Environmental Victims: Arguing the Costs

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ABSTRACT: The costs of anthropogenic environmental change are usually discussed in broad terms, for example embracing damage to the ecosystem or buildings. There has been little consideration of the direct human dimension – the cost to and of environmental victims – except in clinical terms.

In order to prevent and minimise environmental victimisation it seems necessary to present cost arguments to governments and commerce. This paper outlines the personal, social and cash costs of environmental victimisation, using the psycho-social literature, and brief case studies of intellectual disability, road transport and cross-border pollution. It is proposed that governments and commerce might not respond in obvious ways to these cost arguments, but 'trust' is identified as a cost that both may recognise. It is concluded that the concept of *loss-costs* should be central to any analysis, and the paper provides a 'Framework for comprehensive argument of the costs of environmental victimisation', in the form of a simple matrix.

KEYWORDS: Environmental justice, environmental victims, environmental economics, environmental costs, intellectual disability.

INTRODUCTION

A century ago, US and UK laws about child abuse were precipitated by, and modelled on, existing laws about cruelty to animals. This pattern of concern is reflected in the history of environmentalism. For years Greenpeace has raised funds through publicising the plight of whales and the ecosystem; it was only in 1994 that an advert depicting environmental injuries to children appeared. As a consequence of this pattern, the *direct* human cost of radical environmental change has only relatively recently been distinguished to a significant degree from the amorphous 'environmental cost' (e.g. Pearce et al. 1989).

Environmental Values **6** (1997): 3-30

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Media images of environmental victims have fuelled a growing concern about human costs. In 1994 *National Geographic* published a picture of a line of Russian children all with the same congenital injuries – missing left forearms (NG 1994: 72). It was reported that there were at least 90 such cases in Moscow, attributed to the effects of pollution. The same image was then taken up by the Green Cross on its information leaflets, and it has become a common reference point when discussing the 'toxic legacy of the cold war'.

This recent concern about direct human outcomes has prompted new conceptual frameworks (Capek 1993; Hofrichter 1993; Bryant 1995; Williams 1996a), which create an 'environmental justice' or 'environmental victimology' perspective on a topic that has, until recently, not received much attention outside the domain of medicine. In the past, traditional victimology has tended towards a human rights approach, embracing policy advocacy and occasionally a misplaced 'missionary zeal', which was then commonly hijacked by governments and repackaged to create a social palliative (Fattah 1992) – a pattern that needs to be avoided in an environmental perspective.

Perhaps one route to avoiding this outcome is to ensure that environmental victimology embodies a discussion of the costs of victimisation, in the broadest sense of 'cost', embracing personal, social and economic perspectives. Social costs are becoming better documented (e.g. Bates 1994; Rodricks 1992), but are usually only reported in specific case-studies. There is surprisingly little work on cash-costs, which, for example, led the UK Royal Commission on Environmental Pollution to conclude in relation to transport, 'Evidence on the costs of the damage caused to the environment is both limited and fragmentary' (RCEP 1994: 103).

Promoting a cost perspective is not to ignore or deny that environmental victimisation is fundamentally a human rights concern, but simply to be realistic about how we might bring about positive change through influencing two entities – commerce and the state. Entities which respond primarily to arguments expressed in cost, not human rights terms. But is it that simple? Arguing the costs of environmental damage has not, so far, inspired the required change in human behaviour, so perhaps we are aiming the wrong arguments in the wrong direction.

To assess whether a costs approach is a viable strategy for change this paper asks two questions:

- what are the personal, social and cash cost arguments and how do they interrelate?
- how are governments and commerce likely to respond to cost arguments?

Working definitions of 'environmental victim' and 'environmental cause' are proposed, and lessons are derived from brief case-studies of intellectual disabil-

ity, road transport, and cross border pollution. The concept of 'loss-costs' is proposed, and the main lessons from the discussion are presented in the form of a matrix within which future comprehensive analysis of the human costs of environmental victimisation might be framed.

DEFINITIONS

'Environmental Victims'

Any discussion of costs must be based on a clear definition of 'environmental victims', even if this is inevitably arbitrary. The notion of victims in relation to the environment has been applied very loosely. The study, *Victims of the Environment* (Rossi et al. 1983) only concerns natural disasters such as tornadoes and earthquakes, in which there are no apparent perpetrators. Whilst in the headline 'Brain damage found in victims of Bhopal disaster' (BMJ, 1994; p. 359), the meaning is very different as the environmental factors were not natural and clearly there were culpable entities. Michael Reich adopts the term 'victims', giving it the same meaning, throughout his book, *Toxic Politics: Responding to Chemical Disasters* (1991). In an editorial for India's environmental magazine *Down to Earth*, Anil Agarwal wrote recently of his experience of cancer: 'I was speaking not just as an environmental activist but also as an environmental victim.' (1995: 4). The term therefore arises naturally in discussion of contemporary environmental problems, but without sufficient precision for academic purposes.

Surprisingly, 'environment' is rarely defined clearly in law or international declarations (Birnie & Boyle, 1992; p. 2). Through usage it is now generally taken to comprise four components: chemical, physical, microbiological, and psychosocial (Lee, 'Environment', in Bullock et al. 1988: 275). The importance of the latter is in relation to corporate abuses of power which manipulate the other three components. For example, cigarette advertising aimed at children or developing countries.

When formally conceptualising 'environmental victims', it is helpful to exclude those more accurately described as 'environmental casualties' who suffer as a result of natural disasters. Implicit in the etymology of 'casualties' is the notion of *chance*, whilst the concept 'victims' embodies the idea of suffering caused by a *deliberate or reckless human act* (including an act of omission). Some circumstances that appear natural may, if analysed in greater depth, be a consequence of human acts. Those killed by the flooding of the Yangtze river in 1995 may have been victims of deforestation and soil erosion which precipitated the surge (Bird, 1995: 2). Environmental suffering that has affected many generations, such as iodine deficiency, might not be seen as victimisation until

power relationships are examined – why are the communities that suffer iodine deficiency forced to live on land that cannot sustain human life properly?

Environmental law usually embodies the principle that the outcome of an act must have been 'reasonably foreseeable' for it to constitute an offence. But, so far, most environmental law relates to damage to the physical world, not human injury. If we are considering human injury as a specific outcome, it seems more appropriate to borrow from common law in relation to personal injury offences, for example assault, and here the principle is whether an act is deliberate *or reckless*. Reckless behaviour may not embody foreseeing a *specific outcome*; simply that an act could, by its nature, be dangerous to others. The distinction is important. Many claims for compensation for environmentally-mediated injury fail because the perpetrator maintains that it was impossible to foresee a specific outcome. For example, the dumping of a particular substance may be excused because it was not known, at the time, to be hazardous (the specific negative outcome was not 'foreseeable'). But in the same circumstances it might be claimed that to dump the substance was *reckless* because it was not proven safe. In the light of the inability of science to keep up with the problems it causes, this common sense precautionary principle seems more in accord with human well-being. It is the tradition of common law on personal injury, not environmental protection, that has at its heart the direct well-being of humans.

Intergenerational responsibility must be implicit in any conceptualisation because of the time-latent nature of much environmental victimisation. The UK Congenital Disability (Civil Liabilities) Act 1976, for example, embraces environmentally-mediated injury causing, 'predisposition (whether or not susceptible to immediate prognosis) to physical or mental defect in the future'. There needs also to be an assumption that both victims and perpetrators might be individuals *or groups*. And, as will be argued later in relation to causation, it is more appropriate to phrase a definition, 'consequence of' rather than, 'caused by'.

The outcome of victimisation is better described as 'injury' rather than 'suffering'. Injury, as an 'adverse health effect' caused by environmental factors, is neatly defined by Christiani (in Chivian et al. 1993: 15): 'any effect that results in altered structure or impaired function, or represents the beginnings of a sequence of events leading to altered structure or function'. Implicit in the term injury is relationship between two events (cause and effect) which culminate in tangible harm; suffering implies less acute general experiences which might be tolerated without actual injury. This distinction also addresses the debate, common now in poor countries, over whether people must endure some environmental suffering for the benefits of economic development, such as dam building. This is an arguable trade-off, but in no justice system is it acceptable to trade-off human *injury* against economic benefit. 'Environmental victims' can therefore be defined as:

those of past, present or future generations who are injured as a consequence of change to the chemical, physical, microbiological, or psychosocial environment, brought about by deliberate or reckless, individual or collective, human act or act of omission.

An 'environmental cause' of victimisation

Arguing causation is the prerequisite of establishing victim status. Whilst it is convenient for an environmental activist to talk of problems as 'environmentally caused', a cause in relation to the definition of 'environmental victim' (above) is human interaction with the environment, not the environment itself – 'environmentally-mediated' would be a more apt term, but as yet has no legal meaning. The understanding of causation requires greater clarity.

Initially, there is a conceptual legacy within law that must be challenged – the requirement that cause and effect must be adjacent. The law is usually framed in terms such as '*proximate* cause', '*immediate* violence' or 'a *continuing, operating* and substantial cause' (Emmet, 1984: 60), reflecting the rule of criminal jurisprudence *causa proxima non remota spectatur*. Existing law has therefore been weak at conceptualising the indirect nature of environmental victimisation. Causal understandings of 'interjacency' are needed – embracing space, time, and multiplicity and interaction of causes and effects – which reflect the so-called 'creeping disasters' or, in the UNICEF term 'slow emergencies', which now threaten human safety. Court judgements provide one source of evolving concepts, such as that of 'major contributory cause'. *Toxic Torts* (Pugh & Day, 1992) provides a number of examples, which can inform a victimology perspective.

Another approach to the problem can derive from the philosophy of law: the importance of how the causal question is phrased. This is raised by Hart & Honoré, in *Causation in the Law* (1985), who cite a judge who considered the form, 'Did the injury cause X', inferior to, 'Did X result from the injury' (p.87), and argue that their own preferred form is, 'Was X the consequence of Y' rather than, 'Was Y the cause of X' (p.135).

This can be exemplified in terms of environmental victimisation involving a toxic release which degraded farmland, leading to malnutrition, and then a high incidence of disability in the local population. In this case it is easy to argue that the toxic release did not 'cause the disability' – the direct cause was malnutrition. It is less easy to argue that the disability was 'not a consequence' of the release.

How should an 'environmental cause' be defined in legal or quasi-legal terms? One approach is the recognition of environmental causes as the *presence* or *absence* of environmental factors. Each of these embracing the standard distinction in criminal and civil laws defining offences, and therefore victimisa-

tion, as stemming from human *acts* or *omissions*. Broadly, 'environmental causes' would then fall into four groups, which are exemplified in Figure 1. Specific instances of victimisation may well fit within more than one of these four categories, or may fit better in a different category at different periods over a long time scale (i.e. in the case of 'creeping disasters').

	ACT	OMISSION
PRESENCE of environmental agent	e.g. the *presence* of methyl-isocyanate caused by an *act* of polluting and poisoning (Union Carbide – Bhopal)	e.g. the *presence* of excess lead in water supplies caused by an *omission* of the duty to provide safe drinking water
ABSENCE of environmental agent	e.g. the *absence* of food and micronutrients leading to malnutrition and brain injury resulting from land degradation caused by the *act* of dumping toxic waste	e.g. the *absence* of iodine caused by an *omission* of failing to iodise salt in accordance with the law (India)

FIGURE 1. Defining 'an environmental cause' of victimisation

The model is not hypothetical. Although scattered, laws and judgements already exist which acknowledge these four forms of environmental cause. For example, legislation in some Indian states redresses the *absence* of iodine in the environment by a statutory requirement that iodine is included in salt. Victimisation, if iodine is not added to salt, therefore results from an *omission*. A UK appeal ruling in 1995 found that 'running a sewerage system in an unmaintained state is sufficient to entitle a jury to find the party responsible for the system guilty of causing pollution ... failure implied an omission' (Tan, 1995: 11). This provides an instance of *presence/omission*. A definition emerges from this model, that an 'environmental cause' of victimisation is

> *a presence or absence of chemical, physical, microbiological, or psychosocial environmental factors, resulting from individual or collective human act or omission, over any time-scale, of which the consequence is human injury.*

ENVIRONMENTAL VICTIMS

WHAT ARE THE 'COSTS'?

Social costs

Many writers informally note the social costs of environmental victimisation. For example, indiscriminate copper mining by RTZ in Bougainville is reported to have led not only to personal health problems amongst the indigenous population, but also to a 'deep sense of social malaise … which expressed itself in clan tensions, depression, alcohol abuse, rage, traffic accidents and incidents of violence' (Gillespie 1994: 13). The Green Cross reports from the former Soviet union 'instability in contaminated regions, by the feeling of "being left alone" with the toxic threats' (GC 1994).

More formally, research concerning the psychosocial effects of hazardous work environments on personality has provided a starting point for empirically evaluating forms of environmentally-caused community-demise that have elusive economic consequences. For example, Roberts (1993: 74) determines: anxiety, fatalism, depression, lowered self-esteem, and anomie; and describes exploitation, selfishness and a loss of confidence in commercial practice, government, science, and organised labour.

On a larger scale, analysis of the Chernobyl disaster (Fedorychyk, 1994: 2) determines a 'syndrome of the victim', which 'spreads among people and means that people consider themselves doomed':

- *live-for-the minute attitudes* -'they don't want to have long-term plans'
- *apathy* – 'their life attitude is aggressively parasitical'
- *no confidence in social institutions* – 'people have lost their confidence in the State, because it acted against people; in science, because it caused the problems which could not solve, in medicine, because it was used as a political instrument, in world community'
- *denial* – 'people in Ukraine try to forget about Chornobyl in order not to go mad'
- *reduced marriage prospects* – 'this generation will have serious discrimination problems in getting married'.

From a social perspective, the ultimate cost of workplace or societal 'victim syndromes' seems clear – communities that few of us would choose to live or work within, and the breakdown of trust is a significant aspect of this. (See Williams 1996a for an elaboration of 'victim syndrome'.) It is not hard to see that such communities are also likely to suffer economic problems, although it is much more difficult to express these in finite cash terms which might positively influence politicians or industrialists. There appears a need for analysis from a socio-economic perspective which, when possible, pushes the idea of human cost beyond a social psychology view.

Socio-economic costs – a case study of environmentally-mediated intellectual disability.

Intellectual disability is one of the most elusive yet concerning outcomes of environmental victimisation. Lead pollution and iodine deficiency are perhaps the two most commonly recognised threats, but there are many more (Williams 1996b). The problem has been discussed almost exclusively in medical terms, and it presents a demanding socio-economic case study. If arguments can be honed in this field they are likely to be readily transferable to other contexts.

Community decline

The difficulties posed to communities by a high prevalence of intellectual disability go beyond a threat to day-to-day survival. Social relationships that have long-term influences are likely to decline – good management, transferring knowledge, maintaining and developing cultural traditions. Hetzel reports that iodine deficiency in Northern Indian villages creates 'a major block to human and social development' manifest as 'a high degree of apathy' (even affecting domestic animals) and 'effects on initiative and decision-making' (1989: 92). Those who do not suffer intellectual problems are likely eventually to leave such communities compounding the problem. Exploitation is the eventual cost. The UN warns:

> Although they may seem much less obvious than any physical disability, learning disorders are a particular source of danger because they may affect an entire population and even impair its capacity to resist exploitation. (UN 1991)

At a village in Unnau, India, where it is reported that there is a 40% prevalence of intellectual disability through water pollution (Saxena 1991: 3), there is no village headman, the villagers cannot remember when they had last had a village meeting, and education and health services have long-since disappeared.

Economic consequences seem inevitable. Researchers from the Programme Against Micronutrient Malnutrition provide an impression of the problems caused by iodine deficiency in the Philippines: 'The result is poor productivity; a nation not up to par economically; a substandard quality of life for its citizens; and a community which cannot compete globally' (PAMM 1995: 2). On a local level, Li and Wang report a Chinese community, where 'the economic development of the village was retarded' and there was no truck driver or teacher (1987: 4-5). These appear to be tangible economic threats. But they are rarely quantifiable because many of the economic relationships, in the type of communities likely to suffer, are not conducted on cash terms, for example pooled labour at harvest times.

Families

Families usually have to provide the direct care for disabled offspring, siblings and relatives. In poor countries the economic outcome is twofold: the cost of caring and the loss of potential income. Families can show remarkable strengths in these circumstances, but this does not reduce the demands put upon them. In countries like India, it is not unknown for young people with intellectually disabled brother or sisters to commit suicide because of the future burden that will, of tradition, be passed to them.

More specifically, diminished marriage opportunities are commonly recorded. Li and Wang report a Chinese village where iodine deficiency was common, known as 'the village of the idiots', where girls from other villages did not want to marry and live in the village (1987: 4-5). Attitudes towards the *hibakusha*, following the Hiroshima bomb, derived more from myth than scientific fact, but that did not alter the effect on families. Robert Jay Lifton reported,

> [No-one] can, with absolute scientific certainty, assure *hibakusha* that abnormalities will not eventually appear in their children, their grandchildren, or in still later generations...[D]amage from radiation experienced by exposure *in utero*...resulted in a high incidence of microcaphaly with and without mental retardation...Scientifically speaking, it has nothing to do with genetic problems. But ordinary people often fail to make the distinction: to them, children born with abnormally small heads and retarded minds seem still another example of the bomb's awesome capacity to inflict a physical curse upon its victims and their offspring (Lifton 1967: 106).

This Hiroshima situation is mirrored now by similar fears in Chernobyl. It is easy for those from western cultures to forget the acute economic problems caused to traditional families by reduced marriage prospects, and that, in a country such as India, there will be common agreement about quantifiable cash consequences.

Looking towards the future, outcomes for families may take on another form in the richer nations: the creation of a genetic economic underclass. In 1995, researchers at the Institute of Molecular Medicine, University of Oxford, identified a DNA marker for intellectual disability – a fraying at the tips of chromosomes. Eventually this could lead to sophisticated diagnoses resulting in families who are unable to obtain health insurance, individuals who are rejected by their peers as potential parents and therefore marriage or life-partners, and a group whose career prospects are reduced because of what employers perceive as the potential burden of caring for children with disabilities.

Families are virtually ignored as a unit of economic analysis in relation to environmental costs, yet arguably they should be the starting point. In the wealthier nations, domestic surveys such as the British Household Survey or the British Crime Survey could well embrace questions about environmentally-mediated problems. The principles of household survey methodology could probably be replicated on a smaller scale in poor-nation settings.

Public services

The costs to health services are probably the most tangible outcome of environmental victimisation. In 1989, the Supreme Soviet Environmental Committee reported that '80% of diseases in the USSR relate, directly or indirectly, to environmental problems' (IDRC 1994: 5). For this scale of effect there is a clear economic consequence for medical and related services, although cash estimates do not appear to have been made. The US does, however, provide examples of cash-cost arguments. In 1985 it was estimated that 'the total health benefit of reducing the neurotoxic effects of lead on US children would amount to more than $500 million per annum'. It was also shown that reducing the level of lead in tap water would save $27.6 million in medical costs (OTA 1990: iii, 20, 230-1).

What will be the impact of environmentally-mediated intellectual decline on education services? In affected areas there will be an increasing demand for an expensive 'special needs' approach in schools. The OTA study (above) came up with a figure of $81.2 million for special education. A report form Katovice in Poland and Pilbram in the Czech Republic, 'blamed high levels of lead in the blood for doubling the number [of children] needing special education and halving those in the 'exceptionally gifted' group' (Seligsohn 1994). More specialist institutions will be needed such as the Foundation for Children of the Copper Basin in Legnica, Poland, where an intensive, and expensive, detoxification programme has been set up to remove heavy metals from the bodies of schoolchildren.

But these are only the tangible educational costs in relation to effects that can be identified clinically – the tip of the iceberg. The 'sub-clinical' outcomes that are less evident will probably affect more children – memory problems, perception difficulties, reduced motor skills, behaviour problems, hyperactivity, concentration problems. This will increase the numbers of the 'dull and difficult', 'low achiever', 'problem children' who pose increasing difficulties in schools throughout the world. Needleman's classic study (1979) demonstrated this 'cost' very clearly in relation to blood-lead levels and teachers' perception of their pupils.

The direct costs to public services and indirect costs to human resources should put Education Ministries in the front line of environmental activism, but party politics intervene. Why, for example, does the UK Department for Education not question that the British standard for lead in drinking water is less strict than that set by the World Health Organisation, by a factor of five? Probably because the cost of removing lead is readily quantifiable, and the cost of failing to do so is not.

Social order

The exploitation of individuals, leading to criminality, is another necessary concern, but one that is hard to argue without conclusions that blame the victim. Whilst there is no evidence that people with intellectual disabilities are inherently criminal, individuals of low intelligence, just above the level of mental handicap (IQ 70), can be susceptible to anti-social influence. One British study found that the average IQ of suspects in police cells was 82 (Gudjonsson et al. 1993). The Cambridge Study in Delinquent Development concludes, 'children with low intelligence are more likely to offend because they tend to fail at school and hence cannot achieve their goals legally' (Farrington 1989: 32). On a more serious level Adrian Raine's study in relation to violent crime found that birth complications causing mild brain damage, which may go unnoticed in early life, *combined* with parental rejection, predispose a boy [sic] to violent behaviour in adulthood. Boys with drowsy brain wave patterns 'were significantly more likely to end up with criminal records at the age of 24' (Connor 1994: 19). Raine concludes that avoiding birth complications 'could help reduce violent crime by more than 20 percent in the next generation'. The 'cost of crime' is a common rallying call in political rhetoric. The next step is to link this cost-outcome to a cost-related cause, and that is always less attractive to politicians.

Compound outcomes

To put outcomes in such neat compartments can be misleading. The real concern is unexpected compound outcomes – a single environmental cause can strike in a surprising way at a number of aspects of community cohesion. Françoise Barten, in her outstanding study of environmental lead poisoning in Managuan communities, commenting on research by Needleman and others, points out, 'Although a mean IQ deficit of 2 to 5 points may appear insignificant ... a downward shift of this magnitude is associated with a threefold increase in the number of children with IQ scores below 80 and a threefold reduction in the number with IQ scores above 125' (1992: 15). The increase in those with an IQ of around 80 relates directly to the problem of criminality, described above. The reduction around IQ 125 depletes a human resource cadre at a level of greatest scarcity for most countries: the intelligent, technically competent workforce. A minor clinical effect from a single pollutant can constitute a compound cost for the community that suffers.

The costs of intellectual disability

In this form of case study socio-economic costs become more apparent and cash costs remain largely elusive, but the personal cost becomes strikingly obvious.

From medical research concerning the effects of lead on the brain, Françoise Barten puts the point starkly: 'no therapy can replace dead neurons' (1992: 16). Much can be done to improve the lives of those who suffer intellectual injury, but there is no cure. The word 'cost' is therefore misleading if viewed only in cash or socio-economic terms – more fundamentally we are talking about a cost that entails an *irreversible loss* of something of infinite cash value.

WHO RESPONDS TO WHICH ARGUMENTS?

The state perspective

From a government view, environmentally-related economic costs span a wide spectrum of topics and outcomes, so discussion here is limited to two extremes: a domestic case-study concerning transport, and a global discussion in relation to cross-border pollution.

A UK case study of transport

One of the few attempts to put a cash cost on a specific aspect of environmental change comes from the UK *Royal Commission on Environmental Pollution*, which after a review of current literature, proposed six 'techniques for putting a money value on environmental damage' (RCEP 1994: 301):

- *Preventive expenditure*, e.g. double glazing to lessen noise pollution.
- *Replacement/restoration cost*, e.g. repairing damage to buildings.
- *Property valuation*, e.g. loss in value because of proximity to a new road.
- *Loss of earnings*, e.g. through injury or ill health.
- *Changes in productivity*, e.g. crop reduction.
- *Contingent valuation* – the amount people say they would be willing to pay to avoid unwanted effects.

The Commission considered that 'money values cannot meaningfully be attached to some types of environmental costs', giving as examples: the interests of future generations, irreversible loss of habitat, global warming, degradation of landscape and destruction of cultural assets (pp.119; 101; 302). But why, for example, are health outcomes only seen in terms of earnings, not in terms of a permanent loss such as disability or life. Cash values, even if arbitrary, can be attributed to such losses – courts and insurers do it regularly.

The Commission concludes: 'we do not believe it would be practicable or appropriate to attempt to base transport policy on balancing costs and benefits at the margin' (p.119). But to compare the preceding discussions of social and

socio-economic costs with the Commission's techniques highlights omissions which seem far from marginal. There is a brief mention in the text of 'medical costs' and the 'much higher costs of suffering by those affected and their relatives' (p.302), but these notions are not then acknowledged in the techniques except in terms of 'loss of earnings'.

Surely, at the very least, the cost to health and other public services deserves accommodation within the techniques. By contrast, in the US the EPA calculated in 1985 that the cost of continuing to use leaded petrol would be $309 million for compensatory education and $107 million for medical care, in 1990 (EPA 1985). Other US economists have considered themselves able to calculate that, in Los Angeles, the health and property costs of traffic smog are around $15 billion per year (Benson 1995: 19). Why can health costs be calculated in the US and not in the UK?

The Commission started by creating an impression of an all-embracing analysis of the 'External costs of transport' (p301). But the 'techniques' have been extrapolated from the main discussion in a manner that loses any reference to direct human costs, yet the necessary methodology was readily available from the US.

But a complete omission is perhaps the most significant – costs in relation to public order and domestic security. Court cases relating to environmental litigation and public inquiries, especially in relation to road building, are costly and complex. But the 'money value' is direct and must be one of the easiest cash consequences to assess. The cost to contractors, for extra security, is commonly quoted in the UK press as increasing the cost of road building by up to 38%. The figures for providing a police presence at anti-road protests are readily available from police departments, so why were these ignored by the Commission? The cost of providing a police presence at football matches is now met through the ticket price – the cost of security is inherent in the cost of watching a match. So why the pretence that security is not an environmentally-related cost inherent in many road building projects?

The broader cost to domestic security and public order, is less easy to quantify. Whilst the Commission was compiling its evidence, the UK press ran numerous stories of civil disobedience against road building, documenting unprecedented alliances between, for example, wealthy, titled, conservative landowners and jobless new-age travellers. Citizens who are usually seen as supporting the police and state are, in anti-road protests, turning against established order, and governments should be concerned. But it is misleading to conclude that the public order cost stems only from violence by activists. In 1995, the UK police paid out more than £80,000 in damages to the Twyford Down anti-road protesters, because of police malpractice (*The Independent* 1995: 5). (The money was then invested to fund further protests!) At the time of writing this paper a government minister was charged and convicted for brandishing a pick

axe handle in the course of protests concerning a new motorway near Glasgow. The unquantifiable public order cost is a downward spiral involving all sides of the conflict.

Much environmental victimisation (actual or potential) is perceived as an act of violence and, not surprisingly, the response form those affected is often therefore violent. It is misleading to judge this circumstance just by 'non-violent direct action' protests in the US and UK. Note the RTZ-Bougainville conflict discussed in this paper – the Shell-Ogoniland disputes leading to hundreds of deaths the closure of an oil well, and the judicial murder of Ken Saro-Wiwa – the riots in Tahiti following French nuclear testing. These events all suggest that rich-nation environmental protest is the tame end of a spectrum – at present (Williams 1996c).

Perhaps the Commission's silence emphasises that the cash-irreversible cost of domestic security walks hand-in-hand with another cash-irreversible cost – the political one – and that in the long run these forms of cost are more significant to governments than cash. There are two other possible explanations for the omissions in the Commission's report. First, there is a related economic paradox underlying the way in which governments form an opinion of the state of an economy – the use of GNP as an indicator. In 1978 Hazel Henderson's book *Alternative Futures* questioned the utility of national economic measures such as GNP, in relation to environmental/social costs (see Capra 1988: 250). It is not just that the cost of, say, a permanent disability is not counted in money terms, but that cash transactions such as those deriving from litigation and health care actually *directly increase the GNP figure*. Environmental victimisation is 'good' for a nation's economy! Whilst this may not be directly in the minds of those who report to governments when they produce such limited views of the cash consequences of environmental damage, it certainly provides an ambivalent context for such analysis and resultant policy decisions.

The second reason is perhaps that states are rarely held accountable for environmentally-mediated personal injuries in the way that commercial entities have been. There is no threat of a direct cost consequence to keep the human dimension at the forefront of governmental thinking. One exception is India where, through public interest litigation based on the Constitution, the courts have recently held the government responsible for traffic related health problems (*Mehta* v. *Union of India* [1991]; reported in Singh et al. 1993: 216). Even in this case there is no cash cost to the government. But there could well be a political cost.

Transboundary costs

The transboundary aspect of environmental victimisation has become all too evident since the Chernobyl disaster. The cost to Belarus is reckoned to be one third of its GNP, and each company now pays a 12% levy towards a 'Chernobyl Fund'. But governments have never demonstrated a great willingness to claim

damages from another country for transboundary pollution. The Chernobyl disaster, and acid rain, are the European examples. The usual explanation is that affected states are reluctant to make financial claims because this might set precedents that they themselves may have to follow at a future date. The failure of the US government to act over pollution blowing over from Matamoros, Mexico, into the Texas town of Brownsville provides another perspective. This is probably not unrelated to the fact that many of the polluting factories are owned by, or have strong links with, US companies.

There are circumstances in which transboundary threats now carry very tangible cash consequences, but in a form that does not lead to acknowledgement by states. Martin Woollacott concludes of Ukraine's request that the G-7 nations fund the closure of the still-functioning reactors at Chernobyl and build new plants,

> A Chernobyl pay-off caries with it serious dangers. One is that it could be a precedent for other such payments to governments elsewhere. The idea that you can pressure the wealthier nations into giving you aid by persisting in running dangerous technologies whose effects, when they go wrong, will not be confined to your own country, is dangerously close to blackmail. (1994: 22)

Paul Brown (1994: 37) describes similar circumstances surrounding the funding of new reactors at Mochovce in Slovakia, by the European Bank of Reconstruction and Development. Mochovce is near the Austrian border, and Brown concludes, 'There are plenty more unfinished reactors and safety work to do in the stricken lands of the East – and the prospect of more Chernobyls is a loaded gun to hold at the heads of bankers.' There may be more subtle cross-border implications. Teichman & Barry reported in 1992: '...financially-strapped Khazakhstan is accepting and burying South Korean nuclear waste at $1000 per kilo and hoping to leverage its willingness to accept hazardous waste against the Ukraine for badly-needed food (TUFTS, 1992). Did Khazakhstan learn a trick from Ukraine: if you do not have your own nuclear disaster to use as a threat, then import it. 'Environmental blackmail' can carry greater cost consequences (negative or positive depending on which side of the fence you are sitting) than actual victimisation. And the costs will become more significant if cross-border blackmail leads to military intervention and an escalation of regional security problems. (See Williams 1996a. for further discussion of 'environmental blackmail' and the security implications of environmental victimisation).

The 'benefits' of transboundary victimisation have also appeared in other forms. In purely economic terms, the compensation for the Exxon Valdez oil spill provided a direct $5 billion bonus for Alaska's economy. India's government cannot be displeased that Bhopal compensation from Union Carbide sits in a state bank account earning hard currency interest. In fact it provides a double bonus – the income is in hard currency whilst the Bhopal victims, if paid at all, receive Rupees.

From the state perspective, transboundary victimisation, in its many forms, therefore creates an economic paradox. Sometimes it may pay well to be a potential perpetrator; sometimes it pays well to be a victim. And, as with in-state environmental victimisation, whatever happens, the increased circulation of cash within an economy pushes up GNP. In this context, cost arguments with the straightforward aim of encouraging governments to reduce environmental victimisation can appear very naive.

The commercial perspective

Commercial entities are starting to demonstrate a more pragmatic awareness of cash costs of environmental victimisation than governments. Landmark examples remain fresh in the minds of risk assessors. The recent losses incurred by the Lloyds 'names' stem from environmental mismanagement decades ago which, at the time, was not conceptualised in terms of eco-vandalism and personal injury for which future generations would demand redress at a high cost to insurers (Gunn 1993). But cost was of such significance in the case of Lloyds because it was born by a few very wealthy and powerful individuals. Seemingly large sums are not necessarily of great significance to the commercial sector, if the cost burden can be distributed widely. When the US stock markets learned of the massive punitive damages ($5 billion) awarded by a jury following the Exxon Valdez oil disaster, Exxon's stock *rose* from $58.75 to $60.25. Investors had been fearing much worse and the damages only represented one year's profits which was not a threat to people who could afford a long-term view.

The costs of violence as a response to environmental victimisation provides another aspect. In Bougainville, copper mining by RTZ, which caused widespread environmental degradation and health problems, led to a resistance movement which eventually forced the mine to close – a cost that presumably RTZ had not envisaged. In Ogoni, Nigeria, resistance to polluting oil exploitation has transmuted into violent conflicts between state and populace and the closure of a Shell refinery. But the cost to a multi-national such as Shell is not so great, because it has numerous other wells to exploit in that region. The cost to Nigeria's government goes virtually unnoticed because all oil revenues go to central not regional funds.

There is not convincing evidence that commercial entities are much bothered by the theoretical costs of personal injuries claims. The Union Carbide (Bhopal) disaster demonstrated how easily companies can avoid their true debt to victims. David Dembo, in *Abuse of Power* provides an excellent synopsis of tactics employed by corporate victimisers to avoid liability (1990: 142): deny the problem; put it in perspective; blame a hysterical public; blame the victim; try to divide the victims; when possible, settle with the government if it will be less costly. Delaying court hearings so that victims and witnesses die, and 'papering out' court proceedings by producing an excess of irrelevant data. If all else fails

companies in the rich nations can simply move their operations to the poorer nations where victims have little chance of redress.

Analysis by companies of potential compensation claims against them may not create a deterrent. It can simply provide a convenient means for environmental offenders to cost the risk associated with their activities into their products. In one example it is reported that managers at a lead smelter in Kellog (US) calculated the possible damages payments to local children who might claim for injuries related to lead poisoning, analysed this in relation to the inflated lead prices at that time, and then *increased* emissions resulting in the 'highest ever recorded' levels of blood lead in local children (Shiva, 1993: 49).

If direct costs relating to environmental activism and the possibility of compensating victims does not at present deter industrial polluters, it may be useful to consider less direct cost consequences for their financial backers. Bougainville again provides an example. Following the closure of the mine, investors in Papua New Guinea (PNG) expressed concern about 'another Bougainville', and the Chairman of Bougainville Copper Limited conceded, 'The banks are not happy about lending in PNG ... and I think that's a problem for any future projects' (Gillespie 1994: 19). However, this does not seem to have deterred bankers backing a massive new venture by RTZ, in Madagascar, which will have a significant environmental impact.

Financial agents might provide a pivot upon which cash arguments will achieve change, and the recent interest of environmental campaigning organisations to convince insurers and pension companies of the threat to their interests caused by environmental damage acknowledges this. On a local scale, estate agents might be persuaded to act corporately against potential pollution if it could affect property sales on their patch. But if the pollution already exists their inclination will be to cover-up and keep quiet, not to fight the polluters. The response of the UK Royal Institution of Chartered Surveyors to the threats posed to properties built on contaminated land was not to call for freedom of access to information about local toxic sites, or to increase their expertise in detecting hazards. It was to add a clause to their standard contract that surveyor's reports 'will not identify the existence of contamination in or from the ground'. Valuations are now made on the '*assumption*' that 'no deleterious or hazardous materials or techniques have been used and that the land is not contaminated' (RICS 1993). This form of avoidance may appear clever in the short term, but it is not so clever in terms of public trust in a profession. Domestic house surveys are not essential to purchasers and contractual abdications of responsibility can create the appearance of a general 'no come-back' ethos. More broadly, a breakdown in an already fragile trust between house purchasers and the related professions in the UK could fuel a move away from house ownership and into renting.

One report, concerning investment in the carbon fuel industry in relation to climate change resulting from the burning of fossil fuels, seems to confirm the

importance of aiming cost arguments at the financial agents rather than at the potential polluter (Mansley 1994). It concludes

> If third parties suffer serious losses as a result of climate change, they may attempt to seek ways to recover some of the damages from those they see as responsible...The most obvious targets here are the oil majors, on the basis that, as producers of carbon fuels, they are responsible for the consequences of their use (in addition, they represent a relatively focused source of liability, and have deep pockets)...The potential for liability from climate change has not been dismissed out of hand in discussions with leading environmental lawyers in North America. While establishing liability would require much higher levels of scientific certainty than currently exist to prove that carbon dioxide emissions do cause harm to the environment, and that losses have been suffered as a result, such levels of certainty may arise in the next decade.
>
> There way be a parallel with mass legal action currently facing the tobacco industry...the latest cases...involve class actions brought by powerful, financially-injured parties (states or health insurers in the US)...Public sentiment and recent allegations of concealed evidence about addiction are changing the legal landscape...The structure of these cases is not dissimilar to the potential cases the oil and gas industry could face...If climate change costs are as large as forecast, having to pay even a small fraction of this would severely affect the viability of carbon fuel companies (p18-19).

This prognosis brings up some interesting linkages: the state as victim suing commercial entities; alliances between individual victims and powerful commercial interests such as insurers; changing public attitudes to alleged 'cover-ups' and the resultant breakdown of trust; and scientific change over long timescales. But it is worth considering that if notice is taken of this and similar predictions now, it is perhaps because they deal in unknowns. Once risks become tangible they can be calculated and accommodated.

The recent decision by the Swedish paper pulp producer Sodra Cell to eliminate chlorine totally from its processes – 'the zero pulp concept' – is an interesting example of a company operating on the precautionary principle when there are scientific and social unknowns. Pulp can be produced without using chlorine gas but still using chlorine dioxide, and there are arguments that this process eliminates threats to the environment. Pulp can also be produced, more expensively, without using any chlorine. Sodra Cell have opted for the latter, in order

> to leave the whole chlorine issue behind – including chlorine dioxide – in order that our company would avoid the debate concerning chlorinated compounds in pulp or in bleach plant emissions. In this way our message would be clear and simple. (Eklund 1994)

Whatever the scientific exactitudes, Sodra Cell seems to accept that the cost of a more expensive process, which preserves the trust of its customers through an unambiguous message, is a price worth paying.

'LOSS-COSTS'

The word 'cost' inevitably creates a line of thinking that tries to repackage human and social costs in tangible cash terms, which has been the form of this discussion. The defensive social scientist, coming from a human rights perspective, tries to debate the case on the terms of the accountant. But is this necessarily a correct or feasible approach to arguing the cost to humans of environmental damage?

Recent attempts to put a cash-value on human life, in relation to environmental threats, have raised more questions than they resolve. It is only necessary to scratch the surface of some cash-cost arguments to see that they are even less robust than overtly qualitative assessments. One part of a draft report from the Intergovernmental Panel on Climate Change (IPCC) caused considerable unease because it based its case on the notion that deaths from global warming in poorer countries should be calculated at £62,500 per head, but that each human life in a wealthy nation is worth £940,000 (Lean 1995: 2). The IPCC Working Group III, in a chapter called 'The social costs of climate change', generated its figures on the basis of a 'willingness-to-pay' to prevent the loss of life. It is unsurprising that human life in the wealthy countries therefore came out as fifteen times more valuable than in poorer nations, and so the 'cost' of global warming would appear twice as much in these nations although they only have 20% of the world's population (Douthwaite 1995: 5).

On a domestic level, the new US Job Creation and Wage Enhancement Act (in progress) would require environmental agencies 'to base decisions about protecting health and the environment on assessments of benefits, risks and the cost-effectiveness of the action.... Agencies would require a formula to compare such different consequences as the higher cost of lead-free gasoline versus the intellectual impairment of children through lead poisoning.' The obvious question was put by Professor Nicholas Ashford of MIT, 'What is the value of that loss to society?' (Beardsley 1995: 15). As mentioned earlier, it is possible to generate rough figures for the health and educational cost-consequences, but this is only a fraction of the total cost picture.

It is not surprising to see a move away from forms of analysis based on supposed cost-benefits. The UN *Human Development Report* (UNDP 1991) provided a precedent, embracing 'cost' indicators such as health status. The approach has been reflected in new criteria from the World Bank which include

'social capital' – the value of groups or human institutions such as families (McRae 1995: 5).

If faced with a cost argument, commerce and governments, like the IPCC, will try to make comparisons between the predicted cash-cost-benefits of the developments that may cause environmentally-mediated injury, and the supposed cash-value of those predicted injuries. And developers will always have more tangible cash figures than environmentalists. The response should not be to play economists at their own, often very flawed, game.

If cost analysis starts with the question, 'The cash benefits of this factory are X dollars, what are the possible cash losses from pollution in terms of health and risk to life?' the response should be, the basis for the analysis is unethical and probably unlawful. The approach should be, 'If the cost of the factory is likely to be Y human lives and Z health effects, how many lives and how much disease will it save?' This form of trade-off at least has an ethical basis in the history of military security, and is sometimes accepted in relation to the cost-benefits of, for instance, providing electricity which improves hospital facilities and public health. If there is then an attempt to contrive a cash-cost, it seems probable that the courts are very likely to point out that injury and death are not cash-tradeable commodities. A straight refusal to put arbitrary cash values on human life overcomes another conundrum arising, for example, in cost arguments concerning AIDs in densely populated communities. In this circumstance, it is all too easy to calculate that death is a cash *benefit*. We therefore need a concept of cost that is clear, honest, and *not* directly amenable to the ethos of cash trade-offs.

If individual bankers were presented with the chance to toss a coin once – heads they win $10, tails they lose $10 – many would play. Fewer would play if the odds were $1000, but there would probably still be some takers. But if the risk was win $1000000 or lose an arm, would any play? 'A pound of flesh' is not a cash-tradeable personal risk. The last version creates a circumstance in which our bankers would not calculate a cost-risk – they would opt out of the game. The same would be the case if they were risking the arms of their children, or of their friends' children. Maybe caution would be extended if the arms were those of others in the same town or even country – if our bankers were known publicly as those responsible for taking the risk. But what if the arms belong to those Russian children depicted in *National Geographic*?

What we want to achieve, through arguing the costs of environmental victimisation, is a consensus that human injury is not a cash-tradeable risk, in any form or at any distance, which brings the discussion full circle. Arguing human costs is no less important than arguing cash costs, and to some extent it has more predictable outcomes. How do we make those with power view the arms of those Russian children as they would the arms of their own children? Photographs in *National Geographic* seem as likely to achieve this as balance sheets.

Both the very abstract notion of 'trust' as a cost-consequence, and the very concrete image of a missing arm, lead to a common understanding. Whether it be confidence in commerce or faith in governments, limbs or brain cells, an environmentally-related human cost is not just something we pay – *it is something we lose*. The 'loss-cost' may be temporary or permanent, and it is not directly cash-reversible. The obvious parallel is the destruction of a 'priceless' work of art.

A cost perspective needs to start by arguing a perception shift from an intrenched view that puts cash-costs at the centre, and then dismisses loss-costs as 'marginals', towards a realisation that loss-costs should be at the centre. A government that accepts stone-cleaning as a cost of traffic pollution, but dismisses the cost of human life as an 'externality', should be portrayed as one that clearly does not represent the interests of its citizens.

Even from this brief discussion it is not difficult to propose a simple matrix within which a comprehensive view, embracing both loss-costs and cash-costs, can be framed (Figure 2). This reminds that single causes have multiple cost consequences in terms of

(i) *who* pays?

This should include future generations and acknowledge relationships between the units of analysis (linkages between individual and global, etc.).

(ii) *what* are the loss-costs?

These may be permanent (e.g. intellectual disability) or temporary (e.g. health), but at the point of suffering are not directly cash-reversible. (Medical intervention may cure a health problem over time, but this does not reverse the fact that an individual suffered a health problem.) The discussion of loss-costs has so far been very restricted, for example ignoring the *social loss* resulting from unemployment, or a *loss of liberty* because of the risk, for those with respiratory problems, posed by going outside the home when air quality is poor.

(iii) *what* are the cash costs?

Most cash-costs are a money value put on a loss-cost (e.g. compensation for brain damage; failure to attract investment because of a loss of trust). Some cash-costs derive from a *prediction* about a loss-cost and linked cash-cost (e.g. environmental blackmail; preventive measures; maintaining social order).

A matrix of this nature would have direct application in a moderately-sized community, such as that in Managua in which Barten's study of environmental lead poisoning was set (1992). In figure 3, some of the *possible* outcomes in a

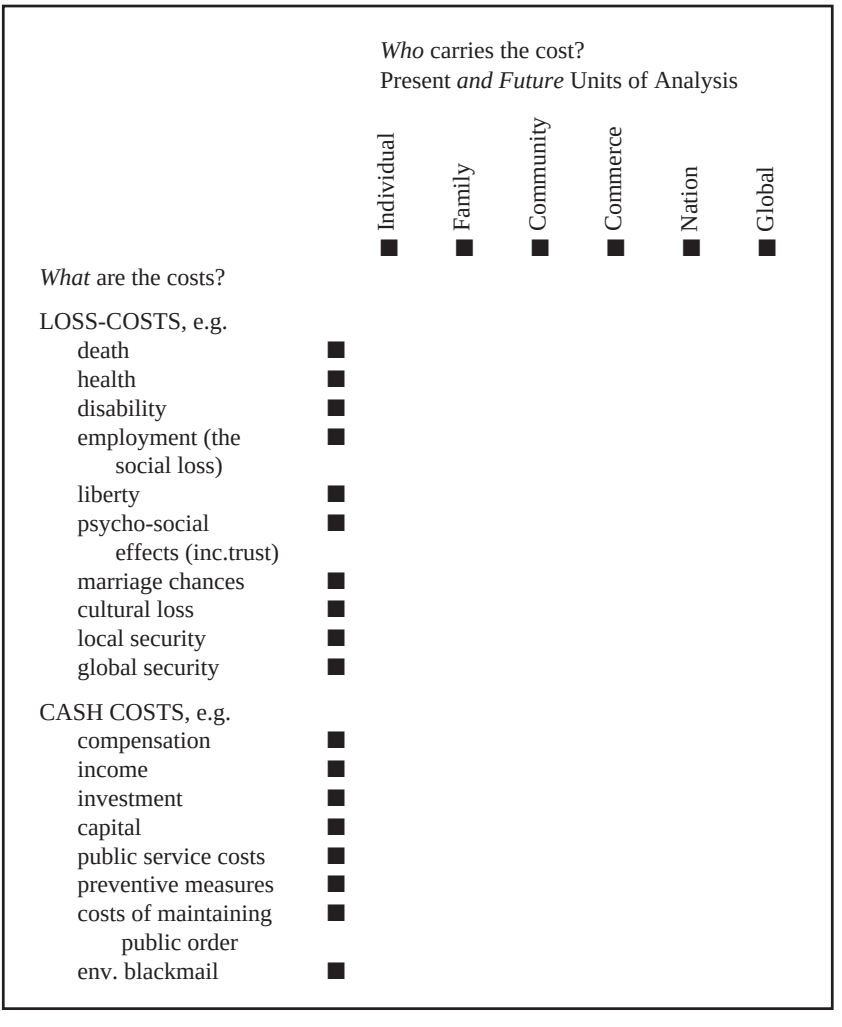

FIGURE 2. A framework for comprehensive argument of the costs of environmental victimisation

setting of this nature are indicated. On a global scale the use of the matrix would be little different. It is possible to state, for example in relation to global warming, the predicted loss-costs – death, incidences of malaria, malnutrition from land loss – with and without dubious cash correlations. If nothing else, this might avoid bizarre conclusions about the value of human life such as those contrived by the IPCC Working Group (above).

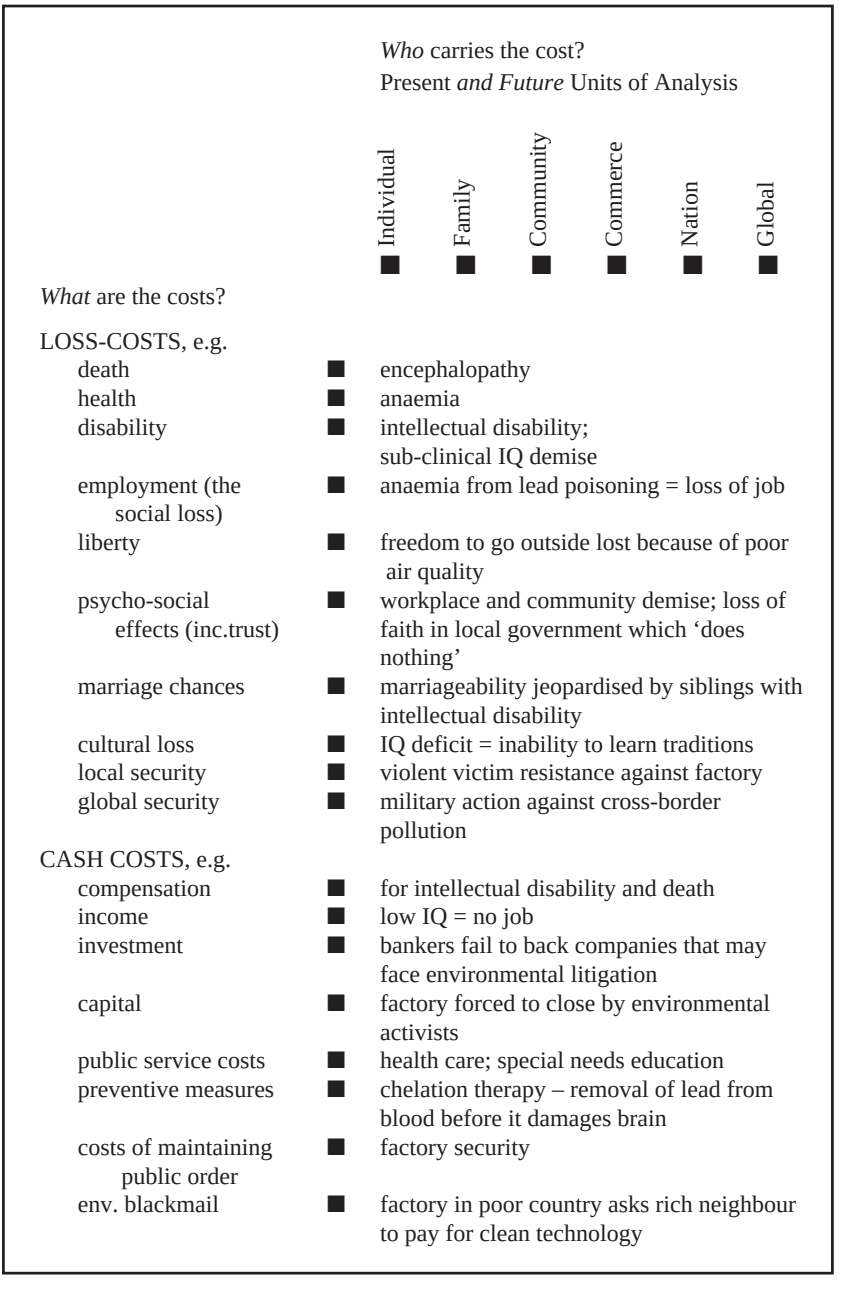

FIGURE 3. The framework exemplified in relation to a study of environmental lead poisoning (see Barten 1992)

CONCLUSION

If cost arguments appear a viable approach to reducing environmental victimisation, there seem to be few certainties as to how state and commercial entities will respond. Governments might be expected to respond to cost arguments related to

- economic threats to the family unit
- costs to public services and the justice system
- threats to social order
- investment problems for domestic industries
- potential long-term human resource deficits
- threats to global security.

But there is little evidence that these issues influence politicians to a significant degree. Governments may become concerned if cash costs are linked to potential political costs, but environmental concerns of any sort have yet to become a major election issue. For poorer nations the cash benefits of being a victim state or potential cross-border polluter might outweigh domestic cost considerations, and always the short-term cost-benefits of industrial development will be given priority over long-term environmentally-related consequences. The over-reliance of GNP as a measure of economies creates an ambivalent context for decision-making for any government.

The commercial sector seems relatively unconcerned by

- compensation for victims
- costs that can be widely redistributed
- liabilities that can be avoided through contractual clauses
- skills deficits or productivity loss from health-related or psycho-social problems.

Cost arguments directed at the financial agents that have long-term interests (banks, insurance, investment, etc.) may have greater effect, but not if the cost can be absorbed by widespread redistribution or contracts that deny liability. The fear of possible but unpredictable future scenarios may have more impact than arguments based firmly on current or past events for which actual risk can be assessed and then accommodated.

There is one factor that might influence both governments and commercial entities – the cost of *trust*. Two extracts from the psycho-social data provide a reminder.

- People who work in dangerous or unhealthy conditions were 'more likely to believe that people were unfair...untrustworthy...and not helpful'...People working in unhealthy conditions were 'far more sceptical about people running "big business" the federal government, and science'. (Roberts 1993: 81)
- Analysis of the Chernobyl 'victim syndrome' concludes: 'people have lost their confidence in the State, because it acted against people; in science, because it caused the problems which could not solve, in medicine, because it was used as a political instrument, in world community' (Fedorychyk, 1994: 2).

The cash value of trust is as elusive as the cash value of environmental 'victim syndrome', but it is a cost that both company directors and politicians recognise. Its main significance is that a loss of trust is not directly cash-reversible. The success, in the US, of organisations such as the *Good Neighbor Project*, which are engaged in local environmental conflict resolution between community and industry, is probably in part due to the greater efficacy of playing the trust card at a *local* level (GNP 1994). The consequences of a loss of trust in a polluting factory range from immediate loss of customers, recruitment problems, to the ostracism of the spouses of company directors at coffee mornings – and the latter may have the greatest effect. (See Giddens 1990 for a broader discussion of trust in relation to modernity.)

Trust, and the other consequences of environmental victimisation with no indisputable cash correlates, take us to the concept of 'loss-costs'. *The costs of environmental victimisation are not cash-costs which sometimes entail an indeterminate loss factor: they are firstly loss-costs upon which a cash figure can sometimes be put.* Whether or not a money value can be assessed is not an excuse for excluding human and social factors from any presentation of environmental costs. There is no reason why a chart quantifying, say, the health costs of pollution cannot show simultaneously the cash-cost to hospitals, *and* the linked loss-cost (e.g. the number of people who suffer related lung disease), *and* loss-costs that do not have an obvious cash cost (e.g. the number of people who suffer loss of liberty because they cannot go out when air quality is poor). Analysis of the costs of environmental victimisation which does not show both cash-costs and loss-costs should be considered as flawed as a statistical analysis based on incorrect arithmetic.

NOTE

This paper derives from an Economic and Social Research Council (ESRC) Fellowship within the Global Environmental Change (GEC) programme.

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