

# **TRANSACTIONS COSTS AND FISHERIES SELF-GOVERNANCE IN NEW ZEALAND**

Ralph E. Townsend\*  
Chief Economist, Ministry of Fisheries  
PO Box 1020  
ASB House  
101-103 The Terrace  
Wellington 6140, New Zealand

30 May 2008

\* The author is solely responsible for the views and analysis in this paper. The views and analysis are not reflective of any official position of the New Zealand Ministry of Fisheries.

## **ABSTRACT**

Within the context of its quota management system, New Zealand has generated an interesting perspective on fisheries self-governance. Despite a period of active encouragement by government for industry to assume greater self-governance responsibilities, New Zealand found that overall industry interest in more active self-governance was tepid. Why industry was generally disinterested in greater self-management authority remains an interesting question for self-governance more broadly.

This paper argues that the benefits of greater self-governance were probably less than the significant transactions costs that the industry faced to organize itself. On the benefit side, the scope for improvement on government management was smaller in New

Zealand than elsewhere, because government reform had already reduced the costs of fisheries administration. Administration of the QMS was devolved to FishServe. Research was administered under a transparent system of competitive delivery by contractors.

The transactions costs confronting industry were substantial for several reasons. First, the unanimous agreement required for self-governance incurred very high transactions costs. Second, government policy struggled to define exactly what elements of governance might be devolved and what elements government must retain. Absent well-specified expectations from government, the investments in self-governance are unusually risky. Third, there may have been unrealistic expectations from government that self-governance could solve not only the pool fisheries externalities, but also the downstream externalities such as sea bird impacts. This expectation may have implied very high transactions costs to negotiate with third parties, such as environmental groups.

This experience has direct policy implications for governments interested in devolved fisheries governance. Non-unanimous governance rules are important to reduce the costs of negotiations. A clear definition of the bounds of self-governance can clarify the possible benefits and reduce the risks and uncertainty. Finally, government must understand that ITQs create incentives to maximise the value of the resource, but they do not create incentives to solve downstream externalities.

JEL no. Q22.

Contact author: Ralph Townsend

Email: *Ralph.Townsend@fish.govt.nz*

## **Transactions Costs and Fisheries Self-governance in New Zealand.**

### **1. Background**

Among the world's nations, New Zealand has made the most comprehensive commitment to individual transferable quotas (ITQs) under its quota management system (QMS). All major fisheries are under the QMS. A recurring issue for the QMS has been the appropriate role for the quota rights owners in management. In several instances, New Zealand delegated important aspects of management to industry or to sectors within the industry. For a period, the government position was clearly supportive of additional self-governance initiatives. But the fishing industry response was unenthusiastic. Because government policy subsequent to 2002 shifted towards government-led fisheries plans, the issues raised here have no immediate relevance for present policy directions. But the disinterest of the New Zealand industry in greater self-governance has great relevance to the wider academic and policy debates over the appropriate industry role in governance of ITQ fisheries. The present analysis argues that the high transactions costs of the self-governance model in New Zealand, coupled with relatively modest potential benefits, probably explain the industry disinterest. Understanding these transactions costs is important, because the legal framework for governance established by government largely determines those transactions costs.

## **2. Improving the Economic Benefits of ITQs through Self-governance**

The economic benefits of ITQs are widely appreciated. ITQs are a straightforward application of cap-and-trade regulation to fisheries. The unresolved issue for economics is whether ITQs can or should evolve into more comprehensive property rights. The perspective on this issue hinges largely on whether one takes a static or dynamic view of fisheries management problems. ITQs clearly provide a highly efficient regulatory solution to the static problem of efficient harvest of a fixed quota (usually a government-set “total allowable catch”, or TAC). But from a dynamic perspective, fisheries management is much more complicated than simply how to harvest a TAC. Optimal management requires complicated decisions about to manage a dynamic age-structured population through time and space (Beverton and Holt, 1957). This optimal management requires management of both uncertainty about population dynamics and market uncertainty. These are not the type of risks that government manage especially well, yet a narrow ITQ conceptualisation leaves all these dimensions to government and to the forces of government failure. From a dynamic perspective, the question is whether ITQs provide the basis for transferring some part of this complicated management problem from government to industry.

The economics literature has made some limited recognition that ITQs do not address all avenues for rent dissipation, even in a static analysis. The incentives to race to catch fish when they are easy to catch, in order to reduce the harvest costs were first analysed by Bradley (1970) and later by Boyce (1992). Costello and Deacon (2007) generalised this point to argue that when fish stocks are economically heterogeneous,

then all attributes of the property right must be defined to provide incentives for completely efficient harvest.

Costello and Deacon (2008) close with the observation that “Our analysis suggests that improvements may come from making more precise delineations of harvest rights or from coordinating effort to avoid wasteful competition and duplication.” Their conclusion spans two widely divergent approaches to solving the residual avenues for rent dissipation: regulatory definition of ever-finer cap-and-trade rights or creation of vehicles for collective execution of property rights. While the mathematical economics of defining more detailed cap-and-trade ITQ rights are straight-forward, the practical issues of implementation rapidly become prohibitive. Specifying ITQs that are specific to area, sex, age, and season (the most obvious dimensions) may be mathematically easy, but the administrative problems of defining, measuring, recording, and enforcing a multitude of sub-species ITQs rapidly become overwhelming. So the alternative vehicle, looking for a collective governance approach to exploitation of the shared rights to the resource, seems much more practical. But this alternative has received almost no attention from economists.

But to appreciate the really significant opportunities for self-governance to increase the value of fisheries, the conceptualisation of fisheries management must be dynamic and managing the costs of government must be seen as part of the fisheries management problem. With this broader conceptualisation, there are broad opportunities for self-governance to improve economic performance.

ITQ right holders receive all future benefits of harvests (assuming rights are permanent, as they are in New Zealand). The self-interest of these rights holders is to

maximize the present value of the stream of benefits from harvests, which is identical to the social interest (setting aside for the moment the issue of third-party environmental externalities from fishing). This reflects the general advantage of private ownership of productive assets: owners have a self-interest in making decisions that maximize the social benefits from those assets.

Private owners who self-govern might improve on government management in a number of ways. First, private owners could devise rules to manage the various avenues of rent dissipation that are identified by Costello and Deacon (2007). Second, private decision-making can solve many issues of implementation and enforcement more efficiently than government. The industry better understands how regulations affect operations and the private incentives that are created by such regulations. The industry may be able to detect violations more easily and may have sanctioning options that are not available to the government. Third, a number of efficiencies in administration and in research may be available to the industry. Canada's experience with private dockside monitoring has shown that routine administrative tasks can often be performed at substantially lower cost by the private sector. Conducting research on research vessels ("fishery-independent platforms"), the historic approach of government scientists, may be much more expensive than generating the same information concurrently with fishing activities. Fourth, owners can incorporate information from markets, such as changes in prices and costs, into the decision-making process. Optimal management depends not only upon biological considerations, but also upon economic considerations. Markets are dynamic; prices vary. Catch level should be adjusted over time to maximize the net present value of landings. To maximize the value of landings, management rules that

affect factors such as roe content, fat content, or size should consider the effect on product value. Industry is much better positioned to incorporate these economic factors into decisions than government.

The management of fisheries is a dynamic problem. The task of determining an optimal time-path of harvests and stock sizes is seriously complicated by the inherent environmental fluctuations and the limited availability of information. When property rights are complete, a resource owner has appropriate incentives to manage this complicated resource. Management is fundamentally about risk management, an economic issue. Risk management involves assessing the value of alternative uncertain distributions of possible outcomes. It requires strategic assessment of the benefits of acquiring information through research to reduce uncertainty against the costs of that information.

While there are good reasons to expect private owners to improve on management in a number of areas, government will retain a major role in fisheries governance. The issue becomes how to delineate the issues where the private sector takes responsibility and areas where government retains responsibility. This delineation must consider at least two factors. First, what are the transactions costs of private versus public provision of management services. Second, for what decisions do private property rights create incentives to maximise social value from the resource and for what decisions to private rights fail to align public and private incentives.

In at least one important area, enforcement and compliance, government has much lower transactions costs because it has access to police powers and criminal sanctions. Most Western legal frameworks prohibit delegation of police powers to

private parties. While civil remedies can be used as sanctions in some instances, civil remedies typically cannot be punitive. For example, government can address illegal poaching of fish stocks by criminal sanctions. Property owners can only recover the damages of a specific detected violation of the owner's rights. Criminal sanctions can and do exceed the damage incurred because they are intended to have a deterrence effect. At a minimum, self-governance agreements might well contract with government agencies for enforcement services or seek formal rules that can be enforced by police powers.

Economic analysis of fisheries has focussed on the "pool externality" (Haveman 1973) that is created because the parties with access to the pool have an incentive to race to capture as much of the pool as possible. The externalities are reciprocally imposed by each user on all other users. By allocating the pool among users under an ITQ, the incentives to race to capture the pool is ended. Moreover, the set of competitive users are transformed into a set of collective owners. The incentive for each owner is to maximise the value of the pool, so the incentives are now aligned.

But fisheries also create "downstream externalities". Harvest may cause incidental mortality of species that are valuable for non-extractive reasons to society, such as marine mammals, birds, and turtles. Harvest methods may disrupt ecosystems by damaging reefs or benthic communities. These downstream externalities on third parties not resolved by ITQs nor is a collective interest among harvesters created to solve these externalities. Management of these downstream externalities will remain an issue that may require government regulation. The economic questions of how best to manage these downstream externalities, which must involve balancing the potential advantages of



reducing market failure against the costs imposed by government failure, are no different and no easier for fisheries than for other economic sectors.

None of the foregoing analysis is new. While economic analysis has not emphasized the possibility of self-governance as an extension of the ITQ right, the possibility has certainly not been ignored. Scott's (1955) seminal article identifies the need to unify decision making into a "sole owner" as the core of the solution to fisheries management. And while much of economic analysis implicitly makes the government that sole owner, Scott (1988, 1993) has repeatedly argued for including collective decision-making in toolbox of fisheries management. Analyses of government failure in the fisheries management context are relatively few, but again the issue has certainly been raised (*e.g.*, Edwards 1994). The distinction between the pool externality of harvesting and the downstream externality of environmental impacts is so obvious that it could hardly be expected to appear in published research.

But economics can certainly be criticised for failing to explore carefully the question of how to design institutional arrangements that will empower these rights holders to make the collective decisions that maximise the value of their right. While Scott (1955, 1988, 1993) has made the case for collective governance, economics has been almost completely silent on the question of the internal decision-making structure of such an institution. Scott (1955, 1988, 1993) tends to lump together such widely divergent institutions as cooperatives, corporations, and government agencies as potentially appropriate "sole owners". This implies that how collective governance is organised is largely unimportant.

The present analysis of why self-governance faltered in New Zealand is intended to argue that the internal governance of self-management institutions is a crucial economic question if the potential economic value of marine fisheries resources is to be realised.

### **3. Fisheries Self-governance in New Zealand**

Because of the comprehensive adoption of ITQs by New Zealand, there is a large academic literature describing and appraising the QMS. Hersoug (2002) is the single most comprehensive such work, and his generally positive assessment of the QMS reflects the consensus assessment. Hersoug assesses not simply the narrow affects of the QMS upon stocks, harvests, and economic performance, but also how the QMS has functioned within the broader context of environmental, political, and social demands. Hersoug (2002, pp. 169-192) provides an overview of fisheries co-management in New Zealand. His assessment is that greater self-governance in New Zealand seems promising from a narrow view of improving commercial utilisation but faces serious obstacles in a multi-stakeholder environment. Hersoug (2002, p. 192) concludes his analysis of self-governance with the observation that:

“...New Zealand’s experiments with QOAs [quota-owner associations] should be followed closely. Maybe they can give some indications to solutions for other nations, where administrative innovations have been conspicuously absent for years.”

The experience with two fisheries self-governance institutions in New Zealand has largely framed the debate over the direction of fisheries self-governance there: Commercial Fisheries Services (almost universally known as “FishServe”) and Challenger Scallop Enhancement Company (“Challenger”).

The introduction of the QMS was part of a much broader market-oriented reform of New Zealand economic institutions. Both the fisheries legislation and other government reforms, as well as the general political climate, contributed to the drive to make fisheries management more efficient through private provision of services. The research functions of the Ministry of Fisheries were transferred to a Crown research institute, the National Institute for Water and Atmosphere Research Limited (NIWA) in 1992. Research has since been tendered competitively. Beginning in 1994, cost recovery fees were levied on industry to pay for a share of the research, compliance, and administrative costs of the Ministry. One goal of cost recovery was to shift the cost of fisheries management onto industry in a way that would create incentives for industry to find and implement more cost-effective delivery of services on its own. The crayfish industry, in particular, does enter the contestable bidding to deliver research. But real devolution of research services has not occurred. While contestability may constrain costs of services delivered by NIWA, that effect may be small in light of NIWA 80% share of winning tenders.

But for administration of the day-to-day accounting functions for the QMS, devolution is a reality (Harte 2008). FishServe is an industry-owned service bureau that began in 2001 to provide complete record-keeping services for licensing, permanent

quota share transactions, annual catch entitlement transactions (the annual landings rights derived from the quota share, called “ACE”), landings against the ACE, and deemed value payments for landings that exceed ACE. FishServe collects and remits to government any fees due to government under these transactions. The relationship between the Ministry and FishServe is actually a complicated combination of devolved provision of some services and contracted provision of others (especially for compliance-related functions that cannot legally be devolved.)

It seems almost certain that no other fisheries management agency in the world has devolved administrative functions to the degree represented by FishServe. That system has functioned to the satisfaction of both government and industry since 2001. The general assessment has been that FishServe has indeed been more efficient in delivery of services than when services were delivered by the Ministry (Harte 2008). However, it is important to note that the process of devolving services required about five years and a large investment of planning by both government and industry. While FishServe may have emerged as an exemplar of fisheries self-administration, the high transactions costs of getting there must be noted.

Challenger Scallop Enhancement Company (“Challenger”) is the second example of well-developed fisheries self-governance. Beginning in 1994, Challenger has undertaken comprehensive self-management (Arbuckle and Drummond 2000; Mincher 2008). Challenger seeds juvenile scallops, closes newly seeded areas to allow growth, conducts stock assessments and research, sets an annual quota within a nominal maximum quota established by the Ministry, and monitors biotoxins and seafood safety. Challenger has negotiated agreements with recreational harvesters and with oyster dredge

vessels to manage conflicts over use. A significant self-imposed fee on landings, which has ranged from 17% to 20%, finances this management activity.

In the 1990s, there were several other industry groups that assumed some level of self-management. The Bluff Oyster Management Company self-managed a program of voluntary reductions in harvests (called “shelving ACE”) when stock conditions were depressed by disease. The crayfish industry became engaged in bidding for delivery of research services for its industry. Some of the Crayfish Management Advisory Committees (CRAMACs) took more active roles, such as the CRA2 Rock Lobster Company’s program to shelf ACE to rebuild stocks (Yandle 2008). The Orange Roughy Company ran a self-managed program of allocating fishing to sub-areas within quota management areas to prevent overfishing of sub-stocks (Clement *et al.*, 2008). But none of these management companies approached Challenger in the scope of their activities. Most of these initiatives would be more fairly labelled as co-management than devolved self-governance.

By 2000, it was becoming clear that self-governance was attracting only limited uptake from industry. At about this time, the Ministry began to consider whether a formal framework for self-governance should be established and what form that framework might take. The Ministry presented its conceptualisation of self-governance in its draft “Fisheries Plan Framework” (Ministry of Fisheries 2002.) While that document was never implemented into policy, it is important to the current analysis because it is the clearest articulation of what the Ministry expected of self-management. As we will argue below, self-governance under that conceptualisation would involve high transactions costs.

The draft framework envisioned replacing the existent *ad hoc* process of self-governance with a codified set of standards and expectations. While not reflected explicitly in the document, one might speculate that the Ministry seemed to understand that reducing the uncertainty of the process was an important step in reducing the costs of self-governance. The draft framework envisioned that industry would caucus and devise a comprehensive proposal for its self-governance activities. The Ministry would provide technical support and advice, but would not engage in negotiation at the plan development stage. Once a plan was developed, it would be submitted to the Minister of Fisheries for approval (MFish 2002, pp. 26-28).

The draft was ambiguous about what would be required of fishery plans or what standards government would apply to their evaluation. The draft indicated in some places that a plan might address only a few, narrowly defined, fisheries management issues, such as area closures (MFish 2002, p. 15). But the overall tone of the draft strongly implied that the Ministry was more interested in plans that negotiated all aspects of management with all other interested groups, including environmentalists, recreational users, and Maori customary users (MFish 2002, p. 9-10).

The 2002 draft fisheries plan framework was overtaken by a wider government debate over whether self-governance was appropriate at all. The result of that debate was a change in policy direction, with Ministry-led fish plans as the core of the new policy direction instead of industry-led fish plans. As a consequence of that policy direction, the present question of why self-governance failed to attract greater industry enthusiasm is irrelevant to current New Zealand fisheries management. But this

experience does provide important insights for the broader question of how effective self-governance might be structured elsewhere.

#### **4. The Costs and Benefits of Self-governance in New Zealand**

Economists familiar with the often-perverse record of government regulation might expect that any industry would jump at the opportunity to accept any management authority that government offered to delegate. But careful examination suggests that the benefits of self-governance in New Zealand may have been limited and the transactions costs of organizing self-governance high under existent rules and expectations.

##### **A. Limited benefits**

Because government had already addressed some of the inefficiencies of government regulation, the benefits that might accrue to greater industry self-governance were lower in New Zealand than in countries with more burdensome regulatory costs. Administrative functions had been broadly devolved to FishServe and contestability was in place for research delivery. Cost recovery had resulted in a transparent accounting for the costs of the Ministry, which made it easier for industry to lobby against inefficiencies. The tepid response by industry to the self-governance initiative may have reflected a calculation that the benefits to be achieved were modest.

## **B. High internal transactions costs of decision-making**

The transactions costs of implementing self-governance offset must be less than the benefits derived in order to warrant industry investment in self-governance. To self-govern, QMS rights holders must self-organize and then bargain with government. Both steps involve significant transactions costs, which can block the realisation of benefits that are theoretically available. The idea that transactions costs are a significant barrier to self-organisation is well-rooted in economics. Coase (1960) argued that transactions costs limit the ability of private agents to bargain welfare-improving contracts. Using the specific case of fisheries, Cheung (1970) argued that the absence of property rights raises the transactions costs of negotiating contracts for efficient use of resources.

The draft fisheries plan framework was largely silent about decision-making within the industry. Implicitly, the proposal took the position that internal governance by industry was not the concern of government. At one point (MFish 2002, p. 26), the draft framework did suggest “democratic principles for making decisions”. But lacking any details, the pre-existing requirement that the industry agree unanimously is implicitly continued. A requirement for unanimous agreement creates large obstacles for joint decision-making even in small groups. Being a holdout in such negotiations is often a dominant strategy. In large groups, unanimity is simply impossible to achieve. The draft framework seemed completely unaware of the very high transactions costs of unanimous consent.

Even if a group of rights owners reach an agreement on aspects of self-governance, there remains the problem of enforcing the agreement. A group of QMS



rights holders could sign a civil agreement that includes provisions that specify how breaking the terms of the agreement will be addressed. The draft framework (MFish 2002, p. 27) clearly expected that industry must arrange for all participants to voluntarily sign binding self-enforcement penalties. But even if the participants would voluntarily agree to be subject to contractual penalties, such contractual penalties face serious limitations. The legal framework of New Zealand, like the legal framework of most Western governments, precludes the exercise of police powers by private entities. Enforcement provisions cannot be punitive; penalties must bear some relation to the costs incurred by failure to obey the terms of a contract. In the fisheries self-governance context, this is problematic for two reasons. First, non-compliance may be difficult to detect. If the only remedy is recovery of damages from a detected violation, then the incentives to comply are weak. The violator, who must pay only for the limited damages of specific detected violations, retains the benefits of all non-detected violations. Second, the costs of non-compliance can be very difficult to quantify. For example, consider an industry that agrees to immediately leave an area when a particular threatened species is encountered. By agreeing to these terms, the industry may be able to avoid much more onerous regulation in the long term. But what is the damage to other rights holders when someone violates this agreement? They are not damaged in any direct sense. Rather, their long-term ability to self-manage is eroded.

The success of Challenger may have given the Ministry unrealistic expectations about the prospects for internal industry negotiations over self-governance. The draft framework, not unexpectedly, refers to the Challenger experience in several places to indicate what the Ministry expects of the process. Challenger, with thirty-five members,

is among the largest self-governance arrangement in the world operating under unanimous consent rules. Challenger emerged under very special circumstances. The industry was closed due to previous over-fishing. The technology for seeding scallops to spur recovery was available, but government had insisted that industry fund its own program. Challenger has operated a system of seeding, closures, and harvesting that is tantamount to extensive aquaculture. These favourable conditions might perhaps arise in a few other shellfish industries; they are almost inconceivable in finfish fisheries. In retrospect, Challenger was perhaps a misleading model of the prospects for industry self-governance. Among 32 cases of self-governance presented in Townsend *et al.* (2008), only one case of voluntary self-organisation had more participants than Challenger. That virtually all the cases there involved a very small number of players, rarely above 10 to 12, provides clear evidence that self-governance for large groups is extremely unlikely.

### **C. Uncertainty over bounds of self-governance**

The process of dealing with government involves large transactions costs. Government is a relatively unpredictable partner in negotiations, and this unpredictability contributes to transactions costs. The process of trying to codify a framework for self-governance would itself suggest that government did indeed want to reduce uncertainty in the process. But to create a more predictable framework, government must be prepared to set limits on its own future decisions. Governments that have wielded significant power are typically reluctant to yield that power, and that proved to be the case in the draft fish plan framework.

Rather than codifying how government would utilise its powers, the draft fisheries plan framework seemed only to codify that government would continue to exercise the full scope of authority available under the Fisheries Act. The industry-led fisheries plans were to be simply advisory to the formal government regulatory process. The draft sent ambiguous signals about how firmly the government would be bound by fisheries plans that were accepted. For example, the draft indicated that future decisions by the Minister “must take account” of fisheries plans (MFish 2002, p. 10). The draft also states “It is expected that the Minister would not unilaterally amend a plan. To do so would amount to disenfranchising the proponents from ‘owning’ the plan” (MFish 2002, p. 37). The draft recognized that plans would be more resilient if contingencies for changes in circumstances were anticipated (MFish 2002, p. 15). This might imply that government would defer to risk-management strategies (such as the delegation of discretion to industry) included in a plan. But the draft also expected that the Minister would retain the sole authority to evaluate a plan and to terminate the plan if the Minister were unhappy with implementation (MFish 2002, p. 18). While recognizing the disincentives inherent in unilateral decisions by the Minister, the framework nonetheless reserved the right for unilateral action.

Arguably, the 2002 draft fisheries plan framework would have ceded less authority to industry than was available under the previous *ad hoc* implementation of self-governance. Previously, the Ministry had signed binding agreements with FishServe (New Zealand and Commercial Fisheries Services Limited 2001) and Challenger (“Memorandum of Understanding”, New Zealand Ministry of Fisheries and Challenger

Stock Enhancement Company Limited, 1997). In contrast, the new fisheries plans were advisory, rather than contractual.

The draft probably intended to communicate that the Minister could be relied upon not to act capriciously and that the industry could rely on past practise on that point. The government has used a “confidence building” approach in its past approach to self-governance contracts with entities such as FishServe and Challenger. Initial contracts were limited in scope with rigorous performance standards. As the government gained confidence in the ability of industry to implement specific management measures, greater flexibility has been accorded. The draft suggested in several places that the initial fisheries plans might be limited in scope and then evolve over time into more comprehensive systems (MFish 2002, pp. 20, 39, 64).

In defining how the Minister would be bound by an approved fisheries plan, the draft framework confronted the fundamental question about how self-governance related to the property rights of the QMS rights owners. If self-governance were part of a strategy to extend those rights, then the rights would logically be accorded protection from arbitrary government action analogous to the protections enjoyed by other rights. The draft framework, in emphasising the primacy of government regulatory authority, was clearly a regulatory response rather than a property-rights response.

#### **D. Confusion over the fishery externalities and environmental externalities**

The draft framework did not seem to appreciate the distinction between the pool externality faced by the collective owners and the downstream externalities imposed on

third parties. In its identification of the challenges of fisheries management that remain, the draft framework emphasized the need to resolve conflicts between harvesters and other stakeholders (MFish 2002, p. 9-11). The draft framework suggested that the QMS has resolved the most important fisheries management issues: “By world standards New Zealand’s fisheries are well-managed. The Quota Management System and the environmental standards set by the Fisheries Act mean that it is possible to ensure that valuable and vulnerable species can be harvested at sustainable levels” (MFish 2002, p. 9). Steps by industry that might increase the landed value of the resource or that would reduce management costs were largely ignored. Industry initiatives to increase the value of the harvest are, at best, ancillary to purposes of plans (MFish 200, pp. 23, 43).

In contrast, the draft framework emphasizes the importance of negotiating with other stakeholders in plan development: “In particular, the process will need to involve all those people who have an interest in the fishery...” (MFish 2002, p. 26). The framework anticipates that the most important issue for fisheries plans will be the resolution of environmental conflicts. Maori issues are also identified for possible resolution under fisheries plans.

This broad expectation that industry will negotiate with third parties for resolution of downstream externalities would have created insurmountable transactions costs in most fisheries. At a basic level, with whom should industry bargain in respect to these downstream externalities? What group, other than government, can claim the right to represent society broadly on issues such as at-risk species interactions? (Given the reluctance of the Ministry to cede greater authority to industry or to specify internal governance structures for self-governance, the Ministry seemed remarkably willing to

designate stakeholder representation for other interests [MFish 2002, p. 32]: “MFish will endeavour to provide information on which stakeholders the proponents should contact.”) But even if some interest group were designated to represent the collective interest, that interest group has no incentive to minimize the transactions costs of negotiations. Rather, such interest groups are likely to withhold their agreement in order to push the entire fisheries management process back into the traditional regulatory environment.

The purpose of self-governance is to devolve those decisions where the exercise of private decision-making will increase the value that society realises from a resource. For fisheries, the private incentives for the rights holders are to increase the present value of the commercial value of resource rents. Those private incentives of the rights holders do not extend to the impacts on third parties. The draft fisheries plan framework proposed that self-governance should address exactly the issues that it is less suited to solving.

## **5. Policies to Promote Self-governance**

This above analysis points in obvious policy directions for a government that wants to promote greater industry self-governance in fisheries. The requirement for unanimous consent and the unspecified process for government approval impose exceptionally high transactions costs. To expand the opportunities for self-management, both sources of transactions costs must be addressed. Specifying low transactions cost rules for self-governance is an important evolutionary step towards clearer rights for QMS owners.

The path to lower internal transactions costs is relatively clear: non-unanimous decision rules. ITQ rights holders are joint owners of a set of resource rights. The benefits derived from the resource are, by definition, in proportion to the ITQ shares held holding. Joint ownership of economic assets is not unusual; most productive assets in modern economies are jointly owned by a large number of shareholders. Governance structures that require unanimous agreement to manage jointly owned economic resources are clearly not the norm; one-share, one-vote rules under corporate governance are the norm. Given the striking correspondence between shared ITQ rights and shared stockholder rights, the obvious collective decision-making rule for ITQ fisheries would be one-share/one-vote rules in proportion to the QMS share (*cf.* Townsend, McColl, and Young 2005). Adopting corporate governance has the additional advantage of incorporating the accumulated body of law that governs corporate institutions. For example, the question of minority rights has been addressed in the context of corporate governance, and that existing legal doctrine would be available to minorities in a fisheries governance corporation.

Even if one-share/one-vote rules are politically infeasible, other modifications of voting rules may still significantly improve upon the unanimous agreement rules. Two examples are super-majority rules (*e.g.*, two-thirds approval) or majority voting with requirements for majority approval by specified sub-groups, such as quota owners in different sub-areas. Any non-unanimous rule will substantially reduce the pay-off to the holdout strategy that dominates under unanimous agreement rules structures. Note, however, that majority voting among shareholders (*i.e.*, democratic one-person/one-vote rules) would create undesirable incentives for QMS rights holders to divide their quota

shares among multiple nominal owners under their control, such as family members or employees. In general, corporate (one-share/one-vote) rules provide lower transactions of making economic decisions than democratic (one-person/one-vote) rules (Townsend 1997).

An alternative approach, used by Canada in particular, has been to raise the cost of non-cooperation. The Canadian government has provided industry groups with two tools to encourage cooperation within the designated industry group (Blewett 2002, Appendix D). First, the government has required that contracts for enforcement and monitoring be obtained through designated industry groups. For example, in the geoduck fishery, divers must obtain mandatory logbooks from the industry association (James 2008). In the sablefish industry, individuals must sign monitoring agreements with the industry association. Second, the government has “use of fish” provisions that allocate some amount of the annual harvest to the industry association to fund activities such as research.<sup>1</sup> In the halibut industry, ten percent of the quota was allocated to the industry association. The association re-allocates that quota to the individual quota holders when dues and fees are paid. The sablefish association also received a quota allocation that generates income for the association to cover the cost of research charters (Sporer 2008). There are 55 licenses for geoduck; 48 for sablefish; and 435 for halibut (Jones 2003). These are notably larger than groups elsewhere that organized under unanimous agreement rules. Modest steps by government to promote non-unanimous self-governance have made a large difference in the ability of industries to overcome free-rider obstacles.

---

<sup>1</sup> Note that the ability of the Canadian government to authorise “use of fish” agreements was ended under the Larocque decision (Jean-Victor Larocque v. Minister of Fisheries and Oceans [2006 FCA 237]).



By clearly defining the scope for self-governance and the process for government approval, government can substantially reduce industry transactions costs. When government clearly defines which activities may be devolved and under what standards, industry can reduce its internal costs to develop a self-governance proposal. For the industry to bargain an internal agreement, it must know the parameters of permissible self-governance. Uncertainty is a major contributor to transactions costs, and clarifying the rules reduces that uncertainty. As the uncertainty increases about what activities can be devolved, the costs of bargaining increase because the negotiations must cover more contingencies. Increased uncertainty also reduces the expected gains from private negotiations. The increase in transactions costs and reductions in expected benefits will decrease the industry's willingness to undertake private bargaining.

The expectations for resolution of third-party externalities under self-governance must be realistic. Self-governance under fisheries plans could be expected to improve the management of some environmental interactions. In the special case when two fishery sectors each have rights and interact through by-catches or direct gear interaction, their rights create a joint interest in solving the externality. A Coasean bargain between the two sectors is possible. For example, Challenger negotiated an agreement with oyster dredge harvesters over dredging on common grounds (Arbuckle and Drummond 2000). Where failure to act risks higher cost regulatory or legislative response by government, an industry does have some incentives to address third-party externalities through self-governance. But the incentive is almost certainly not efficient: the incentive is to reduce the probability of government action, not to solve the externality.

## **6. Postscript: Economic Analysis and Fisheries Self-governance**

Economists have been guilty of failing to look beyond ITQs. An extremely careful reading of the fisheries economics literature would be required to discover that ITQs do not solve all dimensions of maximizing economic returns from the resource. The economics literature does contain recurrent suggestions that ITQs create different incentives for the rights holders, and that these better incentives might somehow be incorporated in regulatory decision-making. But almost completely absent is any analysis of: (a) what shape those institutions might take, and (b) why those institutions have not arisen spontaneously. To address these issues, economics must draw on the institutional analysis of property rights, transactions costs, and government failure. Notwithstanding our Smithian institutional roots and despite the Nobel prizes for Hayek, Coase, Buchanan and North, institutional analysis is simply not fashionable in economics. This disdain for institutional analysis is not shared by our colleagues in political science, anthropology, and sociology nor by elected officials. For fisheries management, the decision by economists to sit out this debate encourages continued wastage of the world's increasingly limited and valuable fisheries resources.

## **7. References**

Arbuckle, M. and K. Drummond. 2000. "Evolution of Self-governance within a Harvesting System Governed by Individual Transferable Quota," in R. Shotton (ed.), *Use of Property Rights in Fisheries Management*, FAO, Rome, Tech Paper

404/2, pp 370-382.

Beverton, R. J. H., and S. J. Holt. 1957. *On the Dynamics of Exploited Fish Populations*.  
Fishery Investigations Series II Volume XIX. London: Ministry of Agriculture,  
Fisheries and Food.

Blewett, E. 2002. "Status Report on Co-Managed Fisheries," prepared for BC Seafood  
Alliance ([www.bcseafoodalliance.com/BCSA/BCSA\\_BLEWETT.html](http://www.bcseafoodalliance.com/BCSA/BCSA_BLEWETT.html)).

Boyce, J. 1992. "Individual Transferable Quotas and Production Externalities in a  
Fishery." *Natural Resource Modelling* 6 (4): 385-408.

Bradley, P. G. 1970. "Some Seasonal Models of the Fishing Industry." In A. D. Scott  
(ed.) *Economics of Fisheries: A Symposium*. Vancouver: University of British  
Columbia, Institute of Animal Resource Ecology.

Cheung, S. N. S. 1970. "The Structure of a Contract and the Theory of a Non-exclusive  
Resource," *Journal of Law and Economics*, 13, 49-70.

Clement, G., R. Wells, and C. M. Gallagher. 2008. "Industry Management within the  
New Zealand Quota Management System: The Orange Roughy Management  
Company." In Townsend *et al.* (2008), pp. 277-290.

Coase, R. H. 1960. "The Problem of Social Cost," *Journal of Law and Economics*, 3, 1-44.

Costello, C., and R. Deacon. 2007. "The Efficiency Gains from *Fully* Delineating Rights in an ITQ Fishery." *Marine Resource Economics* 22: 347-361.

Edwards, S. F. 1994. "Ownership of Renewable Ocean Resources." *Marine Resource Economics* 9: 253-273

Harte, M. 2008. "Assessing the Road towards Self-governance in New Zealand's Commercial Fisheries." In Townsend *et al.* (2008), pp. 323-334.

Haveman, R. H. 1973. "Common Property, Congestion, and Environmental Pollution," *Quarterly Journal of Economics*, 87, 278-287.

Hersoug, B. 2002. *Unfinished Business: New Zealand's Experience with Rights-based Fisheries Management*, Eburon, Delft, Netherlands.

James, M. 2008. "Co-operative Management of the Geoduck and Horse-clam Fishery in British Columbia." In Townsend *et al.* (2008), pp. 397-406.

Jones, L. with M. Bixby. 2003. *Managing Fish: Ten Case Studies from Canada's Pacific Coast*, Fraser Institute, Vancouver.

- Mincher, R 2008. "New Zealand's Challenger Scallop Enhancement Company: Reseeding to Self-governance." In Townsend et al. (2008), pp. 307-322.
- New Zealand and Commercial Fisheries Services Limited. 2001. "Registry Services Delivery Agreement."
- New Zealand Ministry of Fisheries ("MFish") 2002. "Fisheries Plan Framework: Draft Final, 2 Sep 2002."
- New Zealand Ministry of Fisheries and the Challenger Scallop Enhancement Company Limited. 1997. "Memorandum of Understanding."
- Scott, A. D. 1955. "The Fishery: The Objectives of Sole Ownership." *Journal of Political Economy* 63: 116-124.
- Scott, A. D. 1988. "Development of Property in the Fishery." *Marine Resource Economics* 5: 289-311.
- Scott, A. D. 1993. "Obstacles to Fishery Self-government." *Marine Resource Economics* 8: 187-199.
- Sporer, C. 2008. "Co-management of Canada's Pacific Sablefish Fishery." In Townsend

*et al.* (2008), pp. 407-414.

Townsend, R. E. 1997. "Corporate Management of Fisheries," in J. Boreman, B. Nakashima, J. Wilson, and R. Kendall (eds.), *Northwest Atlantic Groundfish: Management Alternatives for Sustainable Fisheries*, American Fisheries Society, Bethesda, MD, USA, pp 195-202.

Townsend, R. E., R. Shotton, and H. Uchida (eds.). 2008. *Case Studies in Fisheries Self-governance*. FAO Fisheries Technical Paper 504. Rome. 451 pp.

Townsend, R.E., J. McColl, and M. D. Young. 2006. "Design Principles for Individual Transferable Quotas," *Marine Policy*, 30, 131-141.

Yandle, T. 2008. "Rock Lobster Management in New Zealand: The Development of Devolved Governance." In Townsend *et al.* (2008), pp. 291-306.