

3. Putting Principles into Practice – Examples of Natural Resource Economies That Incorporate Social and Environmental Goals

Systemic Problems Require Structural Fixes

As commodity systems produce an undifferentiated raw material stream, producers compete with one another to produce the greatest volume for the least cost. Competition on these narrow grounds leads commodity systems toward ever higher production levels and ever lower prices. This focus on high production and low costs puts pressure on the ecosystems, families, and communities of commodity producing regions.

Commodity producers are not naïve about these cycles. Living within them day after day, they understand quite clearly the nature of the traps they are caught in — traps that are the sum of individually rational decision-making based on the "rules of the game." But, as any farmer, sawmill owner, or fisherman can tell you, seeing the traps is not enough to avoid them. Such problems cannot be solved at the level of individual producers. Problems arising out of collective behavior will defeat the solutions available to individuals.

A few isolated producers opting out of the efficiency race cannot break the overproduction cycle. In fact as long as most producers increase their productive capacity, anyone who doesn't do so quickly loses customers and loses sales. Harvesters can't afford to incur costs to stay within the sustainable yield of the resource if their competitors invest less in stewardship and offer the same product for a lower price.

Acting as individuals, the only viable option for producers to escape the traps of a commodity economy is to leave the system altogether and focus on a product that can be marketed outside of the structure of that commodity system. This can be accomplished by programs that preserve the history and identity of the product. From wines and cheeses of specific European regions, to high quality lamb delivered directly to restaurants in New York City, to farmers markets and community supported agriculture, there are many examples of producers who have created — or re-created — alternatives to conventional commodities. These examples are very important. They connect people back to the raw materials of consumption, and provide vibrant examples of what healthy food, lumber, and fiber systems look like. By linking consumers directly with the producers of basic raw materials, such initiatives preserve some of the information that is lost in the process of commodification.

While farmers' markets and sheep-milk cheeses deserve all of the attention they receive, we also need to understand other options available for transforming commodity systems. We need to look for solutions that are effective at a larger scale and that are applicable to those raw materials, such as soybeans or paper pulp, that are not well suited to specialty niche markets.

Commodity systems currently dominate world agriculture, fishing and forestry. They affect millions of people and much of the Earth's surface. For the foreseeable future, Iowa will grow more food than can be eaten locally, while New York and Chicago will always need to import food. Landlocked populations will desire fish. Coffee, tea, and cocoa won't be local crops for much of the world's people. The escape of individual producers from these poorly functioning systems — as important as it is — is unlikely to alleviate the pressures that commodities are

placing on ecosystems and communities around the world. When a few producers move off into a niche market, they leave the dominant system, with all of its pressures on resources, ecosystems, and communities in place behind them.

For this reason, the following chapter explores how raw materials can be produced in large amounts and traded around the world with rules and incentives that incorporate goals for the long-term sustainability of the resource, ecosystem, and local communities. This would be a new kind of natural resource economy, something in between the niche markets for specialty wines or handcrafted wood products and the industrial monocultures focused solely on low-cost high-volume extraction of materials from the earth.

As far as we can tell, such natural resource economies do not exist anywhere, yet. But across commodities, all over the world, people are experimenting with changes to the structure of commodity systems in order to balance productivity with other goals. Each of these experiments gives us a window into possibilities. By understanding the successes and the vulnerabilities of these experiments, we begin to understand the packages of agreements, policies, monitoring techniques, and regulations that together would characterize a productive, efficient natural resource economy integrated into the ecology and communities of its region.

Following are examples of some of the most promising cases we know about. These are commodity systems that have undergone structural changes — changes in rules, incentives, or penalties — and that have attempted to balance productive capacity with environmental and social goals. The examples are from all over the world, from fisheries, agriculture, and forestry. Some of the changes were accomplished by collective agreement of producers, some were accomplished by demand from consumers, and some were created by the action of governments. But each of these stories also shares with the others common threads.

In each example, people found the will and the power to change "the rules of the game." They reshaped the system they live or work within so that it could respond to goals broader than high production and low costs. Whether it is balancing the harvest rate with lobster reproduction rate, or paying the costs of good stewardship and fair incomes, these programs demonstrate that commodity systems can respond to social and ecological limits.

But, in all of these stories — even the most successful — the restructured commodity system still exists within and responds to a larger economic system. And so, at the same time that they give us hope for a new kind of commodity system, these stories remind us that change is required not just at the level of particular commodity but also in the structures and assumptions of the global economy.

Escaping Commodity Traps Using Collective Agreements

Each of the commodity economy traps arises when the system is structured so that individually rational producer decisions add up to collective behavior that erodes valued environmental or social resources. If producers come together and agree on new rules, they can restructure a system so that individually rational choices are also collectively sustainable. The following examples from fishing and agriculture give a sense of what is possible in the arena of collective agreement on harvest and production levels, and what potential pitfalls should be anticipated.

Collective Agreements Limiting Harvesting Capacity – Australian Western Rock Lobster

As we discussed in Chapter Two, commodity systems can quite easily and unintentionally grow to the point where the collective harvest rate is higher than the sustainable yield of the resource. Forest and fishery systems are especially vulnerable to this trap; often the resource limit is the first limit these systems encounter as their productive capacity grows.

In our discussion of the over-harvesting trap in Chapter Two (Figure 2-11) we saw how — without additional system structure — the capacity of the system to harvest a resource tends to ignore imbalances between the harvest rate and the resource regeneration rate.

One of the most successful examples of a collective agreement to balance harvesting with the sustainable yield of the resource is in the Australian fishery for western rock lobster. There, an early response to signs of decline in the fishery resulted in agreements to limit the intensity of harvest.

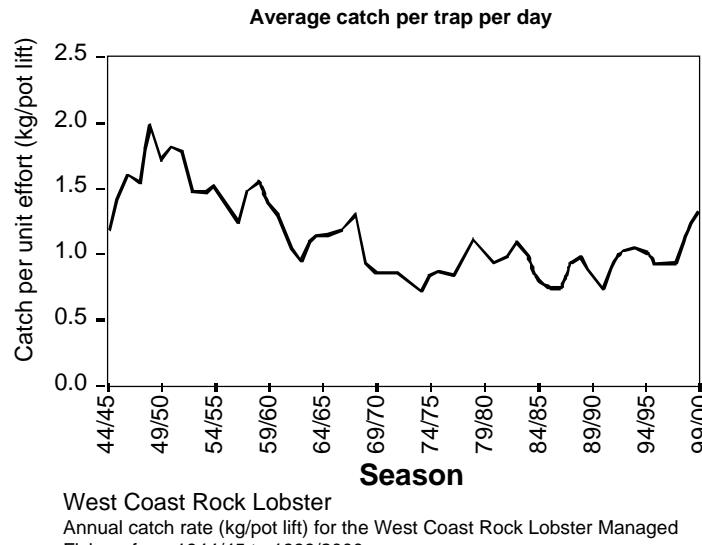
Fishermen, lobster processors, and the government came together in the early 1960s in response to the fact that the average weight of catch per day per lobster pot had been steadily declining since the 1950s (Figure 3-1). The average weight of individual lobsters caught was also declining and more pots were coming up empty. Tracking these indicators gave stakeholders in the rock lobster system information about the sustainability of the harvest. The willingness of stakeholders to respond to this kind of information made way for the changes that have allowed the fishery — headed for depletion in 1960 — to be harvested at a steady rate for the past forty years.

In 1965 the Rock Lobster Industry Advisory Committee was formed as part of the Fish Resources Management Act. The Advisory Committee, made up of fishermen and fisheries managers from the government, helps the Australian government develop management rules. The Western Australia Department of Fisheries is responsible for monitoring lobster populations and enforcing the harvest agreements. Several types of agreements, acting together, help make this a sustainable fishery¹⁸.

Limited number of harvesters: Commercial fishermen must have Managed Fishery Licenses for the western rock lobster fishery. The number of these licenses has been limited since 1963; licenses may be transferred but no new licenses will be issued.

Harvest controls: To ensure that immature lobsters are protected, there are minimum legal sizes for harvested lobsters and a limited season. The pots themselves are

FIGURE 3-1 Australian Western Rock Lobster Fishery Productivity



Source: State of the Fisheries Report 2000/2001³

configured with holes to allow undersized lobsters to escape. Spawning females are also protected.

Capacity controls: The total number of lobster pots that can be deployed is tightly regulated, with a maximum of 150 pots per license. Because the biology of the lobster has been well studied, fisheries managers are able, by controlling the number of pots in any given year, to regulate the catch in response to the underlying health of the population.

New technology controls: The fishing effort is controlled, rather than setting quotas on the actual harvest. Managers recognize that new technologies, such as underwater video cameras or new pot designs, could lead to over-harvesting even with a regulated number of pots. Therefore, provisions of the rock lobster management plan require assessment and approval of new technologies, all of which are factored into future fishery management decisions.

Together, these regulations have resulted in a stabilizing of the annual western rock lobster catch at levels close to the 1963 level (Figure 3-2)¹⁹. The approximately 600 boats that are licensed in this fishery earn high seasonal incomes, and licenses and fishing gear have become valuable assets.

These agreements introduce new structural elements into the rock lobster system (Figure 3-3). By responding to measures of the sustainability of the harvest, limits on the number of boat licenses and the number of lobster pot per boat accomplish two goals. In the short term the limits regulate current fishing effort, and therefore the current harvest. In the long term, they link investment and boat-buying decisions that affect the future harvesting capacity of the fishing fleet to the underlying health of the resource base.

Other fishery systems (for example, the nearby Australian southern rock lobster fishery) employ quotas that limit the number of fish a producer may market and the number of producers. In such cases the harvest is directly controlled, and technology limits may be less necessary, since producers can only harvest a set amount of fish, no matter what technology they use. This kind of quota system requires more information gathering to make sure that no one is harvesting more than the quota. The southern rock lobster fishery accomplishes this by tracking every lobster from fishing boat to buyer²⁰. In either case, the collective agreement has introduced into the system new information pathways and new decision making rules that keep the harvest in balance with the resource.

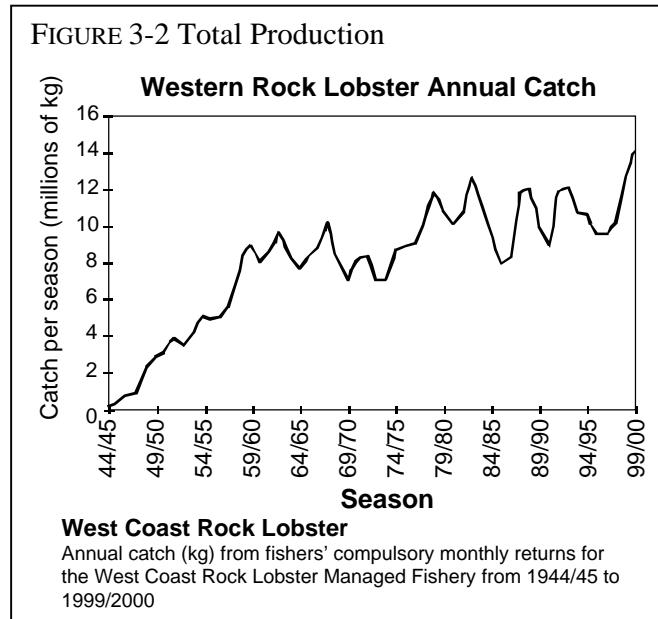
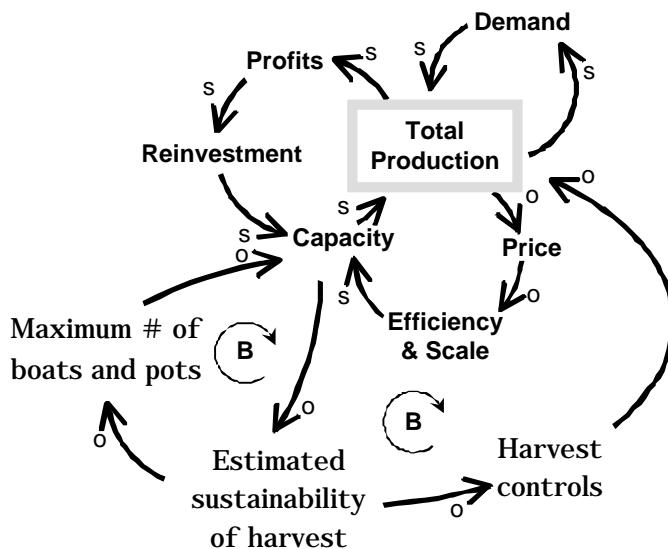


FIGURE 3-3 Addressing the Resource Depletion Trap with Collective Agreements



This figure builds on Figure 2-8. The *Production growth drivers* need a compelling signal of scarcity because the signal via the *Resource level* and *Cost of acquiring resource* is delayed and, therefore, too late to ensure sustainability. In the rock lobster case the *Estimated sustainability of harvest* successfully limits the *Maximum # of boats and pots*, and the *Harvest controls* limit total production. Together these changes keep the commodity system within the sustainable yield of the resource.

controls on the harvesting capacity need to be equally dynamic.

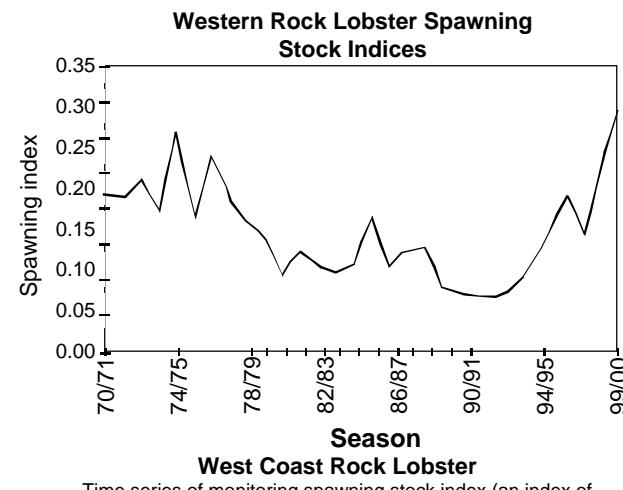
Another key to the success of these collective agreements is the partnership between the fishermen and the state government. Together they collect data and then determine annual catch rates and daily pot numbers based on scientists' best predictions about the health of the resource.

The agreements also include a number of provisions for enforcement by the Ministry of Fisheries, including on-boat inspections for legal lobster, pot counts at sea, boat and pot checks during closures, and daily catch weighing and reporting. These enforcement provisions are an important part of the agreements and

Although the Australian western rock lobster fishery had been carefully managed for decades, in the early 1990s biologists warned that egg production had dropped dangerously low — to 15 to 20 percent of the pre-commercial fishing levels. In response pot numbers per license were temporarily decreased by 18% starting in the 1993/94 fishing season, an action designed to leave an extra 1,000 tons of lobster in the ocean each year. As can be seen in Figure 3-4, spawning stock — a measure of egg production — rose in response to this adjustment.

Having accurate and timely information about the health of the resource base, and the ability to quickly change the harvesting effort if the resource shows signs of depletion, are crucial to keeping the system within sustainable bounds. Natural systems like fisheries are complex and changing, and

FIGURE 3-4 Indicator of Resource Health



source: State of the Fisheries Report 2000/2001³

highlight the fact that although co-operation is required to construct a collective agreement and set annual provisions of the agreement, good will alone is insufficient.

In 2000, the western rock lobster fishery was the first fishery to be certified as being fished sustainably by the Marine Stewardship Council, a designation that reflects the effectiveness of the work that began in 1963.

The Australian rock lobster example makes quite clear that the adoption of harvest limits is an effective tool to keep fishing capacity within the carrying capacity of a fishery, avoiding the Depletion Trap. This, in turn, can keep prices at a high level and provide good producer incomes, addressing part of Trap #3: socio-economic decline in producer communities.

In the rock lobster fishery, pot entitlements can be bought and sold allowing consolidation as more successful fishermen buy out the less successful ones. This sort of consolidation can contribute to the Community Decline Trap discussed earlier. So far, the Western rock lobster fishery the rate of consolidation has been relatively small. But in other fisheries where quotas can be bought and sold, the trend toward consolidation can be dramatic. In Iceland, for instance, consolidation has been quite problematic.

Concentration of quota shares with fewer and bigger companies has lately been accelerating. Along with a general liberalisation of the economic policy in Iceland, there seems to be an ongoing ideological shift within the industry, leaving behind the idea that fisheries and fish processing should be locally embedded in fisheries communities. Many fisheries companies have joined the Icelandic stock market, and ownership is in many cases not linked to any particular community. Direct transfers of quota shares have become less common, small quota owners are now more likely to 'merge' with bigger companies and receive company shares in exchange for their quota shares. The vulnerability of fishing communities, especially small communities with poor employment alternatives, has become more visible, as there have been several cases of communities left with practically no quota as local quota owners have left or sold out their quota shares.

— Einar Eythorsson, 2000²¹.

The potential for the concentration of fishing rights can be guarded against by specific provisions in the quota management plan. For example, rules that require the quota holder be present on the fishing boat remove the incentives for a fisherman to buy up his neighbor's boats. Collective agreements do not, automatically, prevent consolidation. If consolidation is a concern in a commodity system, such provisions must be written into the structure of the agreement.

Price Supports and Supply Control Agreements — US Burley Tobacco

In 1998 US Secretary of Agriculture Dan Glickman spoke to an audience of Kentucky tobacco growers.

I just came back from a week doing a farm tour around the country. Fascinating. The only place in America where there has not been a major diminution in the number of family farmers is in tobacco country. The numbers in dairy, wheat, corn, soybeans, rice, cotton, even livestock show over a period of years a rapid reduction in numbers. A lot of it has to do because individual farmers don't have the clout to bargain or to negotiate with the people that they sell to like you have here.

— US Secretary of Agriculture Dan Glickman, 1998²²

Secretary Glickman's observation about small farms is backed up by the numbers. In contrast to so many other commodities where the product is sold at or near the cost of production, tobacco plots can return high incomes²³. In contrast to the trends of declining price and rising production seen in most commodities (recall the generic pattern in Figure 2-3), tobacco price has known long periods of stability (Figure 3-5).

What is it that makes the tobacco story so different from that of most commodities? The Burley Tobacco Growers' Cooperative Association gives the answer in a single sentence. "It was and is simply a matter of price supports in exchange for production controls."²⁴

The production controls arise out of a collective agreement that has its roots as far back as the 1920s when tobacco growers experimented with a number of ways of organizing themselves for bargaining with tobacco buyers. Lessons from those early experiments were incorporated into the current tobacco program which, although it has been changed slightly over the years, still exists essentially as conceived in the 1930s²⁵.

The collective agreement, honored by all producers and enforced with penalties, incorporates several key elements²⁶.

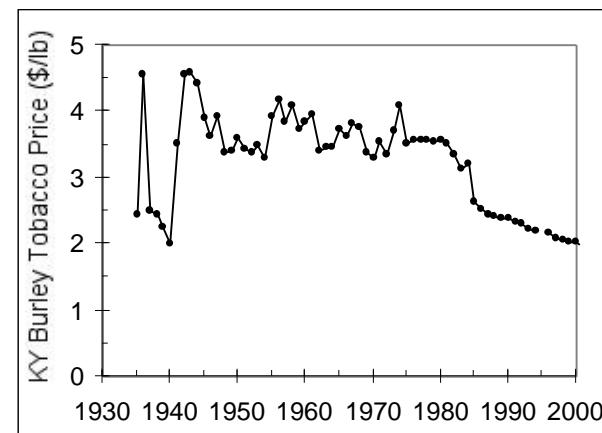
Production quotas: In the original formulation of the program production quotas were based on acreage. Each tobacco quota-holder could grow tobacco on a pre-determined number of acres. In the early 1970s the quota was changed to a "poundage" system in which producers were allowed to sell only so many pounds of tobacco each season. Quotas are adjusted each year, taking into account expected demand and existing stocks.

Quotas tied to land: Tobacco quotas cannot be sold separately from the land they are associated with. Leasing quotas is also limited, with geographic restrictions (quotas can't be leased across county lines) and restrictions on the total amount of quota that may be leased by any one farmer.

Price floor: The tobacco program guarantees growers a minimum price for their tobacco. Under various phases of the tobacco program this has been determined differently, but the price floor for the first forty years linked the tobacco minimum price with the costs of maintaining a family farm and producing a crop.

Farmer cooperatives take loans from the federal Commodity Credit Corporation to buy any tobacco that has not been sold at a price higher than the minimum price. The cooperatives store and age the tobacco, selling it the following growing season, paying back the government loan — with interest — at this time. This price floor, in contrast to other agricultural programs, is not a cash subsidy. It is a legal mechanism by which companies must pay a minimum amount for U.S. tobacco. Cooperative members themselves cover the management costs of the program.

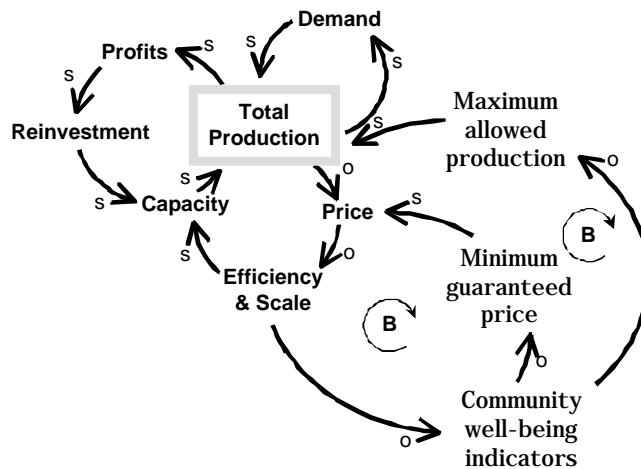
FIGURE 3-5 Tobacco Price



The trap of eroding incomes leading to economic decline in producer communities is broken by interventions that the tobacco program has employed. As with the Australian rock lobster example, the interventions of the tobacco program bring balance between a goal of the system (in this case decent incomes for growers) and the core driving loops that push capacity upward and prices downward. The production quotas provide an antidote to the Reinvestment Loop. Investments in new capacity are not sensible since each farmer is only able to market a certain amount of tobacco.

The price floor helps to counteract the downward pressure on price that would otherwise result from the imbalance of power between many small producers and few large buyers. In addition, the price floor plus the limit on consolidation of quotas weakens the power of the Efficiency Boosting Loop, reducing the trend toward few large-scale farm operations. In keeping farms small and prosperous, rural populations remain high enough to support schools, churches, and other civic organizations. These changes to the typical commodity system are shown in causal loop form in Figure 3-6.

FIGURE 3-6 Addressing the Community Decline Trap with Collective Agreements



This diagram is adapted from Figure 2-15. The *Production growth drivers* push *Community well-being indicators* down. Several interventions help. *Minimum guaranteed price* boosts *Price*. Support for collective agreements decreases the *Maximum allowed production*, and slows the production growth drivers.

We are made up of a lot of little people. It [the collective agreements of the tobacco program] gives us political clout. And I don't know what we would ever do without price support for the thousands of little people. Because without price protection, the growers have no power whatsoever to protect themselves.

— Joe McDaniel, past president of the Burley Co-op. 1992²⁷

The tobacco collective agreements have also contributed to the environmental health of tobacco-producing regions by limiting erosion.

For a sloping, easily eroded countryside such as I live in, and such as comprises much of the "tobacco belt", tobacco has been an ideal crop, because it has permitted significant incomes to be realized from small acreages, thereby sparing us the inevitable damage of extensive plowing, and because it conforms well to the pattern of livestock farming. If tobacco farmers had attempted to realize an equivalent income from corn, neither they nor their fields would have lasted long.

— Wendell Berry, 1993²⁸

That a program with social goals produces environmental benefits is not surprising, given the structure of commodity systems. Interventions that bring forward goals beyond high productivity will tend to restrain the Production Growth Drivers and thus help to promote the health of

environmental and social aspects of the system. Recall that in the Australian rock lobster case, the actions taken to preserve the health of the fishery similarly limited total production and slowed capacity growth in a way that benefited incomes.

The Importance of Enforcement

The tobacco program had a progenitor program, a cooperative action among producers known as the "Old Pool." Many of the rules of the Old Pool are reflected in the present-day tobacco program. Like the current program, the Old Pool was organized so that producers could hold tobacco off the market if buyers offered a price that was too low. But, unlike the current tobacco program, participating in the pool was voluntary. Although joint action was in everyone's best interest, the Old Pool was plagued by "dumping and contract breaching, often through devious methods."²⁹

Such cheating highlights an important feature of collective agreements, one also observed in the rock lobster fishery. Collective agreements need not depend solely on good will, trust, or even enlightened self-interest. Although all of these may be required to create collective agreements, careful design of rules, laws, and enforceable penalties can keep the collective agreement strong over the long term. The existence of a legal framework to make the tobacco program work, however, should not be taken to mean that such programs are best imposed by governments on unwilling growers. In the tobacco program farmers vote every four years on whether to continue participation in the program.

In the work that led up to this paper, we found ourselves often in conversations with commodity producers who worried about relying solely on voluntary action when the participation of all producers was required for success. The rock lobster and tobacco programs remind us that collective management of a commodity system can be based on more than just trust and good will. With enforcement built in, producers don't have to depend upon "trust alone."

Commodities Offer Multiple Opportunities for Intervention

In addition to the changes in system structure we have been discussing, there are two special features of Burley tobacco that have probably contributed to the success of the tobacco program. First, in contrast to many agricultural crops, tobacco is not a crop that is easily mechanized.

Tobacco production looks much the same today as it did 70 or more years ago, right down to hand-hoeing out weeds, and hand-picking off bugs in some small plots.

Producing an acre of tobacco can require up to 300 hours of land labor, compared to about 1-2 hours for corn or soybeans.

— Daryll Ray, 2002³⁰

It may be that the lack of opportunities for mechanization of this crop has provided some opportunity to restrain the Efficiency Boosting Loop that is common to most commodities. This implies that the tobacco program has been balancing a weaker driving loop than many commodity systems must contend with.

A second feature also makes the tobacco system different from many other commodities. Aged, cured tobacco is more valuable than fresh tobacco. This is very different from fish or milk or green beans, all of which must be quickly transported and processed or consumed fresh. The aging process of tobacco means that some of the costs of storage and handling can be recouped when the pooled tobacco is sold at the end of storage. This feature of tobacco is not related to the

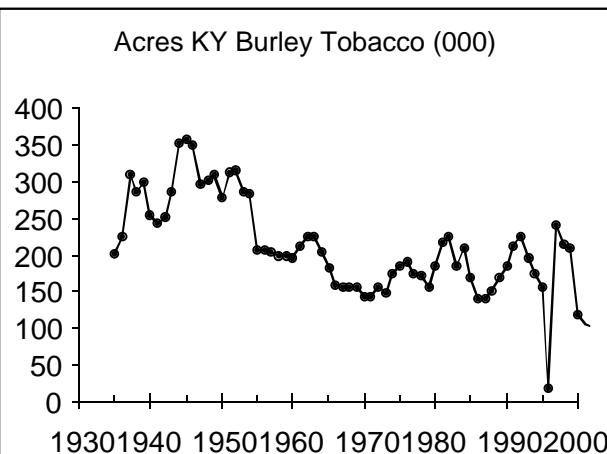
core driving loops, but it shows that storage qualities of commodities can add opportunities for actions such as holding the commodity to support its price.

What Kind of Quota?

When the U.S. Burley Tobacco program was first implemented, quotas were based on acreage, and total production was controlled by adjusting acreage from year to year. Figure 3-7 shows a pattern of decline in the number of acres planted in Burley tobacco in Kentucky from 1950 to 1970. This decline represents the efforts of the managers of the system to keep production constant in the face of yields that doubled during that period (Figure 3-8). In 1971, the quota system was modified so that each quota represented the right to sell a certain poundage of tobacco rather than the right to grow as much as possible on a certain number of acres.

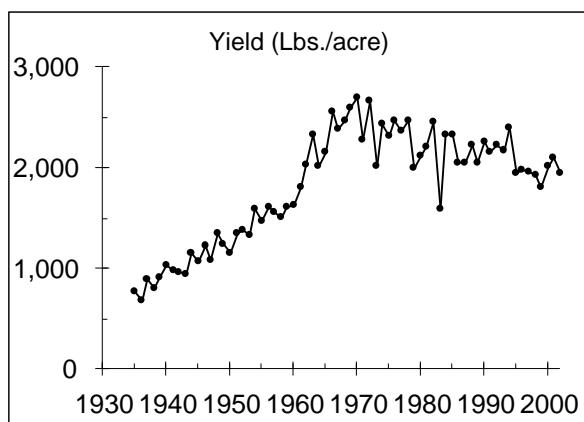
The distinction between an acreage quota and a poundage quota mirrors the difference between the two kinds of quotas found in western and southern rock lobster. One type of quota limits the capacity that can be used to harvest or produce the resource. We might call this an indirect quota. In farming such a quota limits the number of acres that may be farmed, in fishing it limits the number of boats, nets, or pots. The amount that is produced or harvested is targeted by setting the acreage allowances or pot numbers, and the actual harvest is not specifically controlled.

FIGURE 3-7 Decline in Tobacco Acres



Data from USDA-NASS <http://jan.mannlib.cornell.edu/data-sets/specialty/94012/1/TAB088.WK1>

FIGURE 3-8 Increase in Tobacco Yields



Data from USDA-NASS
<http://jan.mannlib.cornell.edu/data-sets/specialty/94012/1/TAB088.WK1>

The other type of quota focuses on the quantity of the commodity itself. For this type of quota a producer is allowed to sell a certain amount of fish or a certain number of pounds of tobacco. We might call this a direct quota. When anything other than the amount one can sell is being limited, producers still have an incentive to invest in producing more, using the boats or acres that they are allowed. So if underwater cameras can allow the same number of pots to be placed more strategically, or if new varieties of tobacco seed will produce more pounds of leaves per acre, rational producers will adopt these new technologies. This, of course, activates the very Production Growth Drivers that

such quota systems are meant to restrain.

The western Australian lobster system uses indirect quotas, but reduces the power of the Efficiency Boosting Loop by dictating that managers of the resource (the government and the fishermen's organization) review all new technical innovations. The southern rock lobster fishery avoids the problems of the Efficiency Boosting Loop altogether by using direct quotas that place controls on the amount of lobster that may be harvested. And in the 1971 switch from acreage-based to poundage-based quota system, the tobacco program also avoids the problems of the Efficiency Boosting Loop. Figure 3-8 shows that after the switch — with the incentive to boost yields removed — tobacco yields have been quite stable. With this stabilization the number of acres in tobacco has still fluctuated, but the pattern of constant decline disappeared.

Recent History — Impacts of an Increasingly Global Market

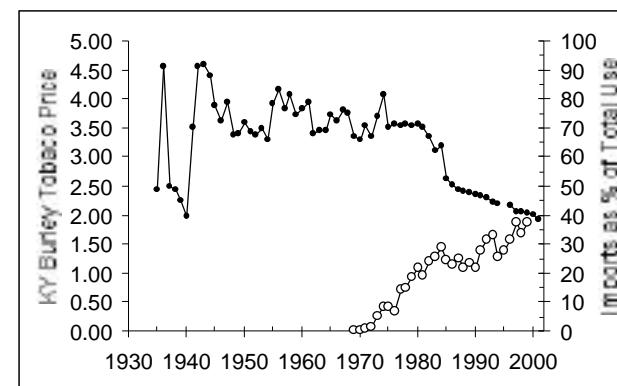
A look back at Figure 3-5 shows that the tobacco program's success at holding the producer price steady (in constant dollar terms) began to erode in the late 1980's. What happened to this program which Secretary Glickman saw as essential to the survival of small farms in Kentucky, Tennessee, and North Carolina?

Figure 3-9 shows part of the reason. Since the 1970s the fraction of imported tobacco used by the U.S. cigarette industry has risen from close to zero to more than one-third. Tobacco grown outside of the United States is not a part of the U.S. Burley Tobacco program. No price floors or production limits exist in the global tobacco market. In the global market, the three core driving loops remain unrestrained. U.S. cigarette makers, trying to limit their own expenses and raise profits, turned to the imported tobacco. More imported tobacco put pressure on the tobacco cooperatives which had to either limit quotas or hold more and more tobacco each year³¹.

In 1993 the U.S. tried to address the problem by passing a law setting a minimum domestic content for cigarettes manufactured in the United States. The law appears to have had the desired effect, for imports fell for several years after this ruling (Figure 3-9). However, in 1995 the GATT dispute resolution process determined that the law was a protectionist violation of free trade, and the law was invalidated. It was replaced by a system of tariffs and quotas on imported tobacco that was in accord with GATT rules, and tobacco imports resumed their upward trajectory in 1996. Trying harder and harder to compete for the domestic tobacco market has forced grower cooperatives to lower their minimum price levels. The power of the cooperatives spoken about so eloquently by Joe McDaniel in 1992 has not been enough to keep prices steady in the face of global competition.

For U.S. tobacco the boundaries of the collective agreement to limit production and support prices have stayed the same for seventy years — about the same number of growers, in the same

FIGURE 3-9 Tobacco Price Decline and Import Rise



source: USDA ERS (#TBS-247)

southeastern states. But over that same time period, the size of the international tobacco growing pool has increased dramatically. Tobacco is grown in South and Central America and in parts of Africa. It is grown in places where land and labor costs are much lower and environmental regulation is less stringent. And those producers, not united in a cooperative with U.S. growers, sell to the very same large buyers as the U.S. tobacco cooperatives. So far, U.S. growers do not see any ways to salvage their commodity program.

Today there is not much optimism among tobacco farmers. The program that took years to establish and fine-tune, the program that was so successful at pulling this commodity out of the typical commodity traps, is now failing to achieve those goals under the impact of a global market. All collective agreements share this vulnerability. The U.S. program for peanuts, the Canadian poultry program, and dairy programs in both Canada and Europe are all under challenge from global competition and trade rules that enforce the "deregulation" of commodity production.

Collective agreements can only work if all of the commodity production for sale is governed by the rules of the agreement. The more "global" a commodity, the wider the group of producers that must come together in order to form an effective collective agreement. There are few examples of collective agreements to regulate commodity production that span national boundaries.

Coffee was one example for a brief time. Until 1989 the supply of coffee was controlled under collective agreements managed by the International Coffee Organization, which set quotas for production and determined the distribution of the quotas between coffee producing nations. Producing and consuming countries were members of this organization. The breakdown of that agreement launched the coffee system into its present mode of overproduction and producer impoverishment.

FOR MORE INFORMATION ON THE TOBACCO PROGRAM
Burley Tobacco Growers Cooperative Association
<http://www.Burleytobacco.com/website/default.asp>

Collective Agreements — Summary

The cases of the Australian Western Rock Lobster Fishery and the US Burley tobacco program illustrate that collective agreements are powerful tools, particularly useful when dealing with commodity systems that are stuck in traps of over-harvesting or eroding producer incomes.

1. RESOURCE DEPLETION OR PERSISTENT LOW INCOMES ARE NOT INEVITABLE IN COMMODITY SYSTEMS.
Producers can organize themselves through collective agreements to regulate the productive capacity of the commodity in the form of harvesting, production, or marketing agreements.
2. BALANCING THE HARVEST RATE WITH THE REGENERATION RATE IS ESSENTIAL TO SUSTAINABLE COMMODITY SYSTEMS, EVEN WHEN THE STOCK LEVEL IS HIGH.
The Australian Western Rock Lobster fishery shows that, in matching resource sustainability with harvesting capacity, it is important to respond to the **relative** rates of harvest and regeneration. The absolute level of the resource stock does not signal the health or sustainability of the commodity system. Rather, it is the decline of the stock, resulting from a harvest rate that is higher than the regeneration rate, which signals imbalance.
3. MULTIPLE GOALS MAY REQUIRE MULTIPLE INTERVENTION POINTS.
Both rock lobster and Burley tobacco show that keeping commodity harvesting in balance with the regeneration of the resource may require intervention at more than one point in the system. Production limits, price supports, consolidation limits, and technology policies may all be required to keep the multiple goals of a commodity system balanced.
4. CONTINUED MONITORING AND RESPONSIVENESS ARE NEEDED.
Even when harvest limits are in place, careful monitoring and even occasional corrections to the system are required to keep harvesting capacity in balance with the resource. A changing biological system can only be managed sustainably by an adaptable management system that has the means to collect new information.
5. COLLECTIVE AGREEMENTS DO NOT NEED TO DEPEND ONLY UPON TRUST OR “GOOD-WILL”.
Both rock lobster and Burley tobacco show that collective agreements depend upon the ability to ensure that no players skirt the rules. Legally binding enforcement provisions can be built into collective agreements. In designing such measures it is important to provide the resources for enforcement.
6. INTERVENTIONS IN THE PRODUCTION GROWTH DRIVERS CAN PRODUCE MULTIPLE BENEFITS.
Interventions that affect the Production Growth Drivers of a commodity system may have multiple benefits. The case of Burley tobacco shows that actions taken in response to social symptoms can also produce environmental benefits. The converse is also true — interventions taken to preserve a resource may increase the economic health of families or communities.
7. QUOTAS THAT LIMIT THE ABILITY TO HARVEST RATHER THAN THE AMOUNT HARVESTED ARE VULNERABLE TO BEING UNDERMINED BY NEW TECHNOLOGIES.
Such quotas should have some technology-limiting provisions associated with them.
8. THE BOUNDARIES OF A COLLECTIVE AGREEMENT MUST INCLUDE ALL OF THE PRODUCERS SELLING INTO THE MARKET FOR THE COMMODITY.
Collective agreements can only be successful over the long term when the commodity producers acting together represent most of the commodity production available to a set of buyers. If buyers have the ability to meet their needs for raw materials elsewhere, their own competitive pressures will lead them to do so, leaving the producers with a collective agreement but no market.
9. AS THE MARKETS FOR MOST COMMODITIES BECOME MORE AND MORE GLOBAL, THE REQUIRED BREADTH OF COLLECTIVE AGREEMENTS ALSO EXPANDS.