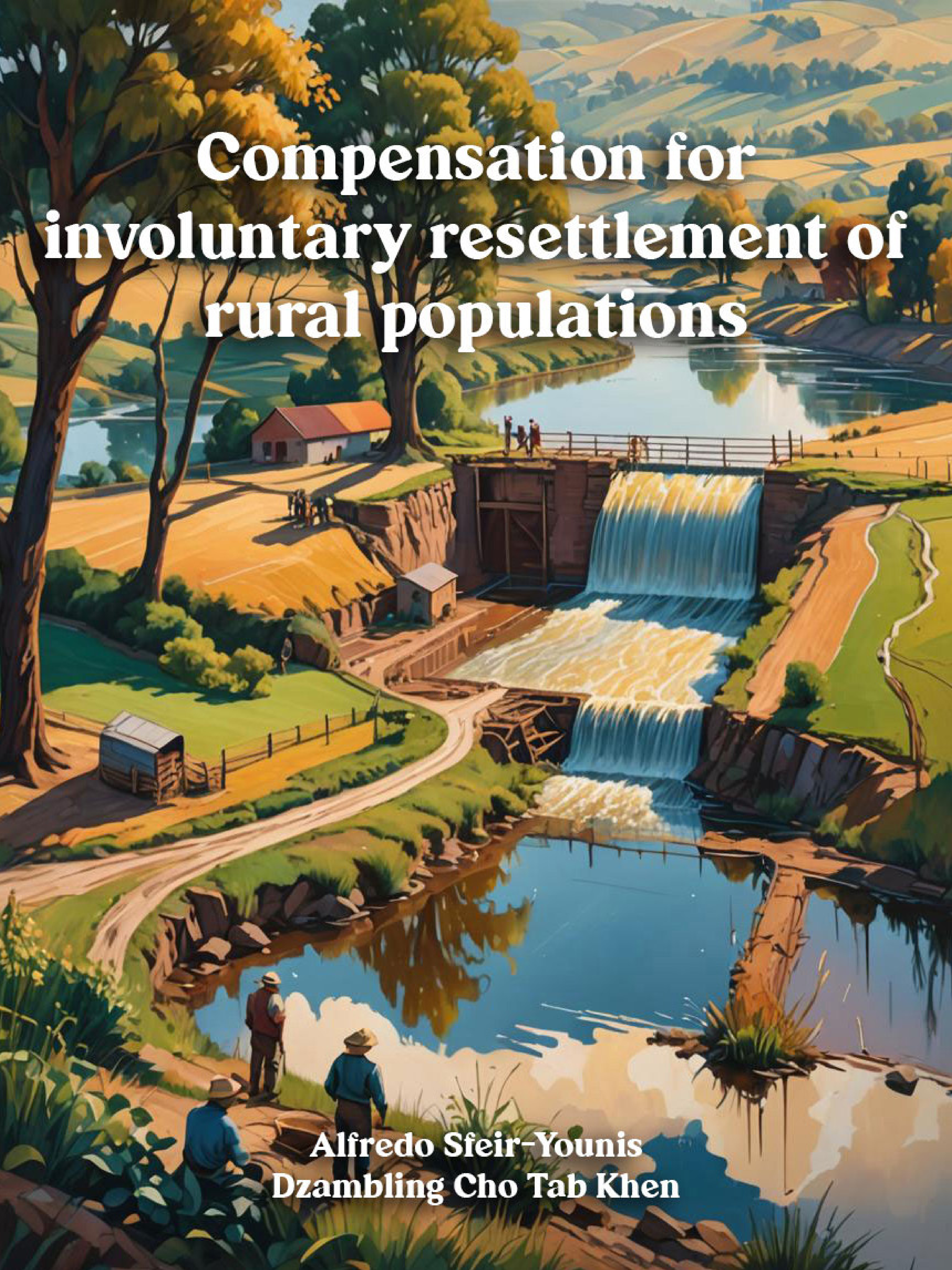

Compensation for involuntary resettlement of rural populations

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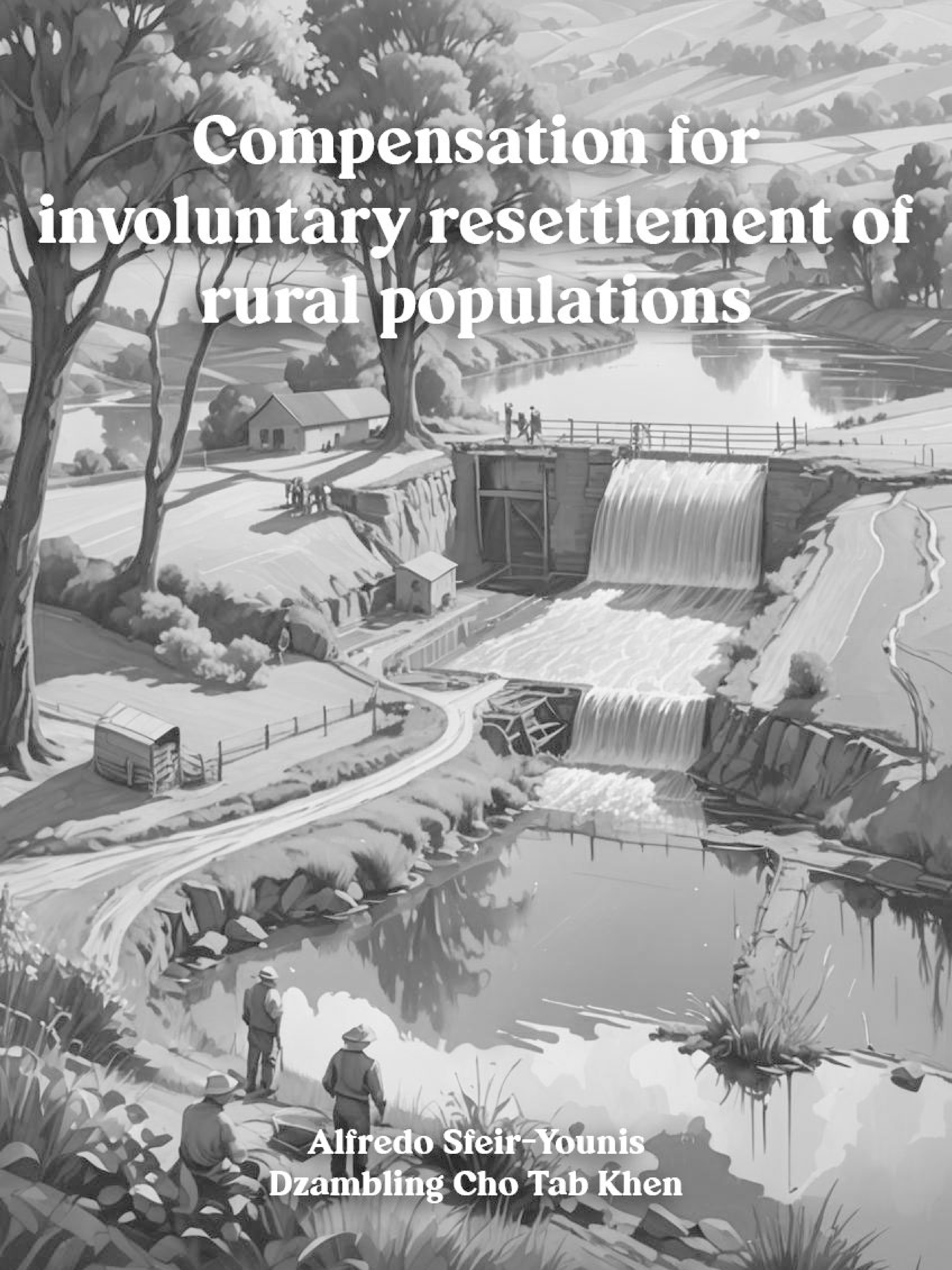

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Introduction

The exploitation of natural resources or improvement in resource management by investment or rule making--involves compensation; development projects often require a large amount of involuntary resettlement of rural population. For example, deferral of tree cutting or limitations on fish catch nay require compensation. Reforestation projects may require large amounts of land presently under habitation or slash-and-burn agriculture.

Deprivation of fuelwood supplies will also require compensation; otherwise, rural settlers will be unable to utilize food or body heat effectively. In short, compens:ztion is a complex issue which must be handled partly through economic analysis (positive as well as innovative) end partly as an art.

In development projects--the main concern of this paper —involuntary resettlement results from the construction of infrastructure, such as dams, highways, and railroads, which are supposed to facilitate regional or national economic growth, as well as from agricultural or silvicultural enterprises which are to benefit the local economy.

In the past, representatives of the central government and international aid organizations paid insufficient attention to the human problems caused by forced resettlement. Many agencies dealt with the resettlement of rural people as if it were an exogenous outcome of project design and implementation. In particular, most of the effort, if any, was devoted to study and provide some form of compensation rather than to seek for ways and means to reformulate projects with an acceptable level of resettlement.

Compensation for resettlement should be an integral part of development planning. The issue is a complex one with sociocultural implications and conceptual connections. to the theory of welfare economics.

The basic objectives of this Paper are: (a) to present a simple conceptual framework which would enable planners to assess specific trade-offs between different levels of net present value (NPV) --relfecting different alternatives in project design-- and resulting levels of involuntary resettlement; (b) to put forth a “minimum” criterion for compensation under several conditions which are illustrated by diminishing alternative development scenarios; and (c) to point out the importance of the need to determine not only how to compensate but when to compensate, including the stock (i.e., redistribution of existing wealth assets) and flow (i.e., the impact upon future income streams of those who will be compensated) effects of alternative forms of compensation. Despite the fact that examples and explanations are simple and straightforward, the issue of compensation is not easy to deal with; consequently, the paper is not intended to inelude empirical evidence, though the author is doing some empirical estimation of some of the parameters of the model offered here.

The achievement of a socially preferred state of the economy --as a Tesult of this imaginary irrigation project--might be approached by considering at least four different types of objectives: (1) mazimizing a given social welfare function $W = W (W_1,...,W)$, designating a most socially preferred state, the one with the largest ΔW; (2) qualify the socially preferred state as that one in which “everybody wins” ($\Delta W_1, > 0$)--where 1 refers to individual “i”; (3) qualify the socially preferred state as the one in which “someone wins, nobody loses” ($\Delta W_1, \geq 0$); and (4) qualify the socially preferred state as one in which “the winners outweigh the losers.”[1] This latter one seems to characterize involuntary resettlement, where the objective is to achieve a *potential* net gain (i.e., a NPV > 0).

How does one compensate the loser and still end up with a net gain? How to compensate those who will have to resettle and still show positive economic and social returns from the irrigation project? How does one measure the gains (or losses), with or without the project? How does one compensate in such a way as to end up with a distributionally neutral distribution of income “with” the project?

1 See H. H. Hinrichs, “Government Decision Making and the Theory of Benefit-Cost Analysis: A Primer” in H. H. Hinrichs and L. Taylor, eds., Program Budgeting and Benefic-Cost Analysts (Pacific Palisades, Cal.: Goodyear Publishing Co., 1969

Since equity is becoming a basic objective of development policy, compensation is an important issue. Some of the key aspects of these problems are determining (a) how compensation affects project formulation --to determine a project design which would yield acceptable ‘levels of resettlement; (b) whom to compensate —to define the gainers and losers from development projects; (c) whea to compensate —to study the role of initial wealth and of the rate of social time preferences; (d) how much to compensate —to determine the amount of compensation once appropriate levels of resettlement have been determined (reformulation) ; and (e) what are the Major institutional constraints.

Compensation and Project Formulation

Economic theory can be used to develop a framework for the formulation of projects that involve involuntary resettlement. The central issue here is to recognize an involuntary resettlement variable in the overall project identification and formulation process. Multiple-objectives **formulation** and evaluation methods[2] offer planners adequate analytic frameworks for dealing with this question if the amount of resettlement associated with a plan can be predicted. For example, in formulating an irrigation project, several options

2 A. Sfeir-Younis and D. W. Bromley, Deciston Making in Development Countries: Multiobjective Formulation and Evaluation Methods (New York; Praeger, 1977).

generally are open: location ard size. The location and size of a dam clearly influence the number of people who would have to go through involuntary resettlement. By solving this optimization problem, planners will have a clear idea about the implicit shadow price of involuntary settlement when different options for locating the project are involved. In the end, this analysis becomes a question of assigning values for how much society is willing to pay for forcing a farmer to resettle. It is important to compare this shadow price with the prices soctety is willing to pay for an extra bundle of commodities when project design changes. The solution to this problem might not be easy to achieve. Yet, it may be desirable to make the involuntary resettlement variable explicit in decision making rather than just a residual that can be patched up by funding a separate project compenent.

The example presented here is simple and does not deal with such complications as the smoothness or convexity of mathematical functions. The analysis here will provide a framework which will illustrate some relevant tradeoffs. Other modifications may be introduced to make this problem more realistic.

First, assume that project formulation and design will be carried out, considering two main objectives: (1) maximization of efficiency measured by the net present value (NPV) of alternative designs, and (2) minimization of involuntary resettlement (IR). Furthermore, let us assume that NPV is a function of the height of a dam. Since the height of the dam is highly correlated with the amount of water stored in the reservoir, for simplification purposes one can use water levels as a proxy for “dam height.” NVP may also depend on the location of the dam. IR is also assumed to be a function of the water level stored in the reservoir and the location of the dam. The IR variable can be defined, for example, in terms of (1) number of people resettled, (2) number of hectares taken, or (3) the opportunity cost of foregone output.

Alternative formulations of the project are considered here to be technically feasible. In reality, there may be limited options in project design; for example, there might be indivisibilities in project scale. In order to build a dam, a minimum amount of water to be stored in the reservoir must be available.

This simplified view of project formulation may be defined in mathematical terms as follows:

$F = F$ (NPV, IR) (1)

$NPV = f_1$ (W,L) (2)

$IR = f_2$ (W,L) (3)

In this case, of a high vaue for IR (IR_M).[3] A social welfare function that maximizes only NPV has been labeled as F_{NPV}, in fact, society gives considerable weight (in the sense of having a social value) to involuntary resettlement, the social welfare function might be represented by a set of F_0 curves, where the optimal levels of economic efficiency and involuntary resettlement will be set at NPV* and IR* (determined at $F_0 = F^*_0$). Therefore, one should select the project from a series of mutually exclusive alternatives which produces that optimal level of NPV and IR if location L_0 is chosen.

However, we can also vary the location of the project, as another dimension of the problem, producing several interesting results. A new location for the dam, let's say $L = L_1$ may shift f_1 downward (see $f^1{}_1$) or upward (see $f^2{}_1$) for all values of W, or it may induce

3 The point IR_{MAX} depicts a situation where the number of people who have to resettle comes out as a residual of formulating a project which will only maximise economic efficiency (NPV).

mixed results (NPV function will go over $f_1(W, L_0)$for certain values for W and go under for another set
of values for W (see $f^3{}_1$). Changes in location also affect f_2 (see $f^3{}_2$).

Changes in location may shift the situation to a new NPV-IR trade-off curve, uy in the top right part of the diagram. In this case, society ends up at a NPV_{L_1}, which exceeds NPV_0 and IR_{L_1} less than IR^*_0 , yielding a net gain in welfare of $(F^*_1 - F^*_0)$. Other hypothetical situations may bedefined in which overall social welfare decreases or remains the same.

In a real-world situation, there may not be a well-defined or revealed social welfare function. In that case, one will have to providethepolicymakerwith"nondominant"or"Pareto"solutions. Nondominant solutions are those where an increase in NPV implies an increase in IR and are represented by the shaded area of the NPV-IR curves. Then, the policymaker will choose a point on the Pareto frontier. The choice among alternative points on the Pareto frontier may depend on the criterion for compensation. This analytic framework can be expanded to include several other objectives and constraints.

Whom to Compensate

Beyond the mathematics, there are some serious difficulties in identifying what individuals should receive compensation. Often, it is assumed that the losers are all of those farmers who are forced to resettle and the gainers those farmers who remain in the area. Of course, this is not always true; there might be several groups who gain (or lose) as a result of the project. For example, there are some people who are not defined as direct beneficiaries such as agricultural goods processors whose profits increase (net gainers) and downstream fishermen who incur losses due to the construction of an impoundment (net losers). It should not be assumed that the only potential losers are those who must move.

Once the government has decided that the state "with" the project is preferable to the state "without" the project, the determination of gains and losses will very much depend on a careful assessment of: (1) the value of initial assers held by each individual before the implementation of the project (stock of wealth), and (2) the magnitude of stock and flow effects resulting from a move from the "without" to the "with" project state. Both of these issues are interrelated since the initial value of existing assets is a function of wealth of stock possesed by each individual.

First, large farmers who possess more wealth from the start of the project and who will, presumably, lose a small proportion of land will be able to spread losses across their portfolio (stock of wealth) much better than those small farmers who lose large proportions of their lands (small portfolio). In some cases, the loss measured by the number of hectares that will potentially be under water due to the construction of the water reservoir, may become a net gain in the sense that water may be available to irrigate large proportions of land (previously rainfed land) that otherwise were only marginal to production, e.g., change in the quality of each component of the portfolio. The portfolio adjustment between rainfed and irrigated land, resulting from the construction of the reservoir, is sometimes much smoother than the portfolio adjustment carried out by small farmers. (Inerease in overall land values also helps; large farmers end up with a more expensive portfolio of land.) Therefore, the expectation that land prices were to rise may induce many large farmers to stop land sales before the project was implemented.

Second, the land possessed by each individual farmer will change due to the project; this is the stock effect (i.e., in terms of hectares and in terms of value). The income streams by each unlt of the stock will change due to the project; this is the flow effect (i.e., net present value of future output). Both, the stock and the flow effects will determine the net income borne by each individual farmer and the pattern of income distribution resulting from the project. However, the distinct:ion between stock and flow effects becomes important when farmers do not own the land they are working on. Other factors that should be considered are speculative increases in land prices beyond changes in its marginal preductivicy and changes in the supply of unpriced inputs. Equity also demands that small farmers whose entire block of land is taken receive more compensation than large farmers who lose the same amount of land when it is only one percent of their portfolio.

Therefore, planners have to distinguish several cases before compensation for net losses takes place: (a) where the stock effect is high but the flow effect is small; (b) where the stock effect is low or negative but the flow effect may be high; and. (c) any other combination. An example of case (a) are those large farmers who end up ("with" the project) having more land in relative terms than other farmers ("without" the project) but where the access to water may be more costly and the net income per hectare may be lower (in relative terms) "with" than "without" the project. An example of case (b) are those farmers who might have ended up with smaller size farms but located much closer to the watercourse (i.e., better access to water) and, therefore, their net income per hectare may be much higher (i.e., again in relative terms) "with" than "without" the project.

When to Compensate

A major issue is *when* to compensate. As the initial stock of wealth determines the distributional impact of alternative compensation systems, the marginal rate of social time preferences is the key variable in determining when to compensate. Assuming that planners have found a formula for compensation (see the next section), should they compensate in cash or in kind after completion of the project or should they compensate farmers before the project is fully underway? If one compensates in cash after the fact, many years may pass before low-income farmers receive any payment.

If compensation is paid many years before the land is actually taken, small farmers will tend to spend the “windfall” cash ‘in consumption items rather than on investments (new land). This kind of compensation of low-income families results in redistribution from future consumption to present consumption. Compensation of large farmers, on the other hand, results in redistribution of savings rather than consumption because of lower individual time preferences. Anecdotal evidence from the Rapel Dam case in Chile suggests that small farmers spent most of their money almost immediately and that large farmers invested in new cars, leisure trips, or new farm machinery.

If compensation is paid in kind by giving farmers land, one might frustrate those farmers who would like to move out of agriculture. Many young farmers tend to migrate to adjacent cities. This is mostly due to the expectation that the irrigation project would incrase the level of income across the board and that income increases would materialize in consumption expenditures.

Difficult complementary issues are involved in optimization of compensation. For instance, should farmers decide (“with or “without” the project) if they want to be compensated to stay in agriculture or to move to other sectors in the economy? This is an issue very much in debate in international trade policies when tariffs or quotas create unemployment and people are "compensated" to move into other sectors of the economy. Should compensation encourage the farmer to move into the industrial sector by providing training and expanded employment opportunities? Or should the project compensate farmers to stay in agriculture by keeping them at least as well off as they were "without' the project?

How Much to Compensate

As the formulation process required planners to focus on ways of minimizing the number of people who have to go through involuntary resettlement, the reformulation process assumes that a defined number of people will be resettled involuntarily (let's say IR*); therefore, it addresses the question of how to compensate them. This is called here the reformulation process.

In this process, planners have already made up their minds about the extent of resettlement, and there is clear evidence of who needs to be compensated. In other words, one has to define how to compensate farmers who would suffer from involuntary resettlement. Choosing among alternative criteria for compensation is not a "value free" process. It involves "normative" judgment problems such as whether it is socially acceptable for farmers to remain in agriculture and whether the present pattern of land distribution is acceptable. The answers to these types of questions are crucial since they will determine what society will compensate for. The answers to these questions are specific to a particular society and must be answered in the context of individual projects. Therefore, in discussing suggestions for compensation formulas, this section will assume that: (1) once the project has been formulated in such a way as to minimize the number of people that will "suffer" from involuntary resettlement, society wants to keep farmers devoted to agriculture, and (2) society accepts the existing distribution of land so that compensation will be distributionally neutral.

Under these assumptions, society must compensate a farmer by an amount that will cover the move to a new agricultural enterprise "with" the project which is equivalent, on distrbution grounds, to the old agricultural enterprise "without" the project.

This criterion refers to quantifiable factors, mostly economic ones. For intangible factors, an arbitrary additional amount could be provided. Intangible factors include the presence of an old sacred tree, nice neighbors, and beautiful scenery, and they can be valued by determining the price each individual is willing to pay to forego consumption of that commodity.

In terms of a specific formula for those quantifiable elements, I propose that farmers should be compensated according to an "equivalent hectare" criterion. This rule requires payment in equivalent value or in kind of enough land to generate an equivalent social value "with" the project. Equivalence is measured in a distributional sense relative to "without" the project and may involve more or less land than the amount taken. This is a minimum amount of compensation since it does not account for losses in the cultural and social environment.

The application of an "equivalent hectare" criterion depends upon several factors and assumptions. Therefore, before this criterion is applied, one has to define the scenario to which the formulas will be applied.

Scenario I. The compensation process may be characterized by a “zero-sum game” situation in which the amount someone loses equals the amount someone else gains. This scenario is representative of areas where land is a constraint, and compensation involves a major redistribution of assests “with” the project.

Here is a simple example of a zero-sum game situation in terms of the number of **hectares** to be redistributed. Assume that (1) there is a farming area of 100 equally productive hectares “without” the project, having a social value of Rs 100.000. (2) there are only two farmers: A with 90 hectares and B with 10 hectares; (3) the social value of the stock of land is strictly proportional to the number of hectares so that A has Rs 90.000 and B has Rs 10.000; (4) farmer B is the one who has to resettle; and (5) the social value of land with the project is Rs 200.000.

If, as a matter of policy, the distributional stock effects are expected to be zero, A should make Rs 180.000 “with” the project and B should make Rs 20.000. Since there are only 90 hectares remaining for the use of both A and B, the total price per hectare is Rs 2.222,22 instead of Rs 1.000 “without” the project. To compensate farmer B and force a constant relative distribution of income, one would need to provide him with 9 hectares so he can make the Rs 20.000 needed to have the equivalent of 10 percent of the total asset value.

Problems arise when one compensates farmets with (1) the number of hectares they had “without” the project or (2) the per hectare value “without” the project. Under Scenario I, compensation type (1) will overcompensate farmer B; therefore, the distribution of assets “with” the project will not be distributionally neutral. In other words, by compensating farmer B with 10 hectares, he will be able to appropriate Rs 22.222 “with” the project and farmer A will be able to appropriate Rs 177.778; the relative distribution of the stock becomes 12 percent versus 88 percent rather than 10 percent versus 90 percent “without” the project, a move in favor of farmer B. Compensation type (2) will undercompensate farmer B, redistributing assets in favor of farmer A. In particular, if farmer B gets Rs 10.000, he will be able to afford only 4.5 hectares of land (half of what the “equivalent hectare” criterion recommends). This results ina distribution of 5 percent of the asset to farmer B and 95 percent to Farmer A.

It is important to note that, despite the fact that nobody seems to be worse off “with” the project, the new state of welfare may result in “unacceptable” distribution of assets. In the zero-sum game case, this distribution is more “drastic,” since it takes place under conditions of land constraints.

This scenario can be expanded to account for a larger number of farmers. Let us assume three farmers, A, B, and C, who possess 70, 25, and 5 hectares, respectively, “without” the project; suppose that farmer C has to be fully compensated. If “without” the project assets total Rs 100.000 and “with” the project total Rs 200.000, then, optimal compensation implies granting farmer C 9.5 hectares “with” the project.

Scenario II. This scenario occurs when land is not a constraint, for instance, when public land is freely available for compensation. If land is not a constraint, the criterion seems less complicated. Using the same example developed before, farmer A will continue to have his 90 hectares, and farmer B will have to be compensated with 10 hectares in order to maintain a neutral distribution of the total asset value, Rs 222.222,22.

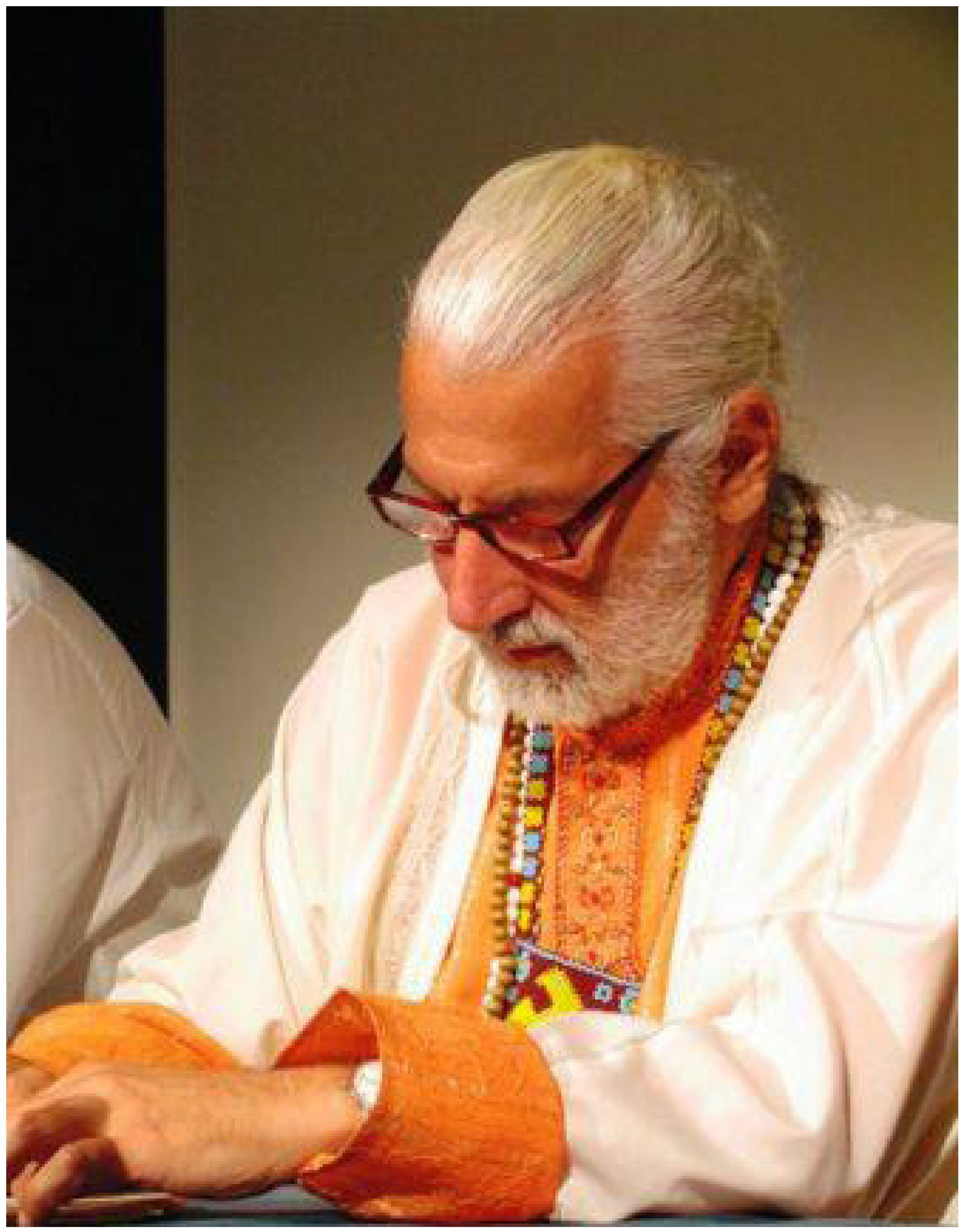
Institutional Constraints

Additional scenarios can be developed to incorporate different types of land, economies of scale and institutional constraints. Also, there night be different ways to compensate, such as through subsidized loans to purchase new land or priority rules for allocating publicly owned land. Land ownership constraints, policies for moving people out of agriculture, and overcompensation may be especially common.

Land Ownership Constraints. The zero-sum game scenario assumes that land is a constraint and, therefore, land distribution has to take place as a result of compensation. Yet land redistribution may be constrained by land subdivision regulations and unexpropriable, privately owned land. In some cases, where land can be subdivided and government lets the land market operate freely, a few large landowners may withhold land from sale under the expectation that a substantial capital gain due to the project will take place. After this stock effect adjustment takes place, the market would operate again. Therefore, under this set of circumstances, one would be forced to compensate in cash rather than provide land and would have to forecast the changes in land prices resulting from stock effects.

Moving People out of Agriculture. How much would society be willing to compensate if people are forced to nove out of agriculture? The major issue here is: Would the “hectare equivalent” provide enough money to compensate small farmers who are forced out of agriculture? In my experience, the amount of compensation allocated to the small farmer (minifundista) is not enough. Small farmers who move to the city face higher price levels, and the level of cash expenditures for food, housing, and transport is much higher than in rural areas.

Overcompensation. Due to the large array of institutional arrangements such as subsidized interest rates, price supports, and property tax advantages, the system might end up overcompensating certain groups more than the “equivalent hectare” criterion or even the total compensation (including sociocultural losses). To the extent that rural emigrants enjoy the “glitter of city lights”, they may be overcompensated for moving to urban areas.



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