Why Supply is Often Out of Balance with Demand

One might expect that in the face of falling prices and rising total production, individual producers would leave the commodity system. While it is true that over time the number of producers in most commodity economies tends to decline, several factors minimize this as a balancing force. As a commodity-producing sector begins to struggle, governments — especially in the richer countries — offer subsidies to boost the income of producers, and keep production levels high. Such programs can also take the form of subsidized research and development, spurring the Efficiency Boosting Loop or the Demand Growth Loop.

Subsidies in commodity systems ripple through the global economy. In rich countries, subsidies allow commodities to enter global markets at artificially low prices, placing enormous economic hardship on producers in parts of the world that do not subsidize their natural resource economies.

> ***Yes [European] milk powder is cheaper than our local milk. But what you must realize is that imports of milk powder have export subsidies on them. The Jamaican farmer has no subsidies whatsoever. Our production figures are true cost.***
>
> — Aubrey Taylor, president of St. Elizabeth Dairy Co-operative, Jamaica, 2002[4]

In addition to government subsidies, many commodity producers will take on outside jobs to keep their farms or their fishing businesses alive. The producers are, in effect, subsidizing the costs of commodity production with their own labor and keeping production levels high even when prices are low.

Commodity producers often feel very little flexibility. Those who use specialized equipment or who have no marketing infrastructure to sell other crops will have little ability to switch commodities in response to falling prices. Commodity production will remain high, even in the face of low prices, if producers have no alternative commodity to produce with their land or equipment.

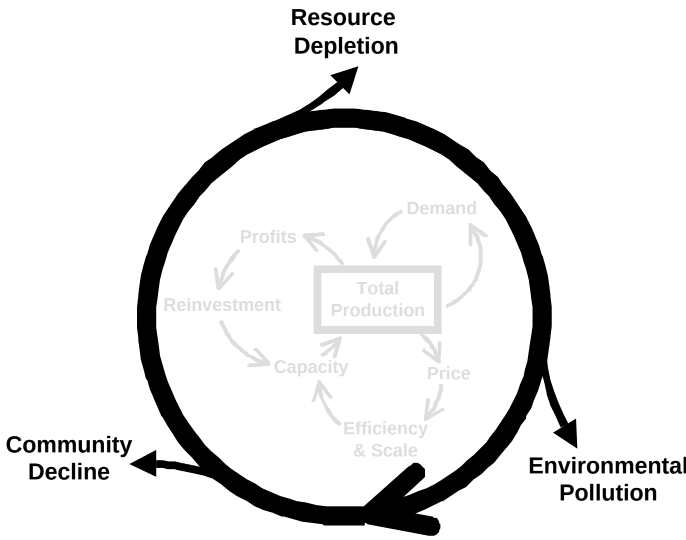
All three of these factors — subsidies, supplemental employment, and lack of production alternatives — add to the tendencies of commodity systems to overproduce relative to demand.

One might also expect that increases in demand would result in higher prices, bringing the system into balance. However, the Reinvestment and Efficiency Boosting Loops are increasing new supplies, driving down price, generally outpacing the rising demand.

The Three Traps of Commodity Systems

The three feedback loops described above — Reinvestment, Efficiency Boosting, and Demand Growth — help explain the rise in production levels and the decline in price seen in most commodity systems. But the benefits to consumers of ever-rising production levels are only one side of the behavior of commodity systems. Commodity systems have another side that is documented daily in newspapers and reports around the world — that of environmental and social crises. Although these problems — from fishery depletion to hypoxia in the Gulf of Mexico to the poor standard of living of cocoa bean harvesters — are usually described and addressed in isolation from one another, they all emerge from the three driving feedback loops we have been examining. Rising up out of the same dynamics that have made commodity systems so productive are mounting pressures on the people and the resource base that make commodity production possible in the first place (Figure 2-9).

FIGURE 2-9 Three Commodity System Traps



The production growth drivers create high levels of production and keep costs of commodities low, but these same growth drivers can also contribute to resource depletion, pollution and community decline.

Increasing productivity and scale within commodity systems increases the scope of the unintended impacts on environment and community. At the same time the constant pressures to lower costs reduces the ability of individuals in commodity systems to address these problems. The social benefit to more affordable and accessible basic commodities is clear. But what of society's goals for our communities and our ecosystems? In general society wants healthy farming, fishing, and logging communities. We want the resource to be well stewarded and able to provide for people on into the future. We want to make sure that natural habitats and ecosystems are not damaged by the processes of commodity extraction and production.

In our research and in many case studies about commodity economies we find that the structure of commodity systems has the potential to push them into three traps of counter-productive behavior. While different commodities may be struggling with different challenges, they all have the potential to experience each of these traps. Avoiding one trap might simply set the stage for encountering another. These traps are tendency of commodity systems to exceed the productive capacity of their natural resource base (Depletion), exceed the ability of the environment to absorb wastes (Pollution), and undermine producer income and communities (Decline).

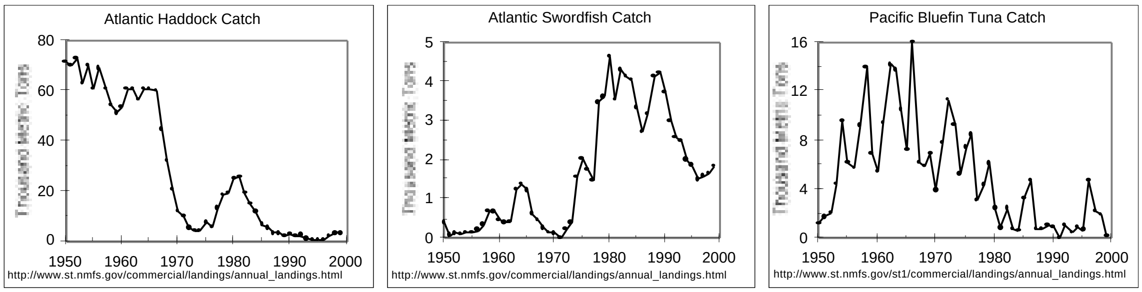
We call these traps because of the built-in structural tendency for commodity systems to "trip" into these modes of behavior and because of the difficulty of getting out once in. The following sections examine the dynamics behind each of these pressures and explore approaches for managing these dynamics.

Trap # 1 Resource Depletion: Harvest rates exceeding natural resource regeneration rates

> ***Commercial fishermen on the West Coast who harvest groundfish from the Pacific Ocean are bracing for more waves as the federal government looks for ways to recover dwindling fish populations. The latest plan calls for pushing half of the groundfish fleet out of the business in Oregon, Washington and California. Remaining fishermen will be faced with additional cutbacks on the number of fish they can catch.***
>
> — CNN Internet news report. 17 Oct 2000 [5]

From the 1890s to the turn of the 21st century, from the virgin pine stands of Michigan to the Pacific groundfish industry, commodity systems display a tendency to grow beyond the capacity of the resource base they are harvesting. Sometimes, as in the conversion of forests to open land in the area surrounding Chicago in the late 1800s, the resource never regenerates. Sometimes, as in the case of fisheries (Figure 2-10), the resource declines precipitously with the prospects for recovery uncertain. The tendency for collapse of the resource results from the interaction between the commodity system's driving feedback loops and the biophysical dynamics of the natural resource at the heart of the system. When the production growth drivers are not responsive to the resource dynamics, the harvesting capacity can easily increase beyond the capacity of the resource.

FIGURE 2-10 U.S. Fish Catch



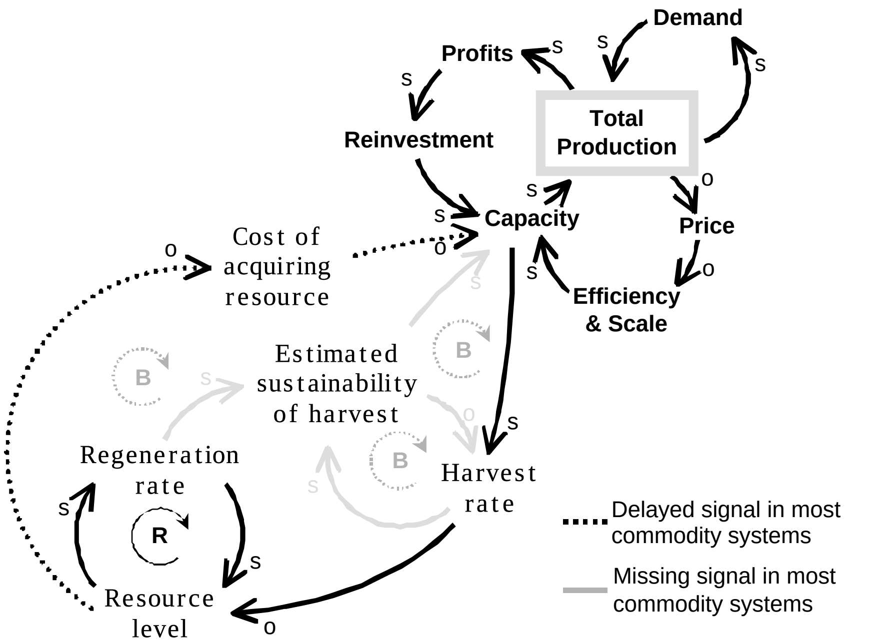
The depletion trap is most obvious in fisheries and forestry. But it is also present wherever agricultural activities draw down aquifers or reduce soil fertility. Commodity systems whose product comes directly from a renewable resource such as forests and fisheries are easily identified as vulnerable, but commodities systems that are based on crops or animals also depend on the renewable health of soils and rangelands to support the raising of their product.

Fisheries illustrate the challenge of balancing growth in commodity production with resource regeneration and show the difficulty of developing market and regulation mechanisms that will ensure sustainability of the resource. At present, the U.N. Food and Agriculture Organization reports that 47 to 50 percent of the world's major marine fisheries are fully exploited and another 15 to 18 percent are over-exploited[6]. Regional studies report similar trends. According to the European Environment Agency, "most fish stocks of commercial importance in European waters appear to be outside safe biological limits."[7]

Early in the development of a fishing industry, the production growth drivers push up the productive capacity — the size and efficiency of the fishing fleet — and thus the harvest rate (Figure 2-11). Prices fall over time and demand grows as processors find new uses for the fish. Harvesting technologies improve — in the form of better nets, sonar, and bigger boats — so that harvests grow and per-unit costs fall. Fishing companies make profits and reinvest in new boats.

> ***The canneries were so efficient at processing the lobsters that they were soon forced to work with smaller lobsters. In 1860, James P. Baxter recalled that four to five pound lobsters were considered small and the two pound lobsters were being discarded as not worth the effort to pick the meat for canning. Only twenty years later, the canneries were stuffing meat from half-pound lobsters into the tins for processing.***
>
> — Gulf Of Maine Aquarium [8]

FIGURE 2-11 Resource Depletion Trap



The *Production Growth Drivers* lead to increases in *Harvest rate*. If *Harvest rate* is higher than *Regeneration rate*, then *Resource level* will decline. Although many people expect the *Cost of acquiring the resource* to limit *Total production*, this signal is often too weak or too delayed to do so.

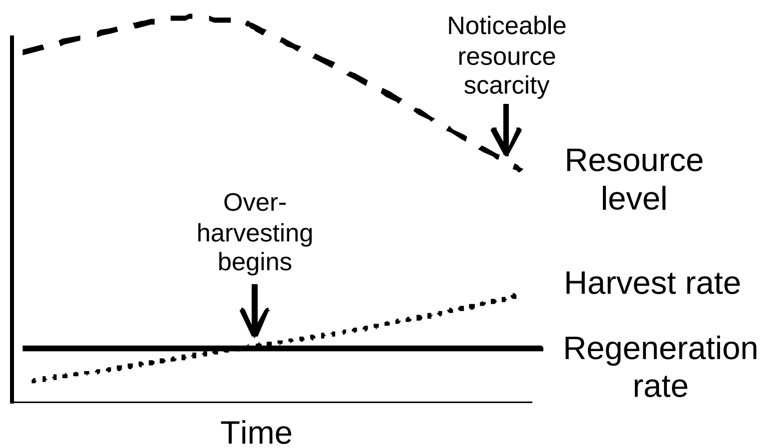
At some point in this story — often before most players note signs of scarcity — the fishing fleets begin harvesting mature fish faster then the young ones are becoming mature. Some time later, the annual harvest crashes. Regulators often put into place restrictions that allow recovery of the fishery. But just as often, the regulations are too little too late. Sometimes, the viability of the fishery returns. More often, however, the catch does not return after a respite, as seems to be happening with Pacific Bluefin Tuna, Atlantic Cod, Atlantic Haddock, and Atlantic Swordfish (shown in Figures 2-1 and 2-10).

If a resource is not already regulated (which is the case in most natural resource systems that have not yet been through a cycle of overshoot), then typically the production capacity expands as long as demand for the product is present. This continues until either raw material costs or absolute scarcity prevent additional production. At that point the cost per fish caught overwhelms the benefits from selling the fish. Declining profits slow investment in capacity, eventually slowing the growth in the harvest rate. Declining profits can also encourage producers to leave the commodity system, further reducing production capacity. If these signals happen in time, and capacity is reduced quickly enough, harvest rates decline and the resource can recover.

But the experience in many fisheries, forests, and other renewable resource industries shows that these signals are only rarely timely enough and strong enough to keep harvesting capacity within the limits of the resource. Much more typically the harvest rate "overshoots" the sustainable yield of the resource, eventually leading to a crash of the harvest rate. The result is the "boom and bust" fisheries depicted in the data shown in Figure 2-10.

Market signals do a poor job of preventing overshoot. The cost of acquiring the resource is a weak signal of resource level because the Efficiency Boosting Loop continues, for a time, to drive the harvesting cost down even as the fish are becoming more scarce. The resource must already be well into decline before it becomes significantly more costly to harvest. By the time the ever more efficient boats are pulling up fewer fish, the harvesting capacity of the entire fishery can have grown well beyond the sustainable yield of the resource. Corrections in harvesting capacity happen very slowly. Even if profits are falling, fishing boats continue to be used to bring in as much return on investment as possible. Therefore, capacity only truly begins to decline after the harvesting capacity wears out and is retired, a process that may take many years.

FIGURE 2-12 Resource Level Responds to Harvest Rate and Regeneration Rate



It is important to note that over-harvesting begins as soon as the harvest rate exceeds the growth rate (shown in Figure 2-12). **Thus, the resource can be over-harvested even at a time when the supply of trees or fish appears to be plentiful.** Because the signal of scarcity typically comes long after the capacity to harvest the resource has exceeded the productive capacity of the resource, the harvest rate does not just need to be capped at current levels, it needs to be **reduced** to match the regeneration rate. Reducing harvests, of course, has significant economic impact on jobs and communities, leading discussions about regulation to stretch out over years, and pressuring participants to set harvest limits as high as possible.

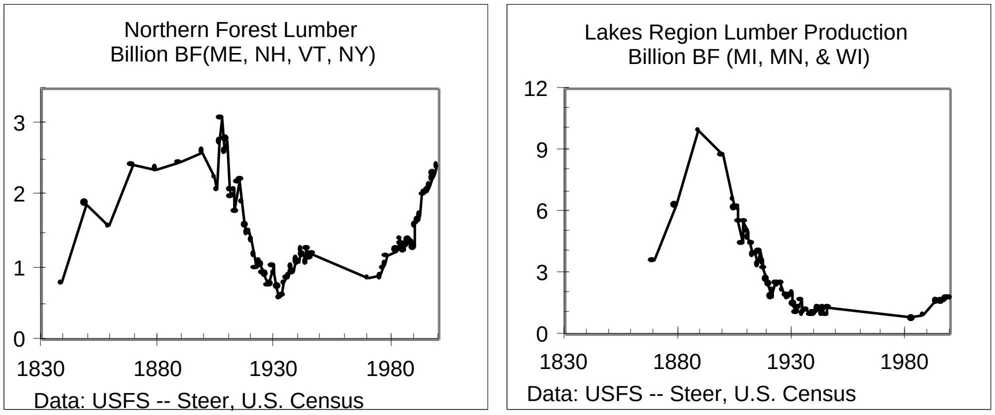
Compounding these problems, market signals can accelerate the decline of a resource base. As a commodity product gets scarce it may become more desirable to consumers because of its rarity, making the market price rise and creating an even stronger incentive for the commodity producers to harvest beyond the sustainable yield. As an extreme example, in Tokyo in 1998 a single scarce Bluefin Tuna sold for $83,500.[9]

One of the reasons that fishery systems have difficulty matching harvest capacity to sustainable harvest rates is that fish populations are so difficult to estimate. Perhaps, then, if one could physically see the resource level, commodity producers would not harvest above the sustainable yield. And, yet, in the world of forestry, where foresters inventory the trees in a region, the same over-harvest relative to a resource limit trap still occurs.

Many regions in the United States experienced a "boom and bust" in timber harvesting around the early 1900s as sawmills moved across the country from East to West, with harvest rates, exceeding the sustainable yield of the forest, running low on trees, and moving further West.

For example, as shown in Figure 2-13, the forest-based lumber industry of the Northeast boomed in the late 1800s, busted in the early 1900s and was booming again in the late 1900s after forty years of tree growth. In other instances the timber industry did not return. In the Great Lakes region of the U.S., once the industry collapsed the first time, other uses for the land took over and forestry has not returned.

FIGURE 2-13 U.S. Regional Lumber Production



Why does the over-harvesting trap exist even when producers ought to be able to track the growth rate and total size of the resource? Wouldn't the market signals work better at keeping the harvest rate within the sustainable yield of the resource?

This happens because, in forest economies that are based on privately owned forestland, most landowners are willing to harvest and sell timber faster than it grows when the number of trees is high. They often have nothing else to sell. Because of this willingness to sell, timber is harvested faster than its growth rate without the price of the timber increasing significantly. Prices only increase when the landowners feel that the total inventory of desirable species and qualities is low. In other words, when making harvest decisions, landowners tend to look at the supply of timber rather than at the growth rate of the timber. As in fisheries, price is a delayed and weak signal of scarcity. So, lumber producers frequently end up "overshooting" the resource regeneration limit.[10] As in fisheries, when price finally does begin to rise, it becomes even more attractive for landowners to sell their timber, pushing down price and delaying any signal of scarcity to the mills.

The technology adoption dynamics outlined in Figure 2-5 compound the problem. A decision by a sawmill owner to expand the mill's capacity and, therefore, its harvest demand, has less to do with a clear assessment of the health and regeneration rate of the timber resource and more to do with ensuring survival in a competitive market. Sawmills that survive have the latest technologies. And sawmills with the latest technologies generally are higher capacity. Increasing capacity lowers per-unit costs. As one New England sawmill operator said in an interview with us, "Good market or bad market, it is always a good time to increase production."

After growing strongly over the past thirty years, New England sawmills may be feeling the effects of the raw material limit. Price has been rising for the sawlogs they cut and several species are now quite scarce. Faced with falling profits, some mills have closed, but many more have modernized their mills with technologies that reduce waste using thinner sawblades, cut labor costs with computerized scanners and sorters, and allow the mills to cut a curved log into a straight board. All these technologies reduce costs and keep the mills alive; however they also increase the overall timber appetite of the milling industry. In short, mills may be reacting to scarcity with **increased** demand for timber.

Many operators share the ethic we heard expressed often. "If we run low on timber and mills have to close, my mill is going to be the lowest cost mill and be the last one standing." As this system is currently structured, the competitive pressures to increase production and cut costs lead mill owners to conclude that it is impossible to make decisions based on the sustainable harvest rate of the forests in their region. They believe — probably accurately — that if they were to try, they would be put out of business by global competitors with lower costs of production. Because of looming competition from foreign producers, solving the problem of over-capacity relative to the resource base involves decision making that takes the dynamics of the resource into account. And it requires decision-makers with enough insulation from global pressures to even imagine such decision making.

TRAP # 1 RESOURCE DEPLETION

The harvesting capacity of commodity systems tends to grow past the sustainable yield of the resource. Market signals of resource scarcity (in the form of higher costs of harvesting as the resource becomes scarce) are too weak and too delayed to slow the growth of harvesting capacity as the resource begins to be over-harvested. In some cases, the market signals encourage the growth of excess harvesting capacity by encouraging investments in technologies that increase the efficiency of harvesting and boost the harvest rate even as the resource becomes depleted. ***Over the long term, all players in commodity systems—from industry to government to those advocating for the environment and communities—would benefit from actions that ensure that the rate of harvesting not exceed the sustainable yield.*** And because of the delays in the system, such actions need to be taken well in advance of the system running over-capacity.

Escape from the Depletion Trap requires linking the health of the resource with the rate of capacity growth in the industry (the dotted lines in Figure 2-11). Doing this requires both **knowing** the harvest rate and the resource regeneration rate and **controlling** total harvesting capacity so that the harvest rate plus the natural death rate does not exceed the regeneration rate.

In the third chapter we will examine concrete examples of actions, policies, and agreements aimed at matching harvest capacity with the sustainable yield of the resource.

Trap #2 Environmental Pollution: Waste generation rates exceeding natural waste absorption or purification rates

> ***Excavated in the Rockies for more than a century, cadmium is a silver-white metal used in rechargeable batteries, alloys and galvanized chrome on auto parts and appliances. Cadmium usually finds its way into the environment through ore tailings at abandoned mine sites. In the white-tailed ptarmigan, a member of the grouse family, cadmium was found to cause kidney damage, which reduces the bird's ability to process calcium. Forty-six percent of the adult birds surveyed in the 10,000-square-kilometer area were found with alarmingly high cadmium accumulation in their kidneys. "Birds in the winter get really hammered," said James Larison, an alpine ecologist at Oregon State University and lead author of the study, which appears in today's issue of Nature. "Their bones fracture easily so they die at a younger age and they don't have enough calcium to build normal egg shells."***
>
> — CNN Internet News report, 2000[11]

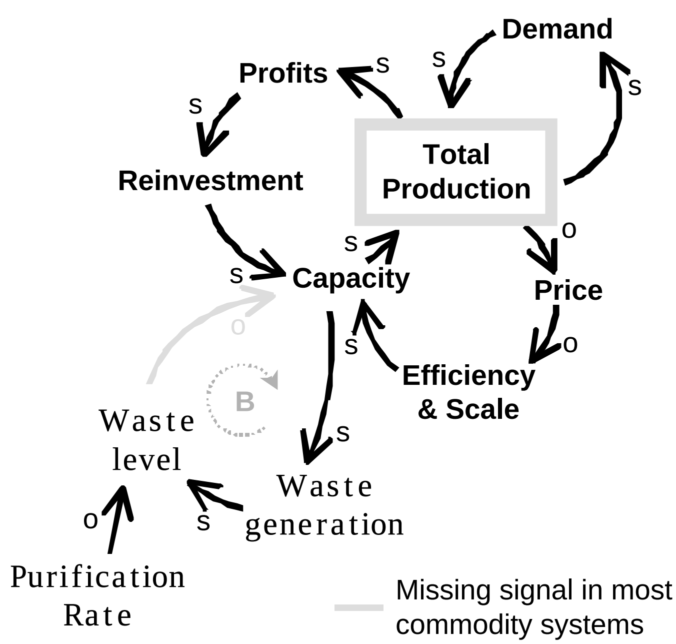
> ***It can stretch for 7,000 square miles off the coast of Louisiana, a vast expanse of ocean devoid of the region's usual rich bounty of fish and shrimp, its bottom littered with the remains of crabs and worms unable to flee its suffocating grasp. This is the Gulf of Mexico's "dead zone," which last summer reached the size of the state of New Jersey....***

> ***The trouble with the dead zone is that it lacks oxygen, scientists say, apparently because of pollution in the form of excess nutrients flowing into the gulf from the Mississippi River.***
>
> — New York Times, 1998[12]

Commodity systems produce waste — byproducts of growing, harvesting, or extracting raw materials from the earth. Many such wastes are biodegradable if they are produced at levels that are within the capacity of the environment to absorb or breakdown. Some are long lived toxins that need to be carefully managed, such as some mine tailings. If the production of wastes grows beyond the capacity of surrounding ecosystems to absorb and purify them, then waste products accumulate, often with severe consequences for human and ecosystem health.

Like the Depletion Trap, the Pollution Trap arises from the fact that the Production Growth Drivers of commodity systems are only weakly (if at all) restrained by feedback about the state of the ecosystem receiving the waste (Figure 2-14). Just as a commodity system may already be over-capacity relative to the resource even while the fish or trees appear plentiful, the system may already be over-capacity relative to its waste absorption capacity before signs of pollution or ecological degradation are noticed. As soon as wastes are produced at a rate faster than existing natural or man-made systems can absorb or detoxify them, the commodity systems has over-grown its sustainable capacity. But most often, pressure to address wastes only comes when the wastes have accumulated to the point where they are already damaging humans or ecosystems.

FIGURE 2-14 Environmental Pollution Trap



The *Production growth drivers* push the rate of *Waste generation* upwards. Over time, if the *Waste generation* rate surpasses the *Purification rate*, the *Waste level* builds. However, the connection from the *Waste level* to *Capacity* is weak or missing in most commodity systems.

Managing the pollutants is also complicated by the fact that wastes may accumulate at a point far removed from their origins in commodity production, as when excess nitrogen fertilizer applied in Iowa ends up contributing to algae blooms and lack of oxygen in the fisheries of the Gulf of Mexico.

And, as was the case for the dynamics of resource overshoot, it is the collective action of many individual producers that results in the production and accumulation of wastes. Individual producers are quite limited in their ability to respond if reducing their wastes creates a cost or market disadvantage.

In most commodity systems that run into this trap, production of the waste does not carry a cost for the producer. So, practices that boost production while creating waste products — fertilizing, bleaching, strip mining — can raise the volume of production without raising costs. In these cases, rational producers will be compelled to adopt the practice.

As Figure 2-15 shows, for this trap to be avoided signals about a rising waste level must in some way influence decisions about capacity growth. Many commodity producing systems have grappled with the specific policy measures required to accomplish this. We will discuss some of them in the third chapter.

> TRAP #2 ENVIRONMENTAL POLLUTION
>
> Commodity systems tend to grow to the point where they overload their environment with waste products. Because the costs of pollutant accumulation are rarely felt by the producers who generate the wastes, these systems are not on their own able to avoid overshooting this limit. To avoid this trap, ***as the waste production rate approaches the waste removal rate there must be some mechanism to slow investments in new commodity producing capacity or to increase investments in practices that reduce waste.*** Because of the delays and non-local effects of pollutants in the system, such actions need to be taken well in advance of the system reaching the waste absorption limit.

Trap # 3 Community Decline: Producer incomes falling too low to sustain families and communities

> ***Soon we were in Iowa, headed south on Interstate 35 past the large sign welcoming us to the Heartland. For over a hundred miles we saw nothing but corn, soybeans, and an occasional metal building in which unseen hogs or turkeys lived out their short lives. We saw not one single person working in any of the fields we passed, nor a single farm animal grazing on what had once been a great prairie of grass. Despondent farmers would soon mount $200,000 combines to begin gathering a near-record crop destined for sale at prices that, adjusted for inflation, ranked among the very lowest of the century.***
>
> — Levins, 2000 [13]

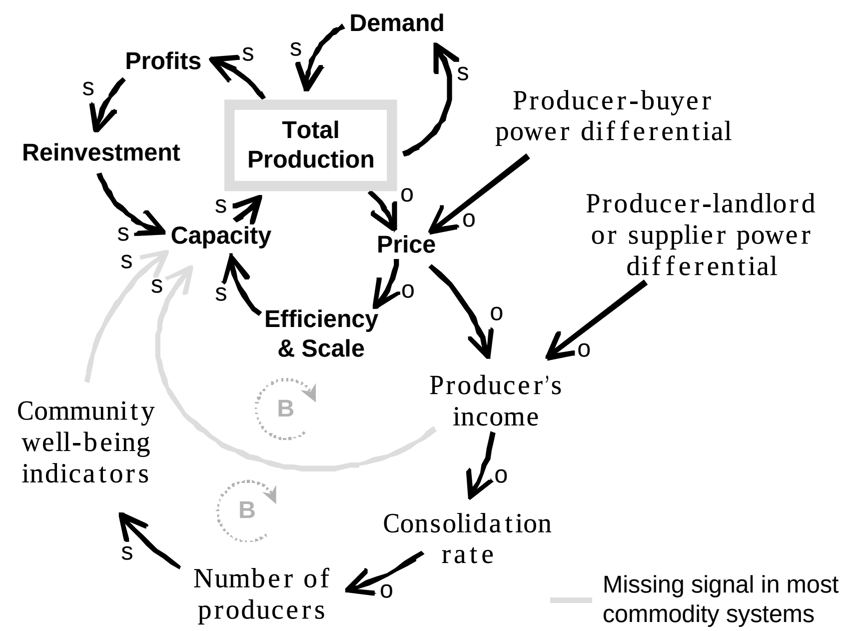
We have already seen that as production rises in commodity systems, prices tend to fall (Figure 2-3). The lower prices result in lower profits, which push some producers out of business. This means that fewer and fewer farmers, fishermen, and sawmills do the work that was once done by many producers. This decline in the number of producers ripples out into communities, impacting schools, churches, and small businesses. As the number of producers declines and the make-up of communities shift, options that were once possible fall away. This trap reduces the choices open to communities.

> ***A dramatic restructuring of the farm sector has been underway since World War II. This restructuring is evident to the most causal observer throughout many parts of the rural Midwest. Abandoned farmsteads, deserted rural schools and churches, and boarded-up businesses tell the story of changes in farming and its effects upon the rural culture. Statistics tell a similar, if not equally compelling story: from 1940 to 1990, the number of farms was reduced by two-thirds and the farm population declined from nearly one-fourth of all Americans to about 2 percent.***
>
> — ***Beyond the Amber Waves of Grain,*** 1995 [14]

Just as commodity systems can grow beyond the sustainable yield of the raw material they harvest or beyond the capacity of the environment to absorb their wastes, they can also consolidate to a point where they put severe pressure on the economic and social life of communities of producers.

Figure 2-15 shows how this plays out. As productive capacity and therefore production levels increase, the unit price of the commodity falls, in the classic behavior mode of commodities. A single farmer, coffee picker, or fisherman's income falls unless he can grow, pick, or catch enough additional volume – by using new technology for instance — to survive. What typically happens is that the producers who are least able to increase productivity leave the market. Their land, boats, and equipment are purchased by other producers, so that fewer and fewer producers own more and more production capital. Total production does not fall as these individuals leave the system because their land or boats continue producing under new ownership.

FIGURE 2-15 Community Decline Trap



The *Production growth drivers* push down *Price*—and a greater *Producer-buyer power differential* will drive down *Price* all the more. Falling price reduces the *Producer's income* (even more so when the Producer-landlord or supplier power differential is great). Falling income increases the *Consolidation rate* of producers, decreasing the *Number of producers* and lowering *Community well-being* indicators. Feedback is missing, however, that might solve the problem. Neither the falling *Community well-being* nor the falling *Producer's income* affect *Capacity.*

In some commodity systems, especially in poorer countries, the drop in income over time can have devastating impacts on a family's ability to feed, educate, and care for their children. This story — repeated all over the world — can be seen in the words of this Ethiopian farmer who saw his income drop from $320 to $50 over the course of only five years.

> ***Five to seven years ago, I was producing seven sacks of red cherry (unprocessed coffee) and this enough to buy clothes, medicines, services, and to solve so many problems. But now even if I sell four times as much, it is impossible to cover all of my expenses.***
>
> — ***Mugged: Poverty in Your Coffee Cup,*** 2002[15]

The growth processes that bring lower prices and higher production directly cause these unwanted effects — the collapse of farming and fishing communities in the developed nations, and the hunger and deprivation of producers in the poorer parts of the world. No one wants these consequences, they are not the intent of anyone in the system, but still they persist. They persist because commodity systems lack mechanisms to slow the cycle of technical advance, increased production and declining prices. Producers in commodity systems will not have healthy communities and dependable incomes until decisions about capacity growth take into account the impacts of the growth on the incomes and communities of commodity producers.

The tendency of commodity prices to decline over time is exacerbated by the power difference that often develops in commodity systems between the many relatively small producers and the few very large buyers and traders. Producers are often unable to store their commodity to wait for a better price — especially for perishable commodities like milk or fish — while buyers often have huge infrastructures for holding and storing commodities. And, in the era of globalization, buyers are able to buy commodities from wherever in the world the price is the lowest, which effectively increases the number of producers all competing to offer the lowest price.

At the same time, many types of commodity production also require inputs — seeds, fertilizer, equipment — or the rental of land. Here again there is a relationship of many commodity producers with few large input suppliers. Across many commodities it has been well documented that if ever producers' incomes rise, the costs of supplies increases almost in lockstep. This is yet another pressure on the finances of commodity producers.

Agricultural economist Richard Levins describes the situation for U.S. farmers, but the same issues apply to most commodity producers in most parts of the world.

> ***Economic power can be used to manipulate prices, to influence terms of contracts, and to affect the "rules of the game" set by government agencies at all levels. The end result of economic power is that those who have such power are able to earn profits that are not available to those who do not have it. In our present food system, farmers are the ones without economic power.***
>
> ***While the size and monopoly can increase economic power, there is one thing that can certainly reduce it: competition. Of all the economic sectors of our food system, farmers are universally regarded as being the most competitive among themselves. In a world of giants, however, such competition works against farm income. For example why do farmers rush to adopt technology that will benefit a few in the short run, but hurt everyone in the long run? The answer is competition among farmers. Why do farmers constantly strive to produce at levels that keep product prices relatively low? Again competition. And why do farmers have such low economic power that they lose profits to landowners and agribusiness giants? Once more, the answer is competition.***
>
> — Levins, 2001 [16]

Is there anything to be done about the trap of low producer incomes and pressures on commodity-producing communities? Just as for the first two traps, the key lies in making sure that decisions about increasing commodity production capacity are informed by an understanding of the effect of that decision on the incomes of commodity producers. It is important to understand that the individually rational decisions of each producer to increase capacity lead to the overproduction and low prices that affect all producers. Because of this, collective agreements by producers to limit the capacity of their system have great potential to solve this problem.

In addressing this trap one must also recognize that whenever there is a power imbalance between the producers and the people they depend upon for supplies or to buy their harvests, the tendency of the system to overproduce for ever lower prices is exacerbated. But while the large processors have the advantage of a direct brand relationship with customers and more ability to push costs down the supply chain, their individual choices are also limited by both consumer choices and competitor actions. Being in a competitive market, they experience the same type of cost reduction and expansion pressures as do producers. Emerging from the Community Decline Trap will require solutions that work for both the producer and processor communities. In the third chapter we consider some promising examples of commodity systems coping with this trap.

TRAP # 3 COMMUNITY DECLINE

The growth loops that drive rising productivity and falling prices will tend to erode the incomes of commodity producers and the social capital of producing communities. To avoid this trap, ***commodity systems must respond to declines in incomes or quality of life with measures that counteract the trend toward ever-rising production and ever falling prices.***

Integrating Social and Environmental Goals into Natural Resource Economies

The three production drivers — the Reinvestment, Efficiency Boosting, and Demand Growth Loops — allow commodity systems to serve an important goal, providing plentiful and inexpensive raw materials. But, the uni-polar orientation of commodity systems creates trouble. Recall the two basic rules around which we began our discussion of commodities: commodity systems standardize the characteristics of the raw commodity and the producer with lowest prices makes the sale. By stripping away information about how the commodity was produced, by focusing competition only on the volume and cost of production, commodity systems have served this goal extraordinarily well. But removing this information also prevents the system from responding to signs of pollution, resource depletion, and community decline.

Productivity and efficiency are undeniably important. But the three traps of commodity systems remind us that productivity and efficiency are not the "highest" goals above all others. Creating commodity systems that serve a broader range of goals will require incorporating those other goals into the structure of the rules and incentives that shape the behavior of commodity systems. Sustainable commodity systems will need to be much richer in information, full of the details that have been so intentionally stripped away in the process of commodification.

Historian William Cronin, in his book about the history of the commodities that grew up around the city of Chicago, makes this point well.

> ***Even those of us who will never trade wheat or pork bellies on the Chicago futures markets depend on those markets for our very survival. If we wish to understand the ecological consequences of our own lives — if we wish to take political and moral responsibility for those consequences — we much reconstruct the linkages between the commodities of our economy and the resources of our eco-system.***
>
> — William Cronin, ***Nature's Metropolis,*** 1991[17]

Putting these ideas into practice is a matter of very specific policy decisions and changes in actions. How does one measure the health of the resource and how can that be used to influence the growth of harvesting capacity? What is a fair income for producers? What level of waste is tolerable in any given system? How can costs of production incorporate all the costs to society of particular production practices? Can producers be rewarded for good stewardship?

These are the sorts of questions that can best be examined in the context of real decisions being made on the ground in actual natural resource economies. In the following chapter we will do just that, exploring some of the steps that stakeholders in various commodity systems have taken to address one or more of the traps we have been discussing.