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‘Nested enterprises’? Spatial dimensions of ecological governance

Do the twain ever meet? ‘Natural’ and ‘man-made’ systems and the problem of scale

The nature–society interface: different scales, problems of fit, and nestedness
Space is of central concern to rational ecological governance. Environmental problems and resource management issues cross the man-made scales of local, regional or national governments. The question thus becomes how ‘to negotiate a better fit’ in responding to very complex ecological challenges (Pritchard Jr. et al. 1998:30 f.). Elinor Ostrom’s answer in her now classic Governing the Commons is twofold. The underlying principle in her model of stable, ecosystem-based governance is one of congruence between a natural ecosystem and the unit of governance for that system. Regimes for the use and management of natural resources must thus have clearly defined boundaries, and the users/managers of the resource should have their right to organise recognised by external governmental authorities. Pointing to the complexity posed by the crossing scales of natural and man-made systems, and thus the problems of scale and co-ordination in ecological governance, she recommends a spatial web of ‘nested enterprises’. Smaller-scale resource regimes are linked in multiple layers to form larger entities of resource governance (Ostrom 1990:90 ff., 101 f.).

Admittedly, Ostrom’s classic study deals above all with single-interest, single-purpose resource regimes. Ecosystems of some size are, however, usually subjected to multiple, often conflicting
claims and uses. This makes the problem of designing and co-
ordinating units for ecologically rational governance even more 
complex. However, I argue that the idea of nested enterprises 
does imply that multi-faceted interests and uses of shared natural 
resources can be organised into a proper response to problems of 
ecological governance. I therefore examine the ideas of ecosystem management in order to formulate operational criteria for evaluating Sweden’s performance in terms of spatially rational 
ecological governance.

Ecosystem management – basic features
The first issue of ecosystem management is to define the unit to 
be managed. An ecosystem is a community of organisms that 
functions as an integrated energy-nutrient processing system. As 
such, it has physical structures, such as soil, plants and animals, 
and exhibits functions of energy flows and nutrient cycling. 
Ecosystems do have both space and time attributes. However, ‘no 
boundary, border or classification system can adequately cate-
gorise and organise all of the information to support an ecological 
approach’ (Sexton et al. 1998:168). Ecosystems grade into one 
another and are nested within a matrix of interrelated ecosystems 
of different sizes (Szaro et al. 1998:2). Still, we can define certain 
types of ecosystems. Some are bounded naturally, like water 
catchments, or topographically, like mountain ranges (see 
Brussard et al. 1998:11 ff.).

Ecosystems provide the basis for sustenance and reproduction 
of human life. This human dimension means that to become 
meaningful units for management, ecosystems must be delineated 
in ways that have meaning and significance for people within and 
outside that area as management units. They must thus be defined 
in terms compatible with the problems of the actors benefiting 
from or dependent on the natural resources and the ecological 
services of the area (Lackey 1998:24). As management units, they 
may build on, but not be constrained by existing political and 
administrative jurisdictional boundaries. Governance units at 
local and regional levels can be modified to match such areas as 
water basins, air sheds, or mountain ranges. From a management 
point of view, however, it is important to have a core definition 
of the spatial area in order to enhance the effectiveness of the 
administrative operational unit for that area (Slocombe 1998:34).
What then should we mean by ecosystem management (ESM)? It is evident that there has been an evolution in the views on what constitutes the proper aims and content. In terms of our double standard of sustainability and autonomy, the traditional view of ESM showed little concern for autonomy. Many of the early definitions contended that ESM should be run by expert managers who wilfully and skilfully use and integrate an established knowledge base to achieve already decided objectives, usually framed in terms of the viability of the ecosystem. The need for participation by present users and the population of the area in decision-making was not recognised (Freemuth 1996:413).

However, this view of the ESM as best left to professionals is rapidly fading. Scientific information is important for effective ecosystem management, but is only one element in a decision-making process that is fundamentally one of public and private choice (Lackey 1998:21 ff.). Nowadays, ESM is seen as a democratic process that requires public participation to create consensus on the most proper use of resources. This is achieved on the basis of an integrative use of knowledge – ecological, economic, social and managerial – not only to maintain ecosystem sustainability and biological diversity but also to support human culture through sustainable economies and social civic communities (Berry et al. 1998:56; Szaro et al. 1998:6). ESM is thus now seen as involving relevant stakeholders in defining ecologically sustainable alternatives for the interactions of people and the environments in which they live. The implementation of these alternatives is achieved through a full integration of social and economic needs into management decisions (Pavlikakis and Tsihrintzis 2000:265 ff).

Ecosystem management and existing units of governance: alternative ways to negotiate a ‘better fit’

The inclusion of different stakeholders and interests in ESM means that conflicting economic and social demands enter the process (see Jones et al. 1995:166). This, and the fact that stakeholders’ actions have economic effects across areas of various scales, means that the distribution (read ‘nesting’) of authority and responsibility across natural and institutional scales becomes a core issue for rational ecological governance (see Szaro et al. 1998:3 ff.).
But where should the collectively binding decisions be made to allow for a better fit to scale? The underlying premise in the more recent discourse seems to be that the actors and interests living in and/or socially and economically dependent on the ESM unit’s resources should have considerable space for self-regulation, i.e., to make and apply binding resource decisions for the designated area. Given the spatial delineation of present jurisdictions, this may involve at least three designs, i.e., scaling down, scaling up, or working sideways. Scaling down means transfer of authority and responsibility to the ecosystem level, if that is smaller in size than the political/administrative unit presently vested with jurisdiction over the ESM area in question. Working sideways or scaling up denotes strategies for use when the delineated ESM area covers space across boundaries of already existing jurisdictions. These units will then have to relinquish powers horizontally or vertically to the trans-boundary ESM unit.

Used in this way, the ESM approach would mean an increase in autonomy for the stakeholders directly affected by ESM decisions. However, there could be problems in terms of nestedness. The use of natural resources and the effects thereof may have ecological, socio-economic and cultural repercussions way beyond the designated ecosystem management area. To make this alternative of self-governance at the ESM level acceptable, its mandate must thus be compatible with democratically established national and regional sustainability objectives, and bounded by authority and power at the higher jurisdictional levels, e.g., the region or the state. This means a need to create co-operative mechanisms among agencies and actors through changes in the existing institutional and organisational pattern. At a minimum, meaningful co-operation will require resolving conflicting mandates and integrating management goals among different jurisdictions and agents (Cortner et al. 1998:162; Brussard et al. 1998:14).

The state has the power to establish overarching objectives and the scale of natural resource use in society. It is the central government’s responsibility to determine the ‘law of the land’, e.g., to provide for a decentralisation of certain decision-making authority, as well as responsibility for implementing sustainability measures that are functional in an ecological and resource management sense. Such authoritative linking of levels of gover-
nance, be it scaling down to regional or local governments, scaling up to the central level, or cross-level co-operative schemes, are strategies continuously used for restructuring governance to adapt to new circumstances. For such re-organisational efforts to be seen as ecologically rational, however, there must at least be allusions, and preferably direct adaptations to ecologically relevant scales.

Criteria for spatially rational ecological governance

We can now formulate some operational criteria for spatially rational ecological governance. First, at its core are place bound units with clearly defined boundaries. The delineation is based on ecologically relevant characteristics, such as natural or topographical features. Second, spatially rational ecological governance means that the circle of relevant principal stakeholders and participants is defined on the grounds of the area’s natural or topographical characteristics. Finally, spatially rational ecological governance through ecosystem-based management units works within a larger web of ‘nested enterprises’, i.e., interlinked decision-making units and processes of scaling down, working sideways and scaling up in adherence to relevant ecological scales.

- Ecological governance is spatially rational when air sheds, water catchments, or specific landscape types are constitutive elements in the collective management of environment and natural resources to achieve sustainability.
- Ecological governance is spatially rational to the extent that it defines the circles of stakeholders and interests in goal setting and decision-making on actual resource use and management in accordance with relevant spatial scales.

‘Scaling down’ – decentralisation to local government

Administrative decentralisation of environmental affairs in the 1980s

Despite ‘misfits’ with ecosystem boundaries, local governments are of crucial importance to ecologically rational governance. In Sweden, there is a long history of local governance; municipalities have a constitutional responsibility to attend to the common interests and collective welfare of their inhabitants, and are vested
with strong tax powers for this purpose. Scaling down along traditional lines of public authority means decentralisation from central to regional and local levels of government. Over the last decades the Swedish state has transferred an increasingly heavy burden of responsibilities for implementing national policies.

What has been the pattern of such ‘traditional’ decentralisation in environmental affairs over the last decades? The authority to issue permits for polluting activities under the 1969 Environmental Protection Act was originally very centralised. A reform in 1981 delegated all permit issues – except those of national significance – to the Regional Administrations. The 1981 reform opened up for municipalities to take over – by agreement – some or all of the County Administration’s supervision of polluting activities within the municipality. However, only few of the 286 municipalities sought such widened responsibilities during the 1980s (SOU 1987:32, p. 200).

The 1988/89 environmental reform redefined activities covered by the Environment Protection Act according to duration, scope, and effects on man and the environment. Half of the large plants and facilities covered by the National Licensing Board procedures were deferred to the Regional Administrations. Authority to issue environmental permits to about 6,000 medium-sized and small plants and facilities was decentralised from the regional level to the municipal Environment and Health Protection Committees (EHPCs). These Committees already handled more than 4,000 smaller facilities and activities requiring prior ‘notification’. Decentralisation of supervisory responsibilities meant that the municipal EHPCs would from then on supervise all permit or notification activities within the local government’s jurisdiction (SOU 1987:32, p. 309 f.).

While such changes may bring some gains in local autonomy, their contribution to spatially rational ecological governance is less certain. The drive for resource efficiency might encourage inter-municipal co-operation on environmental issues. Data from a 1991 survey to Swedish local Chief Environmental Inspectors show that more than half of the municipalities were engaged in formally organised co-operation on water and air quality monitoring and surveillance. Nearly 60 per cent of the registered co-operative contacts concerned neighbouring municipalities. Furthermore, almost nine out of ten reported co-operative
activities with municipalities within the same region. In terms of authority, only one out of six CEIs said that the co-operative organisations had authority to make decisions on resources or actions binding on the participating municipalities (CEIS 1991).

Thus, while decentralisation along traditional administrative boundaries provides municipalities with more autonomy within their territory, it contains inter-municipal co-operation within and along traditional administrative lines. This has consequences for spatially rational ecological governance. Municipalities co-operate more with non-neighbours inside the same region than with neighbours across the county border, even if close co-operation with the latter would be more rational in terms of ecosystem management (see below, pp. 36–9).

Freedom to organise; the 1991 reform of municipal government

The 1991 survey revealed the existence of a lively network among professionals at the local and regional levels of government. When asked about their contact network, the CEIs reported very frequent contacts with environmental administrators in other municipalities. These contacts were even more frequent than those with their local politicians or with local action groups, local media, and local associations. CEI contacts with environmental officers at the county level are almost as lively as the contacts with municipal politicians. There is thus a very specific professional network on environmental and resource management at the local and regional levels (CEIS 1991).

The impact of such professional networks on the effectiveness of ecological governance (see further ch. 6) very much depends on the position of ecological competence within local government. The new Municipal Act of 1991 gave Swedish municipalities wide-ranging autonomy on how to organise local government. Except for a Municipal Board of Directors (elected from the political majority on the Municipal Council) and an Election Committee, earlier mandatory boards and committees can be substituted by an organisation tailored to the needs and political will of the individual municipality.

Within a year after this reform, 57 Swedish municipalities (or 20 per cent) had abandoned their EHPCs in favour of other organisational solutions (SOU 1993:19, p. 41 f.). The amalgamation of traditional, mandatory environment and health protection
tasks with other local government activities continued during the 1990s. One line is legal-administrative; as many as 105 out of Sweden’s 288 municipalities had merged all decision-making on activities needing permits in Environmental and Building Permit Committees after the 1998 local elections. Another is environmentalist; traditional EHPCs existed in 83 municipalities, and 35 local governments had Environment Committees. A resource management perspective can also be discerned; 19 local governments had integrated Environmental and Planning Committees. Finally, there is a risk management view; 16 municipalities had joint Environmental and Rescue Committees. It is further notable that nearly 10 per cent of Sweden’s local governments did not have a politically appointed Committee with the word ‘environment’ in its name in 1998 (Hagevi 1999).

There seems to be no necessary link between a politically appointed Committee dealing with environmental issues and an independent Environmental Administration. Soon after the 1991 reform, 25 per cent of all local governments had integrated environmental protection officers within other municipal administrations, like the Real Estate and/or Building or the Technical and Infrastructure. This trend towards integration of environmental issues into other parts of the local governmental organisation was particularly visible in smaller municipalities (SOU 1993:19, p. 43). All in all, the organisational changes in local government during the 1990s seem to have weakened the possibilities for ecological governance both politically and administratively.

**Agenda 21 and local measures for sustainable development**

As an outflow of the Rio Conference on Agenda 21, the Swedish Cabinet in early 1994 proposed that all Swedish municipalities should formulate their own Agenda 21, based on local problems and alternatives for local solutions. The process should encourage local groups and interests to engage in a discourse to find alternative, less resource-demanding and less environmentally disturbing ways to conduct their daily activities, and integrate sustainability concerns into every branch of the local government itself. The municipal Local Agenda 21 documents were expected to contain a comprehensive sustainable development programme for the municipality (Cabinet Bill 1993/94:111, pp 63 ff.).
Cabinet’s Environmental Advisory Board (situated in the Environment Ministry) distributed a handbook to guide the municipalities in their LA 21 process with an emphasis on ecologically sustainable development (see SOU 1994:128). Money from employment support programmes was allocated to local governments for hiring Agenda 21 co-ordinators. Most municipalities came to make use of this support.

Literally interpreted, the 1994 bill implied wide-ranging autonomy for municipal governments. Local action programmes for sustainable development should be drawn up without interference from higher governmental levels. A lively activity unfolded at the local level. By the end of 1996, more than half of Sweden’s local governments had appointed LA 21 co-ordinators. Municipalities arranged seminars and courses, and gave practical advice on how to proceed to different target groups as well as to the general public. The Swedish report to the UN follow-up conference on Agenda 21 in 1997 stated that ‘all’ Swedish municipalities had started work on Local Agenda 21 (SOU 1997:105).

By spring 1998, 56 per cent of Swedish local governments had adopted an LA 21 action plan. The political centrality is revealed by the fact that (a) over three quarters of the municipalities set aside a special LA 21 budget, and (b) over 90 per cent of the plans were adopted by the highest political bodies, i.e., the Municipal Council or the Council’s Board of Directors. Around 70 per cent of the adopted action plans were furthermore co-ordinated and implemented by either the Board of Directors or a specially appointed LA 21 Committee or Delegation. Only 12 per cent were under the ægis of the Environmental and Health Protection Committees. This implies that most municipalities viewed sustainable development as involving a broader resource management perspective than that of traditional environmental policy (Brundin and Eckerberg 1999).

The municipal LA 21 activities scored high in terms of autonomy and democracy. Most local governments took active steps to involve their citizens in the process, and three quarters launched multi-faceted campaigns, including public meetings, educational activities, study circles, and direct information to the households. As many as 40 per cent reported that the local civil society initiated, or played an important role, in the LA 21 process. General interest was reported as increasing, or at least not changing, in
about 75 per cent of the municipalities in spring 1998 (Brundin and Eckerberg 1999).

At issue, then, is how Sweden’s LA 21 activity scores in terms of effects on sustainable development. Are the LA 21 action plans actually integrated into the daily activities of local government, and if so, to what extent? Except for traditional environmental tasks, integration is slow. The 1996 changes in planning and building legislation directed local governments to strengthen citizen involvement in detailed planning and to integrate the LA 21 and regular planning processes (Cabinet Bill 1994/95:230). However, just over 50 per cent of the municipalities had formally decided to join these two processes at the turn of the century, and half of the LA co-ordinators reported that there had been little or no practical integration by 1998. Municipal finance, budget and accounting processes are, by far, the municipal sectors least integrated in the LA 21 activities (Brundin and Eckerberg 1999).

There are doubts about the prospects of LA 21 as a vehicle for ecologically rational local governance. The Cabinet’s 1998 decision to provide SEK 50,000 to each of the 70 smallest municipalities (see Parliament Housing Committee 1998/99, p. 18) may not suffice to help economically hard-pressed local governments. As one close observer puts it: ‘It is clear that that the gap between pioneer and laggard municipalities is increasing.’ This implies that ‘those municipalities that have few staff and little resources to manage comprehensive LA 21 programmes’ will not live up to the original 1994 expectations of comprehensive sustainable development plans (Eckerberg 2001:35).

Between resource mobilisation and sustainable resource governance: a continuing local dilemma

Local governments are encountering three different logics in relation to resource management, all affecting the possibilities of establishing an ecologically rational system of governance. To mobilise resources, i.e., to increase the tax base and induce local growth, they see merit in going alone. To use available resources efficiently, there are strong incentives in favour of co-operation to gain economics of scale in, e.g., large infrastructure investments. To achieve resource sustainability, dependence on other local governments may be quite obvious – like the case of communities downstream from polluting industries – or less distinguishable,
like acidification caused by long range transports of air pollutants (Lundqvist 1998:95 f.).

The main feature of the decentralisation measures just described is that they have vested more legal and administrative competence in local governments for decisions that bind actors within the spatial unit of the municipality. The changes in planning and environmental legislation up to the Environmental Code of 1999 have this spatial implication. In particular, the powers inherent in the local governments’ planning monopoly are crucial. The Master Plans (översiktspplaner) are a rolling, more or less continuous exercise in which municipalities lay out visions and plans for the use of land, eco-services, and the built environment. Such exercises clearly invite local governments to work within the logic of resource mobilisation, i.e., to adopt an exclusively intramunicipal perspective to maximise the developmental potential and thus, hopefully, the attractiveness of the municipality. In fact, very few inter-municipal co-operative arrangements are found in planning (Lundqvist 1998:100).

It is indeed somewhat of a spatial irony that the Local Agenda 21 process has been organised along these traditional jurisdictional lines, despite the central government’s emphasis on ecological sustainability as the core of that process. The local government initiates the process within the borders of the municipality. Co-operation among municipalities to make action plans for common pool resources is at best an added bonus, not something set out as a precondition for the process.

Informal co-operation among environmental and planning professionals across municipal borders may be a way of addressing the spatial problem of ecosystem management in a decentralised system of government. But the extent to which ecological rationality prevails in local decision-making is then dependent on the political and administrative strength of the proponents of the precautionary principle. The reorganisation of local government taking place in the wake of the 1991 reform implies that both the political and the professional strength in municipal government may have become weaker with the diffusion of the environmental functions into several other, and structurally stronger, local administrations.

The developments in local government during the 1990s as a result of decentralisation and municipal reorganisation, and even
more as a result of the financial squeeze prevailing for most of the decade, seem to point in the direction of a continuous dilemma for ecological governance. Admittedly, the Regional Administrations have some possibilities to block ecologically questionable local actions and to initiate regional co-ordination of resource management. However, the dominant strategy of vesting authority in the hands of local governments provides few incentives and possibilities of a spatially rational system of ecological governance where decision-making capacity transcends administrative borders to follow ecosystem boundaries.

‘Working sideways’: local and regional governmental co-operation

Water catchments – from mutual monitoring to actual management?

If Sweden were to be divided politically and administratively on the basis of main water catchments, there would be 119 units of governance. The history of co-operation in water catchments dates back to the 1950s, when Swedish municipalities initiated and organised joint water quality management associations and boards. By 1993, there were over 50 catchment-wide associations in operation, varying in size from water management associations of the big lakes Vänern, Vättern, Mälaren, and the large rivers, e.g., Dalälven, and Göta älv, to water management committees in the small catchments in the Skåne region. Membership consists of municipal governments, local business, farming and forestry organisations, and others. The average size of membership was 25, varying from 52 in the water associations to 12 in the water committees. The catchment organisations do indeed transcend municipal and regional boundaries. When controlling for multiple drainage basin memberships, a 1988 study found that as many as 178 of the then 284 Swedish municipalities participated in organised co-operation on water quality management. At least one dozen were members of three such organisations. About half of the basin-wide organisations involved municipalities in at least two counties (Enell et al. 1988).

However, their authority and responsibilities do not correspond fully with the criteria for ecosystem management formulated earlier. The core activity is monitoring; the so-called
‘recipient control program’ involves the municipalities and stakeholder members in continuous, joint monitoring of water quality. The associations have only to a limited extent been involved in local resource planning. This holds both for setting up specific water planning documents and for active participation in the process of developing municipal master plans (översiktsplaner). It is worth noting that the 1977 Act regulating Water Associations (vattenförbund) explicitly aims at enabling joint municipal and stakeholder management of common water resources (Edenman 1990). Still, these water associations did not report any more extensive activity on water planning and resource management than other types of associations. They were only consulted, and did not play an active role in the municipal master planning process around 1990 (Gustafsson 1995). This pattern is further evidenced in an inventory made by the Swedish Environmental Protection Agency in late 1996. Half of the catchments are subject to no further joint activity than monitoring water quality. In terms of our previous criteria for ecosystem management, only three (3) per cent of the catchments reported having active cross-boundary municipal water planning including stakeholder participation (Norman 1997).

Why this pattern? Apart from the obvious lack of money and manpower, representatives of water catchment organisations point to the problem of credible commitment from local politicians, as well as to legislative and administrative hindrances (Gustafsson 1995). In fact, none of the municipal powers in land use and resource planning provided to local governments under the Planning and Building Act have been transferred from local governments to the catchment associations. They have thus not been nested firmly enough in the regular planning and management administration to play a significant role. Still, the principal view held by municipalities and regional administrations is that voluntary catchment co-operation would easily develop if local and regional levels were provided with more resources and better policy instruments (SOU 1997:99, p. 18).

Around the turn of the century, there was mounting domestic and international pressure to adopt a catchment perspective on water management. The 1997 proposals for a EU Water Directive explicitly built on this. Anticipating this Directive, the Swedish Government had already appointed a special commission on
water management. Its October 1997 report recommended that Sweden be divided into ten ‘Catchment Districts’. A special Catchment Authority would comprise two or three regional administrations and all local governments within the district area. Within the Catchment District, this Authority should (a) decide on collectively binding management plans to reach ambient water quality norms for catchments, (b) be solely responsible for environmental permit decisions under the Environmental Code, and (c) be responsible for monitoring and for liming of acidified waters. Within the District’s major catchments, local governments should consolidate permit decisions into one permit decision-making unit per catchment (SOU 1997:99, pp. 49 ff., 69 ff.).

While these recommendations were geared towards sustainable management, the commission also addressed the issue of autonomy. It thus suggested that binding plans and norms should be worked out in close co-operation among regional administrations, local governments, existing water catchment associations, and all relevant stakeholders. Farmers and local governments should be allowed to ‘swap’ management actions in order to establish the most cost-effective ways to reach the water quality norms for their sub-catchment. Subsidies, polluter fees and other means could be used to encourage this form of ecosystem management co-operation (SOU 1997:99, pp. 75 ff.). However, collectively binding decision-making capacity could be delegated from the Catchment Authority to such ‘local environmental management co-operatives’ only if they fulfil certain criteria for joint associations laid down in the Swedish Constitution (SOU 1997:155, p. 81 ff.).

Anticipating the entering into force of the EU Water Directive, the Swedish Government in early 2001 mandated the Environmental Code Committee to work out suggestions of how to adapt the Swedish Code to the Directive’s clauses on water action plans. The Cabinet also indicated that a special commissioner would be appointed to work out recommendations for the administration of the water catchment districts required under the EU Directive (Dir. 2001:25). Meanwhile, there has been substantive work done on water management scenarios within the Swedish Environmental Protection Agency. These scenarios range from very centralised action in particularly ‘troubled’
waters, over a ‘strong district’ model with popularly elected water district parliaments deciding on action plans, to a model of ‘local participation’, with an emphasis on new forms of co-operation, diffusion of information, and local stakeholder participation. The latter would include delegation of authority to existing water catchment associations (SEPA 2000a).

There are as yet (spring 2003) no concrete proposals to be finally acted upon by the Swedish Government. From the viewpoint of ecosystem management adopted here, a few comments are in order. First of all, most discussion seeks to incorporate a spatial ecosystem view – the water catchment – into the traditional administrative system. But regional boundaries rather than catchments determine the width of the Catchment Districts. There is a firm view on nestedness; ecologically determined organisations such as existing catchment associations and the proposed ‘environmental co-operative groups’ are to be bound by centrally and regionally determined water quality norms. Autonomy, i.e., ‘freedom to organise’ and to distribute costs and benefits among relevant stakeholders is so grudgingly recognised that it might detract from stakeholders’ already low willingness to participate in management activities that cost money (SOU 1997:155, p. 54).

Coastal zones – from water quality monitoring to ecosystem management?
If anything, the coastal zone outside the land area of a state is a common property resource. It is possible to detract individual resource units from that zone, but no one could claim total control of the stock. Water is running, and schools of fish and other species are moving. To achieve rational ecological governance, it would thus seem logical to develop a spatially integrated coastal zone management.

However, Swedish coastal zone management in the mid-1990s was more like a patchwork (see Engen 1996). The environmental decentralisation in the late 1980s among other things involved the so-called ‘recipient control programmes’. It was thus the boundaries of the municipalities that determined the surveillance and monitoring of water quality in coastal and marine areas. The 1987 planning legislation furthermore made local governments responsible for physical planning out to 12 nautical miles from the territorial base line. This process of decentralisation meant
that the commons of the Swedish coastline and marine environment was administratively divided into 15 regional and 85 municipal administrative enclosures of planning and resource management. At the same time, there was an ecological division into 55 ‘coastal water areas’, linked to the 119 major water catchments in Sweden (SOU 1997:99, p. 50).

In terms of spatially rational ecological governance, municipalities were given an order they could neither refuse nor deliver. No local government can fully control marine waters within their boundaries. What evolved of coastal zone management after 1990 reflected the narrow pattern of monitoring and measurement that prevailed in inland catchment areas. By 1993, the entire western coastline from the Norwegian border to the Strait between Sweden and Denmark, the coastal waters around Skåne and along the Baltic Sea coastline up through the Blekinge and Kalmar counties, was subject to inter-municipal co-operation in coastal water associations (see Gustafsson 1995). The most striking discrepancy from the spatially rational model of ecological governance outlined earlier is that the coastal water associations emerging in the 1990s were confined to running commonly financed monitoring stations along the coastline. Nowhere did there develop any co-ordinated coastal management crossing existing regional boundaries.

Why this spatial pattern? First of all, the initiative to set up co-operative coastal monitoring schemes was top-down, from the Environmental Units of the Regional Administrations. As arms of the state, these Administrations and Units have the authority to survey and co-ordinate actions on environmental and resource issues crossing municipal borders. However, municipal planners and officials were sceptical of ‘planning in water’. Co-operation across municipal borders seldom went beyond the mandatory consultation procedures prescribed by law; no municipal authority to decide on land use and resource planning was transferred to coastal water associations (Engen 1996). Thus, only one fjord area on the West Coast had co-ordinated planning and environmental control policies involving all the littoral municipalities in the mid-1990s, and this was furthermore the result of state economic support directed to that particularly ‘threatened’ marine environment.

The remedy to this situation may be coming from central
government. Following reports and recommendations of its Environmental Advisory Board (EAB), the Cabinet in December 1997 directed seven Regional Administrations to develop action programs for ‘Sustainable Development in Sweden’s Archipelagos’. The areas concerned are the Stockholm archipelago (with three Regional Administrations involved), the coastal areas of southern Östergötland and northern Kalmar regions, the archipelago of the Blekinge region, and the coastal areas of the new Västra Götaland region. The action programmes are to be worked out in co-operation among the Cabinet’s Environmental Advisory Board, the municipalities and interested stakeholders with the Regional Administrations as the central co-ordinating actors (Environmental Advisory Board 1998:5 f.).

The action programmes for the four coastal regions are to cover both environmental management and economic and social development. They are to rest on four pillars, namely (a) Sweden’s national environmental objectives (see below, pp. 64-9), (b) ‘vital’ environmental and resource interests as defined by earlier processes of national physical planning, (c) the Strategies for the Regional Environment (STRAMs) worked out by the Regional Administrations, and (d) the Local Agenda 21 documents worked out by the municipalities concerned. The objective is to establish coherent management programmes for the four coastal regions that are ‘environmentally satisfactory and compatible with the need for [sustainable] socio-economic development’ (Environmental Advisory Board 1998:6).

An EAB evaluation of the regional environment and resource management programmes worked out for the above-mentioned four archipelago areas came in 2000. The Board recommended that the municipalities in these areas should produce in-depth master plans for their coastal zones and marine waters by 2005. The Regional Administrations in these areas should very actively follow up municipal implementation and report to central government in both 2003 and 2005. For the remainder of Sweden’s coastal areas, concerned Regional Administrations and local governments should produce such master plans by 2009. Regional Administrations and relevant central authorities are to have special responsibilities for providing local governments with the necessary knowledge base. Furthermore, they are to suggest what resources and measures should be given priority in local
planning for sustainable coastal zone development (SOU 2000:67, pp. 37 ff.).

The Archipelago Management Programmes are still (spring 2003) at the planning stage. There are, however, aspects of sustainability that imply a development towards spatially rational ecological governance. The archipelagos are delineated as ecologically relevant planning areas. Several Regional Administrations are mandatorily linked in the formation and implementation process. They are to provide a firm basis of ecologically relevant knowledge to local planners. There are also recommendations for integration with the EU International Coastal Zone Management initiatives. With such a strong emphasis of coordination from above, what then about local and stakeholder autonomy? First of all, the explicit linking of environmental protection to sustainable resource use and socio-economic development of the regions points towards the kind of involvement from local stakeholders typical of ecosystem management. Second, the active interaction with the local population during the formation process is strongly emphasised as a necessary ingredient for successful implementation of coastal zone management (SOU 2000:67, p. 45).

Air quality co-operation – the land is the limit, not the sky

Air quality is both influenced diffusely over large areas, and locally affected by agglomerations of population, buildings, industries, and transportation. While the former implies a commons of vast dimensions, the latter indicates a more limited spatial perspective, such as metropolitan areas or main traffic arteries. And how should the relevant spatial unit be defined if the local problem is caused by mobile sources? Furthermore, global climate change problems imply that air quality management is not easily defined in terms of ‘natural’ spatial boundaries.

Actors may thus be tempted to define air quality problems along established boundaries. Indeed, Swedish co-operative efforts in air quality management are predominantly organised within the borders of the Regional Administrations. Just before the turn of the century, there were air quality associations in all except the northernmost of the 24 counties. Most of those associations were founded just before 1990, after initiatives from the Regional Administrations’ Environmental Units. The
statutes, organisation and activities of the associations are almost identical. They (1) initiate measurements and monitoring of air quality within the county borders; (2) provide support and assistance to investigations of the environmental and health effects of air pollution; (3) inform members and other interested parties about monitoring results and air quality developments within the county, and (4) pledge to ‘work for’ co-ordinated action to abate air pollution (see e.g., Kalmar, Kronoberg, and Östergötland Counties, 1997–99).

There are three membership categories, i.e., all the municipalities within the county, the main industrial polluters, and regional non-industrial organisations. Members pay an annual ‘service’ or ‘monitoring fee’ to finance measurement activities. Some of the administrative functions are carried out by the Regional Administrations’ Environmental Units. The actual measurements are contracted out to the Swedish Environmental Research Institute, (IVL, see www.ivl.se). There are a few cases of inter-regional co-operation on the basis of some air shed models. The six southernmost counties run co-ordinated air quality monitoring throughout that part of Sweden (Kronoberg County 1996). Most inter-regional co-operation occurs in metropolitan areas with substantial air pollution problems. The Stockholm project on air quality measurement involved six Stockholm area municipalities. The Municipal Association of the Gothenburg Region comprises Gothenburg City and ten surrounding municipalities in three counties.

The Swedish air quality associations are examples of how an external actor moves in to bring about spatial co-operation on a problem that the concerned actors – municipalities and polluters – may not even recognise they have in common. The main activity of the associations is limited to monitoring. Individual municipalities may hesitate to commit resources to joint air quality management since the possible gains may literally be gone with the wind. In areas dominated by mobile sources and differing meteorological conditions for individual local governments, it is furthermore quite difficult to define the common interest. We are thus justified in concluding that in the field of air quality and management, the land rather than the sky is the limit.
From monitoring to management; a small step for central government or a giant leap for local actors?

The planning powers enjoyed by Swedish local governments provide them with a spatial monopoly that becomes a formidable factor in hedging the focus and interests of local governments within the borders of the municipality. The description of inter-municipal environmental and natural resource-related activities in Sweden confirms this view. While local governments do acknowledge the necessity to co-operate on managing environmental and natural resources held in common, they do not seem overly enthusiastic to transfer some of their authority. There are few, if any, examples of inter-municipal, ecosystem-based management units having the power to plan for, and much less to decide and distribute the use of natural resources and eco-services common to two or more municipalities. The monitoring activities of water, air or coastal zone associations are thus not firmly nested within the traditional political and administrative structure. To provide for a spatially rational perspective would thus involve a giant leap for local governments in terms of restructuring power relations and organisational patterns.

At the same time, we have seen that central government, sometimes with pushing from the European Union, is taking some steps in this direction. The on-going design of co-ordinated coastal zone management institutions for the main archipelagos, and the proposed Water Districts and Authorities, are prime examples. The former seems directed towards ecosystem management in that it is to deal also with the social and economic claims and use of resources and eco-services. The latter are so far more exclusively geared toward the ecological sustainability of water resources, albeit on a catchment scale. Common to both is that the central government is trying to design, from above, management units that are spatially rational in an ecological sense, as well as nested within the traditional political and administrative chain of command. What remains to be seen is whether and to what extent these movements will lead to a spatial redistribution of power that reflects the natural scales of relevant ecosystems and if so, to what extent they will be combined with features that secure values of local autonomy.
‘Scaling up’ – centralisation to and within the national government

Implementation from above: local investments for an ‘ecologically sustainable society’

Accepting the leadership of the Swedish Social Democratic Party in March 1996, the then Minister of Finance Göran Persson proclaimed the achievement of an ‘ecologically sustainable society’ as a new, ‘noble mission’ for his party. Presenting the Cabinet Policy Platform as the new Prime Minister two weeks later, he envisioned Sweden as ‘an internationally driving force and a forerunner in the endeavours to create an ecologically sustainable development’ (Parliamentary Record, March 22, 1996).

Several programmes and measures were launched to implement this vision. At the core, however, was massive central government support to investment programmes for local sustainable development (Environment Minister Anna Lindh 1997; DESD 1997:2; Prime Minister Göran Persson 1997; SAP 1997). In January 1997, a Delegation for Ecologically Sustainable Development (DESD) was formed within the Cabinet, consisting of the Ministers of Environment, Agriculture, Taxation, Basic Education, and the Junior Minister of Labour. The Delegation’s first assignment was to ‘develop a platform for the Cabinet’s comprehensive policy for an ecologically sustainable society’ (Prime Minister Göran Persson, Parliamentary Record January 22, 1997).

The DESD proposal for A Sustainable Sweden came in March 1997. The proposed Sustainability Investment Programme included (1) one billion SEK to eco-cycle adjustment of built environments and infrastructure, (2) nine billion SEK to eco-cycle transformation of the Swedish energy system, and (3) six billion SEK to local sustainability investments by municipal governments (DESD 1997). In its April 1997 Economic Bill to the Parliament, the Cabinet proposed 12.6 billion SEK for the period 1998–2000 to local investment programmes (LIPs), and infrastructure and energy conversion projects. The bill was subsequently passed by the Parliament (Cabinet Bill 1996/97:150, pp. 87 ff.). In spring 1998 the Parliament decided to spend a further two billion SEK for the year 2001 (Cabinet Bill 1997/98:150, Spending Area 18, item E1).
The drive for centralised implementation was in clear evidence. The Cabinet – not any central agency – should set criteria for and make decisions on applications from local governments (DESD 1997). The DESD even specified the demands that the Cabinet should make on LIPs receiving support. It was not until amidst the decision-making process that the government issued the statute regulating the LIP application and grant process. The statute described in great detail what municipal applications should contain, but there were no explicit rules or criteria for how the Cabinet should go about determining which municipal LIPs would be worthy of state support (SFS 1998:23).

In fact, the granting process for the first programme year had begun already in the autumn of 1997. All except two of Sweden’s 288 municipalities sent in notifications of interest by mid-October. Within the Environment Ministry, a Preparatory Working Group consisting of 12 members together with the ministers in DESD selected 40 of these as particular municipalities for a dialogue on how to proceed with applications. 115 municipalities sent in full applications for state LIP grants. Very few of the applications were sent for consultation to expert central agencies. The Riksdag’s Housing Committee evaluation states that the process with its ‘unclear structures of decision-making within the Cabinet’s Office and the unclear administrative practice within the Environment Ministry’s Preparatory Working Group . . . raised doubts about the continuity, predictability and equal treatment of applicants’ (Parliament Housing Committee 1998/99:20 ff.).

During spring 1998, 42 municipalities were given a total of 2.3 billion SEK in state grants for their LIPs, with an average state subsidy rate of 30 per cent. The government’s view of the political centrality of the LIP grant programme is shown by the fact that whenever a grant decision was taken, one of the five Ministers in the Delegation for Ecologically Sustainable Development went to the municipality in question. There, they announced the granting decision at well-organised press conferences, particularly pointing to the number of jobs resulting from the local ‘green’ investment programme (see Environment Ministry Press Releases spring 1998).

What then about the implications for sustainability of the supported programmes? First of all, it is clear that the programme
did not adopt a spatially rational perspective; municipal bound-
aries were the criteria of 'sustainable' investments. The Swedish 
Nature Conservancy Association (SNF) stated that the supported 
LIPs were not directed towards more than three out of the 14 
serious environmental threats identified by the Swedish 
Environmental Protection Agency (Kågesson and Lidmark 1998, 
ch. 9). The Auditors of Parliament concluded that meaningful 
evaluations of environmental effects could only be made relative 
to such quantified objectives that existed before the establishment 
of Sweden’s National Environmental Objectives and subsequent 
targets and sub-goals. For the seven comparisons thus possible, 
the measures taken through LIPs granted in the first programme 
year were estimated to contribute between 0.029 and 3.6 per cent 
to the actual achievement of national objectives (Auditors of 

In terms of autonomy, municipal work on preparing the noti-
fication of interest and the final application was hard pressed by 
the narrow time limits set by central government. Many munici-
palities thus could not find time to incorporate new ideas that 
came up during the LIPs’ write up phase. Neither were the LIPs 
fully anchored within the different branches of local government. 
In particular, the local financing part, averaging 70 per cent, 
seems to have caused internal political problems for some local 
governments (Parliament Housing Committee 1998/99:30 ff.).

As shown earlier, the Swedish government in effect launched 
two programmes for sustainable development in the mid 1990s. 
The Agenda 21 process spanned all levels of government, but the local 
governments and the grassroots were given a most crucial 
role (Cabinet Bill 1993/94:111, p. 63). The programme for ‘A 
Sustainable Sweden’ was a central governmental initiative, launched amidst the build-up of the Local Agenda 21 processes, 
and in fact run by a specially designated Working Group within 
the Environmental Ministry that could bypass most of the tradi-
tional lines of Swedish public decision-making (see Lundqvist 
2001a). The three different investment programmes forming the 
 economic core of the programme would each in its own way have 
important consequences for the Swedish municipalities. Official 
statements contended that the LIPs would be ‘directly linked to 
the Local Agenda 21 process. This also means an established 
linkage from the local level to the central decision-making within
the Cabinet and the Parliament’ (SOU 1997:105, p. 11).

If the autonomy criterion for ecologically rational governance is met, this should mean that local investment plans supported by central government money are congruent with or compatible to the Local Agenda 21 action plans. However, evidence shows that citizen involvement in LIP preparation processes was lower and local business involvement much higher than their respective involvement rates in the Local Agenda 21 processes in general in the first LIP year (Brundin and Eckerberg 1999). One report concludes that the sheer size of the LIP grant programme and the economic pressure on poorer municipalities may together create preconditions that will change ‘the direction of their Local Agenda 21’ (Brundin and Eckerberg 1999).

The forms of the LIP process have changed somewhat since the first programme year. Still, it seems fair to say that when finished in 2004, this state-supported programme is a prime example of disguising centralised ‘implementation from above’ as a democratically anchored process of ecologically oriented governance (see Lundqvist 2001a).

Beyond the fence: international conventions for trans-boundary ecosystem management

Sweden is a contracting party to conventions aiming at joint management of trans-boundary common pool resources. Two of the most important ones cover the marine environments of sea areas adjacent to Sweden. The 1992 Convention on the Protection of the Marine Environment of the Baltic Sea Area is a revised and updated version of an earlier 1974 convention. Administered by the Baltic Marine Environment Protection Commission in Helsinki (HELCOM), the 1992 convention covers the Baltic Sea and the entrance to the Baltic Sea up through the Kattegat to the parallel of the Skaw in the Skagerrak (http://helcom.fi/). It thus overlaps somewhat with the 1992 Convention for the Protection of the North East Atlantic Marine Environment (OSPAR). The OSPAR convention combines the earlier 1972 Oslo Convention for the prevention of marine pollution by dumping from ships and aircraft and the 1974 Paris Convention for the prevention of marine pollution from land-based sources, and covers the North East Atlantic including Skagerrak and Kattegat (www.ospar.org/).
These two international conventions oblige each of the signatory states to implement the provisions for prevention of marine pollution from land-based sources and sea vessels within their territorial sea all the way to the base line. The Baltic convention also applies to a country’s internal waters, i.e., the landward side from the baseline to the coastal line as defined by each littoral state. In substantial management terms, it is the states that are responsible for implementing common decisions. The contracting states pledge to adopt the precautionary principle to avoid the introduction into the marine environment of substances and energy that may bring about hazards to human health, harm living resources and marine ecosystems. They agree that costs of pollution prevention, control and reduction measures are to be borne by the polluter. The countries set out to apply best available techniques and best environmental practice including, where appropriate, clean technology (www.ospar.org/). The Baltic Sea convention spells out that the states should use Best Environmental Practice for all sources and Best Available Technology for point sources. Both conventions oblige the member states to take relevant measures also on land without prejudice to their sovereignty to prevent marine pollution (http://helcom.fi/).

Special Commissions supervise the implementation of the Conventions and review the condition of the maritime areas and the effectiveness of the measures being adopted. They may also engage in developing further programmes and measures for the prevention of pollution and for the control of activities that may adversely affect the maritime area, including economic instruments. Each of the littoral states has one vote in the Commissions of the respective convention, and the Commissions’ decisions should be taken unanimously. A decision, but not a recommendation, becomes binding on member states that voted for it after 200 days, provided that three quarters of the member states have shown that they accept the decision (www.ospar.org/).

These two conventions provide examples of how spatial arrangements can be made to manage vast ecosystems. In a formal sense, Sweden and other contracting states oblige themselves to take jointly decided measures to protect the common marine resources of the Baltic and North Seas. At the same time, however, decision-making rules place final power in the hands of
sovereign member states. In the OSPAR case, a contracting state may vote against a decision in the Commission, and thus not be legally bound by it. On the other hand, participation in these marine environment conventions also carries political implications. By engaging in such conventions, states actually commit themselves to participate constructively in the governing of the commons of the high seas. As it turns out, the work in these conventions has been paralleled by ministerial and prime ministerial conferences, where obligations have been made to undertake measures more far-reaching than those stipulated in the conventions (see, e.g., SOU 1996:153, pp. 47 ff.).

‘Nested enterprises’ and compatible scales?

Ecological governance and the problem of fit; seventeenth-century fences are still crossing the commons

This chapter has dealt with the problem of spatially rational ecological governance, i.e., how to solve the problem of fit between naturally bounded eco-systems and man-made systems of government. The premise is that the solution could be provided through a system of interlinked jurisdictions proceeding from naturally distinguishable, but socio-economically and culturally meaningful ecosystems as the basic units. For such a system to become functional, three criteria should be fulfilled: (1) the resource regime must have clearly defined boundaries; (2) the resource users/dependants must have a recognised right to organise and participate at the relevant spatial scale, and (3) the complexity of society-environment relationships should be addressed through nested enterprises. The basic units of governance are successively linked with local, regional and national jurisdictions in order to solve problems of scale and achieve sustainable environmental and resource use and management.

Admittedly, there are problems with and conflicts among these principles. First of all, there are problems of defining ecologically proper boundaries. These are most pronounced for air quality management, but more easily dealt with for the management of water catchment areas. Coastal zones and marine environments are somewhere in between, open-ended but still possible to define in an ecologically and even socio-economically meaningful way. Second, there is potential conflict between autonomy, i.e., the
right to organise for the resource appropriators and dependants, and sustainability, i.e., the need for effective co-ordination of overall and long-term resource planning and use through inter-linked local, regional and national jurisdictions. Existing scales and units of government may prove a strong fence against transferring autonomy to new scales and units of governance.

The empirical evidence provided here corroborates this proposition. Although there are many examples of new strategies to solve the problem of fit between natural and societal scales, they do not yet fully live up to the three conditions of boundaries, recognition and nestedness. First of all, we have found that the strategy of scaling down is fundamentally one of decentralising to the traditional local unit of government, i.e., to the municipalities. There are few, if any, examples of power being delegated further down to users and dependants on ecosystem resources on a smaller scale. (It should, however, be noted that some limited experiments with local water management co-operation among farmers on a sub-catchment level have been carried out; see SOU 1997:155). With regard to the Local Agenda 21 process, it seems as if the original design of municipal autonomy and bottom-up linking of plans was disturbed, and even overrun, by the centrally initiated and managed programmes for local investments in sustainable development.

Secondly, the strategy of working sideways to establish inter-municipal co-operation around common ecosystems like water catchments has so far not involved any delegation of autonomy and authority to catchment associations to allow them to actually manage the resource. These associations are not yet firmly nested within the system of political and administrative governance. They have very little if any influence over the planning process that determines much of the land and resource use at the local level. Whether and to what extent the implementation of the EU Water Directive will involve a stronger role for these ecosystem-based associations is still (spring 2003) an open question. Air quality associations reveal a similar non-nested pattern. Since they have been initiated within and downwards from the Regional Administrations, their scale of operation does not seem adapted to geographically more relevant scales of air pollution.

Third, scaling up to achieve a co-ordinated response to the challenge of sustainable development has in one case meant
super-centralisation. The national government’s 1998–2004 grants to local investment programmes for sustainable development placed decisive powers at the Cabinet level. This is contrary to the traditional Swedish system of managing such programmes through central agencies that are constitutionally independent of the Ministries when deciding on individual cases of implementation. The autonomously developed Local Agendas did not become firmly integrated in the process. By making the municipalities the prime targets for support, the central government furthermore directed this huge effort to achieve ‘A Sustainable Sweden’ to traditional administrative rather than ecologically relevant natural scales. The international conventions in which Sweden participates to achieve sustainable development of adjacent marine environments are built on the states’ sovereignty to adopt or reject common management measures.

Traditional political and administrative scales and units thus make their presence felt throughout the land. Common pool resources and coherent ecosystems have yet to become accepted as legitimate spatial units of governance. Indeed, the boundaries of local governments and regional administrations existing at the threshold of the twenty-first century enclose and fence off the commons in much the same way as they did in the seventeenth, when the present borders of the Regional Administrations, now crucial actors in the Water District, Archipelago Management and Air Quality Monitoring schemes, were once drawn.

Straddling the fence; moves toward spatially rational ecological governance

‘È por ce nuove!’ Galilei is (falsely) said to have exclaimed when receiving his verdict from the inquisition. So is Sweden; there are moves to get over old fences to make man-made jurisdictional scales more compatible with ecologically rational governance for sustainable development. The most evident signs are the recent proposals for new systems of governance for water catchments and the environments of Sweden’s larger archipelagos. Water catchments are recognised as proper units for organising activities to achieve sustainable development. Given traditional identities in the archipelago areas, the delineations are most probably culturally and socio-economically meaningful enough to appeal to affected actors and interests.
‘Nested enterprises’?

Admittedly, there is still a lot of ground to cover to reach spatially rational ecological governance. The issue of autonomy is still clouded. There are yet (spring 2003) no concrete proposals to delegate authority and responsibility to ecosystem-linked actors for decision-making and management of resources within the ecosystem boundaries, but across political borders. Discussing in more vague terms of information, participation and consensus building, recent proposals seem intent on striking a balance between nestedness and co-ordination on the one hand, and user influence over management on the other. The archipelago proposal places the programme development and goal setting in the hands of Regional Administrations, while the central Environmental Advisory Board is to lay out how different local and regional actors and interests should be involved in the implementation of those action programmes (see SOU 2000:67). Different alternatives for stakeholder involvement in developing and implementing Water Catchment Action Plans have been suggested in scenarios worked out by the Swedish Environmental Protection Agency (see SEPA 2000a).

On balance, then, Sweden finds itself straddling old fences in efforts to negotiate a better spatial fit between natural and societal scales, i.e., to reach a spatially rational system of ecological governance.