective.

For environmental economists, integrating environment and economy means incorporating the environment into the economic system. David Pearce and his colleagues, in their report on sustainable development to Margaret Thatcher, the British Prime Minister at the time, said that the principles of sustainable development meant recognising that 'resources and environments serve economic functions and have positive economic value.'^{xvi} Considered as a component of the economic system, the environment is seen to provide raw materials for production and to be a receptacle for wastes from production.

D.J.Thampapillai states in his text on Environmental Economics;

Clearly, the natural environment is an important component of the economic system, and without the natural environment the economic system would not be able to function. Hence, we need to treat the natural environment in the same way as we treat labour and capital; that is, as an asset and a resource.^{xvii}

David James, as a Commissioner of the Australian Resource Assessment Commission has said:

With better management of natural resources we could obtain a larger supply and wider range of goods and services. This is the central notion of sustainable development. It involves making decisions about the optimal composition of the economy's capital stock, including human capital, man-made capital and natural resource stocks. We should be attempting to manipulate the total capital stock in such a way that the welfare of society is maximised.^{xviii}

James points out that economists are interested in the environment to the extent it can ensure a continuous supply of goods and services to meet human wants and this is not, on the face of it, incompatible with the Brundtland definition of sustainable development "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". When viewed in this way, as a source of

inputs and a sink for outputs of the economic system, sustainability becomes a problem of how to sustain the economic functions of the environment rather than how to sustain the environment.

If the environment is a set of resources for the economic system then, economists argue, the market is the most efficient way of allocating those resources:

Any economist will tell you that the environment really ought to be classified as a resource; hence it should fall fairly and squarely into the policy arena concerning the allocation of resources. Management of the environment is essentially an economic problem.^{xix}

Although this is a blunt statement of the premises behind environmental economics that some politicians would shy away from. Its products in policy are manifest in the call for environmental valuation and the promotion of economic instruments which are found in many national sustainable development strategies and environmental policy plans.

Environmental Valuation

Environmental economists argue that environmental degradation has resulted from the failure of the market system to put any value on the environment, even though the environment does serve economic functions and provides economic and other benefits. It is argued that because environmental 'assets' are free or underpriced they tend to be overused or abused, resulting in environmental damage. Because they are not owned and do not have price tags then there is no incentive to protect them. This is a view shared by business people. The Business Council of Australia argues that it is not economic growth that is the real problem;

Rather, it is that important environmental assets tend not to be priced in a market like other assets. These assets are common property - they belong to everybody, and to nobody. Without ownership rights there is not the incentive for any person or group to look after them properly... if the environment has a zero price to users it will eventually be used up.^{xx}

The solution to this perceived problem involves putting a price on the environment and charging people to use it, privatising the commons, and creating artificial markets and price mechanisms through economic instruments and tradeable rights to pollute. The idea is that "the power of the market can be harnessed" to environmental goals.^{xxi}

David Pearce argues that if we are to ensure intergenerational equity then future generations need to be compensated for any environmental damage done by current generations and that this is best done by ensuring that damage is made up for by increased wealth and human-made assets. In other words natural capital (the environment) can be run down if human-made capital (money, equipment, infrastructure, knowledge etc) are increased.^{xxii} In order to compensate future generations we need to value of the environment in the same way as we value human-made assets; that is we need to give it a monetary price.^{xxiii}

These views, which have been incorporated into sustainable development rhetoric and sustainable development policies, call for putting a price on the environment. However the whole process of pricing the environment to ensure that decisions take account of environmental degradation works against intergenerational and intragenerational equity.

Market Values and Ability to Pay

Most methods economists use to value the environment try to assess or extrapolate market values. They treat the environment as a commodity whose market value can be assessed by finding out the public's willingness to pay to preserve the environment. This is done directly through surveys (contingent valuation) where a selection of people are asked what they would pay to protect, for example, a particular area of forest. The responses are averaged and extrapolated to the whole community so that a final dollar total for the forest is arrived at.

A way to get around the tendency for people not to give truthful answers in such surveys is to ask more indirect questions and therefore infer what people are willing to pay from indirect evidence concerning their behaviour. For example, by asking people in a park how far they have travelled to get to the park and how often they come each year, economists hope to find out what the park is worth to them.

Alternatively willingness to pay is inferred from their behaviour in the market such as the extra price they are willing to pay for real estate in non-polluted areas (hedonic pricing). Or a lake that is used for fishing, boating and swimming might be valued by calculating what people spend on private fishing, boating and swimming facilities. Another market substitute commonly used is property values.

Other proxies might include differences in water rates where higher rates are levied to cover better waste water treatment of effluent going into a river. The extra cost to ratepayers is a proxy for the value of a cleaner river. The value of the time environmentalists spend fighting to protect an area can also be used as a proxy for what they think it is worth. However, this can be problematic; if one bushwalker earns more money in his or her job than a fellow bushwalker, does that mean one person's spare time is worth more than another's?

Naturally, people's willingness to pay, whether measured directly or inferred, will be intimately linked with their ability to pay or their incomes. It will also be shaped by their perceptions of monetary value; for example, \$1000 is a lot to someone living on \$3 a day in a poor country. Even in a single community, people's willingness to pay may be dependent on their incomes, and this may distort the outcomes in favour of the choices of rich people. (One could argue that this is the way a market always works, because the wealthy by definition have greater purchasing power.)

Although affluent people are willing to pay more to protect their local environment, they do not necessarily value their local environment more than poorer people value theirs. Clearly methods which depend on willingness to pay underrate the values of people with low incomes. This was most evident recently when environmental economist David Pearce and his colleagues used this method to value lives and found that the lives of people living in affluent countries were worth up to 15 times the lives of those living in

poor countries because people in poorer countries were less willing to pay large amounts of money to avoid risk of death.^{xxiv}

The market is a system which advantages those most able to pay. Using the market, whether an actual market or a contrived one, to value the environment tends to produce values that reflect and therefore maintain the prevailing distribution of income and denies people an equitable influence over their environment.

Environmental valuation is necessary for various types of policy instruments aimed at achieving sustainable development. For example, many people have called for national accounts to be adjusted to take account of environmental resources lost in the process of generating wealth. In this way measures such as GNP and GDP are supposed to provide a better indication of the true wealth of a nation. Nevertheless an adjusted GNP figure is merely a way of measuring weak sustainability. It assumes that as long as total capital, human plus natural, is increasing then welfare is increasing and this allows for the gradual deterioration of the environment as long as the total capital stocks are increasing. The equity dimensions of this assumption were outlined earlier in this paper.

Environmental valuation has also been proposed as a necessary part of cost-benefit analyses and economic instruments; both policies promoted by economists and governments for achieving sustainable development. These policies are also premised on the assumption of weak sustainability and the premise that it is total capital that matters. Their equity implications will be discussed in more detail the following sections.

Cost-Benefit Analysis (CBA)

CBA has traditionally been used by governments as part of their decision-making processes for development projects. Environmental economists argue that cost-benefit analysis should be applied to all private and public projects, because they have environmental effects that are not priced in the market place—'externalities'. Indeed, cost-benefit analyses are now a formal requirement of many large-scale projects undertaken by private enterprises, such as those in the mining sector and the building industry.

In the past environmental costs and benefits have usually not been quantified and incorporated into the analyses but the sustainable development requirement for integration of environmental and economic goals has meant that the new approach is to integrate these environmental costs and benefits by pricing them and incorporating them into the calculations.

Cost-benefit analysis is therefore promoted as a primary method for integrating economic and environmental considerations and can be applied to other matters requiring decisions, such as the rate of exploitation of scarce natural resources and the management of wilderness areas, and to government policies such as regulation. Economists and business people are now arguing that it should be used more often as a way of deciding which way to proceed towards sustainable development.

Distribution of Costs and Benefits

CBA is about aggregated costs and benefits and does not deal with the issue of how they are distributed yet distribution of costs and benefits is of prime concern when considering equity. For example, a chemical plant may provide many benefits, such as profits to shareholders, taxes to governments and wages to workers whilst causing a deterioration of air quality in the neighbourhood. As long as the sum of benefits outweighs the sum of the costs, even if a small group of people get the benefits and many people suffer the costs, the society as a whole is assumed to be better off.

It is sometimes argued by economists that, if the total benefits outweigh the total costs, the winners could compensate the losers and still be better off; but this is only theoretical reasoning and seldom happens. It is also sometimes argued that, although the distribution of benefits and costs may be unfair in particular instances, it will all balance out in the end. However, the tendency in our society is more often for winners to win and losers to continually lose—so that poor people are the ones who tend to suffer the costs of hazardous, dirty or unwelcome developments.

Robert Bullard^{xxv}, professor of sociology at the University of California, claims “people of color (African Americans, Latino Americans, Asian Americans, and Native Americans) are disproportionately affected by industrial toxins, dirty air and drinking water, and the location of noxious facilities”. Studies in 1983 by the US General Accounting Office and in 1987 by the United Church’s Commission for Racial Justice provide statistical support for Bullard’s assertions. For example communities with one or more hazardous waste facilities have higher proportions of minorities than those without such facilities.^{xxvi}

Moreover the logic of cost-benefit analysis tends to exacerbate this tendency. Siting a dirty industry in an already dirty area will be less costly than siting it in a low-pollution area—because the costs of pollution, if measured in terms of decline in property values, will be lower. Similarly, siting the polluting industry in an area that has depressed property values for other reasons but is nevertheless unpolluted will also be less costly by this method than siting it in an affluent area; again, the poor are disadvantaged.

Discounting Future Costs and Benefits

In a CBA, the value of future consequences is discounted (reduced) because it is assumed that costs and benefits in the future are not worth as much to people today. This is a direct result of using money as a measure. The logic behind discounting derives from the logic of money—that a person would prefer to receive money now than the same amount in the future. Pearce, Markandya and Barbier put forward the following reasons for this^{xxvii}:

- Money obtained now can be invested and earn interest.
- People tend to be impatient.
- The person might die before he or she gets the money.
- One cannot be sure of getting the money in the future.
- People in the future will probably be better off; money will not be worth as much then.

The procedure for reducing future costs and benefits to today’s values is known as discounting. Whether a project goes ahead or not will often depend on what discount rate is used. Small differences in discount rates can make big differences in the final ratio of

benefits to costs if long-term costs or benefits are being considered. For example, consider the following:

The net present value of an income or cost of \$200 million in 50 year's time would be

- \$ 1.7 million if the discount rate is 10 per cent;
- \$ 17 million if the discount rate is 5 per cent;
- \$ 74 million if the discount rate is 2 per cent.

The further the costs are into the future, the less they will be worth in today's values; yet future generations will still have to put up with them. An extreme example is that of the storage of radioactive waste, which can last hundreds of thousands of years into the future. A large cost arising from this waste hundreds of years hence would be worth almost nothing in today's values. A more commonplace example is the case of reforestation. 'Except at very low discount rates, a tree that takes 40 years to grow would have a very low value today to show against its costs.'^{xxviii}

Discounting therefore discriminates against future generations by saying that future costs are worth less than present costs. Because costs that are more than thirty years away become almost valueless using discounting at normal rates, long-term environmental costs such as resource depletion may be effectively ignored. Yet there are practical difficulties for governments in using discount rates that are lower than market rates of interest, because it would seem that the government was getting less return on its money than it could get elsewhere and that the cost of raising the funds was more than the returns.^{xxix}

Pearce says:

There are those who argue that we cannot take account of costs to generations yet unborn, for to do so is to widen the concept of 'democratic voting' in an unacceptable way. Those who are alive at the time of the decision constitute the 'proper' electorate. Others draw attention to the fact that the kind of 'inter-generational discrimination' implicit in discounting is an increasing feature of our society. Examples might be the potential for heating up the atmosphere through continued burning of fossil fuels ('the greenhouse effect'), nuclear power waste problems, continued and expanding use of toxic metals and chemicals which do not degrade in the environment, the use of chlorofluorocarbons (CFCs) which punch 'holes' in the stratosphere and increase the amount of ultra-violet rays in certain areas, perhaps inducing skin cancers, and so on.

It seems fair to say that there is no consensus at all on what to do about this aspect of CBA.^{xxx}

The idea that someone would like to consume now rather than in the future is also not applicable to public goods which can be enjoyed now *and* in the future. Society gets the benefits of environmental preservation, and therefore the risk of one person dying before he or she gets the benefits is meaningless.

The operational basis of discounting is that there exists a concrete process of depositing money in the bank where it grows at a given rate of interest and

this process is viewed as an alternative to investing one's money in any particular project. In their models economists seem to consider all good things as equivalent to a sum of money in the bank, and therefore to expect that good thing, whatever it is, to grow like money in the bank. But when in their models economists discount future utility or happiness, then we are already getting into misplaced concreteness, because there is no real world operation by which satisfaction today can be stored in a fund and even if there were, there is no reason to expect such a fund to grow to give greater satisfaction tomorrow ...

The prize for nonsensical discounting must go to those who discount future fatalities to their 'equivalent' present value ... one is left with the suspicion that the motivation underlying the whole ludicrous calculation is simply to convert a 'very large number' into a very small number under the cover of numerological darkness.^{xxx}

Substitution of Private Wealth for Nature

CBA also rests on the assumption, inherent in weak sustainability, that environmental assets can be substituted by human-made assets that can be bought on the market and all that matters in the end is that the aggregate gains outweigh the aggregated losses. If a project generates more wealth than what it is calculated the environmental damage that is caused is worth, then the project should go ahead. The loss of environmental amenity is made up for by the wealth that is generated.

The idea of passing on an equivalent stock of goods to future generations that may contain fewer environmental goods and more human-created sources of wealth depends on the use of cost-benefit analysis for its implementation. Pearce argues that the requirement to keep the total amount of capital constant 'is consistent with "running down" natural capital—i.e. with environmental degradation' as long as human-made capital can be substituted for natural capital. He says that this means that the Amazon forest can be removed so long as the proceeds from removing it 'are reinvested to build up some other form of capital.'^{xxxii}

Economic Instruments

Another increasingly popular way of incorporating environmental values into decision-making is through the use of economic instruments. The idea is that prices of resources should reflect the true cost, including environmental costs, involved in their extraction and manufacture. If this were the case then, the economists argue, people would use environmental resources more wisely.

Laws can also force the polluter to take notice of these external costs by prescribing limits to what can be discharged or emitted but economists tend to be ideologically opposed to the use of laws for this purpose, preferring the market to perform this function. They argue that the market is better able to find the optimal level of damage, the one that is most economically efficient. The idea of an optimal level of pollution is strange, and even repugnant, to many people. But it is a central assumption in the economic theory behind internalisation of costs using economic instruments.

Distribution of Costs and Benefits

The optimal level of pollution is supposed to be the level at which the costs to the company of cleaning up the pollution equal the cost of environmental damage caused by that pollution. If the pollution charge is equivalent to the cost of environmental damage then the theory says that the company will clean up its pollution until any further incremental reduction in pollution would cost more than the remaining charge, that is until it is cheaper to pay the charge than reduce the pollution. This is said to be economically efficient because if the polluter spends any more than this the costs (to the firm) of extra pollution control will outweigh the benefits (to those suffering the adverse affects of the pollution).

This is not an equitable solution for the community. Economists argue that the polluter is better off than if it had paid to eliminate the pollution altogether and the community is no worse off because it is being compensated by the firm for the damage through the payments to the government. In theory the payments made by firms in the form of charges can be used to correct the environmental damage they cause.

This is where theory and reality diverge because there is considerable doubt about whether money payments can correct environmental damage in many circumstances; and more importantly, money collected from pollution charges is seldom used to correct environmental damage. Economists argue that if the money is spent on something equally worthwhile then the community is still no worse off—a view that those who suffer from the pollution might find hard to accept. The people who suffer the environmental damage, the local residents and the other users of the river including fishing people and downstream industries, are seldom the ones that benefit from the charges paid by the company.

Emissions trading also raises equity issues in terms of distributions of costs and benefits. Tradeable pollution rights create rights to pollute the environment, up to a pre-determined limit, and then allow these rights to be traded.^{xxxiii} Greenpeace campaigner Lisa Bunin points out that this involved privatising a shared resource:

This approach appears like a thinly veiled scheme to privatise air using ‘marketable permits.’ Industry simply does not have the right, nor should it ever be given the right, to make money off our air. Air is a part of nature that is priceless—it is essential to all life on earth. It must never be allowed to be quantified or traded by industry over the heads of communities, nor should industry be allowed to bribe communities into consenting to allow them to do so. ... In my view, it is a highly offensive and dangerous program that should be eradicated at the earliest opportunity.^{xxxiv}

Similarly, Richard Ayres, chair of the US National Clean Air Coalition, argues that trading in emission rights “takes a public resource and turns it into something that can be traded as if it were property”.^{xxxv}

It also raises the question of how localised pollution will be prevented, since some firms—those that buy up the pollution rights—will be putting above- standards emissions into the environment. What is to stop some neighbourhoods getting more pollution while others get less? Bunin suggests that such trading is likely to disadvantage poor

communities who will find the air quality in their neighbourhood goes down as wealthy people negotiate and buy high air quality above their own heads.^{xxxvi}

Unfair Burden on those with Low Incomes

Economic instruments can be inequitable if charges or taxes are imposed on a certain section of the society whose members may not be able to afford them. For example, a tax imposed on polluting behaviour is only useful environmentally if alternative action is available or possible. Otherwise, the environment does not benefit and the tax-paying individual is simply worse off financially. For example, raising energy costs—with the aim of encouraging people to buy more energy-efficient models of common and widely used consumer products such as fridges, cars and electric globes—may impact hardest on those who cannot afford to replace or upgrade their consumer goods. Also, if prices are to rise to reflect the real environmental costs of producing goods, those who can barely afford such goods now will suffer from the price rises unless they are compensated in some way—for example, by ensuring they have a guaranteed minimum income and tax cuts.

Another example would be a petrol tax imposed on someone who had to travel a long distance to get to work and who did not have access to alternative means of getting there, such as public transport. The person would be forced to pay the tax—and would suffer the double disadvantage of having to travel a long distance each day and having to pay extra to do so. Since it is often the poor who are forced to live in the outer suburbs, because that is where the cheapest housing can be found, such a measure would impose its greatest burden on those least able to pay.

Similarly a charge on the use of leaded petrol to create an incentive for people to buy unleaded petrol can be inequitable. Poorer people suffer a double insult because they are the least able to afford the more expensive leaded petrol and yet they are also the ones most likely to own older cars that run on leaded petrol.

Substitution of Private Wealth for Nature

The rationale behind economic instruments, like that of cost-benefit analysis, is that of weak sustainability—that the benefits that arise from the environment can be substituted for other benefits that can be bought on the market. In fact, the assumption in internalising the costs is that environmental damage can be paid for and that this is as good as, or even preferable, to avoiding the damage in the first place.

Another inherent assumption behind economic instruments is that the environment can take a certain amount of pollution and that charges can ensure efficient allocation of that capacity to firms that need to utilise it. In other words, they assume that the environment has an assimilative capacity. This idea is based on the fact that some wastes, such as organic wastes that occur naturally, will decompose and break down in the environment if there are not too many of them in the one place at the one time. Other materials, such as some metals, may exist naturally in the environment at very low concentrations.

The unspoken assumption behind all such models is that the capacity of the environment to tolerate a certain number of renegades is something that we ought, collectively, take advantage of. We ought to make sure that all those

slots are taken, we ought allow just as many renegades as nature itself will tolerate.^{xxxvii}

This approach is highly dependent on the ability of scientists to assess the impact of pollutants on the environment and to determine a safe level that will not irreversibly or severely damage the environment. The alternative approach is to adopt the precautionary principle. Instead of purposely making economic use of what is thought to be the assimilative capacity of the environment, a precautionary approach would be to continually seek to reduce emissions that may harm the environment, by constantly reducing allowable discharges over time.

Of course putting a monetary value on environmental costs suffers the same problems involved in cost-benefit analysis. All this supposes that the charges are in some way equivalent to the damage done but this cannot be so easily assumed. As Daly and Cobb point out, “even when the physical consequences are not in dispute the evaluation of the economic loss is subject to wide disagreement and uncertainty.”^{xxxviii}

Decision-making Equity

In practice governments and regulatory agencies do not attempt to relate charges or taxes to ‘external costs’. Rather, in the case of price-based measures such as pollution charges, an extra amount is charged, chosen somewhat arbitrarily by the government, that is supposed to provide an incentive to change environmentally damaging behaviour.

Schelling maintains that “the essence of a pricing system is that it leaves the decision to pay or not to pay to whoever confronts the price.”^{xxxix} Although a government agency may set a pollution charge, the decision about whether to pay it or not is a decentralised one, that is made in the market place. This contrasts with a fine that must be paid and is a way of enforcing legal measures. He argues that under a charge system individual firms are the ones that make the decisions rather than the regulator.

Industry would prefer to retain the choice of discharging wastes into the environment, even if it has to pay for the privilege. Yet this means that the decisions are taken out of the hands of the community and their elected representatives. Business people, bureaucrats and politicians have been attracted to the idea of economic instruments by the economists’ promise that they will remove decision-making from the public arena thereby depoliticising environmental debates. Chant et al. argue that market-based instruments transform environmental conflicts from political problems to economic transactions:

A major advantage of the market as an allocational device is that it provides a non-political solution to the social conflict raised by resource scarcity. Individuals obtain title to scarce resources through voluntary exchange and such exchange represents a solution to what would otherwise be a political issue.^{xi}

Gary Sturgess, former director-general of the New South Wales Cabinet office, is one of many who has been convinced by such arguments and has argued for market-based solutions to environmental problems as they have the potential to remove the politics from policy-making and to prevent politics from distorting decisions.^{xii}

The outcomes of environmental conflicts have been traditionally determined in a relatively open political process. Communities can influence governments to protect the environment by campaigning and demonstrating as well as by voting. In a system where the optimum level of environmental protection is decided by firms and consumers responding to prices that 'internalise' environmental costs, influence is far more difficult. The power of the consumer is not evenly distributed (the wealthy, businesses and bureaucracies have far greater consumer clout), and alternatives are often not available.

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- ⁱ World Commission on Environment and Development, Our Common Future, Australian edn, Oxford University Press, Melbourne, 1990, p.85.
- ⁱⁱ See for example, Ecologically Sustainable Development Working Groups 1991a, *Final Report—Executive Summaries*, AGPS, Canberra, p. vi.
- ⁱⁱⁱ Falk, Jim, Hampton, Greg, Hodgkinson, Ann, Parker, Kevin and Rorris, Arthur, 1993, *Social Equity and the Urban Environment*, Report to the Commonwealth Environment Protection Agency, AGPS, Canberra, p.2.
- ^{iv} Weiss, Edith Brown 1990, 'In fairness to future generations', *Environment*, vol. 32, no. 3, Apr., p. 9
- ^v *Ibid.*, p. 8.
- ^{vi} Pearce, David, Markandya, Anil & Barbier, Edward 1989, *Blueprint for a Green Economy*, Earthscan, London, chapter 2.
- ^{vii} Weiss, op.cit., p. 8
- ^{viii} Goodin, Robert 1992, The ethics of selling environmental indulgences, Paper presented to Australasian Philosophical Association Annual Conference, University of Queensland, July.
- ^{ix} Costanza, R and Folke, C., 1994. Ecological economics and sustainable development. Paper prepared for the International Experts Meeting for the Operationalization of the Economics of Sustainability, Manila, Philippines, July 28-30 (unpubl.).
- ^x Weiss, op.cit., p. 8.
- ^{xi} World Commission on Environment and Development, op.cit., p.72.
- ^{xii} Ibid., p. 8.
- ^{xiii} Rees, William 1990, 'The ecology of sustainable development', *The Ecologist*, vol. 20, no. 1, January February, p.18.
- ^{xiv} Bullard, Robert 1992, 'The politics of race and pollution: An interview with Robert Bullard', *Multinational Monitor*, June, pp. 21–25.
- ^{xv} Brown, Valerie & Switzer, Margaret 1991, *Engendering the Debate: A Discussion Paper for Consideration by the ESD Working Groups*, Office of the Status of Women, Canberra, June.
- ^{xvi} Pearce et al., op.cit., p. 5.
- ^{xvii} D.J. Thampapillai, Environmental Economics, Oxford University Press, Melbourne, 1991, p.5.
- ^{xviii} D. James, Economics, Environment and Sustainable Development, Resource Assessment Commission, RAC Occasional Publication No 1, June, 1991, p.4.
- ^{xix} Ibid., p.2.
- ^{xx} Business Council of Australia, Achieving Sustainable Development: A Practical Framework, BCA, 1991, p. 9.
- ^{xxi} T.H. Tietenberg, "Using economic incentives to maintain our environment", Challenge, March/April, 1990, p. 42.
- ^{xxii} Pearce admits that there are some environmental assets that cannot be replaced by human-made capital.
- ^{xxiii} David Pearce, ed. Blueprint 2: Greening the World Economy, Earthscan, London, 1991.
- ^{xxiv} Fred Pearce, 'Global row over value of human life', *New Scientist*, 19 August 1995, p. 7.

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- xxv R. Bullard, 1993, "Anatomy of Environmental Racism", in *Toxic Struggles: The Theory and Practice of Environmental Justice*, ed. R. Hofrichter, New Society Publishers, Philadelphia, PA, p.25.
- xxvi R. Hofrichter, 1993, "Introduction" in in *Toxic Struggles: The Theory and Practice of Environmental Justice*, ed. R. Hofrichter, New Society Publishers, Philadelphia, PA, p. 2.
- xxvii Pearce et al, op.cit.
- xxviii Ecologically Sustainable Development Working Group Chairs 1992, *Intersectoral Issues Report*, AGPS, Canberra., p. 14.
- xxix Ibid., p. 16.
- xxx Pearce, David 1983, *Cost-Benefit Analysis*, 2nd ed, Macmillan, London, p. 53.
- xxxi Daly, Herman E. & Cobb, John B. Jr 1989, *For the Common Good: Redirecting the Economy toward Community, the Environment, and a Sustainable Future*, Beacon Press, Boston, pp. 153-4.
- xxxii Pearce, 1991, op.cit., pp. 2-3.
- xxxiii Commonwealth Government of Australia, Ecologically Sustainable Development: A Commonwealth Discussion Paper, AGPS., Canberra, 1990, p. 14.
- xxxiv Lisa Bunin, memorandum to Roger Wilson, Greenpeace, 1 July 1991, p. 3.
- xxxv Thompson, Dick 1990, 'Giving greed a chance', *Time*, 12 Feb., p. 51.
- xxxvi Bunin, op.cit.
- xxxvii Goodin, op.cit., p. 16)
- xxxviii Daly and Cobb, op.cit., p. 141.
- xxxix Schelling, T. (Editor), 1983. *Incentives for Environmental Protection*. MIT Press, Cambridge, Mass., p. 7.
- xl Chant, J., McFetridge, D., and Smith, D., 1990. The economics of the conserver society. In: W. Block (Editor), *Economics and the Environment: A Reconciliation*. Fraser Institute, Canada, p. 20.
- xli Sturgess, G., 1991. Paper presented to Market-Based Environmental Policy Conference, hosted by the School of Economics, University of NSW, 20 March (unpubl.).