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Reflections on
The Public Interest in Private
Nonindustrial Forest Lands*

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We may begin with a question: Why should the public, meaning in this case government, have any direct interest in how private nonindustrial forest lands are used or managed? One obvious answer is provided by U.S. Forest Service data showing that some 59 percent of the acreage of nominally commercial forest lands is in the hands of private nonindustrial owners. These acres accounted in 1970 for just over half of the total volume of timber removal and 58 percent of the net addition to growing stock in the nation's woodlands. Their present and potential contribution to the national supply of wood is so great that they cannot be ignored.

This leads to a refinement of the initial question: Why can we not assume that the owners of these lands will develop their productive capacity to the maximum levels justified by our need for forest products? What rationale justifies any intrusion by government into this land use problem? Why is benign neglect not the best public policy for private nonindustrial (hereafter abbreviated as PNI) forest lands?

Some impressive evidence can be assembled to support a hands-off policy on the part of government with regard to these lands. In a companion workshop paper, Marion Clawson has shown that on a regional or state basis, the annual growth on these PNI lands is not as far below the levels achieved

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on private industrial forest lands as the national data seemed to indicate. There remains, however, a deeply rooted belief that governmental action is needed to promote a more adequate realization of this segment of our forest potential. It is instructive to examine some of the roots of this belief. The examination that follows will not attempt to present an exhaustive analysis of the many arguments that can be mobilized to support a public interest in private nonindustrial forestry. The discussion instead will be focused on selected issues that pose problems of choice among alternative policies that seem especially susceptible to misinterpretation.

The overriding reason for expression of a public interest in private forest lands is the long time span involved in forest production. Studies of current federal and state programs to provide incentives to private nonindustrial forest land owners point out that forest restocking efforts of the 1970's will have no appreciable impact on timber supply until well after the year 2000. The typical forest land owner can produce grandchildren more quickly than wood in commercial quantities.

This dominance of the time dimension in forest production gives rise to fears that private land owners will lack both the information and the motivation required to make investments with little prospect of reward in their generation.

There is a close parallel between the current interest shown in public policies to promote private nonindustrial forestry and the debate in the 1930's over public assistance to farmers to promote soil and water conservation. In both cases a key argument for public intervention has been the long term, slow pay-out nature of the investment required.

In both cases, the major policy issue concerned the rationale for public aid to private land owners to persuade them to make investments that prudent business judgement should have led them to make without public assistance.

A major difference between the two arguments is that inflation was not a major consideration when public policies toward soil and water conservation were being forged. It is a major consideration in the current reexamination of the need for public policies to promote private nonindustrial forestry.

Many things are produced on forest lands in addition to trees. One of the less obvious "products" is the opportunity they provide private owners to hold an inflation hedge in times of rapidly rising prices. This hedging function is a characteristic of all real estate in inflationary periods, but it is especially attractive in forestry. Unlike agricultural lands, annual increments in forest growth occur without the expense of annual seeding or tillage. And unlike urban or residential real estate, the structures on the land--the trees--appreciate with time, while buildings depreciate. There is thus a strong incentive in times of inflation for private owners to reorder the priorities that motivate them to hold forest land. The "storehouse of value" motive increases, and the "invest to produce income" motive declines. This in turn reduces any incentive to make subtractions from current income to permit investment for long-term rewards.

One motive for public programs to support private nonindustrial forestry is to correct this implicit high rate of discount of the future. This is

but one, although the most important one, of a family of reasons that economists refer to as remedies for market failure. High interest rates are a clear signal that present goods are to be appreciated in value relative to future goods. Expectations of continuing inflation are a clear signal to acquire or retain ownership of land, but to invest as little as possible in its improvement. A major burden of inflation thus falls on forest investment by private owners.

It can be argued that responsibility for inflation in an economy as large as the United States must ultimately rest with government. A corollary is that responsibility for repairing the most serious damage done by inflation must also be assumed by government. Whether correct or not, this is unquestionably a rationale for much of the current support for public programs to provide monetary incentives for forest investment by private nonindustrial forest land owners.

The provision of a long-run timber supply from private lands has also been threatened by a complex sequence of policies generated by the much greater concern for environmental protection that has characterized past decades. The focus of much of the pressure for environmental betterment has fallen on public lands and at the federal level.

Following a survey of the historical development of policies affecting forestry in the United States, Gardner and Zivuska concluded that:

"The thrust of public policy has been to weight environmental effects and other forest uses far more heavily relative to timber output than was the situation in an earlier period. The result, whether intended or not, has been to constrain and reduce the possibilities for wood production."^{1/}

^{1/} B. Delworth Gardner and John A. Zivnuska, "Public Policies Affecting Land Devoted to Agriculture and Forests," paper presented at the annual meeting of the American Association for the Advancement of Science, Denver, Colorado, Feb. 24, 1977, p. 26.

In political terms, the least cost means of implementing environmental protection measures has been to enforce them on the public lands. In this regard, public lands have played a role in the evolution of recent environmental protection policy comparable to the role played by public agencies as employers of last resort in implementing policies for welfare, equal employment opportunities, and human rights.

It is not clear that this politically least-cost solution is also the most desirable approach in social and economic terms. If the enforcement of environmental protection measures on public forest lands reduces their contribution to timber supply, then non-public lands will become the "supplier-of-last resort", and will bear the burden of adjusting supply to demand through operation of the price system.

In technological terms, this task will be made easier on private forest lands if they are in large tracts. In political terms, the outcome may be quite different. It will be easy to mobilize public sentiment against aid to private forestry if only a few owners of large tracts are involved. Support for public aid to private forestry will be much easier to defend if it is clear that the private benefits are distributed over a large number of land owners. At some point these political considerations outweigh the technological inefficiencies of dealing with a large number of private forest land owners, holding relatively small tracts.

Economies or diseconomies of scale in the practice of forestry on private lands must thus be interpreted in several dimensions. The policy conclusions drawn from a strictly technological interpretation of the diseconomies of small-scale forestry may have short-run validity but highly disruptive long run consequences.

These reflections highlight another of the reasons advanced in support of a public interest in private nonindustrial forestry, namely, the small size of ownership tracts involved. The conventional wisdom is that diseconomies of small scale in forestry are great, and are a major handicap for tract sizes up to 500 acres and beyond. Public support in the form of grants to promote restocking, concessionary interest rates, subsidized technical advice in production and marketing, or tax reduction have all been defended as necessary to offset the diseconomies of scale that constrain the majority of PNI forest land owners. This argument calls for a closer examination.

The small size of tracts in private ownership may actually be an advantage. The major cost of forest production is the capital carrying cost. For large tracts this is an important cost. For small tracts it may not be burdensome.

On the average private nonindustrial forest tract of approximately 70 acres, the capital value of the land and the opportunity cost of holding the capital investment in the land might be as follows: Assume a return on forest capital of 3% and a return on alternative investments of 6%. The differential opportunity cost of capital investment in forestry would be 3%.

For 70 acres of land valued at \$100 per acre this differential would be \$210 per year, at \$200 per acre, \$420, at \$300 per acre, \$630, and at \$500 per acre, \$1050. The small private owner may well ignore this differential opportunity cost, reasoning that he derives annual esthetic and recreational values from his forest land of equivalent or greater value.

The owner of a large tract cannot so easily ignore his foregone opportunity for a return on capital. He is unlikely to obtain equivalent offsetting recreational, esthetic, or other non-monetary rewards from his forest land ownership. The capital costs of holding private nonindustrial forest land in larger tracts may rob forestry on private lands of one of its principal advantages, which has been the diffusion of the burden of carrying the capital cost of the investment.

This problem of technical diseconomies of small scale in forestry poses a dilemma for public policy. In a market economy the major cost of forest production is the opportunity cost of capital. Three policy options are available:

1.) Public ownership of forest lands. This does not avoid the high cost of sunk capital over long time periods but it does bury the cost in public revenue and expenditure accounts where it can be disguised to the point that it becomes politically tolerable.

2.) Subsidies to private owners of large tracts of forest lands, to cover the difference between their opportunity cost of capital and their real return on forest investments. For industrial forests we have been particularly adept at devising subsidies of this nature, primarily through income tax and property tax policies.

3.) Policies to encourage the private ownership of forest land in relatively small tracts, permitting owners to offset the opportunity cost of capital with recreational, esthetic and amenity values that are real to them but relatively costless to the national economy.

We lack the comparative data necessary to construct careful estimates of these three alternative methods of paying for the cost of waiting, which is the major cost item in forestry. Were the data available, it seems probable that they would show that alternative (3), private ownership in small tracts, would be the most cost-effective method of supporting forest capital investment. The major unknown in these speculations can be phrased as a question. Can small tract owners be provided economically with the

technical information needed to realize the production potentials of their lands, and will the timber products, produced on small tracts be available through market processes when they are ready for harvest?

These policy alternatives provide a base for a better understanding of one of the most promising means of implementing public policy for PNI forest lands: the expanded provision of technical production and marketing services to the smaller private owners. They are absorbing the capital cost of holding forest land. Any other method of meeting those capital costs is virtually certain to be more expensive, or politically disruptive. The most cost-effective way of capturing this private subsidy to the national timber supply would seem to be through an enlarged public investment in forestry extension work.

The rationale for expression of public interest in this manner is strengthened by the highly diverse nature of our national endowment of timber sites and stands. With some limited exceptions, it seems highly unlikely that large tracts suitable for uniform stocking and management could be assembled out of our existing inventory of private nonindustrial forest lands. They are for the most part dispersed among our farm lands in small tracts for reasons that are not capricious but are soundly based on considerations of soil, climate and biology. As a practical matter they must be managed as relatively small tracts or not at all.

The management decisions they require are correspondingly fragmented. The cost of this management would be prohibitive if attempted by large owners, whether public or private. The conclusion seems inescapable that we have no choice but to invest in the education of current owners to make them better managers. Given an economy based on principles of private

property, this is not simply the most cost-effective choice, it is the only choice.

A word of warning is in order at this point. In seeking ways to aid the owners of small forest tracts there have been repeated suggestions that more favorable Federal income tax treatment of cost-sharing payments to encourage replanting by private forest land owners could permit them to write off these costs as current expenses.

This will almost surely lead to unintended advantages for larger owners. The income tax advantage of writing off reforestation investments as current costs is progressively more attractive to those owners with higher incomes. An incentive of this nature would be of primary benefit to wealthy owners of large acreages. It is not "scale-neutral."

Given the existence of a graduated and progressive tax on income, there is no way income tax concessions can be used to favor small owners without granting differentially larger advantages to large owners of forest land. If the promotion of forestry on small tracts is desired, income tax concessions are explicitly not the tool to use. They are instead the principal construction material out of which tax shelters for the wealthy are built.

We are still left with some disquieting reflections. The history of land use shifts in the past four decades in the United States invites comparison with J. H. von Thünen's classic study of principles of land use, first published in 1826. In his "Isolated State" von Thünen envisaged a series of concentric circles or zones of land use, with intensity diminishing with distance from the city due to transport costs. The first zone or circle, nearest the city, would be devoted to intensive market gardening and to

milk production. The second zone would be in forest, due to the high demand for fuel wood in the city and the large element that transport costs played in total costs of wood. Field crops and more extensive forms of land use would occupy the third and subsequent zones.

To a surprising degree we are now in the process of reestablishing these forest zones in close proximity to areas of greatest urban concentration, but for quite different reasons than those that von Thünen imagined. The demand for forest land for recreational and residential uses is leading to a re-establishment of forest land uses in proximity to cities. In contrast to the fuel wood demand that von Thünen foresaw, the amenity value of forest land is now predominant in these urban forest zones. The strength of this demand is no less intense than the fuel-wood demand of 150 years ago, but the focus has shifted. The stress today is not on the characteristic of urban forest areas as a "renewable resource" but as a "renewing resource." They furnish re-creation as well as recreation.

In this sense, the demand for private nonindustrial forest land is a derivative of the congestion and frustrations of urban life. A major segment of our resources in forest lands has become an adjunct to our urban life-style.

We are forced to regard the owners of many of our private nonindustrial forest lands as consumers, not producers. This is in sharp contrast with conventional approaches in some forestry extension work, which presume private forest land owners to be ill-informed and unskillful producers of forest products.

If we reverse this presumption, and regard these owners as final consumers rather than as intermediate producers, we may gain a better perspective on the motives that condition their holdings. As a first approximation, it is clear that the market for forest land as a consumers good is highly segmented. The slow-growing, more mature and predominantly hardwood forest lands of the northeastern states are held in large volume by urban residents and professional or white collar workers. It is tempting to classify these owners as part-time urban refugees. Their motive in forest land ownership can be thought of as an "urban-push" interest.

In contrast, many of the private nonindustrial forest lands of the southeastern states are still in the hands of farmers, or of heirs only recently removed from a farm environment. Their interest in forest land holding derives less from a desire to escape the city than from a knowledge that possession of some forest land has been a necessary component of farm land ownership, in areas where farm and forest lands are heavily intermixed. They have incorporated the use of these forest tracts into their rural life style. Their motive in forest land ownership can be thought of as a "farm pull" interest.

In both the Northeast and the South, our defective data on the ownership of nonindustrial forest lands point to an initial approach that regards these owners primarily as consumers, not producers. But their motives for holding land as a consumers good may reflect sharply different goals. If this view is supported by better data in the future, it suggests that private forest land owners in the East and in the South might best be approached as consumers in highly segmented markets. If we seek to reach them with

forestry extension programs, the appropriate economic tools are those of market analysis rather than production economics, in our search for ways to aid them in pursuit of their goals.

The thrust of much current forest policy is to deny that their goals are appropriate and to insist that their primary interest in holding forest land should be the production of wood. In view of the presently defective market outlets and often unattractive stumpage prices for wood, especially in the Northeast and parts of the South, the burden of proof would seem to rest squarely on those who insist that wood production is the proper goal. Price signals in the market place are clearly indicating that privately owned forest land should properly be considered a consumers good in much of the United States today.

The preoccupation with problems of production in most discussions of private nonindustrial forest lands is a reflection of a national tendency to focus on trends in supply, and neglect the changing composition of demand. This has long been a defect in the rationale that supports our agricultural policies. Given the function of this workshop, it must be asked whether or not we are giving adequate attention to the changing structure of demand for the many products of forest land.

Over the past four decades the big increases in demand have been for particle-board, plywood, pulp and paper. What will be the future trend in these components of demand? The answer will be decisive in devising a rationale for public policy toward PNI lands. The most buoyant elements in the demand for forest products are for items that can be made from a much greater variety of sizes, shapes and species than was true two decades ago. Chipping and chip-board technology is revolutionizing our concept of

what constitutes commercial timber. The recent sharp increase in lumber prices will unquestionably intensify the search for substitutes for conventional construction lumber. It is by no means clear that we can in good conscience advise a private timberland owner what to plant, even if he is responsive to the profit motive and receptive to advice.

Consider paper and pulp: The supermarket and the packaging revolution greatly increased the forest product component in our food budget. We do not yet eat trees, but a sharply increased fraction of what we spend for food is for the products of trees. Has this trend reached its peak?

Packaging materials from petroleum now provide keen competition for paper. It is the current conventional wisdom that packaging materials from renewable resources should replace those derived from petroleum. World stocks and available exportable surpluses of timber and petroleum make it far from clear that relative prices will shift in favor of fibers from wood in the near future. Per capita consumption of forest-based packaging materials may well decline in coming decades. Per capita consumption of newsprint has already declined. The full impact of a TV culture has yet to be experienced, in terms of reliance on newspapers and printed materials for the transmission of news and information. It seems unlikely that trends in demand for "information paper" will increase in years ahead.

Consider housing: Between 1970 and 1975 an estimated 28 to 35 percent of all housing production utilized manufactured housing processes, with mobile homes accounting for 16 to 20 percent of the total. Of single family units, 40 to 50 percent were modular, panelized or mobile homes over the first half of the 1970's, with mobile homes alone accounting for

25 to 31 percent.^{2/} In 1975, the Manufactured Housing Institute has estimated that approximately one-half of all single-family detached housing units built in the United States were mobile homes.

These developments have been so recent that they have outrun our data reporting system. Realistic estimates of the impact of manufactured housing techniques have not been incorporated into projections of timber demand originating in the housing industry. We do know that the timber component of modular, panelized and mobile homes is much lower than for conventional housing units. More to the point, manufactured units can make use of particle board and other wood products fabricated from dimensions and qualities of wood supplies that were not even considered a part of timber output when existing projections of timber requirements for housing were prepared.

These reflections suggest that a critical area of needed research involves the nature of prospective demand for the products of PNI forest lands. Concern to date about the failure of these lands to achieve their biological potential has implicitly assumed a large measure of stability in the structure of demand for forest products. It is this assumption that should be subjected to a rigorous examination. No viable means of implementing a public interest in private nonindustrial forest lands can be identified until more is known about probable trends in demand for the products of these lands.

^{2/} "Mobile, Modular and Panelized Housing: Preliminary Research Findings," Minnesota Housing Finance Agency, St. Paul, November 1976.

Where income maximization is a primary goal of private nonindustrial forest land owners, we can conclude that uncertainty over markets is the critical variable. We can derive lessons in the respect from efforts to promote agricultural and forest production in developing countries. Repeated studies since 1950 have shown conclusively that production technologies are quickly adopted by producers previously regarded as uninformed or unskillful, when they are presented with realistic market prospects. In the absence of reasonably assured markets, technical aid in production has either failed outright or been of transitory, or even harmful influence. Markets are the key. Where they exist or can be stimulated, technology transfer has been surprisingly rapid.

This points to a conclusion that public support for private nonindustrial forestry will be most cost-effective if it is concentrated on the improvement of markets. Several of the states have already reached this conclusion, and are shifting their emphasis in forest extension work to the organization of producers to achieve the critical volumes needed to attract processors. This would seem to provide the strongest rationale for public investment to promote wood production on private nonindustrial forest lands.

Although paramount, the marketing dimension is not the only one that can reward public involvement. We have noted that small scale will almost surely continue to be a major structural characteristic of PNI forest land ownership units. This is in marked contrast to the major thrust of technological developments in the mechanization of forestry. Virtually all of the technology in mechanized forestry has been introduced by industry, and tailored to large-scale units. There has been a minimal investment of public funds in experiment station or other similar research into the possibilities of miniturizing this technology.

It is probable that no type of crop production in the United States is in more acute need of an appropriate technology than is forest production on private nonindustrial lands. This too would seem to promise highly cost-effective rewards from greater public investment.

At the risk of misinterpretation, it is tempting to conclude with the observation that management decision problems facing private nonindustrial forest land owners are similar to those facing the owners of junkyards. The key decision is when to sell. Market prospects are highly sensitive to the business cycle. Annual increments of growth in inventory are largely outside the control of the manager, in the short run. Total annual growth in the national inventory is relatively insensitive to price. Production is a byproduct of consumption, and an almost linear function of time.

The significance of this observation concerns attitudes and self-images. In the vacuum that until recently has characterized public policy toward private nonindustrial forest lands it has been rational for owners to conclude that they were in fact in charge of junkyards. The most rewarding rationale for public forest policy is the challenge now posed to persuade these owners that they are in truth the stewards of a precious segment of the national treasure.