

3 Substantive Criteria of Environmental Protection

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I INTRODUCTION

Whenever it has to be determined whether a potentially harmful activity can be tolerated in terms of environmental protection, substantive criteria are needed. By them a society decides what impact on the environment it is prepared to accept and what it is not.

Legal cultures vary as to who exactly takes this decision. Some leave it basically to the administrative agencies thereby trusting in the latter's expertise and effectiveness in persuading or forcing the addressees to comply. The supervision of the agencies by democratic mechanisms may then be widely absent (as in France) or established through the parliamentary responsibility of the competent minister as well as through participatory decision-making procedures (as in the UK). In other legal systems (such as the German) substantive criteria are formulated in parliamentary statute. Such a course implies that, if the courts are invoked in respect of a particular administrative decision, they can take a hard look at both the facts and the agency's reading of the law because it is their task to guarantee that the executive abides by the legislator's will. On the other hand, if the establishment of substantive criteria is left to the agencies' discretion, the courts cannot but confine their judgement to whether there was 'arbitrary and capricious' action.

This rough picture must, however, be qualified. Recent years have shown a certain convergence between these countries. In France and the UK, legislation

has become more active in criteria-setting, and the courts have adopted a practice of denser control whereas in Germany the legislature has introduced more flexible balancing tests and the courts have developed a more reserved attitude.¹

Turning to the substance of the criteria under consideration it seems appropriate to distinguish between different routes of potential environmental impact, that is:

- pollution from stationary sources;
- pollution from mobile sources;
- impact through waste;
- encroachment on nature; and
- impact through dangerous substances.

The substantive criteria to be found in many legal systems tend to vary depending on these routes.

II POLLUTION FROM STATIONARY SOURCES

Pollution from industrial installations has long been a focus of environmental protection law. Therefore it is understandable that the related legislation and its doctrinal elaboration is rather sophisticated.

In order to understand the criteria of delimiting intolerable impact, two questions should be answered:

1. What kinds of environmental impact must be envisaged?
2. What kinds of environmental impact does the law prohibit, and by what means?

1 Environmental impact described

It is established custom to distinguish between an envisaged harm and the probability of the occurrence of the harm.² The probability, in turn, has two components; the frequency of the event (the occurrence of the harm) and the level of certainty that the event takes place. For instance, an event may, to our certain knowledge, be very infrequent or its frequency may be very uncertain.

In the first case, one has no difficulty in speaking of a *low probability*. But in the second case, which is often also taken as a variant of 'low probability', this is doubtful since further investigation may prove that the event is in fact highly fre-

¹ See Chapter 9 by Albert Mumma in this volume.

² Michael Kloepfer, *Umweltrecht*, Munich: Beck, 1989, p. 77 *et. seq.*

quent. In this case, one can speak of low probability in terms of what is 'probed' in a given society: events which are not 'probed' are not probable. In any case, this difference must be appreciated when it comes to understanding what kinds of impact a society is willing to tolerate.

As to the harm, one may distinguish between the deterioration of an environmental medium (air, water, soil) and protected *end points* such as human health, in particular, but also animals and plants. The probability of a harmful effect will generally differ depending on what category of harm is looked at. The introduction of cadmium into a river has a 100 per cent probability of polluting the water, but may affect the fish at a much lower rate and the fish-eating population even less.

From another angle one may distinguish between harm done to individual organisms and harm arising to biosystems. A system – for example, a given biotope – may be more sensitive than the single organisms of which it consists, but it may also be more resistant because it is able to replace one organism or even function with another.

From yet another perspective grave harm may be distinguished from less serious harm. For instance, death is more grave for an organism than sickness. If gravity of a particular harm is related to collective entities rather than individuals, grave harm means that a high level of the population is affected, and minor harm that only few individuals (possibly the more sensitive ones) are affected. For instance, a concentration of 80 µg/cbm sulphur dioxide in the air will cause health problems only to those who suffer from bronchitis, the tolerance limit for the average person lying around 140 µg.

These distinctions must be kept in mind when it comes to understanding or framing substantive criteria for prohibiting or authorizing an environmental impact. As the framing of every aspect would be too complicated the legal language uses more condensed terms. German law and doctrine, for instance, draws a line between hazards and risks. Hazards (*Gefahren*) can be defined as grave harm of a sufficient probability (frequency, certainty). The Immission Control Act counts even mere nuisances and disadvantages (which, however, must be highly probable) as hazards. On the other hand, traditional police law holds that harm which is of low probability constitutes a hazard if its gravity is extreme – for instance, if a nuclear catastrophe is considered.

By contrast, an environmental impact is defined as risk if the harm is minor and/or the probability of its occurrence is low.³

³ The term is differently defined by scientists. They take it to denominate the product of probability and gravity of harm, the different levels of risk being expressed by appropriate adjectives like high or low risk (for example, high probability of grave harm and the inverse, respectively). The legal use as outlined above corresponds better to the ordinary understanding ('the investment seems secure, but there is a risk left').

Situations where the probability is so low and/or the harm is so minor that what is left is negligible are termed as a residual risk (*Restrisiko*)⁴ by German doctrine.

2 Environmental impact regulated

The degree to which hazards and risks are acceptable or not must be determined by legislation or the administration. In most legal systems the law prohibits the causation of hazards. No installation may be authorized if it will cause hazards. This can be understood as an expression of 'the polluter pays' principle, to be sure one where the pollution is 'reinternalized' into the polluter's sphere by prohibitive regulation rather than by financial means.⁵ For instance, the German Immission Control Act formulates hazard prevention as follows:⁶

- (1) Installations subject to licensing shall be established and operated in such a way that
1. this does not involve harmful effects on the environment or other hazards, significant disadvantages and significant nuisance to the general public and the neighbourhood,
 2. precaution⁷ is taken to prevent harmful effects on the environment, in particular by such emission control measures as are appropriate according to best available technology.

There are cases outside the area of the authorization of hazardous installations where the law does tolerate hazards. As to existing installations, even the rather stringent German Immission Control Act does not force but only empowers and urges, the responsible agency to impose orders for eliminating the hazards.⁸ More importantly, the peculiarity of a project may be such that it requires sacrificing parts of the environment – in other words cause a hazard. A road, for instance, cannot be built without the destruction of the plants growing on the route. We shall see later on that the law sometimes establishes further requirements which justify or mitigate the hazard in those cases.⁹

⁴ See, in the context of preventing nuclear power catastrophes, the Kalkar-decision of the Constitutional Court, BVerfGE, 49, 89 (137).

⁵ See for this principle and its two expressions (that is, qualitative and financial) Michel Prieur, *Droit de l'Environnement*, (2nd edn), Paris: Dalloz, 1991, p. 125 *et. seq.*

⁶ Art. 5, para. 1, No. 1, Bundesimmissionsschutzgesetz (BImSchG).

⁷ *Vorsorge*.

⁸ Art. 17, para. 1, BImSchG.

⁹ See Chapter 4 in this volume.

If hazards are generally prohibited the same is not true for risks. Risks, by definition, cannot be excluded because there will always remain a small probability of possible minor harm. Risks can, at best, be minimized. If the law prohibits action not merely to avoid hazards but to abate risks it establishes what is known as the *precaution principle* which requires the reduction of the extent, frequency and/or uncertainty of harm. There are numerous examples of how this can be secured. In particular, environmental quality objectives can be set at a level below the threshold which demarcates the line between hazard and risk, leaving the entrepreneur to find ways and means of how to meet the standards. If the entrepreneur fails to meet them the authorization of the installation can be refused. Another method is to prescribe *best available technology* (BAT – *Stand der Technik*), a criterion from which emission limits or specific technical installation requirements may be deduced.¹⁰

Some, particularly the British, have objected that the BAT standard, being blind to environmental effects, causes inefficiency because it may lead to costly abatement technology even if there is no anticipated hazard or significant risk. Thus, particularly in the water pollution area, they have therefore preferred an approach which is oriented towards the effects of pollution, using water quality objectives as a guide for controlling waste water discharge.¹¹ Yet, at least in the not-too-rare situation where knowledge about possible harm is lacking, the BAT standard is a sensible precautionary tool and can prove very efficient if better knowledge reveals that the impact would have been harmful. For this reason and others, the UK has adopted the BAT approach in the Environmental Protection Act (EPA) 1990, although qualified by cost considerations¹² (*best available techniques not entailing excessive cost* (BATNEEC)).

Another precautionary tool is to prevent the shifting of pollution from one environmental medium to another. This covers cases where each of several relevant media is affected up to, but not above, the hazard threshold, but where the overall risk to the several media may be seen to be more objectionable than a hazard affecting only one medium. The tool the British law provides in these situations is called the '*best practicable environmental option*' (BPEO). It is formulated in s. 7, para. 7, EPA:

The objectives referred to in subsection (2) above shall, where the process (a) is one designated for central control; and (b) is likely to involve the release of substances into more than one environmental medium; include the objective of

¹⁰ For further details on standard-setting see my contribution in Chapter 8 of this volume.

¹¹ Ss. 104 to 105, Water Act 1989, as annotated by R. Macrory. See Richard Macrory (ed.), *The Water Act 1989. Text and Commentary*, London: Sweet and Maxwell, 1989, p. 104 *et. seq.*

¹² See s. 7, para. 4, EPA.

ensuring that the best available techniques not entailing excessive cost will be used for minimizing the pollution which may be caused to the environment taken as a whole by the releases having regard to the best practicable environmental option available as respects the substances which may be released.

III POLLUTION FROM MOBILE SOURCES

Substantive criteria, possibly specified by quantified emission limits, could also be used for drawing a line between accepted and intolerable air pollution from mobile sources. However, if they exist at all, they are frequently vaguely framed or totally inadequate. This is probably due to the fact that pollution from traffic is so common and serious that clear legal language would have to admit that the hazard threshold is exceeded in many parts of the country. This would require immediate and far-reaching action which is very costly due to the economic importance of unhindered transport and the socio-psychological value of individual mobility.

Instead of regulating traffic under the ordinary requirements of environmental protection the law has used more indirect measures. Among these figure emission limits for motor vehicles, prohibition of certain toxic substances in gasoline, tax incentives for catalytic converters and so on.

German law provides examples where substantive criteria in the above sense are in fact established, albeit rather vaguely.

- According to Article 45 of the Road Traffic Regulation (*Straßenverkehrsordnung*) traffic may be restricted on certain roads 'for the protection of the neighbourhood against noise and exhaust'. Against exactly what kind and amount of noise and exhaust protection is seen to be needed is not specified.
- Article 40 para. 2 of the Immission Control Act allows the restriction of the traffic even in whole areas of a community. Measures can be taken on the basis of the balancing of the aim of reducing or preventing harmful air pollution against the traffic needs and city planning considerations. In this case, the substantive criterion consists in a balancing requirement.

In particular, if a 'smog situation' (low air circulation) arises, air emissions may have hazardous environmental effects (*schädliche Umwelteinwirkungen*), and traffic restrictions can be imposed for parts or the whole of a *Land* (Article 40 para. 1 Immission Control Act). The *Land* is empowered to set the relevant emission thresholds by regulation. Most of the *Länder* have done this for carbon monoxide, nitrogen dioxide, sulphur dioxide, and some also for ozone.

IV POLLUTION THROUGH WASTE

Substantive criteria may be set in order to prevent pollution (in particular the contamination of the soil and groundwater) from discharged waste. In most cases they will lead to more concrete requirements as to the geology and the insulation and sealing of the disposal site. The stipulation of certain kinds of pretreatment and conditioning of the waste also plays a part in this approach.

More sophisticated systems regard the waste itself (or, more precisely, waste which is not, or not harmlessly, degradable) as a nuisance, the deposit of which should be reduced to a minimum. These systems establish recycling and avoidance duties which cannot be framed in absolute terms due to the technological and cost implications. For instance, the new German Recycling and Waste Act (*Kreislaufwirtschafts- und Abfallgesetz*) provides as follows:¹³

The duty of recycling is to be observed insofar as this is technically feasible and economically tolerable and, in particular, there exists or can be created a market for the recovered material or energy.

The same Article makes a further qualification. The priority of recycling over discharge is not maintained if the discharge is the environmentally more benign solution.¹⁴ This avoids a requirement to recycle where the process for treatment of the waste for recovery purposes causes more pollution and/or energy consumption than the conditioning and deposit. This qualification can be understood as a second version of the BPEO principle cited above from the British Environmental Protection Act 1990.

Since this chapter is not about waste law I shall delve no deeper into the much discussed definition of 'waste'. But a methodological parenthesis may be worthwhile. The way in which the legal systems define 'waste' teaches us that policy decisions are contained not only in the express directions of a law but also in the definition of legal terms. If, for instance, a law establishes that the local authority is under a duty to collect and dispose the household waste and defines waste ('subjectively') as anything the possessor wants to get rid of, the result is a dead-end of ever higher waste mountains. Consequently, this subjective definition has been termed the waste definition of the throw-away society.

Yet overly semantic discussion regarding definitions can demonstrably be fruitless. In the example above the definition of waste could certainly be narrowed, but the duties connected to the term could also be made more complex by, for example, introducing a duty to primarily recycle the (then broadly defined) waste. A functional approach is preferable. The legislator should begin by devising a consis-

¹³ Art. 5, para. 4, sentence 1.

¹⁴ Art. 5, para. 5.

tent set of duties (avoidance, recycling, disposal), sort out the categories of objects to which these duties should be connected, and give these categories a name. If the duties are carefully formulated, it is of secondary concern whether the law uses a broad notion of waste (as EU law does) which is then subjected to the various duties, or whether the law defines as 'waste' only substances which must be disposed of, calling these substances which can be recycled 'secondary raw material', and using 'residues' as the generic term for both 'waste' and 'secondary raw material'.

V ENCROACHMENTS ON NATURE AND LANDSCAPE

Consumption of space by the construction of buildings, roads, airports and so forth is a further path of environmental deterioration. Its extension has led the legislature and the courts in a number of countries to develop substantive criteria by which space-consuming activities are controlled.

Many countries have aligned their planning laws to this purpose. For instance, in 1987 the French Code de l'Urbanisme was amended by a clause requiring the protection of nature and landscape. Interestingly, a requirement to manage the space in an economic way was also introduced.¹⁵ In the UK, the courts have established a power of the planning authority to refer a proposed development to an alternative site on the ground (among others) that this leads to less harm to nature and amenities.¹⁶

By contrast, German law which also recognizes the concepts of balancing, economizing and alternative testing in planning law,¹⁷ has built into its Nature Protection Act a rather more refined set of substantial requirements, which have to be observed both in planning decisions and decisions under any other law authorizing encroachments on nature and landscape (*Eingriffe in Natur und Landschaft*).¹⁸ Such encroachments must, in the first instance, be avoided as far as possible, and if an encroachment is unavoidable, it must be compensated in kind. For instance, if a wetland area must be sacrificed for the project, a similar biotope must be installed in the neighbourhood or, if a biotope of this kind already exists, it must be put under a special nature protection regime. If adequate compensation measures (*Ausgleichsmassnahmen*) are not feasible, the resulting encroachment on

¹⁵ Art. 110, Code de l'Urbanisme (Article 22 Loi No. 87-565 of 22 July 1987). The importance of this clause is stressed by Michel Prieur (1991), *op.cit.*, p. 589.

¹⁶ See Michael Purdue, Eric Young, Jeremy Rowan-Robinson, *Planning Law and Procedure*, London: Butterworths, 1989, p.219 *et. seq.*

¹⁷ See Art. 1, Construction Code (*Baugesetzbuch*).

¹⁸ Art. 8 Federal Nature Protection Act (*Bundesnaturschutzgesetz*); M. Kloefer (1989), *op. cit.* p. 555 *et. seq.*

nature must be balanced against the benefit arising from the project. If the local natural environment is considered to be more important the project will have to be abandoned. In the other case the project may be given consent but only on the condition that substitute measures (*Ersatzmassnahmen*) are taken. These may consist of establishing a biotope which is also valuable but may be different and situated at some distance from the one destroyed. Finally, if substitute measures prove unfeasible, a compensatory payment may be required, although this is not made obligatory by federal law. The *Länder* may provide for this in their nature protection laws. Some have done so; others have desisted from this tool for fear that, in practice, most developers will press the authorities to agree to lump sum compensation payments in order to forego the organizationally and financially more burdensome compensation in kind.

VI ENVIRONMENTAL IMPACT THROUGH DANGEROUS PRODUCTS

Products can cause environmental harm while being used or after their use (that is, as waste). Prevention of such harm can be targeted by disposal/recycling requirements once the product has become waste. It can also be strived for through requirements for the use of the product (for example, the regular checking of automobile exhaust). Whereas this kind of regulation intervenes at a rather late phase in a product's life cycle, other kinds are tied to earlier phases, making them more effective. The most frequent approach is to regulate the marketing of the product. Two strategies are to be found in most legal systems: information requirements and positive restrictions. The law may require the supplier to inform the customers about the risks entailed by the product – for example, by labelling the package. Alternatively, it may fix quality conditions such as limits for the concentration of toxic substances in products, or it may prohibit outright the marketing or even production of certain products, preparations and substances.

What substantive criteria does the law establish for determining what kinds of products are environmentally tolerable and what are not? There is a multitude to be found in the various product-related laws which are still awaiting doctrinal systematization and simplification. I shall confine myself to the chemical substances laws. The laws themselves are normally not very specific, merely postulating that no environmental harm should arise from chemical substances, preparations and products. Sometimes, as in the German case, the *precaution principle* is added, which provides that grounds for suspecting a risk suffice in respect of regulatory measures where scientific certainty is lacking.¹⁹ These legal standards

¹⁹ Art. 17, para. 4, Chemical Substances Act (*Chemikaliengesetz*).

must be concretized in order to be manageable in practice. In this respect, guidance is given by an EC Directive,²⁰ which basically posits a two-step evaluation:

First, the innate hazard of the substance is determined by identifying the relevant dose-response-relationships. From this it may, for instance, result that a concentration of 1 mg/kg in a human being leads to nausea. Second, the predicted exposure of human beings (be they consumers, workers, the public and so on) is investigated. If the predicted dose is higher than the threshold deemed to be tolerable on the basis of the dose-response curve there is sufficient ground for the regulation of the substance, be this a total ban or merely requirements as to the handling of the substance. Measures of the latter kind depend on whether the substance will be available to end consumers or only to professional customers of whom one can expect a more cautious attitude.

Besides environment-related criteria less transparent ones are applied in regulatory practice. Prominent amongst these are economic concerns connected with the restriction of the substance (cost for consumers of purchasing alternative substances, loss for the producer of the substance, cost of developing a substitute substance). Another consideration that can be observed in practice is the need for, or benefit taken from, the substance. If the benefit is small, the regulator will be more inclined to react even in cases of uncertain or insignificant harm caused by the substance, while in cases of high benefits (when there is also no substitute available) such smaller risks may be accepted. In this context a question arises as to whether these 'factual' considerations should be left to the discretion of the regulator or rationalized (and possibly cut back) by explicit legislation. Insofar as need aspects are concerned, German law has indeed made this explicit. For instance, the authorization of the marketing of both pesticides and products consisting of, or containing, genetically modified organisms has been made dependent of a *benefit-risk assessment*.²¹

²⁰ Directive 93/67/EEC of the Commission of 20 July 1993 on the evaluation of risks from notified substances, OJ L 227/9 (1993).

²¹ See Art. 15 Pesticides Act (*Pflanzenschutzgesetz*) in the interpretation by the Federal Administrative Court (BVerwGE 81, 12 *et. seq.*) and Art. 16, para. 1, No. 3 Genetic Engineering Act (*Gentechnikgesetz*). See Gerd Winter, *Regelungsmaßstäbe im Gefahrstoffrecht*, in idem (ed.), *Risikoanalyse und Risikoabwehr im Gefahrstoffrecht. Interdisziplinäre Untersuchungen*, Düsseldorf: Werner Verlag, 1995.