

SOLAR OPTION: THE COST OF LAND

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There appears to be some confusion about what needs to be known. The key question, at least for a useful first approximation, is the difference between the value of land when used for solar generating purposes, and the potential value in any competing use. Take these one at a time.

From J. Weingart, I gather that the value of land to a solar power generating enterprise is positively related to insolation, flatness (?), and nearness to market; is inversely related to insolation variance and cloudiness; and may be subject to large minimal size thresholds. (Are there other important elements? Are these compounds of other things more easily measured?) Note particularly that for given prices of other factors, a given price for delivered power, and a particular technology, the maximum price the utility is willing to pay for land can be directly calculated from power transport costs.

Potential sites are those where the value to the utility exceeds the value in any competing use. The latter value may be approximated by price (though in any actual situation, large pre-emptors of land find they typically have to pay 1.5 to 4 times the prices that were current before assembly began). The crux of the problem is that estimating the "price" of large divided tracts in multiple use and multiple

ownership is always tricky. Demonstrating that there is "unused" land is not equivalent to saying it has zero or negligible value. Nor is it useful to maintain that the capital cost of land cannot be converted into rents, and vice versa.

There are several standard methods of estimating market value: by examining tax records, by examining records of sale, by interrogating local real estate agents, and by various combinations of these. Each has pitfalls. Taxation systems differ, often radically, from country to country, and the procedures for imputing price from tax payments will be hard to standardize; moreover, the only commonality in land tax situations is the owner's incentive to cheat by undervaluation. Thus not only the formal taxation system, but the cunning of peasants and landowners and the competence and corruptibility of the tax-gathering system have to be borne in mind. Records of actual sales are in a sense more reliable, but there may be taxation incentives for the parties to a sale to report figures other than those paid; intrafamilial transfers--which in many regions predominate--may be based on considerations other than value; there may be unreported side-payments; and of course each actual sale (or lease) reflects a host of factors peculiar to the land and individuals involved. As often as not, at least for limited areas, the best way of getting a good approximation is through interviewing real estate agents and appraisers. These agents are also able to aid the researcher by supplying information on local rates of price change, the

usual weight of the various components (land, buildings, fences, drainage, equipment, stock, etc.) in the reported aggregate figures, and other special features likely to be missed by persons without deep local familiarity.

The point to be made is that all the standard methods are expensive, time-consuming, and, without meticulous attention to local detail, liable to yield seriously misleading results. Some kind of coarse-cut first approximation, based probably on the easier to calculate considerations of what a utility is able to pay, is needed before these methods are fully applied. Before leaving the topic, however, there are two special points about land, particularly in Europe, that ought to be kept in mind.

First is the fact that monetary valuation cannot be placed on a host of site-specific values. Peasants or princes whose families have been connected with particular plots for centuries simply may not willingly sell at any price whatsoever. Ancient monuments, works of architectural distinction, places of religious pilgrimage and the like frequently cannot be priced. Analytically this may mean that a smoothly undulating price surface is punctuated by singularities of arbitrarily high value. Ignoring this leads to the kind of folly committed by the Roskill Commission; in that case, the use of insurance valuation for structures led to entering zero values in the cost/benefit ratio for such buildings as the 12th century Norman church at Cublington, and more fancifully, in Adams' extension, for Westminster Abbey,

Buckingham Palace, and so forth.<sup>(1)</sup>

Second, and much more dangerous to the whole notion of a land-extensive solar option, is that land prices have in recent decades increased at rates well above those of most other prices. In an increasingly populated, wealthy, and, perhaps especially, urbanized continent--quite aside from the substantial tax advantages that often accrue to land-holders--there is no reason to believe that this well-established trend is about to reverse itself.

Three conclusions are suggested. (1) A clear comparative-cost methodology needs to be adopted. (2) A number of factors in the price of European land make those prices hard to predict, but certainly very high. (3) For the European case, it might make sense as a matter of research strategy to devote some effort right away to the possibility of using Saharan or Middle Eastern deserts. Then two problems become paramount: politics, and the transport economics of the secondary fuel.

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(1) J.G.U. Adams, Area, 1970.