

Chapter 12: Evaluating our institutions	2
Institutions	2
Law	3
The behavioural requirements	3
The direction, strength and duration of resource flows	4
Shaping force 2: The content and duration of information flows.....	4
Perception of institutional capacity	6
Perceptions of resource allocation institutions	6
Views about funds flows	6
The integrity of government allocation mechanisms.....	6
Expectations can distort allocation	7
Fairness and social justice problems exist.....	7
Resources are insufficient for implementation.....	8
Resources are not well used.....	8
Perceptions of the effectiveness of information flow	9
Data and intelligence are insufficient	9
Community access to information needs improvement.....	9
Information for decision making	10
Communication of policies is not effective	10
Transacting efficiency of government institutions	10
Principles are not well reflected in action.....	11
Policy gaps exist	11
Hierarchical structures inhibit effectiveness.....	11
Jurisdictional complexities add transaction costs	11
Conflicts and confusion inhibit performance	12
Too narrow a scope of decision making	12
Management complexity is costly	12
Responsibility is too easily avoided	13
Plans often lack quality.....	13
Community effort is wasted.....	14
A failure to forecast	14
Regulation is over-stretched	14
Institutional barriers to sustainability	14
The proliferation of participants	15

The welter of policies	16
The explosion of regulation	18
Summary: Our institutional preparedness	18
References.....	20

Chapter 12: Evaluating our institutions

In preceding chapters we have argued that:

- The number, range and diversity of issues involved in sustainability is enormous;
- The number, range and diversity of stakeholders and participants in decision-making is enormous;
- Interconnection between issues - and therefore interdependence between those who rely on these resources - is complex;
- Conceptually the categories of interventions is, however, relatively small. Markets, regulations, and the support of economic or information interventions, are all we can use to change the outcomes.
- Underpinning the small range of intervention-types are institutions that determine how information flows, how resources are allocated, and how beliefs are formed. These form the structure within which all elements interact in the social system.

Given these characteristics, there is no simple answer to the question: ‘Which technique will be most effective in furthering sustainable use of natural resources?’ Effectiveness rests not with the choice of instrument, but with the patterns of information flow and resource flow that underpin its application. These are all matters where the structures - or institutions - of society will have a marked impact on the outcomes that are achieved.

In the following chapter we will consider these structuring issues, firstly at a conceptual level, and then at a practical level. To do so, we will draw on the information gathered during the regional consultations we carried out for the Southern Catchment case study we described in Chapter 2.

Institutions

An institution is a structure that shapes relationships between the elements in a social system. It influences the flows of information and resources to and within the system to create the patterns of outcome from that system. Team ball sports provide a simple example of the effects of institutional shaping. The allocation of roles and positions, and the role of the umpire, interacts with the team communications, learning and capabilities (as well as the physical arena and the ball), to shape the dynamics of the game.

Institutions are made up of tangible and intangible elements. For example, the institution of marriage involves laws that shape economic relations between the parties (and their dependents) alongside civil and religious frameworks and beliefs. To term something as an institution is not to define its boundaries, but to declare its function of ordering the flows of information and resources in society.

Since resource use occurs throughout society, it is not surprising that there are many institutions that shape resource use. We list some social institutions and their tangible and non-tangible elements are outlined in Table 12.1.

Table 12.1: Institutional arrangements relevant to sustainability

Institutional arrangements	Tangible aspects	Intangible aspects
<i>Law</i>	Courts Lawyers Judges Police forces	Judicial culture Concepts of justice Decision-making through precedent
Politics	Parliaments Political parties 3 levels of government Commentators Elections	Political beliefs Social philosophies Alliances and arrangements Lobbying
Economics	Markets Businesses Analysts Interest groups Production resources	Capitalist beliefs Value Economic techniques Aspiration Trust in institutions
Information	Media Educational organisations Industry associations	Professional beliefs Decision methodologies
Knowledge	Scientific organisations Engineering organisations Professions	Scientific method Knowledge diffusion processes

Instruments are inter-dependent with institutions. New instruments will trigger change in the institutions that underpin them, whether as changes to tangible structures (like establishing a new market, or a new policing body) or intangibles (like changed skill sets of those who work with the new instrument). Since beliefs and knowledge are partially responses to experience, changes to institutions or instruments will eventually feed back into the intangible character of all institutions.

This is a two way street. A change to an institution will also lead to changes in the instruments that are applied. For example, new scientific knowledge about natural resource issues will feed over time into the arrangements for managing that resource (subject to transaction costs and filtration effects).

Institutions also interact. We have seen that markets, politics, and law interact with each other and with the state of knowledge and the available information in the ways in which resources are used and protected. Change in one institution in society will eventually lead to some other change in another institution. Equifinality is a fact of the social system, and therefore of institutional change.

The behavioural requirements

What does it take to reshape a society, and its pattern of interaction with the natural world? The underpinning requirement for instruments to be fully effective - regardless of whether they are market or regulatory in nature - is that they align with the institutions of society. Where this is the case it can be expected that the turbulence associated with transaction costs, filtration and delay will be minimized. Where there is a misalignment, this turbulence can be expected to play a far greater role in shaping the outcomes.

Institutional arrangements shape the two, interacting flows that lead to change in societal decision-making. The first is the pattern of resource flows, and the second is the flow of information.

The direction, strength and duration of resource flows

The institutional arrangements that allocate resources are central to choices made within society by organisations and by individuals. There are two aspects to this.

1. *The reward pattern.*

The expression “what gets rewarded is what gets done” encapsulates the basic mechanism through which rewards are linked to behaviour.

2. *The capacity to implement.*

It is not sufficient that good decisions be made. Decision-makers have to be able to give proper effect to them. A well-meaning decision maker can do harm through poor implementation, or an inability to access resources, or because of applying the wrong resources to the task.

The institutional arrangements that shape resource flows are the market, government (regulation and policy-making processes) and the justice system is part of this framework.

Shaping force 2: The content and duration of information flows

Information flows shape choice. The power of these flows is a function of their content, the “weight” and credibility of the message, and its continuity. A number of aspects to information flow relate to sustainability

1. *Signals of benefit/dis-benefit.*

If the available information suggests that resource-conserving behaviour will be rewarded then it will shape decisions towards that behaviour. Sustainability will be enhanced by patterns of signals that favour resource conservation, and delayed by signals that stress consumption as the key to personal satisfaction.

2. *Signals of feasibility.*

If a sustainability choice is presented as unfeasible, or there is no credible information about how to make the choice feasible (such as where and how to access supports) then the likelihood of decisions in this direction is reduced.

3. *Knowledge and decision ability.*

The decision-making abilities and approach of the resource user or manager will determine the information they can use, and the way that they process it. Education is needed to make it feasible for decision makers to use available information and to structure it in ways that support sustainability.

4. *Persuasion and motivation.*

Persuasive information comes in many forms, with differing degrees of effectiveness. The consistency of the message with self-interest, existing beliefs, and the credibility of the source, will determine its persuasive effectiveness. Credible information from credible sources that promotes “pro-sustainability” beliefs is needed to accelerate the adjustment to resource use efficiency and conservation.

5. *Data for decisions.*

It is not sufficient to have a desire to make the right decisions, nor even to have the analytical “tools” to do so. If reliable data are not available, the end result will be inability to make the right choices. Data about the economic and social impacts of unsustainable use, or about the state of natural resources, is needed in forms that are directly applicable to decisions when those decisions are being made.

6. *Transaction cost reducing information.*

Sustainability will be enhanced by reducing the transaction costs of conservation and increasing the costs of exploitation. Transaction costs reflect failures of information. This may be information about the full costs (externalities) of resource use, or information to make markets or regulation effective, or information to bring those with problems and those with solutions together.

7. *Time lag reducing information.*

Latency delays the effective response to environmental issues. It affects all parts of the HSS, from the initial capturing of information from and about the environment, through the processing and decision-making steps (which can involve complex negotiations with many participants), and eventual allocation of resources in response to decisions. Mechanisms to speed up these processes include better monitoring, improved communications, more effective education, and more efficient giving and receiving of instructions.

The range of institutions involved in these informational aspects of sustainability includes large, including:

- Science and engineering;
- Market economies;
- Law and politics;
- Education and information;
- Public communications and media; and
- Resource policy and governance, at all levels.

Are these institutions well aligned with the requirements of sustainability, and do they have the capacity to make instruments effective in shaping behaviour to the required patterns?

Perception of institutional capacity

During the community consultation outlined in Chapter 2 participants raised 184 issues of governance and institutional effectiveness that related to natural resource issues. We have grouped these into three categories:

- Resource allocation, considering how institutions are coping with distribution.
- Information transfer, from natural resource monitoring through to decision implementation; and
- Efficiency and complexity of governance, including transaction cost, delay and filtration. These issues are particularly focused on government, because it is to government that the community turns when seeking leadership in natural resource management.

The categorizations of issues are arbitrary, since many of the items cross categories. Comments are presented as impressions, though the expressions quoted are drawn from the stakeholders. These views are not intended to be statistically valid (even if this were meaningful given the nature of the enquiry). They span the array of political and social views that one would expect in a wide- ranging consultation. They provide a window into performance of the institutions we expect to drive social realignment towards sustainability.

Perceptions of resource allocation institutions

Views about funds flows

Economic considerations are always important in resource management. Private profit considerations, reflecting traditional resource use frameworks, are seen to drive much of the management process. Aspects of this issue included that:

- *The user pays principle is becoming more important. Payers expect more for their money.*
- *There is a general belief that “private” is better than public management.*

Economic issues are seen as pervasive, but not well understood. Basic resourcing is perceived as important:

- *Pricing for water seems to be set with regard to political and financial outcomes with little regard to environmental consequences.*
- *Legal liability issues are becoming more significant as an economic driver, and perhaps could be used better to aid natural resource outcomes.*
- *Funding drives policy, and practice, of agencies.*
- *The “squeaky wheel” gets the funding.*

The integrity of government allocation mechanisms

There is a frequently expressed sense that allocation is tied to factors other than strategy and policy. There is a sense that whilst community involvement is valued politically, it is not recognized financially.

- *Financial allocations for similar kinds of activities vary dramatically across regions or local governments or departments. It is hard to see how this is justified if the programs or projects are based in science or careful reasoning.*

- *The huge voluntary input is not always recognized or used. Some community input is lost or wasted. There is a need to better recognize and support community projects*
- *Monies only go to those who can write grants, not necessarily to the best projects. Grant writing is a specialized skill in its own right.*
- *A great deal of funds and resource is wasted in project administration, as well as in unsuccessful grant applications.*
- *Funding is allocated to specific projects, not to macro-level strategies.*
- *There is a need to be able to deliver financial support and benefits to industry and commerce, including works on private lands.*
- *Private enterprise must bid for grants on a competitive basis, public agencies do not seem to have to do so.*
- *Funding allocation does not seem to follow the stated priorities.*

Expectations can distort allocation

Expectations shape reactions to issues and to policy proposals. Some expectations (often embedded in the property institution) are barriers to sustainable resource management.

- *The use expectations of stakeholders exceed the capacity of natural resources, particularly as we intensify our use of resources (through increasing population density, more intensive land use, or technology).*
- *Landowners have expectations of a right to rezoning to maximize the value of their lands. Any policy which restricts rezoning potential to prevent more intense use is treated as a (compensable) reduction of existing rights.*
- *Non-owners have expectations of their right to access and use of community resources, sometimes beyond what is sustainable. Long-term use patterns become seen as a right which cannot be disturbed.*

Fairness and social justice problems exist

Resource allocation and use issues involve conflict between users, or between use and non-use. All of these are decisions about who wins and who loses. Questions of fairness are often not well specified, nor well handled. Three specifics were highlighted.

- *Issues of equity can be difficult to resolve. For example, how do you decide whether Sydney or Nowra or the farmers get first call on the water during a drought? How do you decide between the interests of one user group and another, when their uses conflict?*
- *The line between the concepts of “duty of care” and the rights of landowners is unclear. Different groups have different expectations of this.*
- *The moral dimension of decisions gets lost in technical and political debate e.g. Aboriginal rights in natural resources, or the interests of the less advantaged.*

Whilst state policy and common law rights suggest that Aboriginal interests should be considered in virtually any natural resource management decision, these interests are only infrequently considered, almost as an “add-on” to decisions.

- *Native title and land claim issues are unresolved.*

- *Heritage issues of both European and Aboriginal groups, particularly resolving Aboriginal culture issues, are not well considered.*

Resources are insufficient for implementation

Many instances were cited of decisions, where the resources required to implement were either not provided or misallocated. The failure to adequately resource is commonly highlighted as a failing of government.

- *No resources = no commitment. That is the fundamental test of policy.*
- *Policies are not supported by management programs or by resource allocation. Strategic intentions are not matched by funding. Much more money is needed. There is a constant lack of funding for implementation of plans.*
- *The long term funding for programs is always uncertain (constantly changing grant programs and priorities), preventing their effective implementation.*
- *Whilst funds are allocated for capital works for water quality, the maintenance requirements are not built in for ongoing funding. Maintenance is ignored financially and is therefore implemented intermittently and sometimes ineffectively as a result.*
- *There is not enough money to police the policies that are created. There is a lack of resources for policing generally.*
- *There are insufficient resources to monitor and control*

The failure to take into account implementation requirements is not confined to government budgets. An often cited link is between the financial situation of some landowners, and their capacity or motivation to act as custodians of ecological values.

- *There should be funds for those who act as custodians of nature, for example ensuring good water quality or protection of sensitive habitats.*
- *The cost of protection for the environment (ie fencing river banks and stock watering) falls heavily on rural landowners, and is not recognized or compensated. Many simply cannot afford the costs, both direct outgoings and the impact on their income production.*
- *An ageing farmer population sees subdivision as a way of exiting and achieving financial security. The value of their land as farms has diminished, while their value for subdivision has increased. There is no other way of ensuring their, and their families, future.*
- *Many of the older funding systems for on-farm works or extension have gone.*

Resources are not well used

A number of issues were raised about the decision-making for optimal use of resources.

- *Control systems to ensure value for money and achievement of outcomes, are only slowly developing. Monitoring (the lack of, and more efficient methods for) is a significant problem.*
- *There is a need to maximize the value from funding.*
- *The strategic intent of programs is not matched in the application of funds. We need better ways of creating this match*

Perceptions of the effectiveness of information flow

Information flows are not seen as effective in supporting the transition to sustainability. This is due to:

- *Under-investment in science and engineering to track changes in natural resource conditions;*
- *The many barriers to acceptance of information that emphasises the need to shift from a relatively comfortable status-quo;*
- *Confusion and inefficiency in the design and communication of messages to promote more responsible resource use; and*
- *A failure to recognize the fundamental importance of the communication task in public policy making and implementation.*

Such issues came through strongly.

Data and intelligence are insufficient

The feedstock of good decision is good information. There are concerns about the quality of available data.

- *Data (both scientific and market) is collected but it is often not clear for what purpose. There is insufficient integration or planning of intelligence gathering.*
- *Decisions are taken in isolation from each other. Agencies (and different levels of government) do not provide information to each other about their plans and programs.*
- *There is a lack of quality control on in-field assessments, such as site assessments. Assessment procedures need to be made more effective.*
- *Patterns of use and impact of uses need to be better understood (to determine use capacity).*

Community access to information needs improvement

The information available to the community often does not support implementation of policies.

- *There is no reporting on implementation of programs or policies, or the achievement of targets or outcomes for these.*
- *There can be misinformation about Local Environment Plans spread by those with a sectional interest. This distorts community understanding.*
- *State of Environment Reports are a potential useful mechanism, but generally are designed for bureaucratic rather than community purposes.*
- *The benefits of supporting the environment must be shown to the community to win their support.*
- *Frustration is common among those who support environmental values. They don't see clear results from their efforts.*
- *There is often public misperception of the state of the environment. For example, the film of water acts as a barrier to awareness of the problems beneath and there is a perception of coasts as an inexhaustible resource.*
- *There is a need to establish networks to ensure that information flow is effective.*

Information for decision making

There is much formal public consultation in natural resource management, but significant barriers to effective information flow between those creating strategies and the community.

- *More (effective) consultation is needed for environment plans or policy preparation.*
- *Consultation processes are selective in who gets consulted, (typically invitation based) and what they get consulted about (typically driven by the immediate interests of the decision maker). These result in selective input, which may not be representative*
- *There are numerous research studies which produce potentially useful information, but the results are not applied. This in part due to the failure to search out this information, partially a failure of studies to produce immediately applicable information, and partly due to a lack of strategic design of the research agenda.*
- *Knowledge is power, and it is not always shared. Decision makers maintain control and provide information selectively. Participants or stakeholders in decision processes have their own agendas. Inputs into decisions are filtered and selective.*
- *International treaties create expectations, but are not reflected in decision making. This is particularly so at the local government level, which is remote from these treaties.*

Communication of policies is not effective

Policies include laws (a reflection of policy). Policies should communicate to the people affected, and give them the information that they need. This is often not the case.

- *The assumption is that people read regulations and policies. This is not the type of reading which people will do. Many people who ought be aware of obligations or opportunities are not.*
- *Landowners/resource users need a “one stop shop” for policy information.*
- *Government policy is not clear – there are general statements but not implementation guidelines. Regional plans are often too vague to be readily applied at the local level.*
- *Local plans need to be definite and precise.*
- *Expressions used in policies are sometimes so vague that their specific meaning is not clear. The style and structure of policies inhibits their use.*
- *Responsibilities need to be clearly defined. Unless some person is held (measurably) accountable, implementation is not likely to occur.*

Transacting efficiency of government institutions

When looking at natural resource management reform, it is often to the government that people’s minds turn. Whilst the private market, and other institutions of society, are powerful in determining what happens with natural resources, government sets the policy within which these other institutions operate. It is also government that has the levers of regulation and taxation/subsidization that shapes the relationship between

society and the natural world. Concerns about the capacity of government instrumentalities to play their part in achieving appropriate policies and action were many.

Principles are not well reflected in action

Principles are embedded in policies (such as the precautionary principle) or understood from other sources (such as the need to ensure that costs of maintenance are budgeted with capital works) but action (particularly in contentious situations) does not well reflect principle.

- *The “everything is negotiable” approach by agencies (which are servants of the political system) inhibits achievement of environmental and other objectives.*
- *There is frequent failure to adhere to stated policies, often by failing to put in place implementation mechanisms and resources.*
- *There are (unofficial) different rules for different groups, and votes typically come before the environment.*
- *There is a weak commitment to environmental issues at the local government level. Lobby groups strongly influence local decisions.*

Policy gaps exist

Gaps in the network of policies were highlighted. Examples include:

- *Use rights and zoning is well developed on land, but poor for waterways. There is no strategy for keeping areas for specific uses.*
- *Population is a key driver but there is no state, regional or federal government population policy.*
- *There are no plans for provision and management of community lands.*
- *Strategic planning is lacking for the difficult problem of sustainable urban living.*
- *National (environment) emergency response strategies are not in place*

Hierarchical structures inhibit effectiveness

Many issues were raised concerning the federal/state/local hierarchy and its impact on efficient natural resource management. The coordination across these three levels frustrates effective action.

- *The link between different levels of planning instruments is unclear (i.e. regional plans and water plans).*
- *Local government either is not aware of, or considers itself not to be bound by international treaties.*

Jurisdictional complexities add transaction costs

An oft-cited challenge is to overcome the inefficiencies of a myriad of agencies, dealing with different parts of the systems concerned, responding to different issues, with their own political and managerial agendas.

- *There is a great range of entities with official responsibility and it is unclear who has actual responsibility. There is constant overlap and underlap of management. Things which everyone knows should happen don't, because everyone is negotiating about budgets and project accountability, instead of doing the job.*
- *The boundaries of state and local government responsibilities are unclear. One problem is who controls crown lands, and how local governments can ensure that*

crown lands are managed to the same standard that they want to see achieved with private lands.

- *Upstream Local Environment Plans and development controls impact downstream. Development decisions in one shire affect the neighbouring shire. There is insufficient coordination across agencies and councils that share the landscape.*
- *Federal ownership conflicts with its regulatory role.*

Conflicts and confusion inhibit performance

Jurisdictional complexities are compounded by political conflicts within the community or agencies.

- *There are too many bodies – too many authorities with different policies and priorities. Conflicting program objectives result in wasted effort.*
- *Bureaucracies are often engaged in struggles for control which get in the way of the objectives that are meant to be sought.*
- *Regulations can conflict (for example the requirement for blackberry control in riparian areas, with prohibition on chemical use in the same areas). The result is an impossible situation for the landowner .*
- *Too many groups and organisations. The whole system needs coordination.*
- *Conflicting factions result in unsatisfactory outcomes.*
- *The “whole of government” concept is still developing. The words are used but the practice is a long way off.*

Too narrow a scope of decision making

The range of issues considered in policy formulation may not be broad enough to meet the needs of society.

- *Development and growth issues are pivotal, but are not integrated in developing and implementing natural resource strategies.*
- *Federal agencies (such as Defence or federal National Parks) are not addressed through State planning and policy procedures.*
- *Ethnicity is an important variable that is inadequately dealt with.*
- *Education is an important consideration, but is usually treated as either an “add on” or as a soft option to avoid dealing with intractable problems.*

Management complexity is costly

The planning and management system is complex – this is reflected in the issues raised above. Many feel that the structure of the system needs reform to focus energy into initiatives that can work.

- *Planning instruments too often cut rivers and catchments with political boundaries.*
- *There are just too many regulations, too many processes and too many plans. Landowners need clarity and simplicity to be able to do their part. Local plans need to be definite and precise.*
- *Integrated approaches are needed. This is for plan development, creation of strategies, implementation, and consent systems.*

- *There is a lack of links between different management and analysis systems. Too many processes that do not seem to be working together, and lots of consultation and meetings that go over the same ground but go nowhere.*
- *There is a need for whole-of-government program. There is a need for integrated management planning across all levels of government and across different agencies and local government.*
- *There is a failure to manage crown lands.*

A picture emerges from the comments: the proliferation of under-resourced and partially responsible organizations, along with their confusing paraphernalia of plans, strategies, programs, regulations, memoranda-of-understanding and statements-of-joint-intent.

Responsibility is too easily avoided

Responsibilities, even when understood and embedded in policy, are avoided. This has a number of aspects.

- *There is a sense that if it is not law, why should you comply with policies? This applies at all levels of government as well as with community. So you end up with regulation being necessary, even if not always desirable.*
- *There is a common paradox in natural resource management that all problems belong to someone else. This results in blaming and bargaining rather than action to fix problems that are identified.*
- *Councils only see public lands as their problem and often overlook issues on private lands.*

Plans often lack quality

The quality of plan development is a major concern, involving many issues. These could be summarized as a perceived lack of integrity in planning, and the concern about “genuineness” of the commitment to implementation.

- *The sense is that there are no standards for the quality of plans and policies. The same kinds of mistake are repeated, with little apparent learning and improvement in the process.*
- *Particularly where plans are created through community processes (like Estuary Management Plans), the quality of management plans varies between committees. There is insufficient support and quality control.*
- *The initiation of policy and plan development is part of the problem. Environmentalists often strongly influence definition of the issues, rather than the issues being strategically defined from the start.*
- *There is a gap between plan content and what happens on the ground. There is a weak link between policy and action of agencies, and a gap between what is planned and what actually occurs on the ground. (This issue was raised frequently).*
- *There is no systematic performance measurement and implementation control. Regular implementation reviews are essential, as are measurable (and measured) outcomes. It is seen that the goalposts are moved to suit the perceived outcome, rather than goals being fixed.*

- *The content of plans seems to be driven more by politics and by particular issues, than by objective assessment of resource capacity and impacts on that capacity. The basis for plans is often unsound as a result.*
- *Decisions are made on the basis of history rather than principles.*
- *Plan preparation is compromised by political influences. Stakeholders lobby decisions. The minister can and does “interpret” legislation and policy to suit perceived political needs. Developers (and others) will push all limits to achieve what they want.*
- *Blanket solutions are often ineffective, as local conditions vary. Plans and programs need better ways of taking this variation into account.*

Community effort is wasted

It was often cited that community effort is frequently wasted through excessive but meaningless consultation, discouragement, and under-resourcing.

A failure to forecast

Time is a factor in the quality and effectiveness of decisions – both in the need to be proactive and the time required to have an impact.

- *There is a need to be proactive, not reactive. A forward thinking perspective seems to be lacking in most decision processes.*
- *Strategies change too quickly to have an effect. We need long-term strategies to have meaningful effects on long term issues like water quality, weeds (and other) issues. Shortening of review periods for programs exacerbates these problems.*
- *We do not have predictive indicators for emerging problems or issues. We are always reactive, not proactive.*

Regulation is over-stretched

Landowners often feel that regulation is being overused instead of seeking cooperation through incentives and education, as an “immediate but ineffective” response to complex issues.

- *All agree that the land must be respected, but this agreement is not always acknowledged (and indeed self interest can get in the way of this awareness).*
- *Landowners want advice, not controls, and they want to be respected as responsible landowners and resource managers.*
- *Public vs. private issues are complicated. Owners feel that they should be able to do what they want on their own lands. There is a sense of loss of self-management when rules are imposed, rather than agreed.*
- *It is necessary to raise community awareness of the responsibility of landowners to ensure sustainable practice.*
- *There should be less emphasis on education, and more on codes of practice.*

Institutional barriers to sustainability

Many of the barriers perceived by the community to more effective implementation of sustainability principles are secondary effects of institutions of society like the market economy, and political democracy. Concepts of ownership and freedom to exploit, or the right to advocate for self-interest, are drivers of democracy and capitalism. It

would be naïve to expect that they will be suspended even in the face of the challenges of sustainability. History has given ample illustration that change in institutions always lags changes in context.

However, not all of these institutional problems are so deeply rooted. A number reflect the process of change itself, highlighting the fact of transitional confusion that must be anticipated with any major realignment of resource use within a society.

Our traditional model of resource ownership and use was closely aligned with capitalism and the pursuit of productivity. Owners of resources, provided they did not interfere with other owners' interests, have traditionally been relatively free to exploit their holding. Social institutions like religious and political institutions supported these interests with some modification to meet the needs of social equity.

We are now in the process of changing traditional beliefs and institutions, challenging simple concepts of ownership and the "rightness" of exploitation. Challenges include: obligations of custodial responsibility on behalf of future generations, the need to recognize Aboriginal interests, and further inroads into simple ownership to reflect demands of equity and of interdependence.

This transitional state is a source of complexity and transaction costs. It is reflected in

- The proliferation of participants in transactions;
- A welter of policies; and
- An explosion of legislation.

This kind of chaotic stage, though costly, is not abnormal in the introduction of new concepts into society. Ideas mature under the influence of learning in use and further research. As they mature they become more effective in delivering benefits. The early stage (pre-paradigmatic) is when there is a period of confusion and accelerated learning about how to make the ideas effective in practice. This is the stage where we are with sustainability concepts.

The more pervasive the changes that the ideas generate, the more one can anticipate complexity in the adjustment. The more that implementation of the new ideas flies in the face of established power structures, the greater the degree of resistance that can be expected, and therefore the greater the transitional disturbance. The introduction of machines with the industrial revolution, democratic choice with the French revolution, or the introduction of modern technology like the automobile, were all characterized by chaotic and sometimes violent periods of change.

The proliferation of participants

implementation of policy, but it does at least signal the level of political attention and political will to address the subject of the policy.

Following is an incomplete listing of policies that (in theory) apply to the Southern Catchment region:

- NSW Weirs Policy
- NSW State Rivers and Estuaries Policy
- State Wetlands Policy
- Estuaries Policy
- Sand and Gravel Extraction Policy
- State Soils policy
- State Trees policy
- State Groundwater Policy
- Stream Management Policy
- Riparian Zone policy
- Riverine Plains policy
- Wild and Scenic rivers
- Environmental Flow policy
- River Recreation policy
- Water Quality policy
- Flood Prone Land Policy
- Policy and Guidelines Aquatic Habitat management and Fish Conservation
- Policy for Dredging and Reclamation
- Policy for Marine and Estuarine Waterfront development
- Policy for Bridges, Roads, Causeways, Culverts and similar structures
- Policy on Introduced and Translocated fish
- Habitat Rehabilitation and Environmental Compensation Policy
- Australia's Oceans policy
- State Environment Planning Policies
 - SEPP 14 – Coastal wetlands
 - SEPP 19 – Urban Bushland
 - SEPP 32 – Littoral Rainforest
 - SEPP 33 – Hazardous and offensive industry
 - SEPP 35 – Maintenance dredging
 - SEPP 37 - Operation of mines and extractive industries
- NSW Coastal Policy

It is not possible to easily determine which policies are “live”, as policies are rarely revoked – they simply lapse into disuse with no formal signal that they are no longer relevant. Some policies are no longer policy, and the uncertainty contributes to transaction costs and distrust of the institutions of government.

The explosion of regulation

We have already discussed the unwieldy number of regulations identified by us in our review of the national natural resource management regulatory system (Martin and Verbeek 2000). Bear in mind that our review did not take into account:

- International conventions;
- Implementation regulations;
- Local government regulations;
- Administrative rulings, policies, strategies and programs.

In spite of these omissions, we identified over 250 legal instruments, including state and commonwealth laws. Around 75 of these apply directly to the resource management issues identified in the Southern Catchment case study. With 8 local governments operating in the region, there will be additional local regulations that in theory require policing and administration. There are probably around 100 laws that relate to the resource management issues raised during consultation.

In 1994 a NSW taskforce was set up to review planning policies and regulations (Conacher and Conacher 2001). The review was critical of the maze of State environmental policies. The situation remains that the range of policies and plans guiding development and planning is bewildering. The regulatory structure is a barrier to efficient implementation.

Summary: Our institutional preparedness

There are significant efforts to deal with unsustainable natural resource use:

- Catchment Management Boards or Authorities or Committees have been established nationally to set the natural resource management agenda for governments.
- Local government groupings like Regional Organisations of Councils are emerging as vehicles for coordination and shared strategies by local government.
- Specialist committees address issues such as vegetation management, water and other pervasive natural resource challenges, and are improving community engagement.
- There are attempts being made to better integrate administration.

These are reforms within the existing paradigm. Our assessment is that the magnitude of the challenge is beyond the current paradigm.

- ***Information flow: Fundamental information is not being well incorporated in decisions. Information deficiencies in decision making include:***
 - The state of the natural resources, and, in particular, the future state under different management conditions;
 - Scientific information about how natural resources can be conserved or used sustainably;

- reliable reviews about the effect and effectiveness of the strategies being implemented, to provide a basis for adaptive change and for accountability for outcomes;
- Policies guiding the creation of instruments or strategies to ensure that these policies are reflected in action in the field;
- Environmental economic informatio, to ensure that cost-benefit assessments are as objective as possible.
- Communication to the public and those affected by instruments tends to be unclear and confusing, and often fails to provide actionable guidance.
- ***Resource flow: The flow of resources often fails to follow sustainable patterns even when political decisions are made to support sustainability.***
 - Resources to ensure implementation of policy and instruments are often inadequate;
 - Resource allocations tend to follow power structures, leading to “negotiated” outcomes and harm to the interests of the less powerful and frequently overriding policies of sustainability or equity;
 - Allocation systems tend to be political rather than principles based.
- ***Decision-making structures: These tend to elevate non-environmental interests and embed high transaction costs for environment protection:***
 - Jurisdictional complexities and confusing hierarchies are pervasive. Budgets and instruments are fragmented. Implementation requires complex negotiation. Accountability is confused.
 - Planning and governance instruments tend to be fragmented, confusing and difficult to access.
 - As a result decision-making is characterized by deal-doing, negotiation and conflict. Basic principles of sustainability and good management tend to be lost through the processes of resolution.

What comes through strongly is that the sustainability problem is not (just) about the choice of instruments. There are fundamental institutional failures. Unless these are addressed, instruments cannot have the substantial effect that is essential to move to sustainable natural resource use.

The challenge of institutional reform can be posed as three questions:

- Can we create a system that allocates resources with sufficient weight to the preservation of the environment and the interests of future generations?
- Is there a way of reshaping information flows so that sustainability-related considerations get the attention that is needed to reshape decisions?
- Can we substantially reduce the transaction costs at all levels of environmental protection?

It is to the solving of this challenge that we address our minds in the final chapter of this book.

References

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