

How Third World Rural Households Adapt to Energy Stress: The Evidence and the Issues

Philip Payne and Michael Lipton

People can adjust to environmental changes by calling on a wide range of physical attributes, capabilities, and behaviors. For survival, probably the most important are those that make it possible to prevent serious imbalances between food energy needs and the amount of food that can be acquired at acceptable cost. Those who formulate food and agricultural policies need to know the scope, costs, and benefits of the more common adaptive strategies used by poor people, who are normally at greatest risk of energy stress.

In particular, policymakers and analysts need to assess the scope and limits of adjustments by individuals or groups. When might adjustments fail to be biologically adaptive, that is, to reduce the risk that adverse effects of undernourishment will prevent individuals from contributing to the genetic inheritance of future generations? Even if adjustments are biologically adaptive, when are they likely to involve unacceptable suffering, damage to health, or social incapacity?

In *How Third World Households Adapt to Dietary Energy Stress: The Evidence and the Issues*, IFPRI Food Policy Review 2, Philip Payne and Michael Lipton draw upon relevant literature from a range of subjects spanning the biological, behavioral, and social sciences and set out a conceptual framework to identify the current state of knowledge—and the gaps in it.

Ongoing Controversy on Adaptations

An often bitter controversy surrounds this subject. Its verbal, empirical, theoretical, and ethical components have required the reduction of semantic confusion by precise definition and consistency in the use of terms as well as a clear distinction between (1) uncertainties of science (or of measurement) that limit agreement about the extent, costs, or consequences of various forms of adaptation, and (2) evaluative disagreements about whether a particular form or degree of adaptation is “acceptable” on humanitarian or other grounds.

For example, in assessing adaptations to dietary energy stress—such as (in adults) slower and longer work or modest reductions in metabolic rate, or (in children) modest height retardation or reduction in the extent of play—it is necessary to separate disagreements about the extent to which such changes actually take place, can be reliably measured, are triggered by dietary energy stress, remove or relieve that stress, are adaptive in the strict biological sense, and are acceptable on humanitarian or other grounds.

Recent research underscores the subtlety and complexity of the components of adaptive response. Faced with a shortage of food, people appear first to decide to reduce discretionary activity or to modify the duration or intensity of economic work. Such behavioral changes reduce the pressure toward biological adaptation.

In hard times, working adults may temporarily lose body weight. This loss is an adaptation to stress in the short run by using previously stored energy, and in the long run by reducing food energy requirements for maintaining subsequent smaller body weight. A similar principle applies to small children. Inadequate food and frequent infection in the first two years of life usually mean that survivors face irreversibly slower growth and smaller adult body size. Although reducing the capacity for some forms of hard physical work, this again reduces the proportion of total energy expenditure and, therefore, intake needed for maintenance. To describe such processes as adaptive is not to say that they are desirable—only that available alternatives appear to be even worse for survival.

At the household level, responses are behavioral rather than biological. They include redistribution of food among household members; redistribution of work over time to avoid mismatches between food needs and food availability; specialization of skills, types, and rates of work, and types and timings of food intake among family members to match their body characteristics; and adjustments of energy spent in social activities, as against economic work.

The authors reject the inference that because poor people and households often use adaptive strategies, it is acceptable for them to stay poor or stunted. However, the richness and variability of choice in adaptive re-

sponse—behavioral as well as biological—is one of the few assets possessed by the poor and can be crucial to survival.

Thus the main policy implication of the review is that strategies normally adopted by families in response to energy stress must be understood in order to find effective ways of helping these families. The review surveys the places, times, and circumstances in which various responses to energy stress have been experienced. Too little is known about how such responses—though clearly improving survival prospects—may involve other unacceptable consequences such as damage to health or livelihood. Without such knowledge, policymakers cannot efficiently allocate nutritional and health resources, and may disrupt valid coping mechanisms by imposing outsiders' perceptions of what the priorities and responses of the poor "ought to be."

With this in mind, the review examines the timing of stress and response, and identifies the sources of energy stress and the mechanisms by which the body avoids or minimizes the resulting strain or, if damage is unavoidable, limits the type and extent. Common patterns of combinations of biological and behavioral responses are described, and evidence is surveyed as to which groups are especially liable to experience the different forms of energy stress.

Contexts of Energy Stress

This review is a guide to the contexts within which the threat of energy stress is common, and to the strategies for avoidance, repartitioning, resistance, or tolerance that people show in a variety of circumstances. Why is this apparently natural approach not more commonly attempted? In fact, there is both an artificial *consensus* and an artificial *controversy* around the issue of adaptation to dietary energy stress. Both consensus and controversy stem from making generalizations over a very large, but imperfectly defined, range. In contrast to this, the essence of the contextual approach is the need to define precisely the circumstances under which, for example, a particular degree of reduction in child growth or play, or of adult weight or metabolic rate, or work level, would have particular consequences that were—given the circumstances and options—on balance desirable or undesirable.

The authors find the controversy about adaptation as artificial as the consensus about norms and adequacy, stemming as much from semantic

confusion as from real scientific or ethical differences. Both consensus and controversy wrongly imply that there *can* be a universal answer to questions such as whether bigness is good and smallness bad, and more generally whether particular forms of adaptation, if they exist at all, are desirable. It has to depend on context. And the context is complicated because early environmental stresses almost irreversibly map people onto a time-path to smallness in adulthood. Yet it is in later childhood, and in adulthood, that the question of whether it is good or bad to be small will be determined, and the answer must depend on context. For farm workers who do much walking and stooping but little heavy lifting, pulling, or pushing—and who cannot afford much food—adult shortness and a low body mass index are likely to be net advantages. For a lumberjack who can afford enough food but needs cash to put children through school, they are net disadvantages.

All agree that high levels of recurrent illness, and the low levels of child care and feeding that are all many poor households can afford, are unacceptable. But it is economic development that produces healthier, bigger bodies, not the other way round. In many circumstances, biological adaptations are undesirable obstacles to human improvement. In other circumstances, these adaptations are the best feasible solutions and should be allowed to disappear in the course of development and poverty reduction, rather than being seen as evils in themselves.

Recommendations for Research

Future research agendas, for biological and sociobehavioral sciences alike, need to be more careful to avoid advocacy, especially of a claimed consensus. Research on adaptation to dietary energy stress should aim to reveal choices and their consequences accurately, so that people increase their capacity to influence the processes affecting their own nutrition, health, and capabilities. Participatory appraisal and action in nutrition should become the norm, beginning with analyses of alternatives open to a particular community—not with global norms, whether for consumption or body size, that ignore that community's options and constraints. And perhaps the ethical standards, determining which adaptations are "acceptable" and which should be translated into political priorities, should also derive from the communities themselves.

Please send me a copy of Food Policy Review 2, *How Third World Rural Households Adapt to Energy Stress: The Evidence and the Issues*, by Philip Payne and Michael Lipton.

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