Regional Review of Social Safety Net Approaches

In Support of Energy-Sector Reform

Appendix 4:

Energy Reform and Social Protection in Hungary

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Abstract

The energy sector reform process is occurring throughout the transition countries of Central and Eastern Europe (CEE) and Eurasia. The United States Agency for International Development (USAID) has supported this process in numerous countries. The electricity sector reform process involves establishing a modern legal and regulatory framework, unbundling the monopoly electric utility into separate generation, transmission and distribution companies, and creating a competitive electricity market and privatization. This process is leading to the introduction of transparent commercial operations, modern technology, and investment that is needed to provide reliable and economic service for the long run. The transition to this end goal includes increasing tariffs and the collection enforcement for the supplied electricity.

During the transition there will be some impact on vulnerable populations. To identify approaches that will ease the impact on these populations, a multi-country study was conducted to identify social safety net approaches in support of energy-sector reform. This report documents this activity's results. The study identifies and documents lessons learned and best practices to ease the transition impact of power sector reform.

The three approaches to helping low-income households afford energy are contrasted and compared. The approaches are: 1) subsidies and assistance payments; 2) energy-efficiency mechanisms; and 3) tariffs. Each mechanism's impact is analyzed using a matrix that compares a range of quantifiable evaluation criteria.

The country reports (appendices) review the mechanisms that Armenia, Bulgaria, Hungary, Kazakhstan and Romania have used.

The results are available for government policymakers, international financial institutions, donors, and others interested in power sector reform and addressing the needs of vulnerable populations.

Table of Contents

Acronyms and Terms

CA	Condominium Association
CEE	Central and Eastern Europe
CFL	Compact fluorescent lamp
CHP	Combined heat and power
COMECON	Council for Mutual Economic Assistance
EBRD	European Bank for Reconstruction and Development
ELI	Efficiency Lighting Initiative
EPC	Energy performance contract
ERRA	Energy Regulators Regional Association
ESAP	Energy Savings Action Plan
ESCF	Energy Savings Coal Fund
ESCO	Energy service company
ESCP	Energy Saving Credit Program
ESP	Energy Saving Program
EU	European Union
GDC	Gas distribution companies
GDP	Gross Domestic Product
GOH	Government of Hungary
GSL	General service incandescent lamp
HCA	Heat cost allocator
HCSO	Hungarian Central Statistical Office
HEECP	Hungarian Energy Efficiency Co-financing Program
HEO	Hungarian Energy Office (MEH in Hungarian)
HUF	Hungarian *Forint*
IEA	International Energy Agency
kWh	Kilowatt hour
LPG	Liquid petroleum gas
MATÁSZS	Association of District Heating Companies
MEH	Hungarian Energy Office
MOF	Ministry of Finance
MOL	Magyar Olay-es Gazipari Rt.
Mtoe	Metric ton of oil equivalent
MVM	Magyar Villamos Muvek Rt.
MWh	Megawatt hour
OECD	Organization for Economic Cooperation and Development
TJ	Terajoules
TRV	Thermostatic radiator valve
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
USD	United States Dollar
VAT	Value Added Tax (European sales tax)

Executive Summary

Although energy prices have increased in all post-communist countries since the early 1990s, experts believe that prices must rise further in Hungary to reach long-term market-pricing levels.[1] Therefore, additional reforms in the energy sector are likely to increase costs to Hungarian consumers for electricity, gas, coal, and heat. With real wages flat in Hungary, price increases will present difficulties to most households; poor households, however, will be at the greatest risk because energy costs will claim a greater proportion of their household expenditures. These trends suggest that price liberalization must go hand-in-hand with measures that relieve fiscal pressures on households, especially poor households.

This report provides an overview of reforms in the energy sector and describes the policies Hungary has implemented to help both poor and non-poor households meet their energy and utility needs. The report focuses on three approaches for aiding low-income households: 1) social payments for energy, 2) energy-efficiency measures, and 3) tariffs. It is meant to provide policymakers with perspectives on the relative importance of each approach to assisting low-income households, while providing policy options for improving social protection for the poor.

The Hungarian government's efforts to assist the poor share two major problems with certain other post-communist societies. First, current distortions in energy pricing—besides being inefficient—are unfair to low-income groups; under the current system of energy pricing and assistance, poor households receive less assistance than do non-poor households. Second, the current system of forming energy policy in Hungary does not seriously consider social criteria when formulating energy policy, nor does it effectively consider poor households as independent stakeholders.

In addition to these two major findings, the study also revealed that:

- Poverty has increased significantly since 1989. Using a poverty line of less than $4 per day (HUF 22,800, or $96), the Hungarian Statistical Office estimated that 26 percent of the population fell into poverty in 1999, representing 2.6 million people. That same year it was estimated that 11 percent of the population existed on under $2.15 per day.
- Although Hungary maintains an extensive social safety net, most social transfers are directed to non-poor households. Social spending for poor households declined dramatically in real terms throughout the 1990s, and most studies suggest that current levels of social assistance and poverty benefits for poor households are inadequate.
- Prior to 1999, Hungary used a lifeline tariff (with three blocks) to aid poor households with electricity costs. After 1999, Hungary eliminated such tariffs for all residential electricity and gas customers because it was viewed as inefficient and unfair. The *Hungarian Energy Policy Statement* (1999) suggests that future government policies

[1] EBRD, 2001; Gerse, 2001; Kessides, 2001.

will use neither lifeline nor social tariffs to help the poor cope with increasing utility costs. However, the new *Electric and Gas Acts* will allow social supplies of both electricity and gas to low-income households.

- Thus far, untargeted across-the-board price subsidies have been among the most important means of aiding households with energy costs. The largest household subsidies are provided to residential gas customers. Subsidies to residential electric customers continue, but at considerably lower levels than gas subsidies. Utility subsidies are expensive and provide much higher benefits to non-poor households than to poor households. Across-the-board electric and gas subsidies provided to non-poor households are annually almost triple all subsidies and aid provided to poor households for energy.
- Hungary has used different programs to provide energy assistance to low-income families. Several temporary assistance programs, for example, have used private funds to assist the poor. However, the main government-sponsored mechanism to assist poor households with energy costs is the housing-maintenance program. Relatively small when compared with other energy programs in Eastern Europe, this program provides general household assistance for energy and non-energy needs to approximately 5 percent of all households in Hungary. Like other social assistance programs, this program witnessed a decline in funding throughout much of the 1990s, despite large price increases for household energy.
- Energy-efficiency programs, while proliferating throughout Hungarian society, are not aimed at helping poor households reduce their energy consumption. This survey shows that poverty-reduction criteria do not influence official Hungarian energy-efficiency policies. Instead, these policies are mainly the product of environmental and economic planning. Current energy-efficiency programs have been designed to advance economic development and minimize environmental harms. Social goals intended to help the least well off very rarely enter as criteria when national energy-efficiency policies or programs are developed.
- The development of energy service companies (ESCOs) in Hungary presents an important opportunity for applications to low-income, residential energy efficiency through public investment projects. Although current governmental policies are mainly concerned with economic development, with small changes and additional investment it is possible to use ESCOs to aid low-income populations. ESCOs represent a viable model to promote energy efficiency among low-income households, using municipal governments as a means to achieve this.

Chapter 1
Energy Restructuring and the Social Safety Net

One of the leaders in Eastern European reforms, Hungary serves as an excellent illustration of the problems facing post-communist countries interested in utility reforms. In terms of energy sector privatization, Hungary has made perhaps the strongest advances in utility privatization among post-communist states. During 1990-2000, Hungary attracted $11.9 billion in privatization revenue, equivalent to 27 percent of Gross Domestic Product (GDP) in this period.[2] Hungary also improved the state regulatory capacity of utilities, noticeably increased local energy-efficiency awareness, and provided for additional investments in energy efficiency. Yet these gains have not translated into fully liberalized pricing for energy, nor have they restructured the energy sector in ways that better help the poor.

In part because of rising energy prices, Hungary experienced increasing poverty during the 1990s. However, the country's energy policies are not designed to protect the poor from such price increases. Social assistance programs designed to help the poor with energy payments declined all through the 1990s. Even more distressing is the fact that local governments frequently cannot meet their fiscal duties to the poor—instead, using for other local needs the national resources explicitly targeted to poor households.

The tariff systems for residential electricity and gas are currently not designed to target the poor or to help them better cope with consumer price increases. Moreover, the better-off households are the chief recipients of electric and gas subsidies. While proliferating throughout Hungarian society, energy-efficiency programs are not aimed at poor households. Although energy restructuring in Hungary has progressed well, it has left the poor much worse off when compared with their situation before the transition process.

A. Energy-Sector Reforms

Since the early 1990s, Hungary has been a leader in gaining the largest per-capita percentage of foreign investments in its economy compared with other Central European states (Ludányi 1996; Hunya 2001). The energy sector also reflects this trend and has attracted considerable foreign investment (Pesic and Ürge-Vorsatz 2001). After dismantling state-owned utilities, Hungary moved aggressively in the 1990s to privatize electricity production and distribution companies. Now, the electricity sector has a majority of companies privatized, with additional reforms expected as a result of the new *Act on Electricity* passed in December 2001.[3]

The gas sector has experienced fewer reforms in ownership structure and pricing, with a large monopoly company controlling all natural gas production, importation, and

[2] EBRD, 2001, 154.

[3] Although the Hungarian Parliament passed this act in December 2001, many specific regulations and standards associated with the act have not yet been specified. At the end of 2002, the details of this legislation were not yet available.

storage. Residential gas prices remain regulated and capped well below accepted international standards. The district-heating sector has experienced more changes in ownership structure compared with the gas sector, but district heating suffers from technical inefficiencies, high unit energy costs, low capitalization, a decreasing customer base, and a complex regulatory structure.

Hungary's legal and institutional commitment to European Union (EU) membership is also playing an important role in the transitional period, influencing policies in different political, economic, and social sectors. The energy sector is no different. The EU's long-term plan to create unified electric and gas markets prompted Hungary to pass the *Act on Electricity*, which promises to open the Hungarian electricity market to limited foreign price competition. Although the main provisions of the present *Gas Act* are also designed to develop competitive practices in the natural gas sector, the Hungarian Parliament has not yet adopted the main provisions of this act. Despite this, EU negotiations with Hungary on the Energy Chapter are provisionally closed, and the EU pronounced Hungary's legislation to be in line with the *acquis communitaire*.[4]

Although energy sector privatization has progressed well, price liberalization is still incomplete. Subsidies for residential electricity and gas remain, with most of these subsidies going to non-poor households. Such subsidies are causing distortions in demand for district heating and in the market for household energy-efficiency measures.

B. Social Welfare and Social Protection

In the social sector, Hungary has introduced deep structural reforms in the administration of its social safety net.[5] Under the "Bokros package," the government ended universal welfare, slashed family allowances and childcare benefits, and ended free higher education. Simultaneously, new means-tested social benefits and reforms in state pensions were introduced. Although the *acquis communitaire* is having some influence on reforms in the social safety net, especially in local government administration, its influence is not as significant as in the energy sector, since there is considerable discretion and variance in the types of social assistance programs that are required for EU membership.[6]

Although reforms in social safety net programs continue, funding, coverage, and targeting remain problematic for different social welfare programs. Social protection

[4] European Union, 2002, p. 90. In addition to this Hungary has not requested temporary exemptions to any portion of this chapter. The accession of a candidate country to EU membership entails the adoption, enforcement and development of EU's *acquis communitaire*.

[5] The terms "social safety net" and "social welfare programs" are used in this report refer to all social transfer programs including universal insurance and poverty-based programs. The terms "social protection" and "social welfare for the poor" refer only to social assistance programs and other means tested programs for poverty alleviation.

[6] The chapter on Social Policy and Employment does not require any additional social protection programs for the poor. The *acquis* is generally silent on poverty requirements and refers more to social protection for the disabled, equal treatment of men and women, anti-discrimination and public health. See European Union, 2002, chapter 13, 82-86.

funding decreased throughout the 1990s, in part, crowded out by other social needs. Decentralization of fiscal and administrative authority is creating additional risks to low-income households because local governments in poorer rural areas have fewer resources to meet all local obligations to the poor. In many cases resources for the poor—especially for energy needs—are directed toward other local priorities.[7]

Hungary maintains an extensive social safety net, reaching most households in the society. In 1997, 86 percent of all households in Hungary received some type of cash social transfer (World Bank 2001a). In terms of the percentage of all households covered, it is among the most extensive social safety nets in all post-communist societies. The main cash transfers programs are pensions, universal family-support programs, unemployment insurance, and social assistance.[8]

In real terms, total government spending on the social safety net declined throughout the 1990s; social spending as a percentage of GDP has also declined.[9] In 2000, Hungary spent 1,895 billion HUF ($6.7 billion) for all cash social transfers and social welfare institutional services; much of this was in pension payments.[10] In 2000, 89.6 billion HUF ($ 317 million) was allocated for social policy benefits at the local level and 5.16 billion HUF ($18.3 million) to means-tested cash welfare benefits to the poor.[11] Clearly, social protection for the poor is a very small fraction of all social safety net spending.

1. Administration and Structure of Social Protection

The main elements of the social safety net—pensions, health care, unemployment insurance, and universal family-support programs—are fully funded by the national government.[12] However, social protection programs for the poor are partially funded by the national government and partially by local governments. Because local governments administer social assistance programs and set eligibility standards locally, social assistance for the poor varies by municipality and region. Provision levels vary considerably across regions as well.

Social assistance programs for the poor are not entitlement programs; rather, they are line items in a local budget and subject to local discretion. Social assistance programs for the poor at the local level include means-tested social assistance, drug and medication supplements, housing maintenance, temporary assistance, funeral benefits, public burial, income supplements to the long-term unemployed, and regular child

[7] See chapters 3 and 5 below.

[8] The evolution of the social safety net, the types of programs, the amount of benefits paid, eligibility criteria and administration have changed throughout the 1990s. Anita Papp, 2001.

[9] Szivos and Toth, 1998, p.5-6.

[10] IMF, 2002, 8.

[11] Hungarian Central Statistical Office, 2001a, p.58.

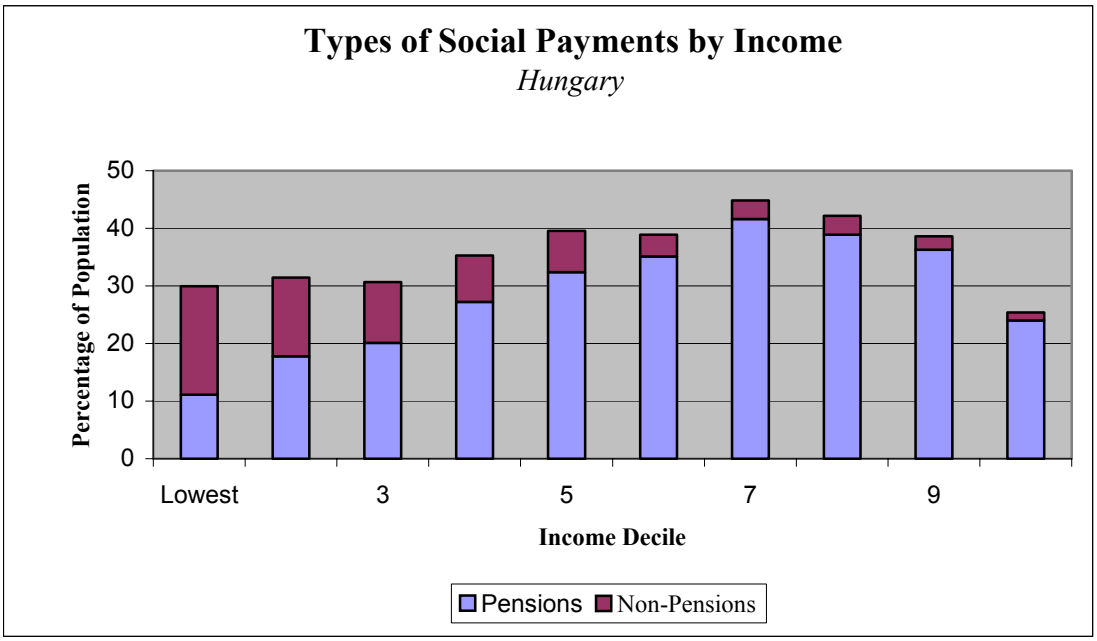
[12] There are many types of social transfer programs in Hungary. See chapter 3 for a more complete listing of these programs.

protection benefits, as well as other locally-financed benefits. In 1997, over 2.2 million people received 38.4 billion HUF ($206 million) in social assistance benefits.[13]

The central government finances approximately 70 percent of the costs for social assistance through normative grants.[14] Because this funding does not require municipal governments to allocate the funds toward social assistance, local governments are free to use this money in whatever way they see fit and pay out benefits according to local priorities. In many cases, there is serious under-funding of social assistance, which leads to irregular benefits provided to the poor.

Pensions make up the bulk of social transfers in both incidence (55% of all households) and total payments (75% of all cash social expenditures). (See figure 1.) Despite problems of coverage and targeting, social assistance transfers are pro-poor. People with incomes in the bottom 30 percent of income distribution constituted 70 percent of all people receiving social assistance in 2000.

Figure 1: Types of Social Payments by Income Groups (1999)



Source: Household Budget Survey, Annual Report, 1999. Hungarian Central Statistical Office, 2000.

2. Current Energy-Assistance Programs

Energy assistance to the poor is provided though the Housing Maintenance program, which in 2000 received just over 3.5 billion HUF ($12.4 million—down almost 15% in

[13] World Bank, 2001, 34.

[14] Normative grants are national expenditures received by the local government from the national government. The amount of money municipalities receive from these grants is based on several demographic features of the municipal district, but they do not cover the entire costs of social assistance payments or services to the poor or other vulnerable groups. See World Bank, 2001 and Kremer et al, 2002.

real terms from the previous year.[15] The Housing Maintenance program provides assistance to households for both energy and non-energy needs: rent or mortgage payments, utilities, as well as heating, whether gas, district heating, coal, or wood.

How effective is the program in providing energy assistance to poor households? Of the total benefit paid in 2000, only 23 percent of all payments went to heating assistance, and of this total, there is evidence that less than half went to the poor.[16] Moreover, the program is relatively small, representing only about 9 percent of all social-assistance transfers each year in the late 1990s.

C. Summary of Energy Reforms and Social Safety Net Programs

The reform path and privatization policies favored by Hungary for restructuring its energy sector have moved the country closer to liberalized energy prices. EU accession requirements are having a strong influence on the speed of energy sector reforms. Energy sector privatization has progressed well, with domestic and foreign investors represented throughout the electricity, gas, and district-heating industries. Despite these gains, energy prices need to increase to further liberalize the energy sector.

Since the beginning of economic transition, housing expenditures (particularly for utilities) have become a greater burden to all households, especially the poor. Residential prices for energy increased dramatically throughout the 1990s, including price increases for electricity, gas, water, and district heating. These increases occurred despite government price caps and subsidies to different segments of the industry.

Social sector reforms have failed to keep pace with reforms in the energy sector, as the EU's accession requirements are not fundamentally reshaping Hungary's social reforms. Despite large price increases for energy, social assistance for low-income families declined dramatically throughout the 1990s. Under the current system of energy pricing and assistance, poor households actually receive less assistance than do non-poor households.

[15] Hungarian Central Statistical Office, 2001a.

[16] See chapter 5.

Chapter 2
The Relationship between Poverty, Energy, and Social Safety Net Protections

Like many other post-communist states, Hungary experienced rising poverty in the 1990s, due to sharply decreasing production, falling real wages, and growing unemployment throughout the country. However, another factor associated with the country's increasing poverty rates is the decrease in real expenditures on social programs for the poor. No doubt, some of these decreases stem from budgetary pressures growing out of fiscal adjustments and policies designed to decrease government expenditures.[17] Yet others are the result of new reforms in social protection services that are designed to end entitlement programs and replace them with discretionary, targeted assistance programs.

Since the beginning of economic transition, expenditures on housing—in particular, on utilities —have become a greater burden to all households, but especially to the poor. Housing costs increased from roughly 10 percent of household expenditures in 1989, to 18 percent in 2000.[18] Meanwhile, residential energy prices had increased dramatically all through the 1990s, including price increases for electricity, gas, district heating, and also water. These increases occurred despite government price caps and subsidies to different segments of the energy industry.

With rising levels of inequality in Hungary, decreasing government expenditures on social protection, and increasing energy costs, poor households are finding it harder and harder to meet all household needs. Besides food expenditures, utility and energy expenditures now take up the single greatest percentage of household budgets.

This chapter discusses the extent of poverty in Hungary and the main social protection programs used to combat poverty. This study found that funding for the poor has declined and that recent reforms in social protection have weakened the social safety net.

A. Poverty and Social Protection in Hungary

Poverty, in the sense of low or inadequate income, is not a new phenomenon in Hungary.[19] However, the severity of poverty under communism was limited by guaranteed employment, price supports, and extensive social safety net protections. Low administered prices for a range of key goods and services (food, rent, and utilities) kept the cost of living strictly under control, while a generous system of pensions, family allowances, sick pay, and maternity benefits insulated households from major income shocks.

[17] Haggard et al., 2001.

[18] Hungarian Central Statistical Office 2001a, 10.

[19] Szalai 1998; Haney 2002.

1. Hungary's Social Safety Net

Hungary's extensive social safety net touches most of its society. In 1997, 86 percent of households received at least one social transfer, with those transfers accounting for 28 percent of gross income to households.[20] Since 1993, fiscal provisions as well as eligibility requirements have been divided between national and local governments. The entire social protection system consists of social assistance programs and labor-related social insurance benefits such as pensions and unemployment benefits. The main elements of the social safety net—pensions, health care, unemployment insurance, and universal family-support programs—are fully funded by the national government and have national eligibility requirements.[21]

Pensions make up the bulk of all social transfers in both incidence (55% of all households) and total payments (75% of all cash social expenditures). This pattern is similar to many other post-communist states in CEE and Eurasia. Because pension obligations make up the majority of all social safety net transfers, many countries have instituted various reforms in state pension systems to control spending.[22] Hungarian pension reforms have been particularly ambitious, instituting a three-pillar system to replace the old PAYGO system.

2. Increasing Poverty

According to most experts, poverty in Hungary has increased significantly since 1989. The exact rate of increase, however, is subject to considerable dispute because of differences in methodological approaches to measuring poverty and also because of political differences about the consequences of poverty estimates.[23] There is no official poverty line in Hungary, nor is there a political consensus on what poverty means. However, since the early 1990s, poverty has been estimated by many using the concept of a subsistence minimum.[24] Unfortunately, this concept lost much of its practical meaning early in the transition process, when 58 percent of the population had expenditure levels below the subsistence minimum (1993). By 1995, the Central Statistical Office (HCSO) had abandoned the calculation of a subsistence minimum to estimate poverty rates.

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[20] World Bank 2001.

[21] There are many types of social transfer programs in Hungary. Those provided by the national government include pensions, (short term) unemployment insurance, disability pensions and sick pay, childcare support (Gyed, Gyet and Gyes), family allowances, schooling allowance, birth and pregnancy benefits, first home benefits, PIT deduction. Additional benefits provided by local government include social assistance, housing maintenance, long-term unemployment assistance, regular child assistance benefits, orphan allowance, burial allowance, other child benefits, public food, housing for the disabled, family support services, institutional care and rehabilitation, day care for different groups, temporary and emergency assistance.

[22] Andrews and Ringold 1999; Orenstein 2000.

[23] See Szalai 1998, 2002.

[24] This concept uses a basic or minimum food basket differentiated by age. However this is not used for eligibility for social welfare programs. The methodology for assessing this changed in 1994. See World Bank 2001, 3 and Szalai 1998.

In 1999, the HCSO estimated a minimum-income poverty line as an average of HUF 22,800 ($96) per month per capita. According to pilot calculations based on the HCSO Household Budget Survey, 2.6 million (26 percent of the total population) lived under the poverty line in 1999, using that standard. That same year the minimum old age pension was HUF 15,350 ($64).[25] Approximately 11 percent of the total population, 11 million people, had an income less than the minimum pension, that is, lived in deep poverty.

In 2002, the minimum pension in 2002 was raised to 20,100 HUF ($76) per month. This line is not a satisfactory indicator to assess poverty, however, since the real value of pensions declined in the 1990s.[26] Using a relative measure defined as 50 percent of the mean equivalent income, at least 12.8 percent of the population could be defined as long-term poor in 1998.[27] By a similar measure, OECD estimates that approximately 9 percent of the population are poor.

3. Declining Social Assistance for the Poor

In real terms, total government spending on the social safety net declined throughout the 1990s.[28] Social spending as a percentage of GDP has also declined.[29] In 2000, Hungary spent 1,895 billion HUF ($6.7 billion) for all cash social transfers and social welfare institutional services—again, much of this in pension payments.[30]

Social assistance programs to the poor make up a small and decreasing portion of the government budgets for social protection. In 1997, the World Bank reported that over 2.2 million people received 38.4 billion HUF ($206 million) in means-tested social benefits from municipal governments.[31] Most of this money (20 billion HUF) went for income supplements to the unemployed. Total regular social assistance to the poor in 2000 was 6.25 billion HUF ($22 million).[32]

These programs for the poor, which are administered and funded at the local level, include both regular and irregular benefits. At the local level, programs for the poor include means-tested regular social assistance, long-term unemployment benefits, old-age benefits, regular child-protection benefits, housing-maintenance benefits, emergency assistance, funeral benefits, public burial, as well as other locally financed benefits.

There are no statutory eligibility requirements for social assistance at the national level. Instead, eligibility requirements are set at the local level. Such requirements exhibit

[25] Lakatos 2001.

[26] See figure 4 for estimates of the real value of minimum pensions in the 1990s.

[27] Szivos and Toth 1998, 19.

[28] Lelkes 2000; World Bank 2001, 5.

[29] Ibid, 6.

[30] IMF 2002, 8.

[31] World Bank 2001, 34.

[32] Hungarian Central Statistical Office 2001a, 108.

considerable variation among municipalities and regions. In some cases eligibility is calculated using the minimum national pension; in others it is calculated using a certain percentage of the minimum pension and can be as low as 50 percent of the minimum pension.

At present the main program for assisting low-income families with energy needs is a housing maintenance program. This program, administered by the 3,177 municipal governments, is not necessarily for energy payments and can also go for other types of household assistance. Local governments determine the qualifications of the program and allocate these funds, despite the fact that most of this money comes from the national government. Another program designed to assist low-income families was the state energy fund, which lasted for two heating seasons (1996-1997).[33]

According to experts, the amount of benefits provided for regular social assistance is inadequate[34]:

Although there is no reliable data about the adequacy of benefits, their level and average sums disbursed are known. From this information it suggests that they can hardly be adequate. The subsistence minimum was around HUF 22,000 ($102) per person in 1998. It was close to HUF 60,000 ($279) for a family of three, and around HUF 75,000 ($349) for a family of four. The average amount of regular social assistance was around HUF 10,000 ($47), that of the housing benefit or crisis assistance around 1 to 2,000 HUF per month. These sums are insufficient to cover even the most basic needs.[35]

4. Decentralization and the Social Safety Net

To the question of why funding for poor households has declined, there is more than one answer. Certainly, fiscal pressures faced by the national government explain much of this decline. However, reorganization of the provision of social assistance for the poor also accounts for funding and coverage declines. After 1993, local governments in Hungary were expected to manage all finances and programs for the poor. About 70 percent of local government spending is financed through central government transfers, called normative grants, which cover different categories of spending.[36] These grants normally do not cover the entire costs of social spending, and local governments are free to use these transfers for purposes set by the locality.

This reorganization of social protection for the poor has had several important consequences. First, the ability to tailor funding to local needs has probably weakened social protection for the poor. Many local governments, especially those in poorer regions, cannot fully fund their social assistance programs. Statistical data shows that

[33] See chapter 4 for a full description of these programs.

[34] Cf. Kramer et al., Ferge et al, Haney, Szalai.

[35] Ferge, et al, 2000, 19.

[36] For example, the social normative allocates resources to local governments based on the number elderly, unemployed and children in a given locality. The educational normative allocates resources on the basis of primary school students, secondary school students etc.

only a fraction of local governments operate all the services stipulated by law.[37] Second, considerable variation in social protections and social services for the poor has emerged across municipalities. In Hungary, social benefits are neither a right nor a legal entitlement.

Decentralizing government power in post-communist countries has been a priority for multilateral agencies such as the World Bank and bilateral agencies such as the U.S. Agency for International Development (USAID). However, the decentralization of government power in Hungary is creating new and unanticipated problems in the funding and execution of social-assistance programs in the energy sector. For example, many local governments devote resources to financing education and local infrastructure first, and then fund social needs in the community with any revenue remaining. This study found that local government allocated central government funds according to local fiscal priorities, not necessarily to national poverty goals, thereby defeating the aims of national poverty reduction goals.

Has decentralization improved targeting of social-assistance programs? This is difficult to determine, but experts suggest it has not.[38] Braithwaite et al (2000) argue that benefits for social assistance programs have significant leakage to the non-poor. In that study, they found that only 27 percent of all social assistance in the early 1990s went to families in the lowest income decile. The World Bank (2001), looking at means-tested social assistance programs, also argued that benefits are not well targeted. However, evidence suggested by Acklund (2001) shows that all non-pension benefits are very pro-poor, although leakage occurs in all programs. The evidence from this study, presented earlier, supports this conclusion. (See figure 1.)

B. Low-Income Households: Energy Costs and Family Budgets

Since the beginning of economic transition, energy expenditures have become a growing burden for Hungarian households. Besides food expenditures, utility and energy expenditures now take up the bulk of household budgets. This increasing burden on household budgets is related both to increases in energy costs and to decreasing benefits for social assistance.

One observable result of increasing energy prices in Hungary is a dramatic increase in payment arrears. Yet, despite these increases, there is a strong payment culture in Hungary—along with disconnections for non-payment. As a consequence, non-payment or default is less prevalent compared with other post-communist societies.

1. Effects of Higher Utility Costs on the Poor

The World Bank estimates that in 1997, utility expenditures accounted for 15.3 percent of all household expenditures for the non-poor, while poor households spent 12.2 percent on utilities (Lovei et al. 2000). In 1998, this decreased to 14 percent for all non-poor households but increased to 15.7 percent for poor households (see table 1). In

[37] Kremer et al., 2002, 126.

[38] Ibid. 118.

2001, average per-household energy expenses were 134,261 HUF per year or 11,188 HUF per month.[39] Poor household expenditures on energy were again around 15 percent.

Some groups are especially vulnerable, such as pensioners, single-member households, and large families. For example, pensioners that are the head of a household and in the bottom 30th percentile (in per capita income) on average spend almost 25 percent of their monthly income on housing maintenance, compared with a national average of 18 percent.[40] Single-member households on average spend 26 percent of their household income on maintenance.

Table 1 Yearly Expenses on Utilities by Income Decile (1998)

1	2	3	4	5	6	7	8	9	10	Total	
25,189	32,427	35,827	37,938	41,466	44,743	48,876	52,713	55,726	64,268	43,916	***Yearly Utility Expenditure (HUF)***
2,099	2,702	2,985	3,161	3,455	3,728	4,073	4,393	4,643	5,356	3.660	***Monthly Utility Expenditure (HUF)***
117.5	151.2	167.1	177	193.4	208.7	228	245.9	260	299.8	204.8	***Yearly Utility Expenditure (USD)***
9.8	12.6	13.9	14.8	16.1	17.4	19	20.5	21.7	24.9	17.1	***Monthly Utility Expenditure (USD)***
12,021	17,658	21,262	24,528	27,336							***Gross monthly income, total***
10,919	15,413	18,307	20,708	23,153							***Net available monthly income, total***
19.2%	17.5%	16.3%	15.2%	14.9%							***Percentage of Net Monthly Income***

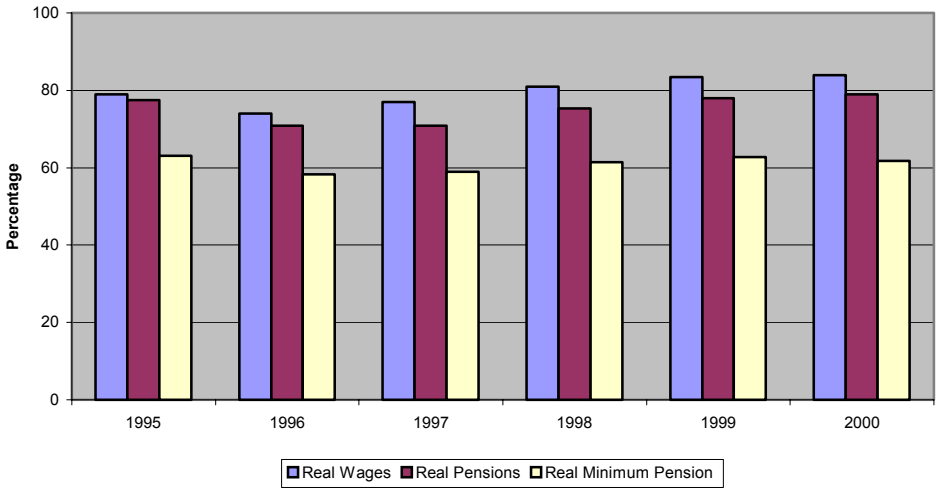
Source: Household Budget Survey, 1999 (Budapest, 2000).

While household expenditures for utilities increased throughout the 1990s, real average wages decreased, and represented only 84 percent of their 1989 purchasing power. Pensioners faired slightly worse, with real pensions representing less than 80 percent of their 1990 value (see figure 2). Other groups fared even worse, such as those receiving minimum pensions or regular social assistance. In real terms, households receiving a minimum pension saw their monthly incomes decrease in real value to 62 percent of 1990 minimum pension levels.[41]

[39] See Hungarian Central Statistical Office 2000, 204.

[40] Ibid. 192. This includes utilities and rent payments.

Figure 2: Real Wages and Pensions, 1995-2000

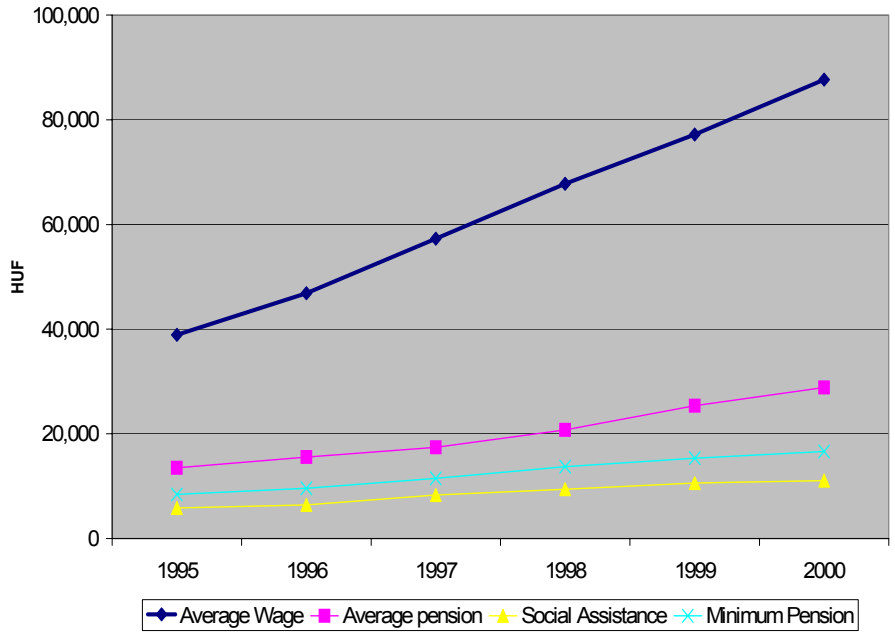


Source: Yearbook of Welfare Statistics 2000, 64; KSH 2001, Budapest.

To illustrate the influence of energy increases on poor households, consider the changes in both minimum pension and average social assistance payments to the poor throughout the latter half of the 1990s. During that time, average wages increased relative to average pensions and social assistance. In 1995, social assistance payments were approximately 15 percent of the average wage (see figure 3). In 2000, this figure fell to 13 percent. More importantly, the minimum pension and social assistance failed to keep pace with electricity and gas price increases.

[41] The minimum pension in 2000 was 16600 HUF, approximately 58 USD, while the average social assistance payment was 11056 HUF or 39 USD.

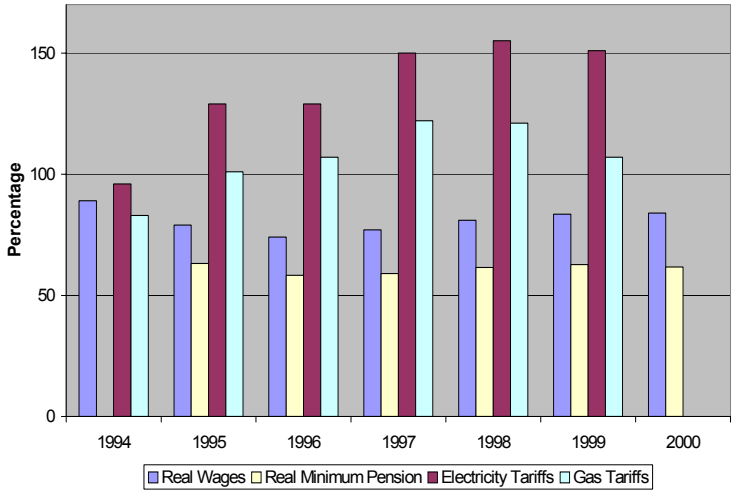
Figure 3: Average Wages, Pensions and Social Assistance, 1995-2000



Source: Yearbook of Welfare Statistics 2000.

Figure 4 illustrates the pressures placed upon households receiving either a minimum pension or social assistance. As this figure shows, in real terms electricity tariffs have doubled, while pensions and social assistance have lost almost 50 percent of their real value. When measured in real terms and/or as a percentage of the average wage, minimum pensions and social assistance have lagged well behind the income of most Hungarian households.

Figure 4: Real Wages, Minimum Pensions and Utility Tariffs



Source: Yearbook of Welfare Statistics 2000.

2. Payment Arrears

Higher energy costs have led to increasing rates of utility-payment arrears by households for. Table 2 shows that arrears are most frequent among district heat and electricity customers.

Table 2 Household Arrears for Utilities

Types of Service	Number of Households in Arrears	Proportion of Consumers (%)	Amount of Arrears (millions HUF/year)	Proportion to total Household Charges (%)
Electricity	603,871	13.2	2,700	3.0
Gas	137,352	5.5	2,223	2.6
District Heating	135,183	21.1	5,082	12.1
Total			10,005	
Source: Ministry of Welfare, ERRA, 2002, 15.				

In the mid-1990s, collections for district heating in Hungary were a serious problem, one that involved 30-40 percent of all households billed for district heat. However, recently this problem has eased, which the Association of District Heating attributes partially to Housing Assistance Payments and to the funds district heat companies give municipal governments to assist low-income families.[42]

[42] Interview with MATASZSZ.

There is considerable variation in non-payment and arrears by region for utilities and district heat. Kremer et al. reports that in one city utility arrears among families living in apartments rented from the local government approached 65 percent.[43] In Budapest, Fotav reports that approximately 5 percent of all customers do not pay on time but that less than one percent of customers fail to pay at all. District heating officials suggested that most non-paying customers are not poor.[44] In January 2002, there were 263 legal cases for defaulting customers pending out of 240,000 customers in Budapest.

It is known that the non-payment problem is more acute in other parts of Hungary than in Budapest, although there is no centralized governmental body that collects statistics on this issue. A higher collection rate in the capital city, where households are generally better off than in many other parts of the country, is consistent with the research team's observations in other countries studied for these reports.

3. Arrears Among the Poor

Nyíregyháza city has suffered considerably in the transition. According to a study sponsored by the Know How Fund, one-fifth of households in Nyíregyháza had some kind of overdue obligations to public service providers. Arrears were especially high for families living in public dwellings, 73 percent of whom were in arrears. This occurred in 1997, despite the fact that 42 percent of citizens eligible for social assistance received a special benefit to cover their deficit in housing expenses and despite the fact that the city spends on average 5 percent of its budget for welfare subsidies.[45]

C. Summary of the Relationship between the Energy Sector and Poverty

While higher energy prices are causing difficulties in poor households, decreasing budgets for social assistance have left many poor families vulnerable. Social assistance programs in Hungary are pro-poor, although leakage and targeting remain a serious problem with many poverty programs.

The main problem with social assistance is the level of government expenditures. Indexing is not based not upon legal requirements but upon on the discretion of political parties and budgetary preferences of the government. As a result, social assistance lost much of its value in the 1990s, and is now insufficient to meet the minimum needs of many poor households.[46]

The reasons for these spending decreases are complex; however, several factors appear significant. A less than robust social sector, as well as ideological priorities and lack of democratic access by vulnerable groups no doubt all play a certain role (Kremer et al. 2002). Decreasing productivity leads to declining tax revenue, and government deficits put pressure on increases for any government expenditures. Steadily increasing

[43] Kremer et al., 121. Case study of Nyiregyhaza.

[44] Interview with Fotav and MATASZSZ.

[45] Tausz 2003, 4.

[46] This statement is true if we consider that most social payments fall considerably below government subsistence minima. However it is also true based on different expert reports on poverty (Kremer et al. 2002).

obligations for state pensions (old age, disability, and social pensions) crowded out other increases in social protection. Finally, decentralization of authority has eroded protections for the poor due to other more-pressing local priorities and lower fiscal capacities. Central financing does not cover the total costs of services to the poor, elderly, or disabled. Therefore, poorer settlements frequently meet local social welfare needs at lower levels.

Heating and utility costs to poor households continue to increase both in real terms and as a percentage of household budgets. Besides social assistance and child assistance programs, there are a number of programs that also provide aid to low-income households for energy: housing assistance (in kind or in cash) and occasional “emergency” assistance (in-kind or in cash). These programs can be used to pay heating and utility costs.

Chapter 3
Assistance Payments for Poor Households

Hungary has used various mechanisms to provide energy assistance to low-income households. However, the country currently has no fully funded national programs designed to help the poor with energy costs.

In 1997, there was a national program designed to help the poor with rapid price increases for residential gas and electricity. That social fund was not established on a permanent basis and was partially funded by utility companies. Such an approach is among the most-innovative approaches to assistance payment for the poor because, unlike all other assistance programs in post-communist countries, it used money from private companies to fund assistance payments for low-income households.

At present, there are two social programs used to help poor households with energy costs. These programs are administered locally, delivering variable, means-tested benefits to low-income households. The programs are poorly funded, with low benefit levels and limited coverage for the poorest households.

In addition to these government-sponsored programs, there is a system of non-governmental organizations (NGOs) funded by service providers to help low-income households meet energy costs. These organizations are developed locally, with local rules and regulations governing benefits and eligibility.

D. Social Energy Fund

Established in 1996, the Social Energy Fund was set up to help low-income households deal with energy-cost increases expected in 1997.[47] The fund was not established on a permanent (statutory) basis but instead was to operate for only a year and a half, through early 1998.[48] It was a large national program with national eligibility criteria. The government ended this program when it decided to implement assistance through the housing maintenance program.

1. Private Assistance

Due to increasing energy costs, the Hungarian Government made a decision in early 1997 to establish a private fund to help citizens cope with these increases.[49] During this time electricity and gas prices rose on average by 50 percent compared with 1996.[50] The main thrust behind the creation of the private fund was the need to buffer poor households from price increases as well as the recognition that widespread utility disconnections by households would cost more than establishing a social assistance

[47] See *Government Resolution* (2368/1996 (XII.20)) and *Government Decree* (1032/1997 (III.19)).

[48] Ibid, Hungarian Energy Office, Appendix, 73.

[49] *Governmental Resolution No. 1003 of 1997*, January 17.

[50] "Report on the Activities of the Hungarian Energy Office in 2000," 25. These are nominal not real price increases.

fund.[51] Therefore, both welfare and economic interests prompted the establishment of this fund.

The fund was established as a private, non-commercial entity through financial contributions from energy companies. The power producers and distributors provided initial monies to the fund (472 million HUF, or $2.5 million). Later that year, the government agreed to provide public monies (1 billion HUF, or $5.35 million).[52] The Association of Municipalities, as well as representatives of employer and consumer interests, also contributed to the fund. The fund's board of directors included a government commissioner, the MEH, and a Ministry for Social Welfare representative.

In the fourth quarter of 1997, 1.3 billion HUF ($6.6 million) was offered to the fund to compensate for gas price increases. This included 700 million HUF ($3.57 million) by the government and 350 million HUF ($1.8 million) by MOL. Gas distribution companies later contributed 241 million HUF ($1.2 million).

Fund contributions from both government and industry totaled approximately 2.8 billion HUF. The type of energy assistance provided to the poor from this program came in the form of cash payments for gas heat, direct payment to district heating companies, or in-kind benefits for wood or coal.

2. Benefit Coverage and Eligibility

By May 1997, over four and a half million application forms and eligibility brochures were mailed to consumers (approximately 10 percent of the customer base). Applications for this subsidy arrived in June, and distribution companies started to provide subsidy credits beginning in October. Completed application forms were certified by municipal governments and sent back to the fund.

Eligibility criteria were based on whether or not families already received social support, unemployment benefits or educational assistance, rental assistance, or regular medical services. Old-age pensioners who received a minimum pension were also considered for assistance.

There were 373,000 customers who received credits ranging from 1,500 to 12,000 HUF ($8-$64) per year, depending on their circumstances (World Bank 1999). Some beneficiaries were already receiving social assistance from municipal governments; however, others included those receiving unemployment benefits (20 percent), child assistance payments (12 percent), household maintenance assistance (14 percent), common medical assistance (14 percent), and pensions (32 percent).

A similar method to determine eligibility for the electricity fund was also used to determine eligibility for the gas fund. (The application also required stating the number of dependants or pensioners in the household). Almost 600,000 households qualified for the gas fund, receiving an average subsidy of between 3,000-7,500 HUF ($15-$38).

[51] World Bank 1999, 84.

[52] *Governmental Resolution No. 1032 of 1997*, March 19.

E. Housing Maintenance Program

The Housing Maintenance program, (*Lakásfenntartási támogatás*), first introduced in 1993, currently provides general household assistance for energy and non-energy needs. This program is administered by local government and provides monthly assistance to qualifying households.

It is important to realize that program funding changed in 1998. The Ministry of Welfare had set up this program in 1993, as a new form of social assistance for poor families facing higher housing costs. Until 1998, this program was fully funded with national eligibility requirements. In 1998, however, the government linked this assistance to contributions by the local governments through the normative grant system. Eligibility criteria and payments are now provided locally.

1. Benefits

The Housing Assistance Program provides assistance to households for rent or mortgage payments, utilities, and heating—whether gas, district heating, coal, or wood. These benefits include both cash and in-kind benefits. In 2000, the program received just over 3.5 billion HUF ($12.4 million), down almost 15 percent in real terms from the previous year.[53]

Table 3 shows that almost 200,000 households benefited from this program in 2000, representing approximately 4.8 percent of all households. On average, people that year received five heating assistance payments, amounting to 4,304 HUF ($15.04) per month. If utility costs to poor households are approximately 11,000 HUF per month, this sum would cover approximately 40 percent of utility expenses for poor households.

Table 3: Total Number of Persons Receiving Housing Maintenance Benefits

Year	Benefit recipients		Number of cases of benefit	Number of cases per recipient	Number of benefit recipients per thousand dwellings	Total paid in benefit, thousand HUF	Average payment per capita	
	Number	Per 10,000 inhabitants					HUF	Previous year = 100.0
1993	54,437	52.9	73,305	1.3	13.8	489,006	..	..
1994	82,436	80.3	537,452	6.5	20.8	1,014,172	..	..
1995	234,727	229.5	1,037,984	4.4	58.8	2,331,706	9,934	..
1996	236,559	232.1	994,422	4.2	58.9	3,004,129	12,699	127.8
1997	296,280	291.8	1,016,368	3.4	73.5	3,698,197	12,482	98.3
1998	268,721	265.7	1,191,194	4.4	66.4	3,881,190	14,443	115.7
1999	211,876	210.5	1,048,468	4.9	52.2	3,654,433	17,248	119.4
2000	197,032	196.2	961,056	4.9	48.3	3,550,882	18,022	104.5

Source: Yearbook of Welfare Statistics, Budapest, 2001

[53] Hungarian Central Statistical Office, 2001a.

2. Eligibility

Families or individuals are eligible if (a) their dwelling size and quality are at or below minimum standards determined by the local government, (b) they receive no rental income, and (c) the monthly cost of maintaining the dwelling (including rent or mortgage payments) is above 35 percent of the household's monthly income. Local governments have the authority to determine and set the minimum standards a house or apartment must fit.

An alternative condition is for households whose members' monthly per capita income is less than twice the minimum pension and whose heating costs are above 20 percent of the household monthly income. Their minimum benefit would be 1,000 HUF ($3.76) per month, and beneficiaries may renew their applications annually.

Several local governments excluded households with arrears from the group of beneficiaries, while others set minimum or maximum amount of arrears and housing cost. In Nyíregyháza, for example, one-fifth of the city's annual welfare budget is used for housing benefits (Tausz 2003). The only people eligible for this benefit are those with no debt owed to utility companies or who have made an installment agreement to repay their arrears

3. Coverage, Targeting, and Official Statistics

How much of these benefits went to energy assistance as opposed to other household spending? Of the total benefit paid in 2000, only 23 percent of all payments (830,431,000 HUF) went to heating assistance.[54] The remaining 77 percent went toward other household expenses, with the bulk going for rental payments (see table 4). Among the energy assistance payments in this program alone, it is difficult to determine exactly how much was directed at the poor, but certain evidence indicates that much of this assistance may not be reaching the poorest households.

Table 4: Average Housing Maintenance Benefits

Year, form of benefit	Total paid in benefit, thousand HUF			Average payment per capita, HUF			Average payment per case, HUF		
	In cash	In-kind	Total	In cash	In-kind	Total	In cash	In-kind	Total
1993	360,493	128,513	489,006	10,194	6,737	..	7,246	5,457	6,671
1994	641,363	372,809	1,014,172	11,353	14,370	..	1,730	2,234	1,887
1995	1,725,831	605,875	2,331,706	9,476	11,295	9,934	2,277	2,163	2,246
1996	2,084,348	919,781	3,004,129	11,878	14,902	12,699	3,151	2,763	3,021
1997	2,310,626	1,387,571	3,698,197	11,195	14,594	12,482	3,850	3,334	3,639
1998	2,261,291	1,619,899	3,881,190	13,521	15,765	14,443	3,691	2,800	3,258

[54] Hungarian Central Statistical Office, 2001a, 115.

1999	2,173,671	1,480,762	3,654,433	16,193	17,870	17,248	3,761	3,147	3,485
2000	2,176,521	1,374,361	3,550,882	17,239	19,033	18,022	4,077	3,217	3,695
– Of which:									
General	1,437,466	701,663	2,139,129	21,818	24,324	..	3,819	3,178	3,582
Heating	428,273	402,158	830,431	11,086	15,966	..	5,089	3,697	4,304
Other	310,782	270,540	581,322	14,297	14,885	..	4,240	2,771	3,401
Source: Yearbook of Welfare Statistics, Budapest, 2001									

Official statistics, for example, provide some evidence of this gap. Excluding recipients without income statements, only 45 percent of all people receiving a housing benefit had per capita incomes below the minimum pension.[55] The remaining 55 percent therefore qualified for housing payments on the basis of expenses (including housing loans) that were greater than 35 percent of the monthly income. However, more troubling is that official statistics indicated that only about half of all recipients had reported income statements to justify receiving the benefit. This suggests either poor administration or poor documentation of these programs at the local level or leakage of national payments to other needs.

Given the nature of these statistics, it is impossible to say how many poor people received energy payments from this program; it is unlikely that the government knows. These same statistics may make it difficult for the government or international organizations to verify the effectiveness of targeting for this social fund.

Some evidence, if fact, suggests that central government funds for housing assistance never make it to the poor at all. To understand this, recall the local government role in dispersing funds.

a. The Local Government's Role

Housing maintenance funds are part of other social benefits that municipalities have an absolute right to administer according to their own discretion (*Act on Municipalities*, 1993). As mentioned earlier, housing maintenance funds are dispersed to municipalities on the basis of low-income claims made to municipal social assistance offices, these then reported to the Ministry of Social Protection. Although the central government (Ministry of Social Protection) recommends statutory regulations on qualifications for assistance payments, municipal governments have discretion over how these funds are dispersed.

Housing maintenance funds are associated with other social assistance funds (social normative transfers), as part of the total (monthly) budget that the Ministry of the Interior allocates to municipalities. Housing maintenance payments can be used for any local needs that a municipality suggests. Therefore, the fact that the central government allocated social assistance money for a percentage of people in a municipality does not

[55] *Yearbook*, 2001, 117.

mean these funds were dispersed and spent on social assistance—despite the fact that the local government received these funds for this purpose.

The other set of claims to support this concerns evidence heard in interviews with different officials in local governments and ministries. Several examples illustrate this. According to the Ministry of the Interior, for example, there are no (fiscal) means or (legal) mechanisms to monitor how money is spent at the municipal level and whether it is allocated in the way the central government requires. This suggests that if policymakers want accurate information, they will need to survey municipal governments.[56]

In summary, both reported and documented evidence support the finding that local governments are diverting funding for the poor to other uses.

Taken all together, these claims suggest that it may be difficult to accurately evaluate the effectiveness of targeting these payments to the poor for energy needs, and the data gathered thus far is not promising. At the very least, targeting claims incite considerable skepticism, as there appears to be a serious problem in delivering allocated money from the Treasury to Hungary's poor.

F. Other Assistance Benefits for Energy

Several other types of assistance are available to the poor to help meet energy needs. The Héra Foundation (described in chapter 5) has provided some direct benefits to poor households for electricity payments.

Poor households can also receive irregular social benefits, called "temporary assistance," to help them with energy costs. Temporary assistance benefits can be provided either as a grant or as a zero interest loan, and can be provided monthly or discretionally from time to time. As with the Housing Benefit Program, temporary assistance is not intended exclusively for housing or utility payments. It, too, is administered locally with local eligibility requirements.

In some municipalities, poor households may receive assistance from utility distribution companies. The companies provide grants through local NGOs to help low-income families with energy payments.

1. Electricity Allowances

The 2001 Act on Electricity permits qualified low-income citizens to receive an allowance for the purpose of maintaining their real property that they use as their residence. Part of this allowance may be used to pay for electric utilities. (Electricity allowances may not be provided as compensation in cash.) The government specifies

[56] In interviews with the Ministry of Social Protection, it was indicated that money allocated for energy needs (in the Housing Benefit) was sometimes diverted to public lighting—a cost that local government is responsible for. The Ministry of Social Protection also suggested that in one year, approximately 15-18 billion HUF ($56 million-$67 million) is allocated for social protection for poor households. However, they estimate that only 2 billion HUF actually makes it to poor households.

the form and resources for the electricity allowance and grounds for eligibility, as well as the detailed regulations pertaining to the applications for these allowances. State budgetary and local governmental resources and other voluntary contributions provided for this specific purpose may be allocated to finance the electricity allowance.

2. Private Assistance

Although some district heat companies such as FOTAV contribute earnings to help low-income households, it is unclear whether these contributions are separate from government budgets for housing maintenance payments or are separate from local government programs. FOTAV Rt. reported providing 500 million HUF ($2.7 million) annually to the Budapest municipality for a fund that aids poor households on district heating.

In Nyíregyháza, two major utility service companies joined with the Association of Large Families to form a public foundation (RES Foundation) designed to aid families with payment arrears through grants. This foundation allows private service companies to transfer funds for public purposes. In this system, if applicants pay a substantial amount of existing arrears in one sum, the companies will finance part of the arrears and permit a payment plan to satisfy any remaining balances.

Utilities monitor on site the eligibility of applicant households and prepare contracts with the customers. The companies follow their own procedures in means testing and evaluating the financial status of the households. Of the 10,000 households in arrears, nearly 2,000 cases were successfully worked out with RES's technical and financial assistance between 1996 and 1999.

G. Summary of Assistance Payments to the Poor

Throughout much of the 1990s, energy assistance was provided to low-income families to help them with higher-priced electricity, gas, and district heat. In this effort, Hungary has used both public and private financing. Financing mechanisms, however, have evolved and changed over time, due in part to changes in the social protection structure.

The Housing Maintenance Program was the main program intended to offset increasing housing costs; it was originally established as a fully funded national social welfare program. However, as decentralization of the government continued, central government contributions decreased in terms of percentage and contribution level. Although that program still exists, there is evidence that the benefit level varies considerably among jurisdictions and that targeting is poor.

Another national program, the Social Fund, combined government financing with contributions from major utility producers to help assist households with increasing costs. This approach, although temporary, was among the most innovative approaches to assistance payments for the poor, because—unlike all other assistance programs in post-communist countries—it used money from private companies to fund assistance payments for low-income households.

The barriers to providing low-income households with more assistance for energy costs relate to the organization of social welfare in Hungary. National funding for energy-related needs of the poor is indirect. The voluntary provision of benefits by local governments means that many households do not receive housing assistance benefits. Eligibility rules vary across municipalities, with the poorest regions often providing the lowest benefit levels. The end results are low coverage, poor targeting, and often-inadequate levels of provision.

Now, however, with financing from utility providers, Hungarian NGOs are working to address the problem of arrears. Unlike the other approaches, funding is completely voluntary, with no government contributions and eligibility set by private companies.

Chapter 4
Energy Efficiency

Compared with that of other OECD countries, the Hungarian economy has low energy-efficiency characteristics, with energy intensity levels at least two times higher than most OECD states (Szlavik et al. 2000). However, compared with other post-communist societies in Europe and Eurasia, Hungary has among the most advanced institutions, policies, and capacities for energy efficiency with continued improvements on the horizon. This chapter describes the main efforts successive governments have used throughout the 1990s to achieve this progress, with a special focus on commercial and residential energy-efficiency measures used to help low-income groups. Later, the extent of utility metering with applications to district heat is discussed.

The team's review shows that besides the Héra Foundation and the UNDP-sponsored Efficiency Lighting Initiative (ELI), there are currently no energy-efficiency programs directed at low-income households. Despite this gap, a variety of energy-efficiency programs directed at the public sector are having some limited impact on poor households. These programs, along with the aid of energy service companies (ESCOs), can direct financing to improve energy efficiency in municipally owned housing. The main programs for financing energy-efficiency improvements (that indirectly aid low-income households) are the *Hungarian Energy Efficiency Co-financing Program* (HEECP), some programs under the Széchenyi plan, and the Energy Savings Coal Fund (ESCF) German coal-aid program.

A review of energy-efficiency measures illustrates that Hungarian policies on energy efficiency are mainly the product of environmental and economic planning, with little or no concern with the advancement of social goals associated with the poor or poverty reduction. With few exceptions, energy-efficiency programs in Hungary have been designed to advance economic development and minimize environmental harms. Social goals intended to help the least well-off are very rarely important criteria in forming policy in Hungary.

A. Energy Consumption in Hungary

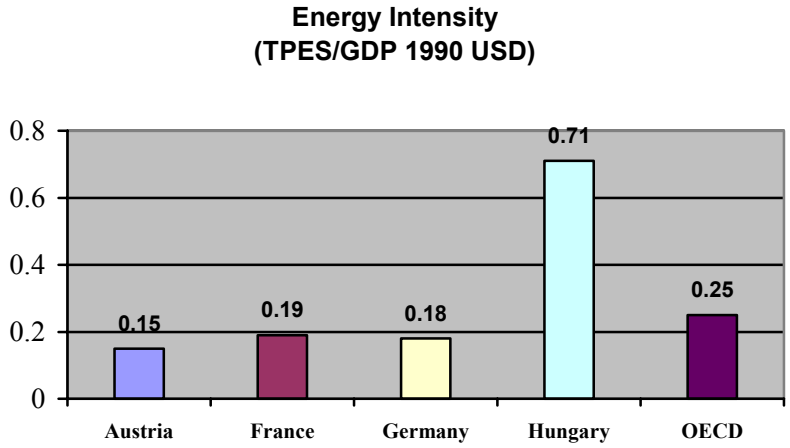
Prior to Hungary's transition, per capita energy consumption in the country was high due to subsidized energy prices and energy-intensive industrial production. During this period, energy intensity was three to four times higher in Hungary than in other EU states (Molnar 2001). This situation improved in the early 1990s, mainly because industrial production declined after trade among former Council for Mutual Economic Assistance (COMECON) members collapsed. Sudden declines in energy demands ensued, decreasing Hungarian consumption almost 22 percent—from 1350PJ to 1050PJ.

1. Energy Intensity

When compared with other EU states, Hungary does not use energy efficiently. If one uses as energy intensity as a baseline measure—that is, energy consumption divided by GDP—then Hungary ranks low when compared with other EU states. How poorly

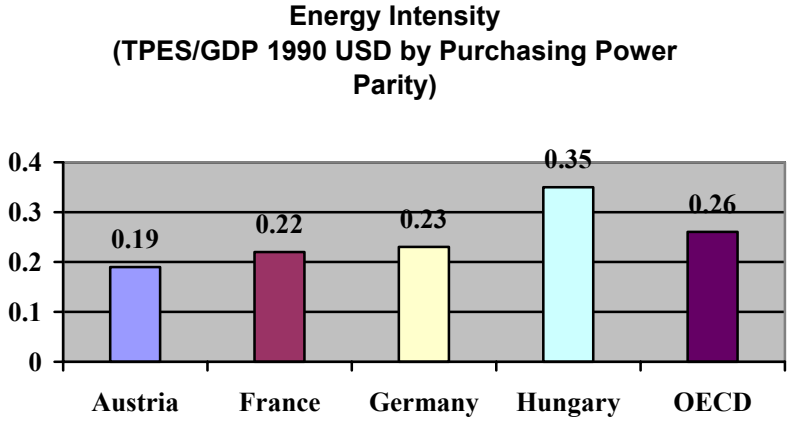
Hungary ranks depends on how GDP is calculated; if GDP is measured according to real 1990 dollars, Hungary uses more than twice the energy for similar productive outputs compared to the OECD average (see figure 5). If GDP is measured in 1990 purchasing power parity dollars, Hungary fares slightly better and uses only about 35 percent more than the OECD average (see figure 6).

Figure 5: Energy Intensity for Select OECD Countries



Source: IEA 2000.

Figure 6: Energy Intensity for Select OECD Countries by Purchasing Power



Source: IEA, 2000.

B. Consumption Trends

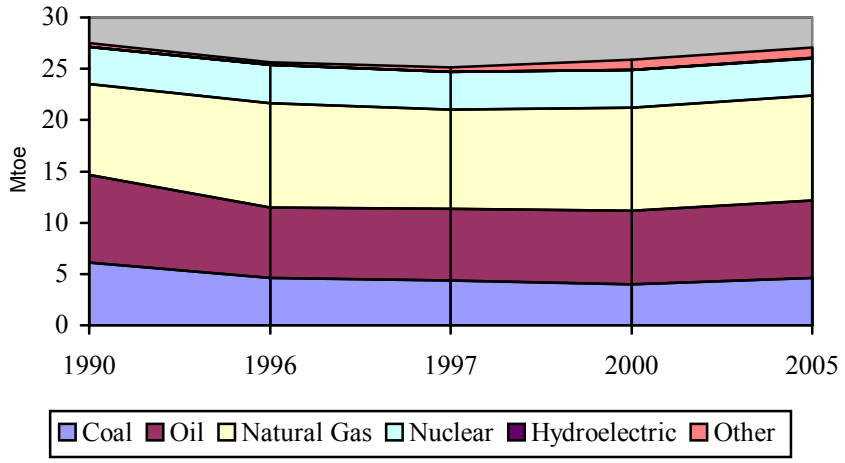
The reasons for Hungary's high energy-intensity levels (when compared with OECD countries) are complex and relate to many different factors in the Hungarian society and the economy.

Substantial changes in the economy and society in the 1990s certainly lowered overall energy intensity in Hungary; however, a number of barriers remain. The practice of providing households with artificially low priced energy utilities provides an economic incentive to choose additional consumption over investing in energy efficiency. This is particularly true of the natural gas sector, which is one element of total final consumption that has increased since 1990. Natural gas now accounts for 40.8 percent of total final consumption, almost twice as high as other European IEA countries (IEA 2000). Short-term projections suggest this trend will continue.

Increased consumption in natural gas can be explained by increases in residential and commercial demand for gas.[57] Since 1990, the demand for gas in this sector of the economy has doubled. Experts suggest this increased demand is the result of a combination of natural gas price subsidies and of fuel switching from district heating systems due to the systems' poor temperature regulation.

Despite inefficient energy use in Hungary, national energy use has decreased and energy intensity is dropping. Hungary's total primary energy supply (TPES) decreased sharply in the early 1990s, and has remained relatively stable since 1992, while GDP has increased by 28 percent (see figure 7). This has resulted in regular and steady decreases in energy intensity throughout the 1990s. In 1995, for example, energy intensity was 0.82, compared with 0.71 in 1998.[58] IEA projects this trend will continue to improve through the present decade reaching 0.55 in 2010.[59]

Figure 7: Primary Energy Supply, 1990-2005



Hungary is moving away from energy waste associated with state socialism and toward a more-efficient economy that produces greater value with less energy. The following sections describe the main policies Hungary used to map this progress and the principle

[57] IEA, *Hungary 1999 Review*, 2000, 56.

[58] *OECD Energy Statistics 1995*.

[59] IEA 2000, 209.

organizations and financial instruments used to encourage energy efficiency in the society, with a discussion of their main benefits and limitations for aiding the poor.

C. Energy Efficiency for Household Appliances and Lighting

As Hungary will join the EU in 2004, it has recently established a set of regulations on energy efficiencies in household appliances. The establishment of these regulations is likely to have relatively little influence on electricity costs in low-income households since the regulations will mainly influence new appliance purchases.

When a general service incandescent lamp (GSL) is replaced by a compact fluorescent lamp (CFL), a very high energy saving potential (typically 80%) can be realized while arguably maintaining the same illumination (Urge-Vorsatz and Huaff 2000). Energy-efficient lighting in households saw significant advances in the 1990s, with both education efforts and subsidies directed at low-income households.

1. Appliance Labels and Efficiency Standards

Appliance labels and minimum energy-efficiency standards for household appliances were first introduced in Hungary in 1994, in accordance with EU legislation. The Hungarian Standards Institution is responsible for the preparation and application of appliance energy-efficiency standards.[60]

Energy labeling of household electric refrigerators, freezers, and their combinations began in January 1998.[61] Labeling of washing machines and dryers was introduced in December 1999.[62] Unlike in some other post-communist states, Hungary's labeling will have an impact on low-income consumers because of the high level of ownership of common household appliances (see table 5). The heavy burden that energy expenditures place on households will ensure that energy efficiency will be a major criterion in selecting appliances.

In February 2002, the Ministry of Economic Affairs issued three new ministerial decrees on appliance energy efficiency,[63] which deal with dishwashers, combined washer-dryers, and electric refrigerators and freezers (or combinations). Based on these decrees, producers will be required to declare the energy consumption of the product to consumers.

Table 5: Durable Goods by Income, 1998

[60] One of the barriers to the introduction of labeling is lack of funds to finance related research and qualification activities and to maintain accredited laboratories. Although manufacturers would be willing to pay for the labels, this is insufficient to finance the operation of the institutional support for determining qualifications for all appliances.

[61] *Ministerial decree 1/1998 IKIM r.*

[62] *Ministerial decrees: 77/1999 and 78/1999 (XII. 22) GMr.*

[63] *Ministerial decrees: 5/2002, 6/2002 and 7/2002 (II. 15) GM r.* These directives are in line with European Commission Directives.

Stock of Consumer Durables Pieces per 100 Households by Income Deciles **1998**												
		1.	**2.**	**3.**	**4.**	**5.**	**6.**	**7.**	**8.**	**9.**	**10.**	**Total**
Refrigerator		85	84	87	88	87	87	85	84	85	83	85
Deep freezer		35	54	60	61	64	63	62	66	63	65	61
Refrigerator and deep freezer		14	20	19	21	19	21	21	25	27	33	23
Boiler (gas, electric)		59	69	72	77	77	78	76	78	78	77	75
Cooker, total		97	100	102	102	104	104	104	106	106	109	104
Of which:	*Gas*	89	91	93	93	96	95	95	93	92	95	93
	Electric	8	8	8	7	6	8	8	11	13	11	9
	Gas, electric combined	1	1	1	1	2	1	1	2	2	4	2
Microwave oven		21	33	35	40	40	40	43	47	56	69	45
Washing machine, total		101	104	105	107	106	104	105	105	105	105	105
Of which:	*Automatic*	28	44	45	48	49	44	51	57	67	79	53
	Semi-automatic	4	4	2	6	5	5	5	7	4	5	5
	Non-automatic	69	55	58	53	53	56	49	41	34	21	47
Washing machine, with dryer, automatic		1	1	1	1	1	1	1	1	1	2	1
Spin dryer		65	57	61	59	58	62	53	49	42	32	52
Vacuum cleaner		71	87	89	88	90	92	93	92	95	96	90
Cleaning machine		2	4	6	6	8	6	7	9	10	19	8
Sewing machine		23	35	39	41	45	50	47	48	45	43	43
	Mono	50	52	57	56	61	69	67	68	65	64	62
Television set, total		106	116	117	117	116	117	123	123	124	127	120
Of which:	*Color*	83	94	99	98	100	101	106	110	113	119	104
	Black and white	23	22	18	19	16	16	17	14	10	8	16
Source: Household Budget Survey, 1999												

2. Use of CFLs

In the early 1990s, CFLs were barely known in CEE countries, and only a few households owned a CFL even in the mid-1990s. Hungary was no exception. However, by 1997, 19 percent of all households in Hungary had at least one CFL, which ranked Hungary in the top eight countries in Europe with respect to CFL penetration (and thus probably in the top dozen worldwide)(Palmer et al. 1998). Moreover, surveys show Hungarians were well informed about the existence of CFLs. In 1997, eight out of ten Hungarians knew about CFLs (Urge-Vorsatz and Huaff 2000).

A Hungarian market research company (Medián) conducted studies on CFL ownership, surveying 2,400 Hungarian households in 1997, and again in 1999. They found that CFL ownership was significantly higher within some groups than others. The highest disparity in ownership correlated with education levels: while only 6 percent of those without a complete primary school education had a CFL, 44 percent of all households with a college or university degree opted for the energy-efficient GSL alternative.[64]

While one may conclude that differences in ownership are probably due to a higher income level among the better educated, the correlation between education level and income is not uniform. While the lowest percentage of CFL usage is recorded in the poorest households (13% in the lowest quartile), and the highest percentage among the richest households (26% in the highest quartile), the correlation, (although slight) is reversed in the medium-income groups. Among median income groups, the more affluent the household, the less likely it is that they had installed a CFL.

Another factor influencing CFL ownership is the household size. Almost three times as many households with four persons use CFLs as single-person households. However, the trend of increasing CFL penetration with increasing household size is broken for households with more than four persons: only about 40 percent of those households use this efficient lighting technology. This is probably due to the fact that large families are more likely to be poor and therefore may not be able to afford these lamps.

a. Héra-Donated CFLs

The Héra Foundation, a nationwide foundation financed by donations from energy suppliers and other companies, local governments, and private persons, aids families with cash and in-kind benefits (e.g., energy-saving bulbs) and provides consultation services. Héra's mission is to assist those who need help covering their utility bills. Applications may be submitted for either a one-time support of a monthly electricity bill or a free CFL; 85 percent of recipients have chosen CFLs over a reduction in electricity bills. Starting in 1992, the foundation gave approximately 200,000 CFLs to low-income households.[65] While this number is respectable, especially from the perspective of social assistance, it cannot be considered to have a significant long-term influence on the CFL market, which represented around 3.5 million CFLs in 1997.

3. Efficient Lighting Initiative

The Global Environment Facility (GEF) sponsors the ELI program in Hungary, which aims to promote less energy-intensive lighting equipment. Begun in 2000, the program is scheduled to end in 2003. It has residential, commercial, and public sector

[64] The strong correlation between education level and CFL ownership is confirmed by both the 1999 repeat Medián survey and another representative market survey conducted by Szonda Ipsos for Philips Hungary Ltd. (Szonda 1999). The repeat survey did not find a significant difference in any of the categories, as compared to the 1997 research. Although the categories in the Philips survey were slightly different, the key findings were all consistent with our survey. In the Philips study, the level of difference between the most and the least educated in terms of CFL ownership is the same as in the study conducted by the first author and Medián: five-fold. According to the Philips survey, more than half (51%) of the respondents with a university degree owned a CFL in 1999.

[65] This was cited in Urge-Vorsatz and Huaff 2000, in a conversation with N. Basco in 1999.

components and a 1.25 million USD budget. The residential program is mainly designed to enhance public knowledge of CFLs in Hungary.

ELI selected two counties in Hungary, Hajdu-Bihar and Szabolcs-Szatmar-Bereg, because they were among the least-developed counties with high unemployment levels and low levels of average income. These two counties received considerable public information on CFLs through television, radio, and print media. The campaign results have not yet been assessed.

D. Residential Energy-Efficiency Programs

The thermal efficiency of Hungary's residential buildings is poor, with annual specific heat requirements of 900 MJ/m^3.[66] This is well over twice the level found in Western European countries with comparable heating seasons. For this reason, weatherization of properties in Hungary can yield considerable energy-efficiency gains for all households including the poor (Szavik et al. 1999). Unfortunately, there are many barriers to implementing such measures in Hungary.

Approximately 80 percent of apartments are individually owned, which makes individuals and condominium associations (CAs) responsible for thermal modernization investments and energy-efficiency improvements. Estimates vary, depending on the type of insulation installed in apartments; however, costs range from 300 USD for an average size apartment to several thousand USD.[67] Few households can afford these costs.

Financing is another barrier to the installation of thermal insulation. Even if households can afford to repay loans for insulating their apartments, Hungarian banks thus far have been unwilling to finance individual renovations because of the high credit risk. Of course, the installation of thermal insulation normally is part of an installation covering an entire apartment block and involving both private apartments and commonly shared building features. CAs must therefore find financing for the common areas and reach agreement on individual costs. This can be very problematic, especially in large apartment blocks since insulation's benefits are not uniform across all apartments (e.g., ceiling insulation mainly benefits apartments on the top floor). Therefore, many barriers must be addressed for households to finance insulation upgrades in their apartments.

To help residential consumers overcome these barriers, Hungary has developed several programs to encourage energy efficiency in households while stimulating economic development. Although these programs may reach some poor households, they are mainly intended to stimulate spending by higher-income households. Because these programs require capital for improvements in a residence, they were not designed to target poor households.

[66] ECEE, "Hungary Market Brief," available at: http://www.ecee.org/pubs/hungary.htm.

[67] *Laszlo Banhidi* 1997, 16.

1. Széchenyi Plan

Hungary has recognized the need for sustainable economic growth and the importance of improving competitiveness in the Hungarian economy. To advance these goals, Hungary has developed an ambitious set of policies known as the *Széchenyi Plan*. *The Széchenyi Plan*, introduced in 2001, attempts to stimulate private investments in selected areas and sectors using a set of co-financing schemes such as grants and tax rebates. Besides general government revenues, the plan is expecting to use EU pre-accession funds. The program organized several existing programs of the Ministry of Economic Affairs, while creating some new plans and consolidated them into a single legislative initiative (see table 6).

Table 6: Szechenyi Plan – Energy Saving Action Program, 2002

Name of the Subprogram	Beneficiary	Objectives	SUPPORT PER ALLOCATION (HUF)
Residential Energy Saving	• Apartment / House Owners • Housing Co-operatives • Entrepreneur	Additional insulation of the houses and apartments; modernization of the heating and hot water supply system; changing or insulation of the windows and doors	30% of the costs maximum; 350,000 – 500,000 HUF per apartment for housing co-operatives
Energy Credit Programme (EHP)	• Local governments and their enterprises • Firms providing third party financing	Modernization of the heating systems; insulation and changing of the windows; modernization of the lighting; CHP insulation; heat pump installation; use of waste or by-products as energy source	30% of the investment costs maximum; 25 million HUF
Modernization of public lighting system and supporting alternative energy sources instead of bulk supply	• Local governments and their enterprises • Firms provide third party financing • Apartment / House owners	Modernization of public lighting; building of the electricity grid for remote places; switch from bulk supply to natural gas or renewables	30% of the investment costs maximum; 25 million HUF in case of gas; 250,000 per apartment in case of renewable switch
District heating supply side modernization	• District heating companies • Owner local government • Firms providing third party financing	Modernization of the DH supply e.g. CHP installation; modernization of the present systems; measuring in the heat centers	30% of the investment costs maximum; 50 million HUF
Renewable Energy	• Apartment / House owners • Housing co-operatives • Entrepreneur • Companies • Local governments	RES-based power plants; Biomass; Geothermal; Wind; Waste; Solar collector; PV; Heat pump.	30% of the investment costs maximum; 500,000 HUF per apartment; 35 million HUF in case of local governments and firms

Name of the Subprogram	Beneficiary	Objectives	SUPPORT PER ALLOCATION (HUF)
Awareness raising and EE reorganization of the transport	• Civil organizations • Educational institutions • Firms • Entrepreneurs • Local governments • Research Institutions	Developing and applying new methods for awareness; education in the schools; influence consumer behavior; energy efficiency advisory activities; reduce the volume of transport needs; organizational measures.	75% of the project cost; 5 million HUF maximum
Energy audit of the companies and local governments improving the energy management of the local governments	• Companies with energy cost of more than HUF 30 million per year • Entrepreneurs • Local governments • Enterprises	Preparation of energy audits	50% of the energy audit costs maximum; HUF 5 million.
Energy efficiency investments and R&D of SMEs and reduction of the energy cost of industrial companies	• SMEs • Firms providing third party financing	Reduction of energy losses; Applying energy efficient technology; additional insulation and heating reconstruction; use of alternative energy sources	30% of the investment costs maximum; HUF 10 million in the case of large companies; HUF 30 million maximum

Source: Energy Centre, 2002.

One of this program's main parts is intended for homeowners and CAs and designed to subsidize apartment renovations for block apartments. Support for energy-saving renovations takes the form of subsidized loans, covering two-thirds of the interest on housing loans for energy-saving measures. CAs may apply for interest support to renovate their common areas if they have kept a renovation fund for at least four years. The support level is 70 percent for the first five years and 35 percent for the next five years of a loan.

a. Housing Renewal in Budapest

As part of the *Széchenyi Plan*, the GOH allocated HUF 4 billion to special areas of Budapest for housing renewal and energy efficiency. Most of the people living in these areas are low-income families. The grants cover one-third of the investment by tenants in a pool of at least 50 apartments (the rest covered by local government and the tenants). Allowable renovations include insulation of the entire building, replacement of water and sewage pipes, and refurbishing and upgrading the heating systems. Energy-saving reconstruction received 3 billion HUF ($10.4 million) in 2001.[68]

b. Energy Efficiency Grants for Households

The Energy Centre provides this grant under the *Széchenyi Plan* for people wishing to make energy-efficiency investments in their houses or apartments. Grants can be

[68] The Housing Program within the *Széchenyi Plan* received 69.9 billion HUF in 2001 and 72.6 billion HUF in 2002. Not all of these funds were designated for energy-efficiency measures. Other parts of the Housing Program are designed to stimulate housing purchases and new housing starts.

obtained for 30 percent of the total investment to a maximum of HUF 200,000 ($708) per household. In 2000, the Energy Centre received more than 500 applications for heating reconstruction, additional insulation, and replacement of windows and doors. This program covered almost 4,000 households and resulted in an estimated total energy saving of 37.5 TJ/year. The total budget available for this program amounted to HUF 100 million ($354,383), but the Ministry of Economic Affairs increased it to HUF 150 million ($531,575) because the program was very popular among people wanting to modernize their heating systems. Altogether, government support generated more than HUF 500 million ($1.7 million) of private sector energy-efficiency investments nationally. Since this program had been very successful the previous year, the total amount available increased to HUF 500 million ($1.7 million) and the maximum amount per household to HUF 500,000 ($1,771).[69] The budget for energy-saving measures increased to 2 billion HUF ($6.9 million) in 2001.

2. Pilot Panel Program

In 1996, a *Pilot Panel Program* (PPP) was launched to improve the thermal insulation of buildings. Its first phase aimed at improving the thermal performance of almost 5,000 apartment blocks. The Central Environmental Fund provided HUF 60,000 ($393) in grants to upgrade the insulation of each individual dwelling; the average payback time of the investment was under 10 years. The Hungarian Foundation of Enterprise Development managed the pilot program. The association of producers and sales representatives of insulation materials and technologies were also involved in the project's implementation.[70]

E. Public and Commercial Sector Energy-Efficiency Programs

Because the *Széchenyi Plan* is not designed to target low-income households, its impact on poor households will depend on how municipal governments direct resources from this plan. This survey of energy-efficiency measures shows that public sector programs are likely to have the greatest impact on energy-efficiency improvements among the poor.

Energy-efficiency barriers are perhaps the strongest in the public sector, which has the least availability of awareness, information, and finance to implement energy-efficiency projects.[71] A serious barrier is the structure of government and financing of public sector energy-efficiency projects. As previously noted, there are many small municipal governments and rarely do these municipalities have energy managers; as a result, they lack both the technical and the financial capacity to identify and implement energy-efficiency measures. Existing barriers make it difficult for smaller municipalities or

[69] Balazs Medgyedy, "Report to the IEA," Energy Center, July 2001.

[70] Ibid.

[71] Public sector consumption (more than 135 PJ in 1995) is mainly composed of coal (87.3 PJ), natural gas (74.8 PJ), fuel oil (22.4 PJ), and gasoline (4.0 PJ). According to the *Hungarian Climate Change Action Plan*, annual energy saving potential totals 28–41 PJ in the public sector, depending on the measures selected.

poorer municipalities to access the ESCO services that are available.[72] Small municipalities without energy managers also have encountered difficulties in identifying qualified auditors and ESCOs because there is no official process for certifying energy auditors or ESCOs to operate in Hungary.

Public and commercial sector energy-efficiency programs are therefore likely to be essential elements in helping low-income households decrease their energy consumption.

This section illustrates four different types of viable financial vehicles that can be easily adapted for aiding vulnerable populations with their energy needs. It also highlights the importance of coordination between various institutions in obtaining loans and investments targeted to the poor. Finally, several cases illustrate how local government can improve services to special populations while simultaneously saving money.

1. UNDP Public Sector Energy-Efficiency Program

The Public Sector Energy-Efficiency program that the United Nations Development Programme (UNDP) supported seeks to lessen barriers municipal governments face by providing support for energy-efficiency policy, awareness, and coordination; support for project identification, development, and financing; and training related to the support described. The project will also support the new agency in strengthening the capacity of municipalities and regional networks. Begun in 2000, the project will continue to 2005. There is about USD 7 million in UNDP and GOH support.

The project will support the national agency in identifying energy focal points for all municipalities and leverage the energy managers currently working in larger municipalities and the regional advice centers covering small cities and villages. Strong ties with municipalities will raise awareness of energy issues and ensure maximum penetration of national energy-saving initiatives. Finally, this project component will explore the potential role for the agency to certify auditors and ESCOs and thus address the related barriers of knowledge and confidence, which are factors behind the reluctance of municipalities to commission energy audits. The project is expected to generate approximately $12 million in support from both public and private sectors.

2. Hungarian Energy-Efficiency Co-financing Program (HEECP)

The HEECP has been extremely successful and serves as a potential model for how households can be assisted through innovative financing programs. Launched in 1997 by the International Finance Corporation (IFC), HEECP is a pilot program designed to stimulate local bank activity in energy efficiency. Initial funding was $5 million GEF, with $300,000 for technical assistance and $450,000 for program administration and operations. The remaining funds were earmarked as guaranteed reserves.

[72] The problem is further complicated by Hungarian law, which forces cities to conduct a bidding process on public procurements with a value of more than US$ 140,000 and accept the least-cost bid. Because of these rules, an unqualified auditor offering a low bid must be selected over an established ESCO. As a result, cities may decide that it is too risky to contract for these services. A further and related problem is that there is no clearly accepted standard for energy audits.

The program's main objectives are to promote the financing and implementation of local energy-efficiency projects in all sectors and to promote the development of commercial markets for energy-efficiency products and services, especially through ESCOs. These objectives are achieved by providing partial loan guarantees to financial institutions and also through various types of technical assistance activities, so the perceived (and real) risks of such loans are reduced.

As of 2000, HEECP had provided $605,125 worth of guarantees to six projects valued at $1,659,587. One project supported heating system upgrades and energy-efficiency measures for households (see table 7). DEGAZ Rt., a local gas utility, instituted a program that helped homeowners install new gas boilers and a range of building envelope improvements. The first part of this program closed with a portfolio of 2,020 leases and total principal of 1.5 million USD (CJ Aron Associates 2000).[73]

Table 7: HEECP-Funded Programs

Hospital/gas-fired heating system/controls (Graf Esterhazy)	$ 117,500
Multi-family housing/heating system	$ 39,500
Meat Packing Plant/boiler system	$ 146,330
Multi-family housing/heating system	$ 71,112
Railroad station/heating system	$ 825,902
Residential/gas heating systems (DEGAZ Rt.)	$1,550,662
Hospital Heating Project	$ 760,000
Source: **http://www.ifc.org/enviro/EPU/EEfficiency/HEECP/heecp.htm**	

HEECP's technical-assistance component helped support roughly 50 projects by providing small grants to 20 energy-efficiency companies. As of 2000, US$ 111,655 was disbursed in technical assistance.

After the first phase of this project, there was substantial development of both the ESCO and bank capacities at identifying viable projects. This led to a second program phase that was launched in 2001, with $16 million in additional financing.[74] The program goals are similar although the amount of available credit has decreased. In the pilot program phase, guarantees covered 50 percent of the credits, while in the second phase they had decreased to 35 percent coverage.

The number of credit guarantees continues to increase. By 2002, 15 credit guarantees were provided mainly for improvements in street lighting and heating systems—with a total investment of approximately 3.7 million USD.[75]

[73] Only 4.4% of these leases are overdue by three months or more.

[74] *3rd National Communication*, 90.

[75] *3rd National Communication*, 91.

3. EBRD Case: Graf Esterhazy Hospital

As energy prices in Hungary increased, inefficient heating systems such as the one at Graf Esterhazy hospital (360 beds) in Pápa could no longer be affordably operated.[76] An energy audit determined that substantial saving could be achieved through switching from fuel oil to natural gas and through the installation of more energy-efficient equipment. The municipal owner could not afford to install this equipment so an ESCO, PROMETHEUS Rt., invested in the equipment necessary to generate the savings and is being repaid by the municipal owner under an energy performance contract (EPC). Prometheus is taking the performance risk, that is, the risk that the promised savings will not be achieved.[77]

Graf Esterhazy's hospital had a badly maintained and very old heating system that was fired by fuel oil. The annual energy expenses (fuel plus operation and maintenance) were 35 million HUF in 1992, with fuel accounting for 94 percent of this. Under the EPC contract, PROMETHEUS Rt. renovated the heating system in four months through these measures:

- Installing a gas supply system from the hospital property limits to the boiler;
- Replacing all the heating equipment (boiler, burners, heat exchanger, piping, electricity supply to the system, supply of sanitary hot water, pumps, etc.);
- Installing automatic controls on every outlet of the heating system;
- Conducting the necessary civil engineering work.

Under the EPC contract, the hospital must pay PROMETHEUS Rt. 10 million HUF ($37,600) per year for 10 years (6 million HUF or $22,570 for fuel and 4 million HUF or $15,000 for operation and maintenance) and reimburse the investment at 23 million HUF ($86,500) a year for five years. The HUF 33 million immediately saves the hospital money because it is less than the 35 million HUF ($131,600) the hospital paid for fuel oil and maintenance before the renovation.[78]

The fuel cost envisaged in the contract is based on average winter weather conditions and the risk of exceeding this cost during a more severe winter or bad maintenance is by PROMETHEUS Rt. The hospital bears the consequences of an energy price

[76] IEA, *Energy Efficiency Initiative Volume II: Country Profiles and Case Studies*, 1998.

[77] In 1995, the EBRD provided a first loan of US$ 5 million (3.8 million ECU) to PROMETHEUS Rt. To help PROMETHEUS Rt. meet the growing demand for its services, EBRD provided an additional US$ 16.9 million (16.1 million ECU) financing package, consisting of a loan of US$ 10 million in debt and US$ 6.9 million in equity, to be used for renovations of heat supply systems and for operation and maintenance of energy installations in both private and public enterprises. The EBRD loan covers 40% of the investments, and foreign commercial banks co-financed the other 60%.

[78] The hospital's operational and maintenance costs increased from 2.5 million HUF to 4 million HUF to provide for better maintenance; when the actual savings in the first year turned out to be higher than initially estimated, the contract was modified so that the hospital would pay less than the 6 million HUF for fuel that was in the original contract.

increase by the energy supplier. After the reimbursement period (five years), the client benefits fully from the reduced energy costs.

Replacement of the hospital's heating system resulted in a 70 percent reduction in energy costs, 40 percent of which is due to the actual reduction in energy consumption and the remaining 30 percent to the price difference between the gas used now and the fuel oil used before.

4. Energy Saving Credit Fund (ESCF)

In August 1991, the Ministry of Economic Affairs established the German Coal Aid Revolving Fund (ESCF) with proceeds from the sale of donated German hard coal. The program's main objectives are to replace traditional and waste-related energy sources with renewables and to induce energy saving in commercial businesses. The program subsidizes commercial borrowing at 50 percent of the central bank's base rate, with a governing board making all loan decisions. Applicants must be creditworthy and must expect to achieve a specified energy efficiency level from the financed investments. Credit is granted for a maximum of six years, with up to two "repayment-free" years, at a below-market interest rate; in 2000, this was set at 9 percent, at a time when market interest rate was about 16 percent and inflation was running at 9.8 percent.[79]

The program has been not only popular, but also effective (Laczó 2000). In 2000 alone, the program allocated more than more than 1 billion HUF ($3.5 million) in preferential credit for small and medium-size enterprises, resulting in an energy-saving potential of 325 TJ per year for a total investment of 1.6 billion HUF ($5.7 million) (*Report to IEA* 2001). The impact of this fund has been substantial, resulting in almost 7 PJ of annual energy savings, corresponding to an annual saving of 5.5 billion HUF ($19.5 million) (ESMAP, 7; *Report to IEA* 2001). Table 8 contains a complete list of the programs and their energy-saving effectiveness.

[79] The interest rate for the loans with these conditions is half of the current prime rate of the central bank, 3% is added onto the interest rate to cover bank expenses and 0.5% is added for technical supervising and controlling expenditure. For example, the prime rate in 1999 was 11%; the interest rate for this credit was in total 9% (5.5 + 3 + 0.5). The loan interest rate is variable. For example, if the prime rate of the central bank decreases the repayment charge decreases also.

Table 8: Energy Saving Credit Fund Program Evaluation

Project description	Number of projects	Total cost (mln HUF)	Granted credit (mln HUF)	Energy saving (tJ/ year)	Effectiveness of credit (tJ/mln HUF)	*Cost-effectiveness of total investment (tJ/mln HUF) [2000 HUF]*
Modernization of the manufacture of energy saving equipment and machinery	4	24	18	170.6	9.48	7.11
Waste-heat utilization	14	402	303	500.4	1.65	1.25
Utilization of industrial, agricultural and forestry by-products for energy production	33	1,349	858	1,428.5	1.66	1.06
Reduction of heat loss through improved insulation	1	3	3	1.8	0.71	0.60
Regulation and automation of energy production process and equipment	4	126	104	66.6	0.64	0.53
Optimization of energy usage through measurement, data processing and process regulation	3	123	81	62.8	0.85	0.51
Promotion of energy saving in heat distribution systems	10	162	130	82.2	0.63	0.51
Application of energy saving technologies and production systems	38	1,611	1,044	736.5	0.71	0.46
Development of co-generation systems	16	1,758	778	791.4	1.02	0.45
Modernization of energy transformation equipment, distribution mains and heating systems	222	5,988	4,353	2177.5	0.50	0.36
Modernization of lighting systems	133	2,667	1,909	744.8	0.39	0.28
Development of complex energy saving in energy supply	4	158	124	36.0	0.29	0.23

Project description	Number of projects	Total cost (mln HUF)	Granted credit (mln HUF)	Energy saving (tJ/ year)	Effectiveness of credit (tJ/mln HUF)	*Cost-effectiveness of total investment (tJ/mln HUF) [2000 HUF]*
TOTAL	482	14,373	9,705	6,799.1	0.70	0.473 [0.25]

Source: Energy Center, 2000 and Ferenc Laczó, 2001.

The ESCF loaned 9.8 billion HUF in energy-saving credits to applicants over 10 years, with the granted credit assistance funding supplied being circulated four and a half times as a positive result to energy saving (see table 8). The industrial, service, and local-governmental sectors received up to 86 percent of the loans that the ESCF granted (The Energy Centre 2000). The effectiveness of the energy-saving credit in the trade, industrial, and agricultural sectors was above average, while projects implemented in the public sectors—including transport, water-management, education, health, sport, and governmental projects—were generally the least effective.

As these data indicate, the loans' effectiveness in the three project types was below the average (0.357 TJ/year/mln HUF). Other project areas, such as development of cogeneration systems; utilization of industrial, agricultural, and forestry by-products in energy production; and modernization of the manufacture of energy-saving equipment and machinery received only 17 percent of the ESCF loans, although their cost-effectiveness was higher than average (0.763 TJ/year/mln HUF).

Since 1991, there have been 450 loans made with only 10 borrowers defaulting. The average loan is for $80,000 that is provided to industrial firms, municipalities, and district heating companies.

5. Energy Saving Credit Program and Energy Saving Program

Unlike the ESCF, the Hungarian government initiated the Energy Saving Credit Program in 1997. This program provides preferential loans to local state-owned public facilities (schools, hospitals, social, and health care buildings, etc.) for the implementation of energy-conservation measures.

In 2000, the program was expanded and renamed the Energy Saving Program (ESP). The ESP framework included a strategy to modernize the country's district heating by establishing a new credit program. This program is now part of the *Szechenyi Plan*.

The government subsidizes the interest rate for qualified borrowers through a special government fund for economic development that the Ministry for Economic Affairs manages. The credit available from the ESCP reached some 800 million HUF ($4.2 million) in 1997, while in 1998 and 1999, a 1.1 billion credit existed. In 2000, 1 billion HUF ($3.5 million) was available from the ESCP and 0.9 billion HUF ($3.2 million) credit was available from the ESP in regard to energy-saving projects involved with mainly local government-owned district-heating systems. The money for this program comes from general government budgets.

The types of project eligible for credit under the ESCP may help low-income populations that depend on utility payments in public housing. These include applied energy-saving equipment in heat and hot water use, decreased heat loss from outside doors and windows, decreased energy loss through the use of thermal insulation, and use of built-in heat-pumps to conserve energy. Table 9 reports the number, types, and efficiencies of projects that this program supports.

Table 9: Performance of projects funded by the ESCF and ESP's district heating credit program, 1997-1999 (2000)

Project description	Number of projects	Total cost (mln HUF)	Credit granted (mln HUF)	Energy saving (tJ/ year)	Credit cost-effectiveness (tJ/mln HUF)	Cost-effectiveness of total investment (tJ/mln HUF)
Waste-heat utilization	3	103	58	40.5	0.70	0.39
Establishing cogeneration systems	1	97	30	32.5	1.08	0.34
Decreasing energy loss by thermal insulation	14	112	101	32.0	0.32	0.29
Utilization of renewable energy resources, industrial, agricultural, forestry waste and by-products	6	132	115	35.6	0.31	0.27
Modernization and optimization of energy transformation equipment, distribution networks and heating systems	197	2,737	2,194	549.2	0.25	0.20
Modernization of lighting systems	15	190	165	33.9	0.21	0.18
Introduction of energy saving technologies and production systems	3	30	27	3.0	0.11	0.10
Local governmental, 1997-1999	239	3,401	2,690	726.7	0.27	0.21
Local governmental, 2000	83	1,234	804	198.1	0.25	0.16
Local governmental, 1997-2000	322	4,635	3,494	924.8	0.26	0.19
District heating program total	10	1,046	696	224.0	0.32	0.21
Total funds granted from the ESCP and the ESP's district heating program	332	5,681	4,190	1,148.8	0.27 (0.25)	0.20 (0.184)

Source: Ferenc Laczó, 2001.

In 2000, projects could receive a maximum credit of 30 million HUF ($106,000)—in the case of the district-heating program, 50 million HUF or $177,200—with the total not to exceed 75 percent of the total project expenditure. The credit is granted for a maximum of five years, with up to two repayment-free years. The interest rate is currently about half the prime rate of the central bank. The annual cost of providing these preferential terms is estimated to be between 45-80 million HUF ($170,000-$300,000). The applicants can receive normal commercial credit for the remaining 25 percent of the expenditure, but at the usual interest rate.

Modernization and optimization of energy-transformation equipment, distribution networks, and heating systems dominated the ESCP's activities (197 out of 332). This type of project had been implemented in the past and was very feasible to undertake. In terms of cost-effectiveness, however, the relatively small number of projects implemented in the areas of cogeneration, thermal insulation, use of renewables and by-products, and waste-heat outperformed others.

a. ESCP Case: Low-Income Apartment Upgrade in Szeged

One loan that was targeted to low-income and poor residents in Szeged is especially interesting. The local government, along with a private property management company, and district-heating company, applied for a loan to upgrade municipally owned low-income housing.[80]

The program started in 1997 and ended in late 1998. The total loan amount was nearly $4 million, and its purpose was to lower the energy cost in buildings, improve the energy efficiency of properties, and improve the welfare of the poor. The buildings involved in the renovation were not all in the same neighborhood but were all situated on the town's outer fringes.

During the renovation program, eight buildings were renewed including 968 apartments—between 60 and 300 apartments per building. The majority of the renewed apartments were studios apartments for the elderly. New insulation was installed, the heating system modernized, and thermostatic radiator valves and water meters installed. The renovation costs varied between 8717 HUF ($40) and 20568 HUF ($95) per square meter, depending on the apartment and the work. As an effect of the renewal, the ratio of the energy saving reached up to 60 percent in certain buildings, while the average energy saving in the eight buildings (containing 968 apartments) was 25 percent.

F. Metering and Control

Although the relationship between prices and energy consumption is well understood, it is often forgotten that metering and control are the essential practical links that make the relationship work. Metering is an essential element in liberal market reforms of utilities, since it provides essential information on individual household consumption.

[80] The houses have a special tenant structure that was built especially for the elderly, temporary apartments for low-income families, and apartments for local sport clubs with special services available for each population.

When coupled with control devices and energy-efficiency measures, it allows households to better regulate their energy consumption.

Metering is progressing well in Hungary. There is universal electric and natural gas metering. Hungarian law requires universal metering of district heating buildings (basement metering), although it is still incomplete. At the end of 2002, nearly half of all district-heated buildings were metered. Metering is now partially funded in the *Széchenyi Plan*. This suggests that progress on district heat metering can be expected to continue. However, some district heating companies (such as Fotav Rt. in Budapest) are resisting the requirement to meter every building, claiming it to be too costly.

Despite the availability of basement meters, many households are not electing to install household-level metering with individual radiator controls. Unlike some other post-communist states, this is not due entirely to prohibitive costs but rather related to other factors that discourage customers from using individual meters, despite the growing availability of the basement meters and the known energy savings that result from such installations.

1. Metering and Disconnection: Electricity

Electricity meters are universal throughout Hungary, with day-night meters in many households.

In Hungary, consumers can be disconnected from electricity supply for non-payment. The threat of disconnection for non-payment is a powerful incentive for consumers to pay their bills on time. The clearest (and perhaps most-notorious) case in Hungary illustrating the importance of disconnection occurred in 1995, in Budapest. When the local distribution company took over in late 1994, with inherited debts of 1.4 billion HUF ($9 million), it reported the reduction of 85 percent of consumer debt through disconnection. The company disconnected several thousand customers per month in 1995. However most of these were quickly reconnected upon repayment.[81] Although there are arrears elsewhere, disconnection for service occurs throughout Hungary, and non-payment is not tolerated.

2. Theft of Electricity and Non-payment

Although the theft of electricity has been an on-going problem, the *2001 Act on Electricity* now provides greater protections to both power distribution companies and consumers. Because electricity theft is difficult to catch, losses need to be estimated. According to the MEH, there is no clear data on consumer theft of electricity, although they estimate the amount is quite low. According to ELM, an annual check of 150,000-180,000 meters usually yields fewer than 2,000 cases of theft or manipulation, or less than one percent of all residential customers.[82]

There have been difficulties associated with determining manipulation and theft of electricity in Hungary. For example, upon change of ownership in apartments or houses,

[81] Kessides 2000, 23.

[82] Interview by author, June 2002.

utilities were not required to check for manipulation of electrical meters. This meant that new tenants or owners could be accused of attempted theft, even though they were not living in the household when the manipulation occurred. However, this problem will soon end with the new *Act on Electricity*, when electricity distributors will be required to check meters upon change of ownership.

Under the new law, if a consumer is caught manipulating a meter, the utility is permitted to remove the meter and put it into a closed, sealed stamped box. The consumer is asked to be present whenever the meter is read, and an independent meter reader later checks to see if the seal has been broken and whether manipulation occurred.

ERRA reports that in 1998, approximately 3 percent of all households were in arrears for a total of 2.8 billion HUF ($13 million).[83] This figure is consistent with more recent data. According to the MEH, approximately 3-5 percent of all consumers are involved in late payments, which it estimates at somewhere between 100 million ($466,417) and 3.1 billion HUF ($14.5 million) in late payments; however, this number can include penalty fees. A collection agency contracted by electrical distribution companies usually handles late payments. Defaulted payments for electricity are rare. As an example, ELM reported 2,600 cases of non-payment and just 16 legal proceedings out of 1.3 million customers in 2001.

3. Prepayment Meters

Utility companies can install pre-payment meters. Although the extent of such installations is not known, the frequency of installations has slowed to virtually a stop because of the expense to utility companies. In the past, consumers could request an ordinary meter or prepayment meter. Regardless, customers would need to pay for the equipment even though the meter remained the property of the utility and would also pay for the labor associated with installation. However, this will change under the *2001 Act on Electricity*. Consumer cannot be charged for ordinary metering equipment. And since prepayment meters are more expensive than ordinary meters, utility companies have been reluctant to install them. *The Electricity Act* also provides that power companies may install prepayment meters without the consent of customers who are more than 60 days in arrears.

G. District Heat Metering

According to the *District Heating Act* (*Act XVIII*, 1998), all buildings must have meters, although meters in individual apartments are not required. Each building or condominium community is permitted to decide its billing method from the district heating company, either per square meter or by quantity of heat, when heat cost allocators (HCAs) are installed. Buildings therefore can decide if they wish to install HCAs.

HCAs meter the relative heat consumption at each radiator in a building, so that households can be charged according to their heat consumption. TRVs allow

[83] See table 2, ERRA, 2002

households to adjust the amount of heat used by each radiator (including turning them completely off when no one is home), allowing the households to conserve energy and also lower their heating bills.

1. Heat Metering and Control

The cost of installing meters, along with thermostatic radiator values (TRVs) depends on the type of system existing in an apartment building. Single-pipe systems generally cost more than two-pipe systems.

According to Danfoss Ltd. (Hungary), the average cost to install metering and TRVs in most households ranges from 60,000 ($222) to 80,000 HUF ($296). Cost recovery depends on whether an apartment is connected to a one-pipe or two-pipe system. Cost recovery for a one-pipe system is approximately 5-6 years, for a two-pipe system approximately 3-4 years.[84]

a. Savings with TRVs in Hungary

A case study in Hungary was completed in Debrecen, studying the heating amount consumed before and after metering. Measured in one building, where TRVs and HCAs were installed and a heat substation updated, investigators found a 14 percent heat decrease without discounting for weather changes.

In Szentes, a town in Southeast Hungary, TRVs were installed in a 10-story building with 44 apartments. This was financed using 70 percent private financing and 30 percent government support. The total cost per apartment was 81,316 HUF ($288). Heat consumption decreased 28 percent, with an expected annual return of 37,000 HUF ($130) per apartment that gives a return on investment of less than 3 years. There are also case studies completed in Budapest. According to a district-heating expert of EGI Ltd,[85] in 14 buildings where TRVs, HCAs, and metering were installed, they measured a 10-15 percent decrease in energy use.

2. Benefits of Metering

Hungarian district heating companies differ over metering's benefits. As monopolists, they recognize that individual household-level metering and control technologies will reduce the demand for heat and hence lower their revenue. So these companies have an economic incentive to oppose the introduction of these technologies.

There is no universally accepted view among heat distributors—even within district heating companies or the association of district heating companies (MATÁSZSZ) about the benefits of metering and control. Opinions diverged widely, with some companies embracing and promoting the introduction of household-level metering and control, while others oppose, resist, and undermine its installation. Although this issue is

[84] This is calculated assuming 20% free heat from other sources in the apartment including people, hot water, appliances, etc.

[85] Presentation at HEECP2 workshop, June 4, 2002, in Pécs, Hungary.

ultimately a matter for householders and CAs, the attitudes of district heating companies influence consumer decisions.

Hungary recently passed a law requiring metering of district heating buildings so consumers can be charged according to the energy amount consumed. This has created additional confusions about pricing for consumers. Already, the system is confusing for customers. When consumers switch from normative payment systems to consumption-based systems, they may need to change their patterns of consumption. There can be very wide variance in household consumption within the same building depending on the efficiency of a particular apartment, its location in the building, etc. Because there is non-linear heat loss in a building, some apartments are net losers when metering is installed and some net winners. What is clear, however, is that the heat consumption decreases.

For several reasons, homeowners in Hungary do not really understand the benefit of meters and HCAs. First, there does not appear to be agreement on the benefits of metering and control among consumers. According to MATÁSZSZ, when blocks choose individual metering, 70-80 percent of the consumers pay less, while 20-30 percent pay more. This suggests that a minority of consumers will be individually worse off and report higher payments to others. This may be one source of consumer confusion. Second, district heating companies have not promoted TRVs and metering, since they stand to sell less heat. Interviews with FOTAV officials reported that customers are almost always worse off. [86]

Major heat distributors (such as FOTAV) have reacted to this by introducing a fixed charge (capacity charge) in addition to the charge associated with the energy amount consumed. This substantially reduces the incentive for householders to install equipment that allows them to control consumption and hence save energy. In some cases, district heating companies charge fixed rates of up to 60 percent of heating bills. Even by turning radiators off and down and reducing consumption by 50 percent, a householder could achieve only a 20 percent financial saving—perhaps less. Because Hungarian district heating companies can charge a 50 percent capacity charge, homeowners may not see large changes on their bill even when their behavior does change.

The research team found several examples of district heating companies applying policies that dissuade the installation of autonomous control equipment by householders (as this reduces their sales). The technique used was to provide less heat to buildings prior to the installation of TRVs and then additional heat to buildings when HCA/TRV bundles were installed, resulting in increasing rather than falling costs. Consumers blamed the price rise on the new equipment and, in one case, chose to remove recently installed equipment and return to a fixed price system based on the size of each apartment.

[86] This is technically correct, however, it is a direct result of company policy. Individual metering often results in increased payments for these customers, as a result of Fotav's tariffs mechanisms and weak regulation. Individual metering could payback in as little as 6 - 18 months if tariffs were designed to promote energy-efficient behavior.

3. Extent of Heat Metering

There are 644,191 district-heated households in Hungary. Around half of the buildings containing these households are now metered for heat, and all will be so metered when full compliance with the *District Heating Act* is achieved.

According to a sample provided by MATASZSZ of district-heated buildings in 14 cities, 42 percent of all households now have basement metering for heat (see table 10). This is based on a sample of 446,622 households (69%) out of a total of 644,191 households having district heating. Assuming that none of the other households have metering, then the number of households metered in 2002 for heat must be at least 30 percent.

Table 10: Extent of Metering in District-Heated Buildings

Total Number of District-Heated Buildings by Town in Hungary, 2001			
Town	**Meter**	**No meter**	**% Metered**
Ajka	1651	5260	24
Budapest	61245	180168	25
Debrecen	30912	*	100
Eger	4754	*	100
Kazincbarcika	8213	*	100
Kecskemét	11078	*	100
Komló	2563	2373	52
Miskolc	5999	25686	19
Nyíregyháza	7482	8036	48
Pécs	20036	10516	56
Székesfehérvár	19745	*	100
Szombathely	11147	*	100
Tatabánya	594	21301	3
Veszprém	2452	5411	31
Totals	**187871**	**258751**	**42**

Source: MATÁSZSZ, 2002

Individual metering and control at the household level for district heating are not very common in Hungary.

H. Policies And Institutional Capacity For Energy Efficiency

Hungary is continually developing new state capacity on energy efficiency, with laws and institutions relating to energy efficiency emerging frequently. As early as 1993, the Hungarian Parliament approved an *Energy Policy Concept*—later adapted to ensure full harmonization with the *acquis* after general elections in May 1998. The concept identifies five key strategic objectives:

- Modernization of supply-side energy systems;
- Increased demand-side energy efficiency;

- Improvement in public information on energy consumption;
- Acquisition of foreign capital for investments;
- Compatibility with the EU and other international organizations.

The National Energy Savings and Energy Efficiency Improvement Program, which was based on the Energy Policy Concept, was developed in 1994, followed by the Energy Saving Action Plan (ESAP) in 1995. ESAP consists of four sets of measures:

- Penetration of renewables;
- Energy-efficiency improvement;
- Energy-efficiency labeling;
- Education, information, and promotion of technological innovation.

In July 1999, the government approved the *Principles of the Hungarian Energy Policy and the New Business Model of the Energy Sector*, which defines short-term principles of the Hungarian energy policy leading up to EU accession. A new energy-efficiency program was developed based on that document, *Government Resolution No. 1107/ 1999 on the strategy to increase energy saving and energy efficiency until 2010*. In October 1999, the government adopted this strategy. The program seeks to create a solid legal, financial, and institutional background for energy efficiency. This *Action Programme,* which started in June 2000 and will continue until 2010, lists all the actions adopted by the government and includes the following main targets:

- Increase energy efficiency by 3.5 percent per year;
- Achieve energy savings at the end of 2010, amounting to 75 PJ per year;
- Achieve CO_2 emission reduction of 5 Mt per year and of 50 Kt per year for SO_2 in 2010;
- Provide financial support from the State budget of 1 billion in 2000 and 5 billion HUF in 2001;
- Increase the production of renewables from 28 PJ today to 50 PJ in 2010.

1. Governing Institutions for Hungarian Energy Policy

The Ministry of Economic Affairs is responsible for the design and formulation of national energy policies, with main responsibility located in the Energy Department. The Hungarian Energy Office is also responsible for promoting energy efficiency; however, the Energy Center carries out most energy-efficiency programs.[87] This agency is responsible for administering international and bilateral projects on energy efficiency, monitoring compliance with international programs, and implementing the National

[87] Formally known as the "Energy Efficiency, Environmental Protection and Energy Information Agency."

Energy Saving and Energy-Efficiency Action Program. In addition, this agency administers the Energy Saving Program in the *Széchenyi Plan*.

The Ministry of Industry and Trade founded the Hungarian Energy Information Agency in 1996, by following the reorganization of the State Energy and Energy Safety Inspector offices. As well as being a major player in Hungary's energy-saving programs, the agency collected and processed data on energy supply and consumption, and provided regular statistical analyses of energy use for the Ministry for Economic Affairs and for the IEA. This agency was also responsible for studies concerning energy and economics. In addition, the Hungarian Energy Information Agency managed the project proposals of both the Energy Saving Credit Fund and the Energy Saving Credit Programs.

The Hungarian-EU Energy Center (the Energy Center) was established in 1992, as part of a joint initiative between the Hungarian Government and the EU to promote energy conservation and energy efficiency in Hungary, and to strengthen cooperation between Hungary and the EU on energy issues. The Energy Center managed several energy-saving programs, among these the Energy Efficiency Co-financing Scheme and renewable-energy pilot projects and coordinated a small training program connected with renewable energy resources.

In April 2000, the Hungarian Government united the Hungarian Energy Information Agency and the Energy Center to establish the "Energy Center-Energy Efficiency, Environmental Protection and Energy Information Agency Public Company." This governmental resolution has assigned responsibility for managing the Energy Saving Credit Fund, the Energy Saving Credit Program, and the Energy Efficiency Co-Financing Program to the Center.

I. Summary of Energy-Efficiency Measures For Low-Income Households

Hungary continues to adapt and improve its energy-efficiency policies and programs and serves as a progressive exemplar for other post-communist states. These policies, originally developed in the mid-1990s, are beginning to produce substantial energy savings in both commercial and residential sectors. Unfortunately, very few programs reach the poor—with even fewer targeting poor households. Evidently, Hungarian energy-efficiency policies are not influenced by poverty-reduction criteria (see table 11).

Table 11: National Energy-Efficiency Programs

	UNDP/GEF Public Sector Energy Efficiency Program	IFC/GEF Energy Efficiency Co-financing Program	Phare Revolving Fund (PhVHK)	Szechenyi Plan (2000)	German Coal Aid Fund (EHA)
Approach	Technical assistance and financial support. Support to EE policy and coordination, training and capacity building, EE information system, technical assistance, support to public EE finance	Guarantees limited technical assistance through private firms.	Financial support	Financial support	Financial support; provided Coal
Supported Technologies	Building and district heating; water heating; public lighting; fuel switching; boiler and control systems	Efficient lighting; building and district heating; boiler and control systems.	Energy saving projects based on professional audit District heating modernization; CHP; efficient lighting	Energy saving; reduction of energy costs; efficient lighting; farm electrification; development of energy management District heating modernization; increasing use of renewable energy sources; approach of energy saving; energy audit; energy efficient traffic/transport organization; R&D support for SMEs	Energy saving projects (decrease energy losses; use of modern energy efficient technologies; renewable energies; district heating; efficient lighting; CHP)
Target Group	Municipalities	Public and Private sectors	Private sector and municipalities	Public and private sectors including households	Private and public sectors
Budget	1.5 Million USD	12 Million USD	4.5 Million USD	Allocated support; 15 Million USD	Allocated support; 36 Million USD
Form of Support	Subsidy	Guarantee	Interest-free credit	Subsidy	Interest-free credit
Start of Program	April 2002	2001	1998	2000	1991
Duration	4 years	6 years	10 years	Continuous	Continuous

Among different energy-efficiency programs in Hungary, public sector programs are having the greatest impact on improving the welfare of the poor and reducing energy consumption in this group. These programs allow institutional actors to act as an agent for the poor by receiving needed funds for making capital improvements, assuming some risks while passing on the costs and benefits to households. The case of apartment improvements in Szeged illustrates its importance.

The development of ESCOs in Hungary, along with national and international financing, presents an important opportunity for applications to low-income, residential energy efficiency. Although current government policies are mainly concerned with economic development, with small changes and additional investment it is possible to use ESCOs to aid low-income populations. ESCOs represent a viable model to promote energy efficiency among low-income households.

Stimulus for energy efficiency is coming from international treaties, the EU, and bilateral organizations such as USAID, as well as from existing market opportunities for capital investment. Successful national programs are slowly having an influence on municipalities and other types of public institutions.

This survey provides evidence indicating that low-income households want to save energy. The behavior of the poor during electricity price increases in 1995 show they prefer long-term energy savings to short-term energy payments. Survey evidence indicated that the poor might know about energy efficiency but often do not adequately understand its significance. This suggests that international actors and NGOs need make greater efforts at educating the poor on energy-efficiency measures.

Chapter 5
Energy Prices, Tariffs, and Subsidies

Liberal pricing mechanisms do not yet exist for electricity, gas, or district heat in Hungary. Despite gains throughout the 1990s in regulatory capacity, increased privatization, and price increases, energy prices continue to reflect strong political interests and short-term considerations associated with retaining power in a democratic state.

Consumer decision-making reflects the distorted prices across electricity, gas, and district heat sectors. This reduces allocative efficiency of markets by allowing consumers, for example, to choose the type of heat that is most subsidized over other types of heat. It also leads to under-investment in energy-efficiency measures.

This chapter discusses the types of subsidies and assistance going to poor and non-poor households in Hungary for energy needs. In the first part, different kinds of direct and indirect subsidies allocated to electricity, gas, and district heating sectors are identified and estimated. Prior to 2000, the electricity sector received large indirect subsidies through coal companies by not paying the full cost of coal mined in Hungary. Consumers can also receive indirect subsidies when state-owned companies do not earn sufficient profit on their investments.

Direct subsidies are extensive throughout the energy sector, with residential gas and electricity customers receiving the largest subsidies. However, calculating the exact value of these subsidies is difficult due to differing assumptions about the best means to estimate the actual costs of energy sold in Hungary. Despite these methodological obstacles, the value of subsidies to residential gas and electricity customers are estimated using varying assumptions about costs.

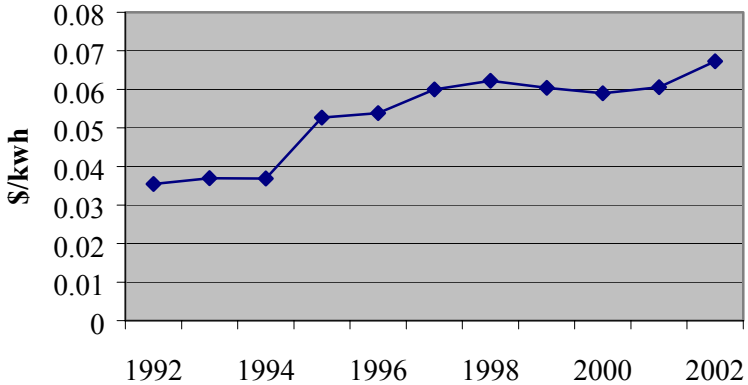
The current tariff structures for both electricity and gas are not designed to target low-income consumers. Instead, non-poor households receive the greatest benefits from government subsidies of electricity and gas tariffs both in terms of the percentage of the benefit and the number of households receiving benefits. Therefore, the current system of energy pricing is most unfair to low-income groups and does not reflect basic considerations of fairness associated with liberal democratic political systems (Rawls 1973).

A. Prices and Residential Tariffs

Residential prices for electricity increased throughout the 1990s, beginning at roughly 3.5 cents per kWh in 1992, and rising to their current price (2002) of roughly 6.5 cents per kWh (see figure 5). Price increases have been the result mainly of government regulation of the sector and increases in the cost of basic fuels. However, even after large 1999 price increases, end-user electricity prices were lower than the average West European prices but higher than prices in most post-communist societies (Gerse

2001). According to IEA/OECD, household residential electricity prices in Hungary are the fourth-lowest price of 20 OECD countries surveyed.[88]

Figure 8: Average Residential Electric Prices, 1992-2002



Source: ERRA, 2002.

There are various problems with residential electricity price setting in Hungary, including monopoly practices, implicit subsidies, and questions about asset pricing. First, there is no price competition in electricity production or distribution (Pesic and Urge-Vorsatz 2001). Instead, Mavir Rt. (the company that transmits electricity) buys electricity from different producers at different prices under long-term purchasing agreements. These producers are permitted to earn an 8 percent equity-based profit based on justified costs. MVM then transmits electricity to distributors at a uniform wholesale price, after which the distributors sell electricity at a uniform average price that the Ministry of Economic Affairs and Transport regulates in consultation with the MEH.

The actual formula used to set prices includes a predetermined efficiency factor, a variable for both inflation and changes in fuel costs. There are, however, many problems with this pricing mechanism. First, it allows the government to hold down price increases by waiving its right to a positive return on investment of its holdings. For example, in 1997, the Paks nuclear power station generated some 40 percent of the total power that year, yet the state did not receive its 8 percent return on its capital for Paks or MVM (Newbury 1999). Second, an important question concerns the exact nature of the asset base, and average costs frequently exclude returns on a large portion of this base. Third, according to David Newbury,

> The price [of electricity] is heavily influenced by the average cost of a written down plant rather than the marginal cost of building a new plant …the average cost of this new plant ought on efficiency grounds to be setting the average price.[89]

Fourth, according to Gerse (2001), the price difference between Hungary and West European countries is related to regulatory practices that better consider the costs,

[88] IEA/OECD, *Energy Policies in IEA Countries: 2002 Review*, (Paris, 2002) 44.

[89] World Bank 2000, 26.

risks, and rightful profits related to the transmission, trade, and consumption of electricity.[90]

What should the long-term marginal price of electricity be set at in Hungary? There is considerable dispute about this question, although most argue that prices need to increase. According to Kosco (2002), the average residential price should be 30 percent higher. The EBRD and others suggest that residential electricity prices should be close to $0.08 kWh.[91]

1. Current Tariff Structure for Residential Consumers

Prior to 2000, Hungary operated a three-tiered inverted-block, lifeline tariff, with three separate blocks for day and night (see tables 12 and 13). Those taking less than 50 kwh per month (600 kWh per year) paid only 86 percent of the average domestic normal tariff; those taking between 50-300 kWh per month (600-3,600 kWh per year) paid 104 percent of the average; those above paid 122 percent of the average (Newbury 1999). This tariff system was eliminated in July 1999, in favor of a single day-night tariff scheme. The present price system contains a regulated maximum price based on the approved basis costs of the separated system elements. Maximum price caps for tariff rates are set once a year by the Ministry of Economic Affairs and Transport.

Table 12: Electricity Tariffs, 1991-1996

	1991*	1992**	1993***	1994	1995	1995	1996
	HUF/kWh				*from January* 1st	*from September* 1st	*from March* 1st
Household Averages		**3.4**	**3.88**	**3.88**	**6.40**	**7.05**	**8.45**
Day tariff	*3.7*		*4.73*	*4.73*	*7.76*	*8.53*	*10.29*
I. Block		3.7	3.7	3.70	6.50	7.00	9.00
II. Block		5.3	5.3	5.30	8.50	9.20	10.70
III. Block			7.5	7.50	10.50	11.30	12.40
Night tariff	*1.9*		*2.2*	*2.20*	*3.69*	*3.97*	*4.79*
I. Block		1.9	1.9	1.90	3.50	3.80	4.70
II. Block		2.7	2.7	2.70	4.00	4.30	5.00
III. Block			3.5	3.50	4.50	4.80	5.30
Employee							

[90] "An analysis of Hungarian end user prices shows that the price differences compared with prices prevailing abroad mainly occurs in the value chain elements of transmission-wholesale-distribution and supply. Gerse 2001, 15.

[91] EBRD, 2001, 95; J. Stern and R. J. Davis, "Economic Reform of the Electricity Industries of Central and Eastern Europe," *Economics of Transition* (Vol. 6, No. 2: 1998), 427-60.

*From 1st February there was only one block.

**Beginning August 1, the second block was initiated.

***Beginning January 1, the third block was initiated.
Note: For years 1991-1992, the HEO provided only block tariffs so the household average is calculated as a simple average. For years 1993-1996, the HEO provided weighted average data (household average) based on consumption.

Source: Hungarian Energy Office, 2002.

Table 13: Electricity Tariffs, 1997-2002

	1997	**1997**	**1997**	**1997**	**1998**	**1998**	**1999**	**1999**	**2000**	**2001**	**2002**
	from January	*from April*	*from July*	*from October*	*from January*	*from August*	*from Jan.*	*from July*	*from Jan.*	*from Jan.*	*from Jan.*
	1st	1st	1st	1st	1st	1st	1st	1st	1st	1st	1st
Household Averages	**10.56**	**10.94**	**11.43**	**12.21**	**12.82**	**13.85**	**14.78**	**15.04**	**16.49**	**17.48**	**18.32**
Day tariff	*12.86*	*13.32*	*13.91*	*14.87*	*15.61*	*16.87*	*18.35*	*18.70*	*19.80*	*21.00*	*22.00*
I. Block	11.20	11.60	12.10	12.90	13.50	14.70	16.80				
II. Block	13.40	13.90	14.50	15.50	16.30	17.60	19.00				
III. Block	15.50	16.00	16.80	18.10	19.00	20.30	20.30				
Night tariff	*6.01*	*6.21*	*6.50*	*6.92*	*7.25*	*7.84*	*8.66*	*8.70*	*9.20*	*9.70*	*10.20*
I. Block	5.90	6.10	6.40	6.80	7.10	7.70	8.60				
II. Block	6.20	6.40	6.70	7.20	7.60	8.20	8.80				
III. Block	6.60	6.80	7.10	7.60	8.00	8.40	9.00				
Employee	*	*3.50*	*3.65*	*3.90*	*4.10*	*4.50*	*5.00*	*5.10*	*5.40*	*5.70*	*6.00*

Source: Hungarian Energy Office, 2002. The HEO provided weighted average data (household average) based on consumption.

a. Privileged Tariffs for Electricity Employees

In addition to this tariff, special tariffs were set for electricity company employees; these are set well below average residential tariff rates. In 2000, approximately 31,490 employees were receiving category “C” tariffs at 5.4 HUF per kWh. The customers under this tariff are not only the active industry employees, but also pensioners who retired from the industry (or the families of pensioners). That same year average general tariff rates were 19.8 HUF per kWh.

2. Energy Pricing Relative to Low-Income Assistance Programs

In interviews with the Ministry of Economic Affairs, staff suggested that the block tariff was not necessarily benefiting the citizens it was originally intended it to benefit. Certainly, households with a single member, such as an old age pensioner, benefited. However, larger low-income families were at a disadvantage from the old tariff system.

Although they received some benefit from the block tariff, it was very small given their consumption levels. Moreover, the tariff system had some obvious unfairness built into it. For example, the tariff system also rewarded those who were better off and owned vacation homes that are used mainly on the weekends.

According to the Ministry of Economic Affairs, there was a deliberate decision by the government to keep market decisions about pricing separate from decisions about social welfare. The Hungarian Energy Policy Principles (1999) plainly state that, "To dampen the effects of increased charges resulting from the introduction of an economic tariff system (i.e., the elimination of cross-subsidy) low-income consumers must be provided assistance on social criteria, through a system independent of the energy sector." Instead of using tariff mechanisms, Hungary opted to use an energy fund created in 1997, discussed earlier, and also the Héra fund.

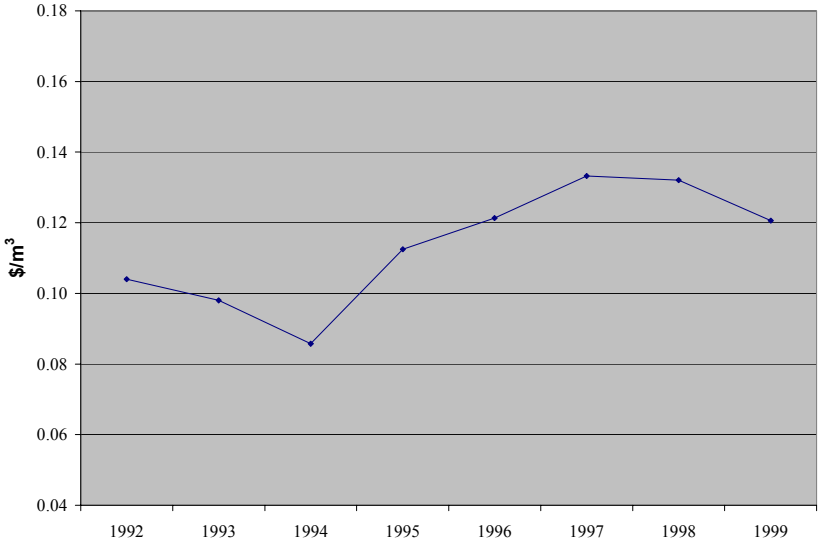
There is nothing intrinsically wrong with attempting to separate pricing from social-welfare considerations; at the same time, there is nothing inherently irrational about using tariff mechanisms to achieve market and social welfare goals. The problem occurs when government assumes there to be a division of labor between poverty alleviation and market development. In Hungary, recent survey evidence suggests little coordination among ministries on these issues. Henderson et al. (2001) report, "From our research there seems to be little evidence to suggest that the various economic ministries have attempted systematically to assess economic policy proposals in terms of their implications for poverty."[92] According to their research, the core economic ministries evaluated poverty implications of most policies on an ad hoc basis.

3. Gas Prices and Tariffs

As is the case with post-communist countries, residential gas prices in Hungary have been historically low, part of the universal welfare provided to citizens. In the mid-1990s, gas prices increased quickly, by as much as 80 percent in real terms (OECD 2000; MEH 2001). Despite these increases, prices have not yet reached cost recovery levels, and are set well below gas prices in Western Europe, with residential customers receiving substantial gas subsidies. Figure 9 shows that the residential price of natural gas has actually decreased in real terms during the late 1990s.

[92] Henderson et al. 2001, 27.

Figure 9: Average Residential Gas Prices



Source: HEO, 2001; Magyar Közlöny no. 2000/127 according to *GM Ministerial Decrees no. 50/2000, 20/2000*.

Experts agree that commercial prices are cross-subsidizing residential prices. In competitive markets, the residential gas cost is usually twice that of commercial gas. This occurs because the costs of maintaining residential pipelines and of billing and metering are all considerably higher than for industrial consumers. Pierce (2000) estimates that the relative gas price in Hungary must increase from its present 1.3:1 ratio to a ratio of 2:1; this suggests that residential prices need to increase as much as 35 percent.

Domestic gas production is also subsidizing gas prices. Hungary's extracted gas is considerably cheaper than imported gas, depending on the world market price. Moreover, the wholesale price of gas sold in Hungary is less than the marginal cost it pays to Gazprom for its imports (Pierce 2000).

The reason for low residential gas prices is partially related to electoral democratic competition. Coverage of the gas network is around 90 percent of all households in Hungary, representing almost three million households. Because such a large proportion of households are dependent on gas, increasing gas prices is an important political issue.

4. District Heating Prices and Tariffs

Among all energy sectors, consumer tariffs for district heat are least understood. This is true for both government officials and citizens. Because there is no single government agency in Hungary for regulating district heat companies, the government is unaware of the range of prices for district heat in the country.[93]

[93] HEO and the Ministry of Economic Affairs in interviews with the research team. MATSZSZ does not keep this information although they have a partial listing of prices.

Understanding district-heating tariffs is difficult for several reasons. First, there is a dual pricing structure depending on whether or not customers have heat and hot water metering in their apartment. Second, district heating customers are charged for both heat and hot water.

B. Subsidies and Estimations of Subsidies

While it is clear that subsidies for residential electric, gas, and district heat exist in Hungary, estimating the actual cost of those subsidies is less clear. Calculating the true market cost of actual units of energy is a complex process involving different assumptions about the cost structure of firms as well as the long-range marginal costs of different types of energy. Information about the cost structure of firms is often incomplete or not available. Claims about the long-run marginal cost of energy often differ among experts. Therefore, expert assessments policymakers prefer will bias estimates of subsidies—to the degree they depend on such estimates.

Despite these problems, the nature of several indirect subsidies for energy in Hungary are described below and the size of residential gas and electricity subsidies in Hungary are estimated for the year 2000.

1. Indirect Subsidies

In addition to direct subsidies to households for energy, there exist indirect subsidies to energy producers and state-owned companies in the energy sector. Indirect subsidies can be defined as known costs to energy industries that are not reflected in the price charged to consumers. There are several types of indirect subsidies to the energy sector: one such subsidy goes to coal companies that do not charge electric companies for the full cost of the coal they supply;[94] another goes directly to residential consumers when the electricity price does not reflect profits earned by state-owned firms.

Prior to 2000, several state-owned coalmines supplied coal-fired power stations with their energy needs. These can be used to indirectly subsidize the cost of either the mines or the electricity. Several mines, prior to 2000, had long-term purchasing agreements with companies operating the power stations. It was possible to support loss-making mines by building into the price of electricity compensation for loss of profit caused by higher production coal costs. Since 2000, there have been no coal-purchasing agreements with centrally regulated prices and only one independent deep coal mine (Lencsehegy) that sells coal to Hungarian power plants. The rest of the coal mines have been integrated into generation companies.

Another indirect subsidy comes from state-owned companies, such as Paks and MVM. When energy prices increase and these prices need to be passed on to consumers, it is possible that state-owned companies will not achieve their 8 percent profit and instead forgo all or some portion of it. For example, in 1996, when the wholesale electricity price required a large price increase, “the state waived its right to a positive return on MVMs

[94] In 1998, state aid to coal companies totaled 5.6 billion HUF. “Annual Survey Of Hungary On State Aid In The Manufacturing And Certain Other Sectors: 1996-1998,” *Report to the European Commission*, July 2000, 13.

assets—both the transmission assets and the base load nuclear power station at Paks, which generated some 40 percent of the total power in 1997."[95]

2. Price Subsidies for Employees

As mentioned above, in addition to this tariff, there are special tariffs for electricity company employees. One employee or pensioner can use this tariff rate on two consumption sites. For example, employees can use this tariff type in an apartment and a weekend garden apartment or the apartment of one of their children, for a maximum consumption rate of 20,000 kWh/ per year. According to Gerse, the consumption in the employee sector was 450.3 GWH in 2000.[96] If the difference is computed between each tariff rate, employees received a subsidy of 14.4 HUF per kWh for a total of 6.5 billion HUF ($22.6 million) in 2000.

a. Subsidies in the Form of Low Prices

In 2000, approximately 4.7 million households consumed 9,792 GWh of electricity[97] when average household electricity prices were 15.151 HUF ($0.0593). This means the total amount charged for residential electricity was approximately 148.3 billion HUF. It was argued earlier that average electricity prices are set too low and should approach $0.08 per kWh. If residential electricity prices were set at this rate in 2000, households would have paid 22.57 HUF per kWh for electricity that year, for a total of 221 billion HUF. This suggests that the implicit subsidy to residential users was approximately 72.7 billion HUF ($257 million) in 2000.

b. Subsidized Imported Gas for Households

Imported gas is becoming increasingly important for the Hungarian gas market as 75 percent of all gas in Hungary is now imported. The market price of gas in Hungary is related to the costs of imported gas, the regulated price of domestic gas, storage costs, transportation costs, and profits from production and distribution. However, the exact values for many of these costs are not known.

Given this, two conservative estimates are made that do not take into account many known costs associated with gas distribution. In the next section, the full subsidy cost is estimated, given known relationships between industrial and residential prices.

Consider first a conservative estimate based on known values for the costs of imported gas and the production costs for domestic gas for the year 2000. The imported gas price in 2000 was $0.1174 m^3, while the domestic gas cost was $0.0304. The same year, average residential prices were $ 0.1066 m^3 and total residential gas consumption 3,606 million m^3. If the household price of gas was the same as the imported price, the subsidy for gas alone to households that year was $38,944,000. This estimate excludes all other distribution or storage costs.

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[95] Newbery, 2000.

[96] Private correspondence, April 2003.

[97] MEH, "Report on the Activities of the Hungarian Energy Office in 2000," 58.

This estimate assumes that households would consume only imported natural gas, or that the cost of domestic gas should be the same as that of imported gas. One could argue, however, that the real subsidy cost (for natural gas alone, excluding other costs) is related to the total costs of natural gas summed over residential and non-residential customers. This would require us to consider the average price MOL paid for gas in 2000, as a weighted average of total household and commercial consumption. Under this assumption the total subsidy to households is slightly lower. The average gas price that MOL paid in 2000 was $ 0.947 m^3, while the average price MOL charged for gas to both residential and non-residential consumers was $0.919 m^3. This means the cost for subsidizing households that year was $34, 274, 800. This estimate again includes no other distribution or storage costs.

3. Nature and Extent of Gas Subsidies

Another way to estimate the size of the Hungarian gas subsidy is to estimate what the domestic price of gas should be based on a simple pricing rule. According to generally accepted pricing rules, household gas prices should be roughly twice the price paid by commercial customers. Household prices should be higher than commercial prices because the costs of maintaining residential pipelines, billing, and metering are all considerably higher for residential customers than for large commercial customers (Pierce 2000).

To estimate the subsidy using this rule, the non-residential average tariff (HUF 23.32 m^3) for natural gas in Hungary in 2000 was used. The average non-residential price in 2000, 23.32 m^3, is close to the middle of the distribution of averages in several countries of the EU for commercial gas customers.[98] (This makes the basis for the subsidy estimate more realistic since it is less biased.)

In 2000, the average residential price for natural gas in Hungary was HUF 30.61 m^3. Using the two times rule, average residential prices should have increased in Hungary by at least 34.4 percent or HUF 46.64 m^3 in 2000. Using this estimate suggests that residential customers were being undercharged by HUF 16.03 m^3 in 2000. Since residential consumption was 3,606 million m^3 that year, the estimated subsidy provided by the government was approximately 58 billion HUF, or $205 million in 2000—not including additional income obtained through taxes.

4. Subsidies to District Heating Prices

The main sources of subsidy for district heating come indirectly from gas subsidies. In 1990, gas accounted for 59 percent of all the fuel used for district heating. By 1999, this had increased to 67 percent (*Yearbook of Hungarian District Heating 2001*).

[98] HEO, 69. In 2000, out of five countries sampled only two had higher industrial gas prices—France (approximately 20% higher) and the Czech republic (approximately 10% higher). Therefore this base estimate is comparable to at least other EU countries.

5. Poorest Households Excluded

Whatever the size of subsidies for gas, electricity, or district heat, it is clear these subsidies redistribute income to households that are better off. Another way to illustrate the extent of bias in subsidies is to look at household heating needs by income level: the poorest 10 percent and the richest 30 percent. This comparison reveals that the poorest households will be more likely to be excluded from across-the-board gas, electricity, or district heating subsidies than are non-poor households.

To illustrate the extent of this bias, consider the type of heating by the households in the poorest income decile. As in other post-communist countries in Eastern Europe, poor households in Hungary tend to heat their homes with solid fuels — almost half of them using coal or wood to heat their homes, and only one-third using either gas, electric, or district heat.

Table 14: Type of Heating by Poorest and Richest Households

Percentage of Household Heating by High and Low Income Groups, Hungary, 1999		
	Poorest Decile	**Top 30 Percent of Income**
Coal or Wood	46%	7.7%
Gas or Electric	22%	39.3%
District Heating	12%	25%
Source: Yearbook of Welfare Statistics, 2000.		

Because district heating is concentrated in urban areas and because the poor tend to be distributed more in rural areas, district heating also disproportionately serves the non-poor.

When the poorest households are compared with the richest 30 percent of the population, there is an inverse relationship. Richer households rarely heat with solid fuels and are more likely to heat with gas, electric, or district heating. Therefore, even without considering the consumption level of richer households, it is easy to see that any subsidies for power, gas, and district heating are more likely to go to the non-poor. This distribution is even more troubling since richer households consume more energy than poor households.

Chapter 6
Comparing Approaches for Aiding the Poor

This chapter reviews and compares various mechanisms for assisting the poor with increasing utility costs. First is a brief summary of assistance payment approaches, energy-efficiency approaches, and tariff approaches aimed at reducing utility costs for low-income households. Then the main types of across-the-board subsidies to households are reviewed. The purpose of this review is both to compare the mechanisms for assisting the poor and to rank them across relevant policy criteria.

The easiest comparison ranks several approaches by cost. The amount of subsidies going to both poor and non-poor households are compared with the amount of assistance payments going to poor households for energy needs. This comparison illustrates an underlying unfairness toward poor households. Although poor households receive direct energy-assistance payments, compared with the size of subsidies received by non-poor households, the size of government expenditures to poor households is quite small.

More difficult comparisons involve additional criteria. Admittedly, comparisons of each alternative involve complex estimates and multi-attribute factors of analysis that make objective rankings difficult (Raiffa 1982). Nevertheless, this approach can be useful because it allows policymakers to consider both the value of each option with respect to specific criteria and the tradeoffs between options over different criteria. The approach in this chapter recognizes the underlying subjective valuations in rankings, while attempting to advance a more general framework for analyzing policy options.

A. Comparing the Approaches

Hungary, unlike some other post-communist countries, has used very different mechanisms to assist low-income households with increasing energy costs—for one thing, eliminating block tariff mechanisms to aid the poor. However, like so many other post-communist states, the country has used across-the-board price subsidies to help consumers. Price discounts were provided to employees after privatization, so these remain.

As table 15 illustrates, there have been several types of assistance programs to help the poor, some of which have received partial or full commercial funding. The Social Fund, established in 1997 and running for two heating seasons, was a national program to aid low-income households; this program received public and private funding. Certain other funds are funded wholly by commercial contributions designed to help low-income households with heating payments.

Table 15: Types of Mechanisms for Assisting Households with Utilities

	Tariff Mechanisms	Across the Board Price Subsidy	Price Discounts to Privileged Customers	Assistance Payments for low-come with Partial or Full Private Funding	Assistance Payments for low-income with Full Public Funding	Energy Efficiency with Partial Private Funding
Electricity	1990-1999 three block tariff	1989-Present	1997-Present	Social Fund 1997-1998	Housing maintenance; emergency assistance 1993-present	Héra Foundation (Electricity only)
Gas	None	1989-Present	*	Social Fund 1998	Housing maintenance; emergency assistance 1993-present	Széchenyi plan, HEECP, Pilot Panel Program, UNDP Public Sector EE Program, ESCF†
District Heating	None	1989-Present	*	Irregular Contributions by Supply Companies to NGOs	Housing maintenance; emergency assistance 1993-present	
†Energy Efficiency programs, with the exception of one mentioned, apply to each of the three energy sectors.						

In addition to these programs, Hungary has a Housing Maintenance Program that is partially funded by the national government, but administered locally. This program has varying eligibility requirements and different types of payment structure depending on the local government. In addition, there is an Emergency Assistance Program that provides irregular benefits for different types of family emergencies. These benefits can be applied to utility and heating costs.

Hungary also has a diverse set of energy-efficiency programs. One program in particular, sponsored by the Héra Foundation (described in chapter 5, above), also used commercial funds to aid low-income families with electricity bills. Other than this program, however, all other residential energy-efficiency programs are not targeted particularly at the poor. However, programs designed to help municipalities with energy costs at times achieve important results for low-income families.

B. Social Assistance and Across-the-Board Subsidies

Throughout the 1990s, all Hungarian households connected to electric, gas, and district-heating systems enjoyed subsidized prices for their utility services. In the previous chapter, electricity subsidies were estimated at over 72 billion HUF, while gas subsidies could be conservatively estimated at around 58 billion HUF in 2000. In addition to this, low-income households received housing assistance benefits as well as benefits from the Social Fund. Employees also received subsidies. Table 16 lists the costs of these for different categories of utilities for selected years.

Table 16: Cost Estimates of Subsidy Mechanisms

Cost Estimates of Subsidy Mechanisms to Households in Hungary *Selected Years*				
	Across-the-Board Price Subsidy	**Price Discounts to Privileged Customers**	**Assistance Payments (Private Costs)**	**Assistance Payments (Public Costs)**
Electricity	HUF 72 billion† $257.6 million (2000)	HUF 6.5 billion† $22 million (2000)	HUF 472 million‡ $2.5 million (1997)	HUF 1 billion‡ $5.3 million (1997)
Gas	HUF 58 billion† $205 million (2000)	*	HUF 591 million‡ $2.7 million (1998)	HUF 700 million‡ $3.2 million (1998)
District Heating	*	*	*	HUF 830 million** $2.9 million (2000)

†Author estimates, see text for assumptions on estimates. All dollar conversions using official yearly average exchange rates. ‡World Bank, 1999. **Hungarian Central Statistical Office, Hungarian Central Statistical Office, 2001a.

1. Subsidies to Households for Electricity and Gas

Estimates of the subsidy size provide information about the total amount of money that the government allocates to support the price of household gas and electricity; they do not, however, provide information about who receives this subsidy. To estimate distributive effects of a subsidy, per capita expenditure data are examined for a sample of Hungarian households in 1998. Assuming that yearly per capita expenditures on utilities roughly approximate the quantity of energy consumed by households and that subsidies for each are a constant factor across income consumption patterns, then it is possible to approximate the percentage of subsidy going to poor and non-poor households using estimates of the distribution of yearly expenses on electric and gas.

For this analysis, it is assumed that the poor fall into the first three income deciles (30% of the population) and that the non-poor fall into the remaining seven income deciles (70% of the population). This criterion is intentionally broad for the poor, so that any error in estimate for the targeting of subsidies is made in favor of the government's existing policy.

In 1999, households on average spent 3,476.84 HUF ($14.66) per month on electricity and HUF 2,873.68 ($12.11) per month on gas.[99] For electricity, the poorest 30 percent of the population made up 26.6 percent of all expenditures for electricity in that year. For

[99] Per capita yearly cost of electric is HUF 15685 while per capita yearly cost of gas is 12964 in 2000. The final figure was weighed by the average size of a household (2.66).

gas, the poorest 30 percent of the population made up only 24 percent of all household payments.

Table 17: Subsidies and Assistance payments to Poor and Non-poor

Subsidies and Assistance to Poor and Non-poor Households ***Hungary,*** *2000* HUF (USD)		
	Poor (0-30th Income Percentile)	**Non-Poor (31st–100th Income Percentile)**
Gas Subsidies	14 billion HUF (24%) $49 million	44 billion HUF (76%) $155 million
Electric Subsidies	19 billion HUF (26.6%) $68 million	53 billion HUF (73.4%) $189 million
Housing Maintenance Assistance Payments	3.55 billion HUF ($12.6 million)	0 (0%)
Total Assistance	**36.55 billion HUF**	**97 billion HUF**

Assuming aggregate consumption patterns in 1999 roughly approximate consumption patterns in 2000, the non-poor received an estimated HUF 53 billion ($189 million) in subsidies, compared with HUF 19 billion ($68 million) for poor households. For gas, non-poor households received an estimated HUF 44 billion ($156 million) in subsidies compared with HUF 14 billion ($49 million) for non-poor households. Clearly, non-poor households in the main receive the benefits of subsidized gas prices.

Whatever the size of subsidies for gas, electric, or district heat, it is clear that these subsidies redistribute income to better-off households. This comparison reveals that the poorest households in Hungary receive much less assistance than non-poor households for their energy needs.

C. Evaluating Approaches for Assisting the Poor

This report evaluated different approaches for helping the poor. However, in this section a simple growth model is used to illustrate trade-offs between different factors over time. The results of the growth model are then reported using a simple static framework.

The team's analysis shows that household energy efficiency can and ought to be an important element in helping poor households when utility costs to consumers increase. Energy-efficiency measures not only provide considerable cost savings to poor households, but also allow governments to maintain the adequacy of existing energy-assistance payments to the poor—while strengthening incentives to save energy during periods of price liberalization. Governments that implement energy-efficiency measures for low-income households have the opportunity, in the long run, to save money yet still meet their obligations to low-income households during periods of liberalization.

The results of this model, reported below, are limited by specific assumptions about Hungary. In addition to this, there are more general numerical assumptions that constrain the conclusions. These assumptions include a constant yearly real price growth to achieve liberal prices,[100] a constant number of poor households within a country, and constant real price increases in energy assistance to keep the percentage of payments to low-income households constant.

The time horizon in this model is five years plus the status quo. Therefore, conclusions from this model are constrained by this particular time horizon. It is assumed that gains from energy-efficiency investments are divided between poor households and the government. Once an energy-efficiency measure is implemented, energy-assistance payments are lowered to account for a proportion of anticipated annual average household savings.

1. A Simple Growth Model

The inputs of this model are (1) the number of low-income households receiving energy-assistance payments and the cost; (2) the average utility cost to low-income households with yearly price increases; (3) the number of households receiving energy-efficiency measures and the cost; (4) the type of energy-efficiency measure, and its rate of return in savings.

Using this model, four different policy scenarios are evaluated involving the pricing of utilities and the poor. Three of the four scenarios involve price liberalization. Two of the three involve the implementation of energy-efficiency measures. One important assumption associated with energy-efficiency options involves residential metering; without metering, many gains associated with these measures cannot be realized. Therefore, conclusions derived from this analysis presuppose that most of the poor have some degree of household metering for utilities.

These four policy scenarios have different assumptions associated with them:
No energy efficiency with price subsidies. This is the current status quo in most transitioning countries. It is the null case included in the analysis to demonstrate what failing both to liberalize prices and to pursue energy efficiency does for low-income households. This does not mean that households have no energy-efficiency properties, but rather that the government does not include this as an element in its energy policies.

No energy efficiency with price liberalization. Few transitioning countries have been able to attain full price liberalization for energy. This case looks at how price liberalization will affect the average cost of utilities to low-income households over time, with no energy-efficiency measures in place for low-income households. It also looks at the growth of energy assistance payments to the government.

Low-cost energy efficiency. To evaluate this case, household weatherization is assumed to involve only window and door sealing and no interior wall insulation; foil radiator sheets in the case of central heating of the building may also be installed only

[100] Defined as the long-range marginal cost of a utility.

to households already receiving energy assistance payments. The total weatherization cost, including installation, is assumed to be $75. For the purpose of this analysis, the weatherization investment is assumed to have a payback in roughly one heating season, which translates into 16 percent energy savings per year per household for most households. This case also includes price increases.

High-cost energy efficiency. To evaluate this case, it is assumed that high-cost energy-efficiency measures involves window and door sealing, as well as the installation of half-inch insulation on the interior of external walls. Apartments are heated with either district heat or centrally heated buildings, and HCAs and TRVs are installed on all radiators (usually less than three), along with foil radiator sheets.

This case assumes costs, including installation, at $300 and that households will turn down (or off) heat whenever they can. Heat tariffs, in this scenario, are based on average costs, not long-run marginal costs. Assuming savings of approximately $100 per year per household on average, this translates into energy savings of approximately 22 percent per household.

D. Comparing and Summarizing Results

Table 18 summarizes the results contained within the growth model. The table ranks each scenario according to results derived from the growth model. The results from this model are summarized using five different categories. The actual inputs and results from the model can be found in table 19 (see appendix).

Table 18: Ranking Strategies for Helping the Poor

Results/Policies	No Energy Efficiency with Price Subsidies	No Energy Efficiency with Price Iincreases	Low-Cost Energy Efficiency	High-Cost Energy Efficiency
Impact	-2	2	2	2
Investment Cost	0	0	-1	-1
Annual Costs	0	-2	-1	-1
Affordability	1	-1	0	0
Savings	0	0	2	1
Total	**-1**	**-1**	**2**	**1**

This analysis shows that if Hungary implemented energy-assistance programs for poor households, low-cost energy efficiency could have a very positive impact on both government and household expenditures (see table 19). With a relatively small investment spaced out over five years, governments could expect to achieve payback in eight years for low-cost energy-efficiency measures they provide to a proportion of low-income households receiving energy assistance payments.

The savings for households are considerable, keeping energy payments affordable even during periods of price increases. Moreover, as the model illustrates, energy-efficiency measures allow households to consume less energy and in turn allow

governments to keep the total costs of energy-assistance payments flat during price increases.

High-cost energy efficiency measures apply to a smaller group of low-income households — only those in apartments with district heating or a centrally heated building. Our model shows that payback periods are longer, approximately 10 years. Again, however, savings to households are considerable, with average total government expenditures on energy-assistance payments remaining the same.

The two scenarios without energy-efficiency measures are ranked equally, each below the scenarios with energy efficiency. Although the scenario with price increases may be preferable to policymakers interested in promoting energy sector development, this analysis illustrates that it is equally (or less) attractive to domestic policy actors. Without energy-efficiency measures, government expenditures on energy assistance payments and household expenditures on energy can be expected to increase.

Chapter 7
Conclusions and Recommendations

The reform path and privatization policies favored by Hungary for restructuring its energy sector have moved the country closer to liberalized energy prices. Energy sector privatization has progressed well, with domestic and foreign investors represented throughout electricity, gas, and district heating industries. As a leader in economic and social reforms among post-communist states, Hungary provides other post-communist states with an example of the benefits that accompany privatization in the energy sector.

Besides continued privatization progress, Hungary has dramatically improved its regulatory and institutional capacities in this sector, with highly professional regulators, large numbers of energy-efficiency experts, and more and more professional NGOs advocating policy positions on diverse energy issues. Yet, despite considerable privatization, increased regulatory capacity, and progress on energy-efficiency measures, reforms have neither produced full price liberalization for energy nor ended price subsidies to residential consumers. In this sense, Hungary's progress and reform efforts also illustrate the barriers and obstacles many post-communist states must overcome before achieving complete reform of this sector.

A. Findings on Energy Programs and Policies to Aid the Poor

Tariff measures designed to aid the poor were eliminated but may be re-instituted. The *Hungarian Energy Policy Principles* (1999) plainly state that, "To dampen the effects of increased charges resulting from the introduction of an economic tariff system (i.e., the elimination of cross-subsidy) low-income consumers must be provided assistance on social criteria, through a system independent of the energy sector." Although block tariffs for residential electricity and gas were eliminated in the late 1990s, the new *Electricity and Gas Acts* provide for social help for low-income households. Prime Minister Medgyessy's government plans to introduce a new three-tier block tariff for gas in late 2003 or 2004.

Energy-efficiency measures and policies are not directed toward the poor. Energy-efficiency programs, while proliferating throughout Hungarian society, are not focused on helping poor households reduce their energy consumption. The research team's survey shows that poverty-reduction criteria do not influence official Hungarian energy-efficiency policies. In Hungary, there are no energy NGOs explicitly devoted to advocating for low-income households on energy matters.

Energy-efficiency policies are mainly the product of environmental and economic planning. Current energy-efficiency programs were designed to advance economic development and minimize environmental harms. Social goals intended to help the least well off very rarely enter as criteria in forming national energy-efficiency policies or programs.

Social assistance to the poor continues to decline. Like its energy sector, Hungary's social safety net has seen reforms in its programs, administration, funding, and

governance structure. However, funding has emerged as a serious problem in Hungary. The real value of social assistance to the poor has declined throughout most of the 1990s, with the national government devoting progressively less (real) money in aid to the poor. Experts agree that current benefit levels for social assistance are inadequate, and most studies suggest that social transfers to the poor do not prevent or alleviate poverty.

Decentralization is contributing to a weaker social safety net. Decentralization of government authority is also contributing to the decreasing assistance to the poor. Frequently, local governments cannot meet all the fiscal obligations required by the Hungarian constitution—especially obligations to poor households and disadvantaged populations. By law, local governments may redirect resources from the national government, resources originally intended for the poor, to other local needs and projects. Both factors are having a direct influence on declining levels of funding to disadvantaged groups and poor households.

Hungary has used private funds to assist the poor and different programs to provide direct energy assistance to low-income households. At the national level, Hungary established a social fund for two heating seasons to help low-income households. This fund was established with government and commercial contributions. At the municipal level, several commercial district heating companies have contributed to private foundations that help low-income families with heating bills.

Assistance payments to the poor for energy have declined. The housing maintenance program is the main government-sponsored mechanism to assist poor households with energy.[101] This program provides general household assistance for energy and non-energy needs to approximately 5 percent of all households in Hungary. Like other social assistance programs, this program witnessed a decline in funding throughout much of the 1990s, despite large price increases for household energy. In 2000, for example, program funding decreased by almost 15 percent in real terms from the previous year. These programs are administered locally, delivering variable means-tested benefits to low-income households.

Housing benefits appear poorly targeted with weak coverage. Housing benefits from municipal governments appear to be poorly targeted. Evidence suggesting this comes from interviews with experts as well as from social protection studies. In addition to this, national government statistics suggests that program targeting is poor. Coverage of the poor is weak due to variable benefits and decreased local funding.

Energy and housing subsidies mainly go to non-poor households. Housing maintenance programs are not the only form of direct benefit. Low-income households also benefit from subsidized energy, especially subsidized gas prices. However, when the subsidy amount is compared across income groups, it is clear that non-poor households receive the most benefits. Whatever the size of these subsidies for energy, the practice redistributes income to better-off households.

[101] *Lakásfenntartási támogatás*.

B. Conclusions

This survey investigated the methods that Hungarian governments have tried to assist the poor with their energy needs using tariff mechanisms, energy-efficiency programs and assistance payments; it illustrates two major problems common to other post-communist societies. First, current distortions in energy pricing—in addition to being inefficient—are unfair to low-income groups. When energy subsidies are included in an analysis of total assistance, non-poor households receive over three times as much assistance for energy as do the poor. Second, the current system of energy policy development in Hungary does not seriously consider social criteria when formulating policy, nor does it effectively consider poor households as independent stakeholders. As a result, no coordinated national policy has been designed that includes the poor as a major stakeholder to aid this group in making responsible decisions in a new market environment.

C. Recommendations

Drawing on the survey results, the team recommends the following actions as a blueprint for further policy reforms to help low-income families in Hungary.

- **Coordinate energy and social policies at the national level**. In Hungary, authority for price regulation and tariffs, energy efficiency, and social assistance programs is dispersed among many agencies and ministries. There is little evidence to suggest that the various ministries have attempted systematically to assess policy proposals in terms of their implications for poverty.[102] To begin helping low-income households in Hungary, there needs to be coordination among agencies and ministries. At a minimum, an inter-agency task force is needed to coordinate the efforts of different governmental stakeholders. Once this is accomplished, a government response to rising energy prices and social protection can be developed that considers a range of options to best help the poor cope with these price increases.
- **End the price cap on residential gas prices and continue real price increases**. The policy of capping the residential gas price below market levels provides an untargeted subsidy that benefits non-poor consumers more than it benefits poor consumers. This policy is not only unfair, but it also lowers the incentive for householders to weatherize and to improve the efficiency of gas use.
- **Strengthen the Hungarian Energy Office's independence**. The Ministry of Economic Affairs and Transport is ultimately responsible for setting prices in the energy sector. This regulatory authority should be placed in the Hungarian Energy Office, and its independence from political influence should be strengthened. Fixed-term appointments for energy regulators along with full tariff-setting power would strengthen this office. That would allow Hungary to gradually eliminate inefficient price subsidies that go to the non-poor while protecting political parties from electoral consequences of these increases.

[102] Henderson et al. 2001, 27.

- **Improve energy-efficiency programs for the poor**. One option for funding Hungary's energy-efficiency programs is to transfer funds from the budgets of fuel-assistance payment programs. Transfers can be done in such a way that households that would have received assistance payments will instead receive energy-efficiency improvements, thus reducing their need for the assistance payments. Measures such as window and door caulking and radiator sheets, which might cost $10 to install in a household, will typically reduce annual heating bills by more than $10 in those countries with unsubsidized energy tariffs. Thus, an energy-efficiency program's one-time $10 investment will allow for a $10 reduction in the annual fuel-assistance payment a household receives.
- **Strengthen the role of ESCOs and NGOs in aiding the poor**. ESCOs have become an important means for identifying viable projects, improving energy efficiency, and directing funding. This resource should be exploited to aid low-income families. With additional funding from the state or from multilateral organizations, it will be relatively easy to adapt ESCOs to provide services that primarily benefit low-income households or vulnerable populations. In addition, bilateral development organizations and multilateral international agencies should help fund energy NGOs that target the poor for energy savings.
- **Improve tariff measures for the poor and add freedom of choice**. Social tariffs can inefficiently target the poor, depending on their exact design. Hungary's social tariffs are applicable only to energy sources such as electricity or district heat, which are supplied over a network. They are not applicable to coal or wood, whose price may vary. If the poor lack network access, then the non-poor will capture the bulk of network- or tariff-based subsidies. Thus, subsidies for non-network fuels like coal and wood may result in better poverty targeting.[103]

  Even within the set of networked ratepayers, a social tariff does not always reach all low-income families. Many middle-income households use little energy and thus can qualify for the social tariff. With these two caveats in mind, it is still possible to introduce tariffs designed to encourage energy efficiency among low-income households. Giving low-income households a choice of tariffs that can help them save money through reduced consumption is a useful means to encourage energy conservation among this group.
- **Improve social assistance payments for the poor through guaranteed funding**. The national government partially funds energy-assistance payments but local governments allocate them to poor households. This method of provision for energy assistance to the poor is currently constrained by laws granting authority to local governments — guaranteeing local government prerogatives on this issue. The Hungarian Government should fully fund a minimum housing assistance payment to

[103] Julian A. Lampietti and Anke S. Meyer, "Coping With The Cold: Heating Strategies For ECA's Urban Poor," The World Bank (Washington, D.C.) 1.

low-income households using national guidelines to increase the coverage of payments to the poor.

- **Consider restoring the joint public-private partnership to assistance payments**. The Social Energy Fund was a national program that provided benefits to low-income families for energy. This fund was privately managed, with local government agencies certifying eligibility, although it was nationally funded with both private and public contributions. One advantage of this model is that it can provide benefits to the poor when there is fiscal pressure on government budgets to reduce spending for low-income households. This program also was widely advertised, with greater coverage than the housing maintenance program.
- **Initiate and fund local private foundations to assist the poor**. Hungary needs to develop energy-efficiency programs and policies directed at the poor and designed for the poor. There should be attempts to provide national funding for local foundations to assist the poor with energy payments and energy efficiency. Several examples were discussed earlier in this report. There are several advantages to a foundation, as an organizational form. It provides a proper framework for cooperation among interested parties, in this case, the local government, the service companies, and the customers. As an outcome of that coordination, plans to increase tariffs can be directly evaluated in tandem with the social policy consequences of the decision. So the foundation can also work as a consulting forum for combining local financial and welfare policy objectives. It can also support implementation by coordinating various channels of social assistance.
- **Make housing subsidies transparent**. A recent study on poverty in Hungary (Ferge et al 2002) suggests that many poor families are not adequately informed about their rights or entitlements to social assistance and housing benefits. To increase coverage of these programs, it is recommended that the GOH conduct a public-information campaign aimed at increasing knowledge of benefits among the poor.
- **Establish a national poverty line or social minimum**. One of the main problems with social assistance in Hungary is that benefits are variable across municipalities, irregular with low provision levels. The GOH should consider adopting a national social minimum and use this to help alleviate poverty, rather than treating the problem of poverty as a purely local phenomenon.
- **Initiate additional district heating reforms**. At present, some district heating companies use tariff mechanisms that discourage households from investing in energy efficiency, thus enabling the company to sell more heat. The companies also lobby for the status quo, using their superior knowledge of the complexity of district heating and over-complicated tariff mechanisms to cloud some very simple tariff issues. Within the energy sector, district heating reforms are among the most difficult because the reform policy's success will depend on a complex mix of reforms in different sectors. Recommendations for district heating reforms in Hungary need to include regulatory and pricing reforms, while simultaneously providing incentives to district heating companies to modernize capacity and providing condominium

associations with additional incentives to invest in energy efficiency. Within this system, the municipal government's role needs to be clarified. All this needs to take place within the context of a strengthened social safety net for low-income district heating customers.

Here are some suggested measures to address reform of the district-heating arena:

1. Consolidate regulatory authority for district heating in Hungary.

An improved methodology for regulating district heating prices needs to be implemented throughout the country. This will require amendments that allow the MEH to regulate both heat-only district heating companies and their distributors.

2. Lower high-capacity charges for district heating in Hungary.

The mechanism used to charge district heating customers should consist mainly of a simple energy charge (commodity charge), expressed in HUF/GCal that reflects the reading on the meter installed in the basement of a building. The operating costs of the district-heating network—including both fixed costs (system costs) and variable costs (fuel costs), should be rolled into the commodity charge and not be reflected in a capacity charge. A small customer charge (capacity charge) should be levied to reflect the cost of billing an apartment.

3. Monitor, collect, and publish data on residential district heating tariffs and prices.

The MEH should set out the methodology for regulating tariff prices at the local level, with a view to making the district heating cost directly comparable between systems. The MEH should set out transparent methodologies for municipalities to follow. Currently, no agency in Hungary collects and monitors residential district heating prices.

4. Develop public relation campaigns that explain the benefits of thermostatic regulator valves.

Residential customers in Hungary are permitted to choose tariff options for district heat charges—either by the square meter or by the amount of energy consumed. It is important that the government clearly explain the advantages of thermostatic regulator valves and metering to district heating customers.

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Exchange Rates

Exchange Rates, 1996-2002

Monthly average exchange rates *Hungarian Forint (HUF): USD*							
	1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**
Jan	141.92	166.10	206.26	215.96	251.15	282.24	275.92
Feb	144.40	173.32	207.78	223.25	259.95	288.13	279.91
Mar	146.04	176.83	210.55	233.15	266.42	292.63	279.48
Apr	148.75	179.77	211.56	235.68	272.87	298.99	273.61
May	151.93	181.40	210.69	235.28	285.52	295.40	265.80
Jun	152.79	185.04	215.89	240.16	273.66	289.33	
Jul	153.15	191.91	217.72	241.94	276.63	289.49	
Aug	153.93	197.91	221.43	239.09	288.18	279.07	
Sep	156.67	195.96	220.44	242.97	300.99	280.92	
Oct	159.03	195.57	215.70	240.53	307.10	281.52	
Nov	159.41	196.19	217.67	246.45	308.27	283.15	
Dec	163.74	201.47	217.13	251.29	295.41	277.01	
Average	152.65	186.79	214.40	237.15	282.18	286.49	
Source: IMF International Financial Statistics.							

Appendix 1

Table 19: Growth Model

Categories:

- *Impact* refers specifically to the existence of price or rate increases for energy; this category received double weights.
- *Investment cost* refers to yearly investment costs for implementing some energy-efficiency measures. Only energy-efficiency policies for the poor incurred these costs. This cost is assumed to be a government expenditure.
- *Annual costs* refer to the level of total annual government expenditures for energy assistance or energy assistance plus energy efficiency.
- *Affordability* refers to the total cost of utility expenditures to poor households, minus any energy-assistance payments they receive.
- *Savings* refers to the amount of household and government savings from some set of policies. These savings are counterfactual savings from energy costs or government expenditures.

Years	2004	2005	2006	2007	2008	2009	Totals
	0	1	2	3	4	5	
Low-income Households and Energy Costs							
Total Number of low-income households (2001)	568,000	568,000	568,000	568,000	568,000	568,000	
Number of low-income households receiving energy assistance payments	197,000	197,000	197,000	197,000	197,000	197,000	
Average utility cost to low-income households with yearly price increases	$443.64	$463.16	$482.68	$502.20	$521.72	$541.24	
Total Utility costs to low-income households receiving payments	$87,397,080	$91,242,552	$95,088,023	$98,933,495	$102,778,966	$106,624,438	
Social Assistance for Energy w/o Energy Efficiency							

Years	2004	2005	2006	2007	2008	2009	Totals
	0	1	2	3	4	5	
Number of households receiving assistance (2000)	197,000	197,000	197,000	197,000	197,000	197,000	
Average Energy Assistance Payment (EAP) per household	$62.90	$65.67	$68.44	$71.22	$73.97	$76.74	
As a percentage of average utility costs	14.2%	14.2%	14.2%	14.2%	14.2%	14.2%	
Total Government Expenditure on EAP (per year)	$12,391,300	$12,936,517	$13,481,734	$14,029,430	$14,572,169	$15,117,386	
Total Government Expenditure on EAP (cumulative)							**$82,528,536**
Energy Efficiency (Households)							
Low Cost Energy Efficiency (LCEE)							
Number of households receiving LCEE (Cumulative)	39,400	78,800	118,200	157,600	197,000	197,000	
Total number of							**197,000**

Years	2004	2005	2006	2007	2008	2009	Totals
	0	1	2	3	4	5	
households to receive LCEE							
Average utility cost to low-income households with LCEE	$443.64	$384.42	$400.62	$416.83	$433.03	$449.23	
Net Savings to low-income households with LCEE	$0.00	$78.74	$82.06	$85.37	$88.69	$92.01	
Energy Assistance as a percentage of average utility cost	14.2%	17.1%	17.1%	17.1%	17.1%	17.1%	
Total utility costs to low-income households	87,397,080	88,140,305	88,622,037	88,842,278	88,801,027	88,498,283	
Total average utility saving for low-income households	$0	$3,102,247	$6,465,986	$10,091,216	$13,977,939	$18,126,154	
Total savings to low-income households (cumulative)							**$51,763,543**
Energy Efficiency (Government Expenditures)							
Total Government	$2,955,000	$2,955,000	$2,955,000	$2,955,000	$2,955,000	0	**$14,775,000**

Years	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**Totals**
	0	**1**	**2**	**3**	**4**	**5**	
Expenditure on LCEE (per year)							
Energy Efficiency Subsidy per household	$75.00	$75.00	$75.00	$75.00	$75.00	$75.00	
Average Energy Assistance Payment per household	$62.90	$54.51	$56.81	$59.11	$61.40	$63.70	
As a percentage of average utility costs	14.2%	14.2%	14.2%	14.2%	14.2%	14.2%	
Total Government Expenditure on Energy Assistance Payment	$12,391,300	$12,496,954	$12,551,870	$12,598,099	$12,591,608	$12,549,057	
Total Government Expenditure on EAP (Cumulative)							**$75,178,887.04**
As the difference with and without LCEE	$0.00	$439,563.27	$929,864.89	$1,431,330.69	$1,980,560.93	$2,568,329.44	
Total savings to Government on EAP payments (cumulative)							**$7,349,649.22**
Total Government	15,346,300	15,451,954	15,506,870	15,553,099	15,546,608	12,549,057	

Years	2004	2005	2006	2007	2008	2009	Totals
	0	1	2	3	4	5	
Expenditure on LCEE and EAP (per year)							
As the amount of increase in government expenditure per year	2,955,000	2,515,437	2,025,135	1,523,669	974,439	-2,568,329	
Total Government Expenditure on LCEE and EAP (Cumulative)							**$89,953,887**
Total Government Expenditure on EAP without LCEE (Cumulative)							**$82,528,536**
As difference between spending w & wo LCEE							**($7,425,351)**
Savings to government per year (after five years)							**$2,568,329**
Additional years for government to break even							**3**
Total years for government to break even							**8**

Years	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**Totals**
	0	**1**	**2**	**3**	**4**	**5**	
	2004	**2005**	**2006**	**2007**	**2008**	**2009**	**Totals**
Energy Efficiency (Households)	**0**	**1**	**2**	**3**	**4**	**5**	
High Cost Energy Efficiency (HCEE)							
Number of households receiving HCEE (Cumulative)	6,484	12,968	19,452	25,936	32,420	0	
Total number of households to receive HCEE							**32422**
Average utility cost to low-income households with HCEE	$443.64	$358.95	$374.08	$389.21	$404.33	$419.46	
Net Savings to low-income households with HCEE	$0.00	$104.21	$108.60	$113.00	$117.39	$121.78	
Energy Assistance as a percentage of average utility cost	14.2%	18.3%	18.3%	18.3%	18.3%	18.3%	
Total utility costs to low-income households	87,397,080	90,566,847	93,679,658	96,735,514	99,734,413	102,676,357	
Total average utility saving for	$0	$675,704	$1,408,365	$2,197,981	$3,044,553	$3,948,081	

Years	2004	2005	2006	2007	2008	2009	Totals
	0	1	2	3	4	5	
low-income households							
Total savings to low-income households (cumulative)							**$11,274,684**
Energy Efficiency (Government Expenditures)							
Total Government Expenditure on HCEE (per year)	$1,945,200	$1,945,200	$1,945,200	$1,945,200	$1,945,200	0	**$9,726,000**
Energy Efficiency Subsidy per household	300	300	300	300	300	300	
Average Energy Assistance Payment per household	62.9	$50.90	$53.04	$55.19	$57.33	$59.48	
as a percentage of average utility costs	14.2%	14.2%	14.2%	14.2%	14.2%	14.2%	
Total Government Expenditure on Energy Assistance Payment	12,391,300	$12,840,757.51	13,323,204	13,717,691	14,140,700	14,557,871	
Total Government							**80,971,523**

Years	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**Totals**
	0	**1**	**2**	**3**	**4**	**5**	
Expenditure on EAP (Cumulative)							
as the difference with and without HCEE	$0	$95,760	$158,530	$311,739	$431,469	$559,515	
Total savings to Government on EAP payments (cumulative)							**$1,557,013**
Total Government Expenditure on HCEE and EAP (per year)	14,336,500	14,785,958	15,268,404	15,662,891	16,085,900	14,557,871	
As the amount of increase in government expenditure per year	1,945,200	1,849,440	1,786,670	1,633,461	1,513,731	-559,515	
Total Government Expenditure on HCEE and EAP (Cumulative)							**90,697,523**
Total Government Expenditure on EAP wo/ HCEE (Cumulative)							**$82,528,536**
As difference between spending with &							**($8,168,987)**

Years	2004	2005	2006	2007	2008	2009	Totals
	0	1	2	3	4	5	
without HCEE							
Savings to government per year (after five years)							**$1,557,013**
Additional years for government to break even							**5.25**
Total years for government to break even							**10.25**

Appendix 2

Energy Sector Reforms and Privatization

A. The Electricity Industry

Hungary has made remarkable progress in privatizing its electricity sector since 1989. Electricity production has moved from a single state-owned electric company to a system of multiple companies with a large share of private ownership. Privatization attracted much-needed foreign capital. In January of 1992, Magyar Villamos Muvek (MVM) was restructured, incorporated, and partially unbundled into eight power companies, six distribution companies (regional electric companies), one transmission company, and one system operator. With the exception of the transmission company, most profitable companies were sold later in the 1990s; the government retained unprofitable power plants, such as the Paks nuclear plant.

Change in ownership, much of it foreign, as well as extensive privatization has not yet brought about liberalized and fully competitive pricing. Much of the electricity sector remains under the single-buyer model, in which a single state-owned company both buys and sells electricity at the wholesale level. The single-buyer model allows almost any subsidy at the production or wholesale level to be passed intact to customers, and it suggests that almost any structure of relative prices can be sustained. However, this purchasing model is set to change under the new *Electricity Act*.

1. Higher Residential Prices

As others have argued, this purchasing structure has serious deficiencies, which have contributed to the slow pace of price reforms, because it does not force individual firms to initiate measures to eliminate inefficiencies in the firm that will lower average costs to consumers.[1] So, although electric utility producers and distributors have been privatized, the price of residential electricity continues to be capped and implicitly subsidized, with prices below international levels (Newbery 1999; Gerse 2001; World Bank 1999).

Residential prices for electricity increased throughout the 1990s, beginning at roughly 3.5 cents per kWh in 1992 and rising to their current price of roughly 6 cents per kWh. (See figure 8.) Price increases have been the result mainly of government regulation and increases in the cost of basic fuels. However, even after large price increases in 1999, end-user prices for electricity were lower than the average West European prices, although still higher than prices in most post-communist societies (Gerse 2001). According to the International Energy Agency/Organization for Economic Cooperation and Development (IEA/OECD), Hungary's household residential price for electricity is the fourth-lowest price among 20 OECD countries surveyed.[2]

[1] See chapter 7 for a discussion of pricing and tariffs.

[2] IEA 2002, p. 44.

2. Transmission

MVM originally controlled the operational management of the electric transmission system, wholesale distribution of electricity, and all exports and imports. It also managed the contract framework with cooperating companies and formulated development and investment strategy within the sector. However, the operational control of the transmission system has now passed into the hands of MAVIR Rt., which was once part of MVM but is now an independent company.

Long-term contracts previously drawn up between power producers and MVM are now impediments to cost minimization and full cost recovery. These contracts, with a duration of 10 to 20 years, establish an obligation for each generator to sell all its electric power to MVM at a specified price, often resulting in large losses to MVM.[3] MVM buys power from different companies at different prices, operating on different cost bases, to earn an 8 percent equity-based profit. MVM then transmits electricity at uniform wholesale prices to distributors. Contracts between MVM and the distribution companies have been made for a 15-year period and can be extended annually, subject to regulation.[4]

3. Influence of EU Electricity Reforms

Power-sector reform is occurring rapidly throughout the EU. *The Single Market Directive for Electricity* (96-92/EC), which entered into force in February 1999, is a long-term plan to create unified electric and gas markets in the EU. This directive is already influencing developments in Hungary. The EU's plans, along with the Energy Chapter of the *acquis communitaire,* have prompted Hungarian officials to pass a new *Electricity Act* (2001) that will open the electric market to foreign competition.

According to a recent *EU Enlargement Report*, the *Hungarian Electricity Act*, "is an important step toward integrating Hungary into the internal EU electricity market."[5] Although there are grounds for optimism, the extent of liberalization will be limited initially. Liberalization has affected almost 200 large power consumers in Hungary and approximately 10 percent of these large customers have already switched suppliers. Smaller consumers, purchasing less than 6.5 GW per year, will not be affected by these changes and will remain subject to a regulated tariff regime.

B. Natural Gas and Liquid Petroleum Sectors

Natural gas is perhaps the least-reformed industry in the energy sector, considering the number of firms competing in the sector and the share of competitive pricing that has emerged from the sector. A single firm, Magyar Olaj-es Gazipari Rt. (MOL), plays a significant role in the main gas operations in Hungary. Although there are private distributors of gas, there is little competition between them. Most experts agree that the

[3] Pesic and Urge-Vorsatz 2001, 92.

[4] MVM 1999, 11.

[5] Commission of the European Union 2002.

cost of residential gas is set below cost-recovery levels and needs to increase (OECD 2000, 24; Pierce 1999).

The liquid petroleum gas (LPG) or bottled gas sector has fully liberalized prices, with several private companies operating in Hungary. This part of the industry is very small, servicing approximately 4,000 households. Although a relatively small portion of the energy sector, it is an excellent example of the political forces behind market outcomes because it illustrates how the poor have been marginalized in Hungarian politics.

1. Production and Distribution

A single producer, MOL, dominates natural gas production. Approximately 24 percent of MOL is state-owned and, unlike other privatized energy companies, no Western company owns a strategic interest. MOL has been the sole producer of Hungarian gas, the sole importer of gas into Hungary, the sole operator and owner of gas storage facilities, and the sole owner and operator of gas transmission. This is set to change, however, as the government announced in June 2003 that it plans to sell its stake in MOL.

In 1996, six gas distribution companies (GDCs) were privatized, with the Hungarian government retaining rights to name one member to the board of directors in each company; 40 percent of each distribution company was allocated to local governments served by the company. All municipalities but Budapest have sold their shares in these distribution companies, although distributors are monopolists in each sector. There are now 10 gas distribution companies in Hungary.

Competition between these GDCs and MOL is extremely limited (Kessides 2000, 3). Because MOL and the GDCs were assigned their pre-existing customers and municipalities by license, competition for customers and municipalities is effectively prohibited.

2. Gas Prices

As in other post-communist countries, residential gas prices in Hungary have been historically low, part of the universal welfare provided to citizens. In the mid-1990s, gas prices increased quickly by as much as 80 percent in real terms (OECD 2000; MEH 2001). Despite these increases, prices are much lower than prices for gas in Western Europe, and residential customers receive substantial gas subsidies.

This price structure is creating distortions in both supply and demand of natural gas. On the supply side, Hungary is currently exploiting its domestic natural gas reserves at a higher production rate, thereby leading to a more rapid depletion of domestic reserves. On the consumption side, these wholesale cost subsidies are distorting customer demand and causing dissatisfaction among district-heat customers and under investment in basic energy-efficiency measures. For example, the number of customers connected to the Hungarian Natural Gas grid increased from 1,680,000 in 1990, to 2,802,000 in 1998. This increasing demand is partly the result of price subsidies, which provide an economic incentive for households to choose natural gas over other energy sources.

3. Gas Consumption

Natural gas is playing an increasing role in supplying Hungary's energy needs. Whereas in 1996, natural gas accounted for 36.2 percent of total energy consumption (already approximately twice the European average, according to OECD 1999), in 2000, this increased to almost 40 percent of total final energy consumption (MEH 2001).

As consumption is rising, domestic gas supplies are falling. According to the U.S. Department of Energy, Hungary's domestic production of gas in 1990 was approximately 0.17 trillion cubic feet (TCF). In 2000, this number decreased to 0.11 TCF.[6] Hungarian domestic production currently accounts for approximately 35 percent of domestic consumption; however, the International Energy Agency (IEA) forecasts that domestic production will decline to 20 percent of total consumption by 2010.

Increasing demand and decreasing domestic production means that domestic consumption must be satisfied by increasing imports. According to official statistics, roughly two-thirds of all gas is now imported into Hungary (MEH 2000), with the vast majority of natural gas imports come from Gazprom.[7]

C. District Heating

Privatization has led to some consolidation in the district heat sector. Between 1990 and 1999, the number of district-heating supply systems decreased from 328 to 252 (Yearbook of Hungarian District Heating 2001). The remaining systems, however, are thriving and in no danger of collapse. District heating is a local public service, frequently owned and operated by municipalities but also often leased or partially owned by private companies.

Most of Hungary's district heat is generated by electric power plants and heating power plants owned by the main power-supply companies. Many of these plants also have cogeneration capacity or combined heat- and power (CHP) production facilities. According to the MEH, 60 percent of heat produced for district heating is cogenerated with electric energy.[8] With falling numbers of consumers for district heat, the government issued a decree requiring MVM to purchase up to 20 MW of electricity from CHP plants at a rate higher than the average price of electricity. This decree has helped smaller district-heating plants recoup losses from heat generation. Many of the new CHP plants are fueled with gas engines that provide the electricity used to help subsidize the cost of local heat supplies.

There are 6 licensed district heat generator companies in Hungary and 16 licensed district heat supply companies. There are approximately 178 district-heating distribution companies serving almost 645,000 households, or just over 1 million people in 103

[6] DOE 2002.

[7] Hungary also imports from European companies (Ruhrgas and Gaz de France) but these companies buy from Gazprom as well.

[8] HEO 2001, 70.

towns and cities.[9] This represents approximately 16 percent of all households in Hungary. About 19 of the 103 municipalities distributing heat buy it from large electric generation plants. Municipalities who do not buy heat from these plants generally produce it themselves in CHP or heat-only plants.

1. Government Regulation

The regulatory structure of the district-heating sector is confusing, with multiple government agencies and actors involved in the process. Different agencies, for example, are responsible for licensing and regulation. The structure of district-heating tariffs is regulated partially by the MEH (70 percent) and partially by the municipalities (30 percent). According to the MEH, "This circumstance damages the principle of uniform regulation in the district heat market and causes several problems and it would be useful to remedy them in the future."[10]

This regulatory structure has not set prices competitively. Although prices for district heating have increased, they have not done so uniformly across the country, and they still have not increased enough to fully cover costs.[11] In some parts of Hungary, district heating is expensive, particularly in Budapest. The accepted practice is to heat buildings to 24 degrees Centigrade throughout the winter. Any incentive for householders to install equipment to provide autonomous control and hence save energy and money is almost removed because the district heating company charges up to 60 percent of heating bills as fixed charges. Even by turning radiators off and/or down and reducing consumption by 50 percent, a householder could achieve only a 20 percent financial saving—if that.

2. Distorted Price Signals

One of the main problems facing Hungary's district-heating sector is the systemic problem of subsidies in the energy sector, which distorts pricing and incentives. There are currently large gas subsidies to consumers who heat their homes with natural gas heat. This in turn means that homeowners who heat their homes with natural gas typically face cheaper monthly heating bills than do those who purchase heat from district heating companies. As a result, customers who use district heat are often dissatisfied with the cost of their service and frequently wish to switch from district heating to gas heating.

This situation is exacerbated by several factors, some associated with communist legacies in the society and others associated with current utility policies. During the transition and under state socialism, for example, customers had very poor knowledge of the actual cost of the utilities they consumed. Under communism, households paid utility bills that were heavily state-subsidized, so the cost to the consumers actually below the cost of producing the good. Moreover, pricing for utilities was usually based on normative criteria such as the size of an apartment or the size of a household, rather

[9] Yearbook of Hungarian District Heating 2001.

[10] HEO 2001, 34.

[11] HEO 2001, 34.

than on the actual units consumed. Therefore, total household costs related only slightly to consumption.

3. Monopolistic Practices

Another problem facing district heating companies is financing. Because municipalities frequently retain majority shares in district heating companies, and also regulate end user prices, the municipalities are motivated to keep heat prices low. This means that district heat companies normally make too little profit to make capital improvements.

Because households cannot control their own district heating consumption, the companies exploit this by selling customers more heat than they want. Some households prefer to disconnect from the heat company entirely, installing low-cost (subsidized) natural gas-fired heating solutions instead. There is anecdotal evidence that some municipalities use zoning ordinances to prevent households from switching to gas from district heat.

D. Summary of Energy Sector Reforms

Hungary has made substantial progress in energy sector reforms, breaking up state-owned companies and privatizing large portions of their assets. The EU is also having a strong, positive influence on policy reforms in the energy sector. However, privatization of assets in Hungary has not led to a corresponding liberalization of prices. Our survey shows that prices need to increase for electric and gas, as residential natural gas prices are set well below actual market costs.

Gas subsidies to residential customers are causing price distortions throughout the economy, affecting heat customers particularly. Many households using LPG and district heat have attempted to switch from those systems to natural gas. As a result the LPG and district-heating sectors have both lost customers. Because very large numbers of households are connected to natural gas, price increases influence most of the voting population, which translates into political pressure to hold down residential gas prices and to exploit domestic gas reserves at a rapid rate.