The Generic Environmental Act

Staffan Westerlund

In 2009, a long time project on legislating for ecological sustainability resulted in a model act and an accompanying book on this. It is done in Swedish and published digitally.[204] This article presents the generic environmental act as regards a number of its principles and functions etc.[205]

Introduction

1. During the 1960s, environmental awareness turned sincerely ecological, global and future-oriented, at the same time as human rights to the environment were put in focus. The world human population was about half as that of today and is supposed to reach and perhaps level out at 9 billion by 2050. Biodiversity is today still generally declining, climate changes are expected and no country has still achieved ecological sustainability for itself. Instead, all countries still cause larger ecological footprints than what is sustainable. Consequently, for each year of too large such footprints, ecological resources for future generations are degraded. Or in other words, the biosphere shrinks resource-wise.

A large number of academic disciplines have since the 1960s approached mankind's environmental situation. The concept of sustainable development was coined in the 1980s and made the fundament of the Rio summit 1992. It is today referred to, or even prescribed, in many international documents and national legal orders. In human and social science, this has resulted in a lot of research. Most of this has not proved adequate for really achieving sustainability. Much seems to be affected by denial as regards the biosphere's factual limited capacity in relation to mankind, maybe because the different disciplines do not possess theory framework sufficient for ecological sustainability. This seems *inter alia* to have resulted in poorly based ideas about soft and hard sustainability.

But it has also led to very confusing human and social scientific maps of *environmental control*, often based on a misunderstanding of how modern democratic states under the Rule of Law *really* function with regard to anthropogenic environmental impact.

This confusion together with that no state has so far achieved ecological sustainability not only calls, but roars, for the understanding of a relevant paradigm for sustainability control.

2. Sweden came out early with rather holistic environmental pollution control law (1969) and law on hazardous substances and products (1973) and might be regarded as one of the pioneer countries in this respect. To a major extent, however, this environmental law focussed generally on sources and products rather than on environmental qualities as such. Best available technology (BAT) and substitution of hazardous substances and substituting problematic geographical sitings with less hazardous ones, combined with a precautionary principle, was made the main force. Mere prohibitions were very few and generally based on balancing of interests.

In this legal context, the Swedish academic environmental law discipline emerged along mainly two lines. One was old legal thinking applied on new environmental laws and problems. The other was environmental problem-oriented that implicitly, later explicitly, searched for solutions to the seemingly ever growing environmental problems. In the first stage of this, academic studies were rather similar no matter which line was followed. However, when after a few years the problem-orientation turned explicit, the academic results of the two lines became more and more different. The problem-orientation resulted in the second line being regarded as rather methodologi-

[204] <http://www.imir.com/mrg/mbutv.htm>, from where one navigates to the different documents.

[205] Staffan Westerlund is a retired professor of environmental law, previously with Uppsala university, now partly with IMIR. Professor Gabriel Michanek has given very good comments for the improvement. Comments have also been given by a referee.

cal and was later labelled environmental law methodology.

When sustainable development was internationally brought into the front line,[206] it turned out that Swedish environmental and land use law was insufficient. A committee proposal, SOU 1983:56, on how to improve the legal situation was turned down in the parliament, and it was not until Sweden joined the European Union that for example more modern biodiversity and environmental quality law was to be implemented in the country. This was done only partly and very reluctantly, although an Environmental Code was passed 1998.[207] The two lines in the environmental law discipline had by then become so different, so that they did no longer have a common paradigm.[208]

3. For environmental law methodology after Rio 1992, the concept of sustainable development had to be very clear. One way to do this was to focus on *why* such development should be achieved. Another way was to format it into legally manageable language. Rationally, the first one had to be made clear and then the second one followed, so to say.

In the WCED report it was made clear that the biosphere should be maintained so that no future generations were without biospherical resources sufficient for *their* needs. This report also understood that mankind needs nature and that laws of nature cannot be changed by humans. Maintaining sufficient biospherical resources means *ecological sustainability*. Recognising that humans are biological organisms, such sustainability is necessary and without it, mankind will sooner or later undergo an ecological crash.

4. Furthermore, economic and social sustainability were made parts of sustainable development. It follows from #3 that such sustainabilities require ecological sustainability.

Here a large number of writers and others have gone more or less wrong when claiming that sustainable development consists of three different sustainabilities. It is no use to go into different presented views here, since nobody can reasonably deny that humans are biological organisms, that food comes ultimately from photosynthesis and that laws of nature cannot be changed. I refer the readers to Decleris' book 2000[209] and the implications expressed in it about biospherical and social systems etc. It is scientifically impossible to assume that mankind can go on without nature.

Instead, recognising basic natural science, any principle or rule for sustainable development must first deal with ecological sustainability. One way to do this is to formulate a legal principle on it.[210] This should in turn be the framework for a principle on societal sustainability which in turn should be the framework for a principle of development. Any diversion from the understanding that ecological sustainability is a *necessary* precondition for the rest will, as long as we understand humans as biological organisms, constitute a diversion from aiming at sustainable development.

This conclusion is simple, easy to defend scientifically, and still based upon many years of efforts to develop environmental law methodology.[211]

---

[206] The main document being the book 1987 *Our future* by the World Commission on Environment and Development (WCED).

[207] There are several studies made, published in Swedish, which together support these conclusions, see as regards part of them footnote 8.

[208] Westerlund,S: *En hållbar rättsordning*. Iustus 1997. The paradigmatic shift followed the problematisation. Interestingly, methodology does not overlook positive law research as such, while pure positive law as such does not manage methodology related to ecological sustainability problems, as will be illuminated later in this article.

[209] Decleris, M: *The Law of Sustainable Development. General Principles.* http://europa.eu.int/comm/environment/law/pdf/sustlaw.pdf (2000).

[210] Westerlund, S: *Legal Scholarship under Biospherical Challenge* in Europarättslig tidskrift 2008:2.

[211] As early as 1971 my first little book *Miljöskyddslagstiftning och välfärden* aimed at what later was known as sustainable development. My doctoral dissertation 1975 had a concluding chapter that outlined the limits of Swedish environmental law. After that, studies were made of US law parallel with theoretical efforts to understand environmental legal techniques. 1987 my book *Miljörättsliga grundfrågor*, Tapir forlag, collected what was by then found. After that,

5. But is the conclusion really relevant regarded from the viewpoint of *legal science*? Three answers are worth considering.

First answer: A principle of sustainable development is generally recognised by many. Much more seldom, however, is this explicitly connected with how ecological and other sustainabilities do with each others. In international law, any principle of sustainable development seems often to be regarded as part of the soft law. This answer is primarily related to *positive law as generally accepted*. It might, however, be somewhat modified if we regard countries where judges can develop compatibility with ecological sustainability. Such a legal technical solution is, on the other hand, although with fundament in the WCED report, related to the existence of such judges and the general acceptance of such application of law even when other generally fundemental rights seem to be jeoparadised.

Second answer: A principle of sustainable development, when rational, can go back to the WCED report as the basis for Rio 1992. This reports does not allow for jeopardising future generations on behalf of present generations (hence the intergenerational equity) and it also recognises the natural basis as necessary for mankind. Since the latter conforms with natural science, and provided that future generations shall not lack resources for fulfilling their needs, legal science can deal with how this can be achieved, no matter which is the law of today. This is the *methodology answer*.

The third answer goes back to *balancing*, in this case balancing between present and future generations and balancing between ecological, social and economic sustainabilities. However, balancing between generations must not jeopardise any generation's possibilities to fulfill its needs – this follows from *inter alia* the intergenerational equity considered to be inherent in sustainable development (not to mention the word 'sustainable') and mankind's inevitable need for a natural base.

6. The conclusion upon which environmental law methodology, as referred to above, rests is the second answer.[212] It is the only one of the three which recognises both natural scientific basics and intergenerational equity and it also conforms with how the WCED regarded these aspects. What now follows in this article shall be understood accordingly.

Old and new environmental law

7. Gradually starting in the 1970s, the ecological role of law and legislation came into Swedish academic methodology. Years of research within both positive environmental law and legislating techniques had given quite a clear picture of why Swedish environmental policy did not include real progress towards sustainability. The BAT approach in the environment protection act and the balancing approaches besides that, without environmental quality standards, had proved quite insufficient.[213] The structure of the legal system was fractured and inconsistent and included also rights for the government to decide contrary to the substantive standards of the environmental laws. Expropriation and environmental licensing were to a considerable extent more or less mixed without the environmental standards fully ruling. Increasing decentralisation to the municipalities as regarded landuse law decisions (planning) and environmental supervision added even more to the problems. Academic environmental law became more and more questioned and set aside by politicians and administrators, the more academic law oriented itself towards sustainability and full implementation of EC environmental law.[214]

Swedish academic environmental law gathered some speed and during the 1990s, a number of doctoral dissertations more or less circling around sustainability came (Jonas Ebbesson, Charlotta Zetterberg, Lena Gipperth, Jonas Christensen and, more lately, Aðalheiður Jóhannsdóttir). 1997 my book *En hållbar rättsordning* was published and 2003 came my *Miljörättsliga grundfrågor 2.0*, Åmyra förlag. Presently an increased version in English is under preparation.

[212] In countries with judges who strive to apply ecological sustainability, the first answer has some weight, but it does not reach the levels that the second answer would.

[213] Westerlund 1975, chapter 23.

[214] To be presented in an article in Swedish.

8. Looking abroad, different environmental control approaches were developed in a few countries, and some important methodological improvements had come up during the 1970s. This included environmental impact assessments, environmental quality standards and some examples of rather radical biodiversity law. The need for codification in order to structure environmental law better was in the 1980s brought forward. The WCED report and later Rio 1992 made legislators and academics include sustainability in their thinking. New Zealand's Resource Management Act 1991 aimed at sustainability and was an example of far reaching structuring. [215]

However, as I have already mentioned, the concept of sustainable development had almost immediately been thrown into a malstroem of interpretation, deconstruction and what have you, and no country turned its legal orders ecologically sustainable. When Sweden enacted its environmental code of 1998, sustainable development was made the over all objective (expressed in the first article) but the substantive law of the code was not in conformity with this and the structure of the code was to a high extent similar to the fractured structure of Swedish law as of earlier.[216]

9. In Swedish environmental law research at the beginning of the 1990s this led to one major understanding, namely of law as a problem for environment protection in Rule of Law states. Some important Swedish doctoral theses were written during that decade,[217] and participation in foreign legislative projects and environmental policy implementation added to the understanding. A project idea on model environmental legislation for sustainability gradually grew into theory, more extended methodology and later my work on a model holistic law for sustainability.[218] In translation, the name of this model law became '*The Generic Environmental Act*' (GEA). It was digitally published (in Swedish) in spring 2009 together with an equally digital book about this law, containing theory and methodological considerations.

This article will now briefly present GEA and some of the most important theoretical and methodological thinking behind it.

Some fundamental parts and functions of GEA

10. Ecological sustainability for the sake of sustainable development is the over all objective for GEA. Legally, a principle of sustainable development consisting of three principles, the basic one regarding ecological sustainability, reflects this. This means *inter alia* that when in interpretation trouble occurs, the ecologically most sustainable option shall be chosen.

Consequently, the act cannot be set aside by any other law except for a constitution. If on the other hand the constitution is unsustainable in any way, it should be improved.

GEA It shall apply together with other laws and rules and it shall take over whenever a conflict occurs. GEA contains rules on its own interpretation. It lays down environmental legal principles and includes also other rules contributing to the formation of *general doctrines* for the act. In other words, GEA legislates the core of its own general doctrines.

11. GEA lays down *rights* including fundamental ones, which are limited for the sake of sustainability. Property rights regarding land (including water covered ground) are legislated not to include any inherent fundamental right to unsustainable landuse. Causing negative impact on environmental qualities or ecological preconditions for sustainability is no fundamental right. Landowners are by GEA legislated

[215] Carlman I. (2007). *The Resource Management Act 1991 through External Eyes,* in New Zealand Journal of Environmental Law, Vol. 11, pp. 181-210.

[216] Such deficits are referred to as environmental legal deficits, see Westerlund, S: *Det svenska miljörättsliga underskottet. En undersökning av påstådd och reell svensk miljöpolitik i belysning av svensk miljölagstiftnings kvalitet.* <http://www.imir.com/pdf-filer/u-skott.pdf>

[217] Jonas Ebbesson, Charlotta Zetterberg, Lena Gipperth and Jonas Christensen.

[218] Some more researchers were meant to participate in the final part of the project, but time was not sufficient for them. This illustrates *inter alia* the poor research situations in Swedish academic law.

to be equal, which means that developers and other entrepreneurs do not have any superior property rights as compared with those landowners (and similar persons) who might be affected by environmental impact. Property rights are also the same, disregarding whether an issue concerns landuse for building (physical or spatial planning) or environmentally hazardous landuse or activities. Polluter pays principles are increased into user pays principles. Normal everyday life (house holds) based on general precaution is generally allowed but is subject to the substantive rules. Anyone who intends to live or go beyond such behaviour, might under legally prescribed conditions be allowed to do that. But such a license can only be temporary and does not in itself include any fundamental rights.

12. Managing different rights within a limit of ecological sustainability puts the *substantive* part of the law in focus. GEA makes a clear difference between fundamental rights (which as was just said do not include any right to act unsustainably) and other rights. The other rights, temporary and conditional as they are, must of course conform with the substantive rules of the act.

These rules follow a double approach. One is actor-related rules on precaution etc. The other one is environment-related rules laying down limits of different kinds, such as environmental quality and quantity standards. The actor-related rules are always to be complied with, but if any environment-related limit standard is not met – no matter why – compliance with the actor-related rules is not sufficient; GEA then stops (by means of a non-degradation standard which automatically becomes binding) all new, or expansion of, possibly affecting landuse, activities etc. But it also automatically orders *implementation planning* in order for the limit standards to be met. GEA contains on the other hand an offset mechanism, which is further elaborated in #32.

13. The importance of the substantive part of the act is virtually unlimited. The over all function of GEA is to give the legal basis for legally binding limits of different kinds. These limits, be they quality standards or quantities of living resources or whatever relevant for ecological sustainability, must be fully legally operational. This has called for *legal operationalisation*[219] of such standards by means of *feedback functions* in the law, which switch into active mode automatically, namely when a limit standard is not met.

However, ecological sustainability is only a part – although a necessary part – of sustainable development, and GEA aims at sustainable development. For that reason, even when the environment is better than the limits, *full precaution* shall still be taken as prescribed in the actor-related rules. These are as a main rule based on BAT objectively defined, and include also *inter alia* rules on best available siting and use of least harmful substances etc. When this functions well, a maximum of *development space* should occur.

The trade and products problem

14. A major problem affecting not only the structure of GEA, but also of environmental methodology as such, is products etc. They are the centre of trade and market law. GEA singles them out and brings them under the umbrella of two important environmental law principles, one on *market rationality* and the other on *environmental rationality*.

Most lawyers will probably claim that this is completely incompatible with WTO and EC law and they are probably right. However, without GEA's distinction, marketing and trade will be in almost total conflict with ecological sustainability. The solution, chosen in GEA, is logical. Marketing is ruled by the principle of market rationality. Marketing *as such* should not really affect the environment. It is when the marketed goods is stored, transported or put into actual use etc., that environmental impact can occur. But then the principle of environmental rationality applies, not the principle of market rationality.

The GEA project illustrates that virtually all significant environmental problems related to goods etc. ought to be manageable this way. This will cause considerable effects for those in trade, but these effects

[219] Gipperth 1999.

are actually necessary because of environment and ecological sustainability.

This solution to the clash between market and trade on one hand, and ecological sustainability on the other hand, might cause uproar in market circles. Anyone who finds a better way to solve this, will bring environmental law even more forward. However, such a solution must to at least the same extent protect ecological sustainability (equally timely), as the one in GEA. If not, it simply does not count.

Holism and systemic aspects of and in GEA – in brief

15. Summarised so far, much of it – if viewed one by one – might seem rather traditional. There are however also over all and systemic factors in GEA which are very important when striving for ecological sustainability under Rule of Law.

First, law must be perfectly adapted to ecological sustainability. If not, law supports the opposite.

Second, and as a consequence, environmental law must not be set aside by any other law (#10). If the constitution includes unsustainable law, it should be improved for the sake of ecological sustainability.

Third, ecosystems are small and large, smaller normally forming components of larger systems. Ecosystems are mostly more or less open. The biggest one is the biosphere, at least if regarded from mankind's point of view. A biosphere approach is therefore necessary, at the same time as it raises very serious environmental control problems. These problems are to a high extent due to international law as of today (#50).

16. Ecosystems, or nature as a whole, are – as already pointed out – necessary for mankind and mankind's systems. But it is not the other way around. Mankind and its systems cause however environmental impact (anthropogenic impact). This must be sufficiently controlled. Here lies the environmental methodology challenge. It requires understanding of not only natural science but also *inter alia* system theory and the role of law, together with environmental control systems, their possible components and interactions.

17. One critical element in environmental control law is its substantive parts, since under Rule of Law the conduct of persons can only be decided by authorities and governments based on law. This law must therefore be environment related, with legally binding ecological limits etc.

Another core element, that is very clear in the concept of sustainable law, is societal sustainability and development. They require far reaching precaution and cooperation, including instruments for environmental impact assessments and rational management of nature and its resources. The latter is in GEA based on *environmental planning* within a regulated, tiered system. In this system, the limits are decided top-down but the space within the limits are open for regional and local decisions which, however, must fully comply with all substantive environmental law and with superior environmental plans.

18. This moves the already (#11) mentioned fundamental and other rights into the spotlight. The right to one's own life, property rights and the rights to one's home are prominent examples. GEA adapts these *through legislation* to ecological sustainability, as already mentioned, but also to elementary legal and economic rationality.

Among these three kinds of rationalities, the one of ecological sustainability is most easy to explain and defend. Legal and economic rationalities are more hazy. The reason for this lies in legal science and economics.

GEA's legal logic strives at making for example property rights as such equal, no matter who is the holder of the right and no matter what this holder intends to do.

GEA's economic logic is most probably compatible with elementary welfare economics and with the polluter pays principle, all of this however adapted to ecological sustainability.

Both legal science and economics are internally rather contradicting. The views in the GEA project on these rationalities should be understood as stipulated

for the project and adaptable to ecological sustainability. Opposition against this is valuable if, but only if, it brings forward or opens for options which are at least equal as regards *ecological* sustainability.

Environmental impact beyond fundamental rights

19. Now, if and when fundamental rights are carved out, or even stipulated, how can possibilities be introduced for landuse, activities and products which do not find room within such rights?

This question is very important since the answer to it will have very heavy bearing upon development. How heavy, depends partly on the level of technologies. The ultimate technology is perfectly clean and used without any environmental impact but it will still mean use of land and water areas. Such technologies are almost non-existent today. A large part of the world's more than 6,5 billion population does not have a sufficient basic welfare. Cities grow. Much has to be taken care of, even though clean technologies are normally not available. GEA must of course manage this.

20. Such problems were known already in old neighbour law. The problems were approached by on one hand expropriation, on the other hand licensing (concessions), partly in combination with economic liability for larger (civil) damage. These approaches were basically intragenerational. Now we also need intergenerational rationality which requires the preservation of a sufficient biosphere with adequate environmental qualities – for today and for the future.

GEA does not only apply equal property rights but it also opens for additional although temporary rights. The latter rights are however fully subject to the substantive environmental law on precaution and environmental limits etc. This substantive law includes *inter alia* economic assessments and environmental law compensation. When, however, someone is permitted to not only affect his environment, but to *use* anything belonging to someone else (or otherwise under someone else's rights), expropriation shall be chosen, if the possibly affected right holder does not agree in a contract.

21. This reflects GEA's very strict limits between on one hand environmental permissibility, on the other hand expropriation. In the book about GEA, property rights issues, landuse planning, environmental permissibility and expropriation have been considered. The results, included in GEA, are really rather simple as regards legal and economic rationalities, namely:

- property rights are property rights
- whatever humans intend to do that might cause environmental impact, shall be in compliance with GEA
- whenever an activity or whatever, that might cause environmental impact, includes some kind of *use* of property belonging to someone else, it must also be in compliance with expropriation law.

This taken together means that anyone who negatively affects something he does not own, not only has to comply with the substantive law of GEA, but also strictly compensate economically for the negative impact on others *if it lies above a tolerance level*.[220] If someone else's land will be used and not only affected, the expropriation choice is mandatory (unless a contract is agreed between the impactor and those, whose land is to be used).

22. The arguments for this are also very simple. I have already briefly explained equal treatment of property rights (#11). It is nothing curious that environmental impact is subject to environmental law (like GEA). When we touch at expropriation, however, the solution might seem very rational, but it will probably imply needs for improving expropriation legislation. Because if all use of others' property (unless contracted) is brought in under expropriation (in a broad

[220] The tolerance level(s) mark the difference between on one hand normal variations in environmental qualities not affected by anyone beyond his basic right to cause impact, and on the other hand qualities worse than that, *provided* that the qualities are in no way hazardous for the environment or human health. The parallel with old time neighbour law is in this respect significant.

sense), economic compensation will have to be paid (except for what is under a tolerance limit). This is simply an application of a user pays principle.

If then some people think that this means undue burdens on those who carry out activities, these people actually resist that activities shall bear full economic burdens for external impact and intrusion.

GEA's management of malfunctioning

23. With so many new or modified rights, concepts and functions, the risk of malfunctioning would be immense. However, ecological sustainability is in one meaning something absolute. This is true even though decisions about where the limits are will be very problematic (briefly elaborated in #47).

Any environmental condition below ecological sustainability means an implementation deficit, which in at least two ways is negative. One is for the present generation of people who suffer from it. The other is that each day of implementation deficit most probably reduces the ecological capacity for the future generations.[221] It is therefore absolutely necessary for law to be capable of fully and timely counteracting implementation deficits.

Here lies the probably most intricate methodological problem. Research has unveiled a considerable number of legal obstacles against counteracting such deficits. GEA therefore not only uses ecological sustainability as its point of departure, but also stipulates general doctrines and adapts different rights so as not to counteract such sustainability. It also leans on different kinds of environmental limit rules, implementation planning, environmental proactive planning and feedback in GEA as such.

24. In some environmental controls sectors, valuable efforts have been made earlier, like with air quality standards in the US Clean Air Act of 1970 and later. To some extent, air quality standards were there made legally operational.

The more environmental law is adapted to non-linearities, the better can the legal systems be. Gipperth (1999)[222] put order into this environmental control theory problem. She defined the concept of legal operationalisation of environment-related goals and standards. She succeeded because of her understanding of non-linearities in nature and of how to deal with them by means of implementation planning and feedback in the law as such.

Parallel in time, Jonas Christensen wrote his doctoral dissertation on phosphorus, law and recycling.[223] Among other things he brought thermodynamics into environmental law theory.

These two dissertations simplified and improved methodological theory on implementation of ecological sustainability. They assimilated systemic thinking and made it easier to understand the significance of time, resilience, and processes in legal and other societal systems. This indicated rather clearly a need for some kind of *selfregulation* in the legal system, where the feedback function in the law itself, once partly tried with some success in USA, is further developed by means of being made fully inherent in the concept of legal operationalisation.

25. Why is this so important?

The answer is simple. When law decides which environmental qualities are legal, it regulates something that mostly are results from non-linear effects of much anthropogenic impact, and nature's reactions on that. Legislators cannot order water as an addressee to be clean, but nor can legislators successfully find one or few impactors who "really" were the ones who caused poor quality. The few exceptions are in GEA dealt with as linear. Environmental law methodology must therefore find a way to *transform*, or rather *rectify*, reactions and conditions in nature situations into fully *effective* (linear and enforceable) substantive law with *persons* as addressees. Such solutions must manage the

[221] The time issue in relation to resilience and ecological thresholds etc. is elaborated in my coming book *Fundamentals of Environmental Law Methodology*. As regards the present generation, the ecological capacity is also reduced, of course, but then because of the overuse of the biosphere by the same generation.

[222] Gipperth 1999.

[223] Christensen, J: *Rätt och kretslopp*. Iustus 2000.

non-linearities between actions and effects.

The rectifier must therefore receive (or otherwise be informed about) the environmental data and rectify this into substantive, enforceable actor-related rules.

Implementation plans, provided properly regulated in law, can do that. Such proper regulation states that whenever for example an environmental quality standard is not met, the special implementation procedures shall start and at the same time a non-degradation standard shall enter into active mode.

26. This is included in GEA. Its possible significance is probably absolute since there are no other ways known, which would manage implementation deficits with the same legal effectivity. The function calls for a number of sub-functions defined in law. This includes *inter alia* mandatory regular reviews of the implementation plan and of the relevant environmental situation, clear rules stating that an implementation plan *shall* be sufficient for achieving and maintaining the quality standard or what is at issue, and no loop-holes for anyone to slip beyond the substantive rules of the plan. Procedure-wise, openness with full public participation and possibilities for judicial review of a plan is included.

27. Those who are familiar with US air quality standards will recognise the elements in this thinking. GEA goes however further with respect to loyalty to environmental goals and quality standards etc, fully applying the theory of legal operationalisation and of self-regulating law based on mandatory feedback functions, and consequently fully applying the understanding of nature's non-linearities.

Implementation planning is on the other hand a kind of *reactive* instrument, since it is to be used when a limit is passed or when the environmental quality tendencies more or less clearly go towards such passing. It can, provided a good construction, be very useful for managing different kinds of malfunctions ranging from pure corruption to scientific mistakes.

However, a fundamental flaw in most environmental control systems seems, according to much research, to be an over all reliance on reaction and much, much less on proaction. To some extent, old time legal thinking and liberal approaches might be found among the reasons. Planning economies have added, understandably, to scepticism against proaction. On the other hand has different kinds of environmental or resource planning been tried without necessary elements of planning economy. I have already mentioned New Zealand's Resource Management Act and its tiered planning system. More examples, although less clearly developed, can be found.[224] Environmental planning, more or less defined, seems also to be appreciated in advisements to developing countries.

Environmental planning in GEA

28. An assimilation of the biospherical understanding and of nature's non-linearities, the principle of sustainable development (the fundament of which is the principle of ecological sustainability), intergenerational equity and human population growth, cannot lead to any other assumption than that adequate limits for ecological sustainability must be legally protected in full. The instruments for this are different kinds of limit values regarding environmental qualities and quantities, including living and other flowing resources (such as energy). When understanding basics of resilience and ecological thresholds together with thermodynamics, it also comes out that proactivity overrides reactivity, but that reactivity must be included for the management of flaws and unexpected changes etc.

This lies behind the emphasis in GEA on environmental planning. Such planning shall be tiered and compulsory. On the national level, the really important environmental goals and limits shall be decided, either explicitly or by means of criteria which are easy to understand in the different regions and consequently easy to make more precise in the regional environmental plans.

The regional environmental plans are constructed

[224] Like planning in Denmark and the Netherlands and government ideas in Sweden in the 1960s and 1970s about national physical planning.

to be mainly proactive, setting more defined environmental (including land and water areas) limits and also – as possibilities – criteria for permissibility for certain areas and/or landuse or activities. All this shall, however, be in compliance with all the substantive GEA law unless GEA itself allows for exceptions.

29. Regional environmental plans, although primarily proactive, shall however not be constructed as *commands* for private persons (and industry) about what to do, where to do it and how to do it. The basic function is instead to lay down *limits* for what to do and for where to do it. The third question, *how to do it*, will be subject to the substantive law and only under certain conditions as expressed in GEA may a regional environmental plan define also that.

In other words, the plan will as the main rule not decide that a certain thing *shall* be done in a certain area, but only decide that a certain area (for example) *is available from environmental and sustainability aspects* for a certain thing. Thereby, no problems normally related to economic planning should have to occur.

For this to be possible, it is important that the knowledge and data relevant for the planning are well investigated, assessed and included in the plan. GEA is rather explicit on this (19 articles) including also certain demographic facts (including changes during the year, in- and out-moving, and the changes for the last ten years).

30. The possible potential in this kind of planning is very great. Still, mistakes and unexpected changes will occur, new technologies will be developed etc. Regional environmental planning must therefore be reviewed regularly (and with full respect to the over all ecological sustainability objectives). GEA orders and regulates this. Since also implementation planning is clearly regulated and not set aside by the rules on environmental planning, there should be sufficient functions for at least countries with low level corruption to be able to handle what ecological sustainability requires as connected with landuse and other more or less place-bound activities etc.

For the sake of safety additions, transparency and justice, GEA includes far reaching general procedural rules which also apply in planning and will *inter alia* add to the environmental planning system part of GEA. On the other hand, appeals against the plan can only take place after the regional environmental planning authority has decided on the plan. So, only one appeal period per plan.

This is the main rule. GEA allows however for partial changes in the plan and then of course an appeal possibility (regarding the changes) occurs.

Additional instruments

31. As mentioned before (#15 and following), GEA is a system and therefore also environmental planning, although extremely important, shall be regarded in its systemic context. If we regard control instruments as soft, economic and legal, it is easy to see that they can work together as a control system in which the legal parts can catch what the other two parts do not handle sufficiently.

This calls of course for the legal parts to combine effectiveness with room for options *within* the effectiveness and therefore, as much as possible, to express (lay down) *limits*. As already mentioned, this is the main technique for regional environmental plans. This opens for not only options but also for different methods to implement the plans. GEA therefore includes chapters on different ways to cooperate and in other ways take over some or all responsibilities, although generally bound by the environmental plans. Also implementation planning includes possibilities for this.

32. One important instrument, developed from US clean air legislation, applies a kind of offset technique. The term for this in GEA is *improvement surplus*. Its functionality requires certain contents in the legal system as such, especially the very problematic *rights to already operating, licenced* activities.

Such rights are by GEA only temporary. There are several reasons for this, most of which we do not have to elaborate here. One, however, is that it can be very costly – even if no compensation is to be paid – simply

to shut down something which has been licensed. A probably smoother approach includes economic incentives hopefully leading to improved technologies.

Suppose for example an industry with a license based on BAT. Then it is observed that water quality standards in the lake, which *inter alia* is the recipient for the industry's waste water, are not met. The lake receives a lot of impact and nothing indicates that this industry (applying BAT) is the only sinner. Implementation planning is then required by GEA. Now, if the industrialist one way or another finds ways to reduce the industry's pollution further than what the license requires, the difference between what the licence allows based on BAT, and the lower quantity that the new efforts will result in, constitutes an improvement surplus. *Two thirds* of this constitutes an amount, over which the industrialist decides and he can also sell it. The third third "goes to the environment".

Improvement surplus gives rights, which are clearly legislated in GEA. This kind of instrument, partly known from foreign practice, seems to give good possibilities for streamlining environmental quality improvement in situations worse than what quality standards allow for. Its functionality depends however on several factors, each of which is not easy to deal with effectively in law. One is the technological innovativeness available for the polluter, another is which use the polluter can have from the two thirds of possible improvement surplus. It is also important to have a good registering of this, including good but simple evaluations of the improvement surplus as such. GEA regulates this in a hopefully clear and sufficient way.

33. Also other instruments are included in GEA, like different kinds of cooperation, agreements etc., and programmes for certain biodiversity objectives. An identified category of impactors, who together cause the quality situation in for example a smaller water basin may agree (it is voluntary) to undertake to improve this water basin up to a defined level which does not violate any quality standard. GEA regulates this and adds rules which kick in, if the impactors do not fulfill what they are to fulfill. The will to agree is improved by the law, which states that otherwise a real command and control situation occurs for this water basin.

Managing land use development and decentralisation

34. Two of the most difficult obstacles for ecological sustainability are (1) decentralisation ideas and (2) economic assessments (such assessments were briefly set aside in#5).

Decentralisation seems to have been more and more accentuated in many countries, especially as regards planning and connected decisions on landuse, in the first place for building, often referred to as "development".

Suppose that we put the Swedish environmental code and the Swedish planning and building act next to each others and ask: Can these two laws go together in one and the same country?

Which would be the answer?

The code's over all objective is sustainable development and consequently ecological sustainability, but its substantive law does not go that far. The Swedish planning and building act's objective is on the other hand mainly on land development and connected planning issues. Its substantive law lies even further from sustainability, although sustainability is mentioned in the act's introductory article.[225]

The real lack in the Swedish planning and building act is its total disregard of ecological connections beyond municipal borders in combination with an almost total possibility for the municipalities to decide without effective corrections from above. This means that planning and building law decisions are not only mostly disconnected from the environmental code, but can also be in conflict with it.

This is simply not possible if sustainability is to be achieved. Even systemic theory can explain this by means of Ashby's law on requisite variety (which I will briefly get back to in #42).

[225] Christensen, J: *Kretslopsspropositionen. En rättslig Potemkinkuliss?* in Miljörättslig tidskrift 1994:1.

35. GEA solves this kind of problem in the most simple, and theoretically most easily explained, way, namely by making also landuse for building etc. fully subject to GEA.

Legal technically, this is primarily taken care of in GEA as such, namely by making clear that also this kind of landuse falls under it. Many rules on building and buildings, which do not primarily concern environment etc., shall then be included in a special building act. Its content must however not conflict with GEA.

This is very easy, provided that we disregard all those people who for one or another reason claim that they believe that municipal politicians can take care of ecological sustainability. Ecological systems are however generally more or less open, and much depends on how the ecological situations are also outside a specific municipality. That fact alone kills any idea of municipalities as primary caretakers of ecological sustainability. But they can be caretakes by delegation, so to say, namely within the framework of the planning system of GEA. They can (and sholud) also take ecological care when deciding on issues, the consequences of which are only temprorary and restricted to within the municipality in question.

Consequently, also such issues as sub-division of land are to be subordinated GEA.

Managing sectoral environmental impactors

36. One major problem in Sweden, probably also in several other countries, has to do with industrial and landuse sectoring and with how this has been handled by legislators. GEA makes a very strict distinction between on one hand different kinds of industry and landuse (like forestry, agriculture etc.), and on the other hand environment and its reactions to anthropogenic impact. The GEA project presumes special laws on forestry, agriculture, fishery, building (mentioned in #16-17), traffic etc. However, such laws shall only be purely actor related and *not* contain its own environmental law. The latter is instead found in, and under, GEA.

This solution follows the holistic approach behind GEA which in turn is necessary for the sake of ecological sustainability. As an example, rules about who has the right to hunt etc. are to be put in a hunting act, while rules about *what* may be hunted and *when* and *how* belong to the environmental part of law.

37. In order for this to function, a good central and regional authority structure is needed. GEA puts forward a national environment protection agency, with regional and maybe local offices, as the authority with full responsibility for what GEA is about.

As an alternative, one could consider the environmental ministry in the government (some states give strong decision power to ministers, other states do not). This would however probably be in some conflict with the Rule of Law approach, upon which GEA is constructed and intended to function.

38. Water, then? EC law now includes the framework water directive. How would that fit into the GEA thinking?

First, the regional environmental planning areas are to follow water divides. Furthermore, water is necessary to be controlled for the sake of ecological sustainability. Therefore, GEA's regional environmental planning can take care of whatever water planning etc. that the directive calls for.

Thirdly, however, water is complex also from legal points of view. Water is a fluid, or vapour, or ice etc., but it can also as such be an ecosystem or at least be a necessary component in different ecosystems. But this is not all. Water is also normally *flowing*. Also other resources are flowing, including living resources and of course wind and other forms of or results from energy.

In order to handle this, GEA specifies in itself a certain kind of rights called *flow rights*. Also such rights are to be observed and managed in regional environmental planning.

So, in conclusion, the EC framework directive will be fully implemented under a system of regional environmental planning like the one under GEA. Specific law on water projects concerning other things

than environmental, is to be put in a special law next to laws on forestry, hunting etc.

Discussion

39. The book on GEA covers 245 pages and the GEA as such 552 pages. This article can pick only certain central issues. I begin with the systemic approach.

GEA's first part contains an introductory chapter, and then chapters with legally defined concepts, environmental principles, different kinds of rules in GEA, planning rules and certain other common rules – altogether six chapters.

Part 2 has chapters on environmental rights, rights to land and water areas, flow rights, public rights, improvement surplus, priority, environmental permissibility, and other right-related issues – altogether eight chapters.

Part 3 has two chapters – on landuse rules and product rules.

Part 4 includes actor-related substantive rules in four chapters, one on basic precautionary rules, one on landuse for housing, one on products and one with limit rules in linear situations.

Part 5 turns the perspective into reactor-related rules. One chapter lays down environment-related rules, one concerns protection and management of living resources, and one management of other flows – altogether three chapters.

Part 6 deals with land control, has seven chapters, and starts with a chapter on land reserves followed by a chapter on national environmental planning followed by two chapters on regional environmental planning, after which one chapter deals with local environmental planning and one with implementation planning. The last chapter in this part includes other rules on plans and planning.

Part 7 starts with a chapter on voluntary solutions followed by one chapter on management, one on preservation programmes and one on cooperation – altogether four chapters.

Part 8 has three chapters, one on additional control instruments, one on economic instruments and one on other special control instruments.

Part 9 is on procedure. It has seven chapters. The first one is the big chapter on procedure, followed by the chapter on Environmental Impact Assessment, one on licensing, one on planning, one on assessment of environmental permissibility, one on final go ahead decisions, and one with other procedural rules.

Part 10 has two chapters, one on compensation and one on compensation and environment funds.

Part 11 has a chapter on supervision and one on sanctions.

Part 12, finally, includes miscellaneous chapters, one on the tasks of public organs, one on environmental information, one with special additional rules and one with general excepting rules.

40. All this forms a system for ecological sustainability suitable for sustainable development. It declares its own concepts, principles and rules in ways which are intended to put forward general doctrines for environment protection and ecological sustainability. It distinguishes between environment and who might affect it but connects them by means of a far reaching planning system with both proactive and reactive plans plus area-related reserves etc. and flow-related management law. The safety system, although somewhat belated in its functions, should in the long run and provided authorities, who work under good rule of law standards, function for ecological sustainability. The subrights related to priority and improvement surplus should not counteract this, priority being neutral in this respect and improvement surplus having the possibilities to speed up environmental improvement. The different possibilities to apply softer instruments are intended to be well secured within the substantive environment-related law. Errors will occur but GEA has functions which, with some delay, can be used to repair for this.

These are functions and effects which are considered normal and problematic in environmental control. However, GEA includes also another, and maybe more questioned, group of principles and rules.

41. One of them is about property rights to land etc. GEA adapts these rights to ecological sustainability

but keeps them as property rights. However, and as a main rule, this is not expressed in commands but as precautionary requirements, limits and to some extent prohibitions. This – when for the purpose of ecological sustainability – shall never give rights to economic compensation when something is restricted or even prohibited.

With such law, property rights can go together with ecological sustainability, provided that expropriation law is made as broad as presumed in this project. If however compensation should be paid to proprietors (and similar persons) when they are not allowed to act unsustainably, it would mean that the state (the taxpayers) were to carry the economic burden of proprietors' ownership of land, but without taking the land. This would not go well together with the polluter pays principle and it also conserves ownership of land as inherently ecologically unsustainable.

42. Another important function of GEA is that it brings local physical planning, zoning etc. in under GEA's substantive and planning law for the sake of ecological sustainability. This follows from Ashby's law on requisite variety when understood that ecological impact does not stop at a municipal border and that it normally is not temporary and insignificant. Without bringing such landuse issues in under the same legal control as other impact, ecological sustainability cannot be achieved.[226]

43. The broad and tiered environmental planning system is necessary for ecological sustainability within economic rationality. All available resources and all problems can then be collected, assessed and economised with. Within the fundamental rights, possible development space can be defined and allowed for use. Public organs can be commanded to launch or proceed programmes, and to take other actions. Possibilities for alternative solutions can be identified.

All this is however fenced inside environmental limits expressed as quality and quantity standards and the like. It is also subject to the actor-related substantive rules in GEA. However, since the entire region (or part of it) often, maybe generally, is too limited for all ideas about development etc., but the planning makes it possible to overlook the entity when deciding for what it may be used, the substantive law of GEA will be applied in, and adapted for, a holistic process – the planning.

Virtually all countries would have considerable financial costs for turning into environmental planning. On the economically positive side, however, lies considerable opportunities for rational decisions over the total resources and their possible use but also, and this is equally important, possibilities to prevent non-attainment of environment-related standards etc, *id est* to function proactively.

44. Laying down limits of different kinds, including geographical limits (and development space inside them) in a holistic planning process, is not only a rational way to use ecological resources efficiently but also a good way for all involved people to assess and claim their environmental and resource-related rights. However, the more one can find alternative instruments which still meet the same needs that are intended to be secured through planning, but more cost-efficiently or in nicer ways, the better. GEA as constructed so far gives much possibilities for this, and it can also be the basis for further development of the environmental control system.

45. What, then, if GEA and the environmental planning system, together with limits as goals and subgoals for ecological sustainability, result in the finding that a region simply has no development space?

Two answers need to be considered.

The first one is that if so, the law and the planning system etc. finally made clear that the ecological situation in the region is unsustainable.

The second one is that if so, the GEA approach must be abandoned because no development can take place.

Anyone who understands ecological sustainability

[226] Carlman, I: *Control System for Sustainable Development*, in Dubois, D.M (ed): Computing Anticipatory Systems. Casys'07 – Eighth International Conference Liège, Belgium 6 – 11 August 2007. American Institute of Physics 2008.

basics understands that the first answer must be chosen, since the second one will lead to continuous ecological unsustainability and consequently no sustainable development.

Provided the first answer, we then must go back to GEA and see whether it can do something about such a problematic sustainability situation.

46. First of all, the implementation planning law in GEA is combined with rules on improvement surplus which gives opportunities for development either by means of improved technology, or extra costs. The technology improvement is primarily beneficial for the operator who created the surplus, but it results in a better technology in general and will (provided that economy allows) therefore give more general environmental improvement. The possible extra cost will be accepted if the economic benefits are high enough. Consequently, this system ought to give possibilities for development but at a higher standard than the general BAT one.

Secondly, the more effective the alternative control methods become, the lower the cost ought to be for environmental improvement.

However, if both the first and second developments just mentioned fail, ecological sustainability is ecological sustainability and since that is necessary for other sustainabilities, then one cannot set ecological sustainability aside.

47. One issue has gone through this article, and the GEA, but perhaps still without really being focussed upon, namely fundamental ecological sustainability as such. In this summing up part, this must be done. It is rather simple, although indicating severe difficulties.

The simplicity comes from what is already said about the rights of all future generations to have a sufficient nature basis for *their* needs. The scientific simplicity of this takes us to natural sciences. The difficulties, on the other hand, is about defining time after time what is ecologically sustainable and then really achieving and maintaining it.

Ecological sustainability must most probably always be defined by means of goals and subgoals with limits etc. relating to the environment and the biosphere as a whole. This must be done under uncertainties which in turn calls for regular reviews of the goals and limits, but also of how to achieve them. The feedback function in GEA should keep this as *law,* and the procedures around it should give transparency and possibilities for judicial review. There is rather much theory about this in *inter alia* environmental law methodology.[227] The basis of this is that when it is fairly understood that something is ecologically unsustainable, it has to be seriously approached through, or based upon, the law and in the environmental planning etc. Some elementary parallels can be found in *inter alia* US clean air law.

The difficulties cannot be circumvented, and GEA is constructed for really managing them. Nature reacts in its different, normally non-linear ways and humans simply have to cope with that. This is why fundamental rights cannot be absolute, but relative to ecological sustainability. This is also why environmental planning (or something with the same potential) is necessary. But any environmental policy might collapse if implementation deficits are not taken care of *in the law itself*. For this purpose, the well known technique with mandatory and law controlled implementation planning for ecological sustainability, together with the automatic activation of non-degradation standards, is even more developed.

Two important, not to say sustainability inimical, issues have not found any real solution in GEA, namely *international law* and *population growth*.

48. Since the biosphere includes the planet Earth, a control system for that large eco-system is needed. Mankind does not have that yet. International law defaults, outlined by Aðalheiður Jóhannsdóttir in the biodiversity context,[228] are generally pre-environmen-

[227] Westerlund 2003 and the coming book *Fundamentals of Environmental Law Methodology*.

[228] Aðalheiður Jóhannsdóttir: The Significance of the Default. A study in environmental law methodology on ecological sustainability and international biodiversity law. Uppsala university 2009.

tal and conflicting with ecological sustainability. As long as that is a fact, international law is a problem and not a solution. GEA approaches this to some extent.

Partly it is done by developing the principle of sustainable development as a complex of three principles where the one on ecological sustainability is the primary one (and therefore necessary for the two others). Partly it is also done by developing the distinction between market and environmental rationalities. And partly it is done by laying down rules on interpretation where international (and EC) law are to be presumed not to counteract countries' work for ecological sustainability with respect also to the entire biosphere. This is not sufficient, but without improvement of international law as such, this was what could be done at this time. What can be imagined from between the lines here is that international law constitutes an enormous sustainability problem, which simply must be dealt with by i.a. legal scientists.

49. Population growth is one of the really threatening factors for sustainability that is more or less set aside in politics and today's scientific discourse. It does not matter whether this is because of sheer denial or something else. 9 billion people in 2050 is an enormous population which cannot exist and develop without a sufficient and sustainable biosphere.

GEA has nothing about population growth control. The country which has so far done most for at least slowing down population growth is China. The criticism against China's efforts is normally not connected with any realistic alternative, except for some kind of hope that when people reach good living standards, the number of births will go down.

Such living standards call, however, for *inter alia* a sufficient nature basis, good politics, and economic techniques which are not requiring more and more people in order for economy to function. Not even within the wide sustainability framework of the GEA project has it seemed possible to really approach these issues. The most simple way would of course to develop a one child policy that China, at least until now, has – more or less effectively – applied since decades.

50. And this statement brings this article to its scientific end. The construction of a GEA model is a scientific effort to outline what, in Rule of Law states, the legal system must contain – although leaving aside population growth issues and such social science, which needs to improve its theory frameworks to be compatible with ecological sustainability.

As for law, GEA has done this by including *inter alia* adequate concepts, principles, interpretation rules, rights, substantive reactor-related law and substantive environment-related law, landuse control instruments, environmental planning and implementation planning and softer but effective instruments etc. The GEA construction must also be understood as a system with many interior functions including, most important of all, automatic feedback functions etc.

Any change in the construction, which does not counteract the systemic functions of GEA, and which also otherwise is at least equal with the GEA model as regards ecological sustainability, is important forenvironmental law methodology and theory. On the other hand, any change which is less good for ecological sustainability, must be turned down since ecological sustainability is something necessary. Remember then that delays in time are ecologically and economically more costly than if no such delay occurs. Furthermore, any modification of a component in the system must still fit into the system, otherwise the system as such will not function sustainably.

51. Two final comments might be necessary here. One concers to which extent a generic act like this could be useful in different kinds of legal systems and the other concerns the general approach to ecological sustainability.

A generic model act for sustainability has purposes related to conditions which are not restricted to a specific country, even if examples may be taken from some countries. These purposes relate to ecological sustainabiliy for the sake of sustainable development. The ideas in a model act like this can be modified in order to fit into also quite different, although Rule of

Law based, systems. Such modifications are to be checked for ecologicka sustainability including how they will function in the legal system in question (and how this legal systems must be adapted for sustainability).

From this follows that ecological sustainability shall, and must, be obtained – or development is not sustainable. We cannot avoid that conclusion. Anyone, who in spite of this balances ecological sustainability against economy, social issues or whatever else, thereby leaves the entire idea of sustainable development.