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Report No: 35460-HR

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED LOAN

IN THE AMOUNT OF EURO 24.0 MILLION
(US\$29.8 MILLION EQUIVALENT)

TO

HRVATSKA ELEKTROPRIVREDA

WITH THE GUARANTEE OF THE REPUBLIC OF CROATIA

FOR A

DISTRICT HEATING PROJECT

MAY 24, 2006

**Infrastructure Department
South Central Europe Country Unit
Europe and Central Asia Region**

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CURRENCY EQUIVALENTS

Currency Unit = Croatian kuna (HRK)
€ 1 = HRK 7.27 (April 30, 2006)
€ 1 = US\$ 1.24 (April 30, 2006)

FISCAL YEAR

January 1 – December 31

ABBREVIATIONS AND ACRONYMS

CFAA	Country Financial Accountability Assessment
CHP	Combined Heat and Power
DA	Designated Account
DH	District Heating
DH Law	Law on Production, Distribution and Supply of Thermal Energy (March 2005)
DSM	Demand Side Management
ERR	Economic Rate of Return
ESCO	Energy Services Company
FM	Financial Management
FMS	Financial Management System
FMR	Financial Monitoring Report
FRR	Financial Rate of Return
GEF	Global Environment Facility
HEP	Hrvatska Elektroprivreda
HEP T	Hrvatska Elektroprivreda Toplinarstvo
HERA	Croatian Energy Regulatory Agency
IAS	International Accounting Standards
ICB	International Competitive Bidding
IFR	Interim Financial Report
IFRS	International Financial Reporting Standard
ISA	International Standards of Auditing
KWh	Kilowatt hour
MoELE	Ministry of Economy, Labor, and Entrepreneurship
MoF	Ministry of Finance
MWh	Megawatt hour
NCB	National Competitive Bidding
PIU	Project Implementation Unit
SIL	Specific Investment Loan
SPN	Specific Procurement Notice
UNDB	United Nations Development Business
VAT	Value Added Tax

Vice President:	Shigeo Katsu
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Task Team Leader:	Sudipto Sarkar

CROATIA
DISTRICT HEATING PROJECT
PROJECT APPRAISAL DOCUMENT
EUROPE AND CENTRAL ASIA
ECSIE

Date: May 24, 2006	Team Leader: Sudipto Sarkar
Country Director: Anand K. Seth	Sectors: District heating and energy efficiency services (100%)
Sector Manager/Director: Peter D. Thomson	Themes: Other urban development (P)
Project ID: P095389	Environmental screening category: B
Lending Instrument: Specific Investment Loan	Safeguard screening category: Limited impact

Project Financing Data	
[X] Loan [] Credit [] Grant [] Guarantee [] Other:	
For Loans/Credits/Others: IBRD Loan	
Total Bank financing: Euro 24.0 million (US\$29.8 million equivalent)	
Proposed terms: Variable Spread Loan (VSL) with a maturity of 15 years, including a 5 year grace period on the basis of level repayment of principal.	

Financing Plan (US\$m)			
Source	Local	Foreign	Total
BORROWER	10.00	4.48	14.48
IBRD	5.00	24.80	29.80
Total:	15.00	29.28	44.28

Borrower: HEP
Mr. Ivo Covic, Member of the Management Board
Ulica grada Vukovara 37, Zagreb; Tel:6322-753, E-mail: ivo.covic@hep.hr

Responsible Agency: HEP T
Mr. Branimir Poljak, Director
Misevecka 15a, Zagreb; Tel: 6131-983; E-mail: branimir.poljak@hep.hr

Estimated disbursements (Bank FY/US\$m)									
FY	2007	2008	2009	2010					
Annual	7.45	7.45	7.45	7.45					
Cumulative	7.45	14.90	22.35	29.80					

Project implementation period: Start July 1, 2006; End: December 31, 2009
Expected effectiveness date: October 30, 2006
Expected closing date: June 30, 2010

Does the project depart from the CAS in content or other significant respects? <i>Ref. PAD A.3</i>	[] Yes [X] No
Does the project require any exceptions from Bank policies? <i>Ref. PAD D.7</i>	[] Yes [X] No
Have these been approved by Bank management?	[] Yes [] No
Is approval for any policy exception sought from the Board?	[] Yes [X] No
Does the project include any critical risks rated "substantial" or "high"? <i>Ref. PAD C.5</i>	[] Yes [X] No

Does the project meet the Regional criteria for readiness for implementation? *Ref. PAD D.7* Yes No

Project development objective *Ref. PAD B.2, Technical Annex 3*

The project objective is to promote efficient operations by HEP T. This objective will be met by: reducing energy and water losses; increasing the profitability of HEP T; and increasing the level of customer satisfaction.

Project description [one-sentence summary of each component] *Ref. PAD B.3.a, Technical Annex 4*

The project has two components:

A – Infrastructure Rehabilitation through which the district heating networks in Zagreb and Osijek will be rehabilitated and non-economic boilers in Osijek will be closed; and

B – Consultancy Services through which (i) Demand Side Measures will be promoted to reduce apartment level energy consumption; and (ii) implementation of the project will be supported.

Which safeguard policies are triggered, if any? *Ref. PAD D.6, Technical Annex 10*

Environmental Assessment (OP 4.01) for minor environmental effects during construction
Involuntary Resettlement (OP 4.12) for possible land acquisition. There is no resettlement due to the project. However, a Land Acquisition Policy Framework has been prepared for the unlikely event where HEP T would have to acquire land for the proposed rehabilitation works under the project. As the Land Acquisition Policy Framework falls under OP 4.12, this safeguard policy is triggered.

Significant, non-standard conditions, **if any**, for: Not applicable
Ref. PAD C.7

Board presentation: None

Loan/credit effectiveness:

- (a) The Subsidiary Agreement between HEP and HEP T is signed; and
- (b) The Subsidiary Guarantee Agreement is signed between Ministry of Finance and HEP.

Covenants applicable to project implementation:

They are listed in Section C5 of the PAD.

**CROATIA
DISTRICT HEATING PROJECT**

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A. STRATEGIC CONTEXT AND RATIONALE

1. Country and sector issues

Sector background

District Heating (DH) companies serve about 400,000 people in Croatia. The main towns where DH services are provided are: Zagreb, Osijek, Rijeka, Sisak, Vukovar, Karlovac, and Slavonski Brod. On an annual basis, about 2,200 GWh of energy is provided through networks that have a total length of around 300 kilometers (km). The DH services are provided by subsidiaries of a national company – Hrvatska Elektroprivreda (HEP) – and by municipal companies, excepting in Rijeka where the DH company is jointly owned by the municipality and the private sector. The HEP subsidiary providing services in Zagreb and Osijek is called HEP Toplinarstvo (HEP T) which will implement this project. Zagreb and Osijek represent about 75% and 7%, respectively, of the sector in terms of connected consumers.

Development issues

The Government intends to strengthen the DH sector as it is an economical way to provide heat to densely populated areas where DH networks exist. To this end, in March 2005 the Law on Production, Distribution and Supply of Thermal Energy (DH Law) was adopted. In early 2005, the Croatian Energy Regulatory Agency (HERA) was also formed which has a mandate to regulate the entire energy sector including the DH segment.

- **Rehabilitate the sector:** Over the last 15 years, due to paucity of funds the networks in the DH companies were not well maintained and replaced in a timely manner. This leads to frequent breakdowns which affect the quality of services and result in heat and hot water losses. In Zagreb, the average number of breakdowns per kilometer of the network is around 4, which is eight times higher than the average number of breakdowns in Western European countries. Similarly, the heat losses in the networks are around 15-25%, compared to a figure of around 5-10% in EU-15 countries. There is a need to systematically identify the rehabilitation priorities in all DH companies and determine funding possibilities for network rehabilitation;
- **Introduce cost recovery tariffs:** Most DH companies are able to cover their cash operating expenses - fuel, materials, and salaries. However, in many cases, the tariffs today do not cover depreciation that limits the ability of the companies to invest in upgrading the DH network. Further, for a DH company, about 75-80% of the cash operating expenses are for fuel that makes the profitability of the company very dependent on international gas and oil prices. Therefore, a tariff system that is linked to the price of fuel and includes depreciation charges should be considered; and
- **Introduce Demand Side Management:** Consumers are not able to control their consumption and their bills are based on the surface area of their apartment and not actual consumption. This often leads to energy wastage as consumers control their heat intake by opening and closing windows. Experience in other countries in the region has shown that the use of regulators to control consumption and cost allocators to distribute the costs registered in a building sub-station among the apartments leads to savings in household energy consumption and increased comfort. The new DH Law requires that new buildings using DH should have Demand Side Management (DSM) through heat meters. However, there is no regulatory requirement for existing customers to use DSM, although they may do so voluntarily. Given that the bulk of the consumers are the

existing ones, the DH Law should be amended to make it mandatory to install DSM equipment by a certain deadline. This will promote the use of DSM as seen in other countries in the region.

Government Actions

On May 5, 2006, the Government adopted a Conclusion (No. 310-02/06-02/05) which sets the framework for the development and implementation of the District Heating Strategy (DH Strategy). Key features of the Conclusion are:

- The Ministry of Economy, Labor, and Entrepreneurship (MoELE) will be responsible for the development and implementation of the DH Strategy. The responsibilities of MoELE will include the preparation of subsidiary legislation under the DH Law and co-ordination with HERA on matters related to tariffs and service standards. On an annual basis, the MoELE will provide a report to the Government on the status of implementing the DH Strategy. Through the Guarantee Agreement of the project, the MoELE has also agreed to submit the same report to the Bank;
- The development and implementation of the DH Strategy will be financed by the central Government budget between 2007 and 2010;
- The viability of small DH companies that do not use Combined Heat and Power (CHP) boilers as a heat source will be determined. In small towns where non-viable DH companies exist, the possibility of providing heat through alternative means will be examined;
- Demand Side Management options will be reviewed, taking into account the current situation, the benefits, and the costs to the consumer to install equipment at the household level that will regulate consumption and allocate costs among apartments in a building. Currently, the installation of DSM equipment is voluntary. Options to make it mandatory to install DSM equipment will be considered; and
- An Energy Benefit Program for low income and vulnerable groups to pay for heating bills will be developed, especially as tariffs are expected to increase to reach cost recovery levels. This program will be included as part of the larger social assistance program and to this end, the MoELE will co-ordinate with ministries and agencies responsible for implementing the social assistance program.

2. Rationale for Bank involvement

- **Helping Croatia with EU Accession:** The Bank's Country Assistance Strategy for Croatia supports activities that will help Croatia to accede to the EU and meet EU directives. The project will support DSM through a voluntary program to be implemented by HEP T and policy changes under the implementation of the Government's DH Strategy. DSM will help to reduce energy consumption in buildings resulting in reduction of carbon dioxide emissions as per EU Directive 93/76/EEC that makes specific reference to energy efficiency for the DH sector;
- **Experience with DH issues:** The Bank has implemented a significant number of DH projects and has gained experience in policy, institutional, and investment matters for the sector. This experience will help the Croatia and Bank partnership to implement this project. In addition, the Bank is currently implementing two energy projects in Croatia that have deepened its knowledge of sector issues. These two projects are the Energy Efficiency Project and the Renewable Energy Project; and

- **The project was partly prepared before:** The Bank started preparation of this project in 1999. However, project preparation was suspended in July 2002, when a decision was taken that approval of the Bank loan could move forward subject to the satisfactory resolution of the following and the progress made on each issue is indicated in italics: (a) a DH Law should be in place. *A satisfactory law is in effect since March 2005;* (b) HEP T should have its own financial statements. *This is in place since 2003. The DH assets are registered with HEP which leases them to HEP T for a fee;* (c) staff should be transferred from HEP to HEP T. *This was done in 2003;* and (d) there should be a draft agreement between HEP and HEP T on service obligation and operation *An agreement between HEP and HEP T is in place.*

3. Higher level objectives to which the project contributes

This project will be one of the first activities in the sector to improve the operations of a DH company in a systematic manner. The DH companies in Zagreb and Osijek represent a significant share of the sector (around 82%) and improvements in these two companies will bring about improvements for the sector. Further, the improvements in these two companies will have a demonstration effect that can be replicated by other DH companies in the country.

Through the Guarantee Agreement, the project supports the following which will create a conducive environment for the development of the sector:

- Development of a tariff methodology by December 31, 2006 that will allow DH companies to charge tariffs that will cover: operating costs, including depreciation; and investment costs, including debt service;
- Implementation of the Government's DH Strategy which will bring about policy and institutional changes in the DH sector between 2007 and 2010. The MoELE will report on an annual basis to the Government and the Bank on the progress made in implementing the DH Strategy which will include corrective actions to be taken, if needed, to successfully implement the strategy; and
- Development and Government adoption of a Demand Side Management Program by March 1, 2008. The project will also support a voluntary DSM program to be implemented by HEP T. The implementation of the Government's Program and the voluntary program by HEP T will promote DSM that will increase energy conservation at the household level. Further, consumers will be more satisfied as they would have the ability to control consumption and be billed for actual heat consumption.

B. PROJECT DESCRIPTION

1. Lending instrument

The project has been designed as a Specific Investment Loan (SIL).

2. Project development objective and key indicators

The project objective is to promote efficient operations by HEP T. This objective would be met by:

- reducing energy and water losses through the rehabilitation of the network and the closure of non-economic local boilers in Osijek;
- increasing the profitability of HEP T by promoting the use of cost recovery tariffs, assuming that the Government allows tariffs to be adjusted as per HEP T's proposal; and
- increasing the level of customer satisfaction by understanding their needs through surveys and implementing a voluntary DSM Program in Zagreb and Osijek, based on the positive results of a pilot program that was carried out in Zagreb by HEP T which resulted in energy savings of around 10-20% in apartments.

3. Project components

The project has two components: Infrastructure Rehabilitation and Consultancy Services (details in Annex 3). The table below summarizes the project cost and the financing plan.

Project Cost and Financing Plan (in € millions)			
Component	Cost	Financing	
	Total	Bank	HEP-T
A. Infrastructure Rehabilitation			
Zagreb DH Rehabilitation	25.31	18.47	6.84
Osijek , DH rehabilitation	7.44	5.47	1.97
Total for component A	32.75	23.94	8.81
B. Consultancy Services			
DSM Program, design and supervision consultants, and financial audits	2.90	0.00	2.90
Total for component B	2.90	0.00	2.90
TOTAL PROJECT COST	35.65	23.94	11.71
Front end fee	0.06	0.06	0.00
TOTAL	35.71	24.00	11.71

A. Infrastructure Rehabilitation This component includes the following investments:

- **Zagreb:** Network rehabilitation, including replacement of a dual pipe trench (35 km), transmission pipes (20 km), and distribution pipes (15 km). These investments were identified as priority rehabilitation investments where energy and water losses are high. HEP T will contribute by procuring the pipes and the Bank loan will finance the installation works and pipe parts; and
- **Osijek:** Network rehabilitation, including replacement of distribution pipes (15 km) that are in poor condition and connection to the main CHP plant of customers who are currently connected to the inefficient local heat only boilers. In addition, rehabilitation of 25 heating sub-stations will be supported. Further, for some consumers (heat load of 6 MW) the heat supply will be switched from steam to hot water.

B. Consultancy Services This component includes the following. This component will be fully financed by HEP T.

- Development of a DSM Program by December 31, 2006. Under this program, HEP T will look at options to promote voluntary installation of DSM equipment. To the extent possible, HEP T will provide incentives to consumers to install the equipment. The incentives that are currently being considered are: a different tariff structure for consumers that install the equipment compared to

- those that do not; and a one-time rebate for consumers that install the equipment. From 2007, HEP T will implement its DSM Program which is expected to be implemented rapidly once the DH Law is amended making the installation of the equipment mandatory;
- Completion of 2 surveys in the cities of Zagreb and Osijek to understand and respond to the needs of the consumers. The first survey will be carried out in the first year of project implementation. The second survey will be carried out in the fourth year of project implementation to determine the impact of the project;
 - Preparation of bidding documents;
 - Construction supervision; and
 - Preparation of annual audits for the project and HEP T.

4. Lessons learned and reflected in the project design

Policy and institutional environment has to be correct Project preparation was suspended in July 2002 when the Government and the Bank decided to wait until a proper policy and institutional environment for the project was in place. Currently such conditions exist which make it conducive for the project to meet its objectives. Some of the key differences between July 2002 and now are:

- Croatia has begun accession negotiations with the EU and intends to meet the EU's directives on energy and follow DH practices - such as DSM – that are common in EU member countries;
- a DH Law is in place that outlines service responsibility and the framework to establish a tariff methodology through subsidiary legislation;
- an energy regulator, HERA, is in place to ensure service quality and that tariffs are based on costs; and
- HEP T has been formed as a separate entity with separate accounts that helps to clearly identify the revenues and expenditures related to DH, within the HEP group, and make necessary changes to increase the profitability of the company.

Need to promote DSM The sustainability of DH projects is increased if consumers receive good quality service. In a survey carried out in 2001, the majority of the consumers sampled in Zagreb and Osijek expressed an interest to control heat consumption and be billed for actual DH usage (Section D4). HEP T carried out a pilot DSM program in Zagreb where the energy savings have been around 10-20%. Under the project, HEP T will expand the positive outcome of the pilot program by developing and implementing a voluntary DSM Program for Zagreb and Osijek.

5. Alternatives considered and reasons for rejection

Technical Assistance Component to support policy and institutional reforms: A Technical Assistance (TA) component – financed by the Bank loan – was considered at the project concept stage. This TA would have supported the Government to carry out policy and institutional reforms in the DH sector and included support on implementing DSM, strengthening HERA, developing secondary legislation under the DH Law, and preparing a program to support the low income groups to pay for energy bills. However, this option was not pursued since the Government on its own decided to develop the sector and provided funding from the budget¹. The activities proposed under the Government's DH Strategy are similar to the proposed TA component discussed at the project concept stage. Thus, instead of a separate TA component, the project design – through the Guarantee Agreement - supports the implementation of the Government's DH Strategy that will result in policy and institutional reforms.

Sector wide approach: A sector wide approach was considered through which the project could cover all the DH companies in the country. However, this option was not pursued as the viability of some of the smaller municipal companies is not certain and the Government's DH Strategy on this matter is not yet in place. Further, it would complicate project implementation arrangements as there would be multiple end beneficiaries. Thus, under the project it was decided to work with a large enterprise like HEP and HEP T which have the institutional capacity. Further, HEP T's operations in Zagreb and Osijek cover about 82% of sector and the viability of DH services in these two cities is certain as the networks are already in place and both cities have Combined Heat and Power boilers that can provide heat at economic terms.

Lend directly to HEP T: The option of making the Bank loan to HEP T was considered as it is responsible for providing DH services and the company has adequate institutional capacity. However, this option was not pursued as the company is not yet profitable. Thus, it was decided that the Bank loan will be made to HEP, HEP T's holding company, which is a profitable national power company and has experience in working with the Bank on the ongoing Energy Efficiency Project and Renewable Energy Project. Improvements in HEP T will be promoted through the Project Agreement between the company and the Bank; and the Subsidiary Agreement between HEP and HEP T.

C. IMPLEMENTATION

1. Institutional and implementation arrangements

There will be a Loan Agreement between the Bank and HEP which will on-lend the Bank loan proceeds to HEP T through a Subsidiary Agreement. The terms and conditions of the Bank loan between HEP and HEP T will be identical to those between the Bank and HEP. There will be a Project Agreement between the Bank and HEP T clarifying how the project will be carried out by HEP T. Further, there will be a Guarantee Agreement between the Bank and the Republic of Croatia, for the loan to HEP, which will provide the financial and performance guarantees related to the project. In addition, there will be a Subsidiary Guarantee Agreement between HEP and the Ministry of Finance (MoF). HEP and HEP T have created a joint Project Implementation Unit (PIU) comprising staff from the technical, financial, accounting, and legal departments of the two companies. There are no external consultants in the PIU and staff members from HEP and HEP T work in the PIU and also carry out their other duties in these

¹ Based on the Conclusion of the Government dated May 5, 2006.

companies. HEP and HEP T will ensure that the PIU is staffed properly and functions effectively throughout the duration of the project.

2. Monitoring and evaluation of outcomes/results

The project development indicators are: energy loss (% of heat generated), ratio of water added to the network volume, net profit/revenues, and customer satisfaction. The intermediate outcome indicators are: percentage of rehabilitation completed, ratio of receivables to sales, ratio of payables to cash operating expenses, operating ratio, and total number of domestic connections. These indicators will be monitored over time against target values and the results will be available to the Bank in the Project Report prepared by HEP T on a semi-annual basis. The indicators are provided in Annex 3.

3. Sustainability

DH is a basic service and the proposed rehabilitation investments will lead to efficient operations by HEP T. The risk of the services being discontinued is extremely low as consumers have expressed satisfaction with the services being provided by HEP T and not indicated their preference to move to other forms of heating (Section D4). Measures are being taken under the project for the services to be delivered in a sustainable manner. These measures are:

- improvement in HEP T's financial performance through an increase in tariffs and reduction in energy and water losses;
- voluntary introduction of DSM to allow consumers to have more control on their consumption and be billed for actual usage of DH services. This will lead to increased customer satisfaction;
- surveys to be carried out by HEP T to determine customer satisfaction and make improvements, as necessary; and
- policy and institutional changes to be made by the Government to support the development of the DH sector.

4. Critical risks and possible controversial aspects

There are three risks related to the project: the development of a tariff methodology may be delayed, there may be delays in tariff approval by the Government, there may be delays in establishing a contract between HEP T and the City of Zagreb which is a disbursement condition for the Zagreb component of the project.

Delay in introducing tariff methodology

As per the DH Law, the tariff approval process is as follows - HEP T proposes a new tariff to HERA based on a methodology. The Government then approves tariffs endorsed by HERA. As the DH Law and HERA are relatively new, the tariff methodology is not yet in place, although a draft methodology has been prepared and by law it should be in place by December 31, 2006. To address the risk, under the Guarantee Agreement, the Government will ensure that by December 31, 2006, a tariff methodology is in place that will cover operating costs, including depreciation, and investment costs (counterpart funds and debt service).

Delay in tariff approval by the Government

Tariffs endorsed by HERA have to be approved by the Government. If the decision of the Government on approving tariffs is delayed, then the financial position of HEP T will be affected. To address this risk, under the Guarantee Agreement, the Government will ensure that HEP T is able to meet its financial obligations under the project. This would include approval of adequate tariffs by the Government in accordance with Croatian legislation. Through the Project Agreement, HEP T has also agreed that it would submit to HERA a tariff proposal, one month after the tariff methodology is in place to avoid delays in implementing new tariffs.

Delay in clarifying DH asset ownership in the City of Zagreb

In Zagreb, all the DH assets are registered in HEP's balance sheet and the city has allowed HEP T and HEP (before HEP T was formed) full access to all the assets. For the provision of services, the DH Law requires a city and an existing DH service provider to establish a service or a concession contract. Such a contract exists in Osijek. For Zagreb, there is a 1992 decision of the city that delegates the DH service provision to a public company but HEP is not mentioned by name in this decision, although HEP and later HEP T have provided the services. However, to clarify the basis for service provision, the City of Zagreb is in the process of establishing a contract with HEP T by end June 2006. This is also stated through a January 2006 letter from the mayor of the City of Zagreb to the head of the Management Board of HEP. The letter mentions that the city is satisfied with the services provided by HEP over the years and intends to establish a contract with HEP T, as per the DH Law.

Delays in establishing this contract are not expected to hamper the services. However, to clarify the legal arrangement between the City of Zagreb and HEP T, a disbursement condition for the Zagreb component of this project is that the contract between the City of Zagreb and HEP T is executed. If there are delays in establishing the contract then the Zagreb component of the project will not be implemented. However, this risk is not considered high given that the contracting process is well underway and it is in the interest of HEP T and the City of Zagreb to clarify the legal arrangements as soon as possible, in accordance with the DH Law.

5. Loan conditions and covenants

Key conditions in the Loan Agreement are:

Effectiveness Conditions:

- The Subsidiary Agreement between HEP and HEP T is signed; and
- The Subsidiary Guarantee Agreement is signed between Ministry of Finance and HEP.

Disbursement Condition:

- A disbursement condition for the Zagreb component of this project is that the contract for the delivery of heat between HEP T and City of Zagreb is executed;

Other Conditions in the Loan Agreement:

- HEP will on-lend to HEP T, the Bank loan proceeds on terms and conditions that are identical to the loan between the Bank and HEP;
- HEP will ensure that the PIU is staffed properly and functions effectively throughout the duration of the project;

- HEP will ensure that the Environmental Management Plan and the Land Acquisition Framework are implemented satisfactorily;
- HEP will cause HEP T to monitor and evaluate the project and prepare a Project Report on a semi-annual basis. HEP will submit the Project Report to the Bank and the Government;
- HEP will not incur additional debt unless the forecast shows that debt service coverage will at least be 1.2;
- HEP and HEP T will annually review with the Bank their financial performance for the year and financial forecasts for the next two years, and take steps as necessary, including HEP T proposing to HERA appropriate tariff increases to meet its obligations under the project. Proposed tariffs will cover operating expenses, including depreciation; debt service payments, including debt service due on the Bank loan; counterpart financing for the project; and HEP T's payments to HEP to eliminate arrears;
- By October 31, 2006, HEP will agree with HEP T on a schedule to eliminate HEP T's arrears to HEP regarding the purchase of heat and steam. HEP and HEP T will satisfactorily implement this plan;
- HEP will maintain a financial management system acceptable to the Bank;
- Independent auditors will audit the project's financial statements, withdrawal applications, and Designated Account. The Terms of Reference of the auditors will be acceptable to the Bank. The annual audited statements and audit report will be provided to the Bank within six months of the end of each fiscal year; and
- HEP will submit the audit report of the company to the Bank on an annual basis.

Key conditions in the Project Agreement are summarized below. HEP T will:

- ensure that the PIU is staffed properly and functions effectively throughout the duration of the project;
- ensure that the Environmental Management Plan and the Land Acquisition Framework are implemented satisfactorily;
- monitor and evaluate the project and submit to HEP a Project Report on a semi-annual basis;
- HEP T will not incur additional debt unless the forecast shows that debt service coverage will at least be 1.2;
- maintain a financial management system acceptable to the Bank;
- submit the audit report of the company to the Bank on an annual basis;
- submit to HERA – within 1 month after the tariff methodology is approved – a tariff proposal following the Croatian methodology of establishing tariffs;

- annually review with the Bank its financial performance for the year and financial forecasts for the next two years, and take steps as necessary, including HEP T proposing to HERA appropriate tariff increases to meet its obligations under the project. Proposed tariffs will cover operating expenses, including depreciation; debt service payments, including debt service due on the Bank loan; counterpart financing for the project; and HEP T's payments to HEP to eliminate arrears; and
- develop a voluntary DSM Program by December 31, 2006 which will be implemented from January 15, 2007.

Key conditions in the Guarantee Agreement are:

- the Government will enable and facilitate HEP and HEP T to meet their financial obligations under this project, including approval of adequate tariffs as proposed by HEP T to HERA;
- the Government will develop and implement the DH Strategy as per its Conclusion dated May 5, 2006. This will include a submission of an annual report by MoELE on the progress made in implementing the DH Strategy;
- HERA will approve the tariff methodology by December 31, 2006; and
- the Government will develop and approve a DSM program by March 1, 2008, applicable for the entire DH sector.

D. APPRAISAL SUMMARY

1. Economic and financial analyses

Details of the economic and financial analyses are presented in Annex 9 and the main features are summarized below. The financial covenants are presented in Section C5.

Economic Analysis

A cost benefit analysis was performed which resulted in an economic rate of return (ERR) of 18.4 % and 12.0% in Zagreb and Osijek, respectively, justifying the investments. The benefits of DSM have not been taken into account as the DSM Program to be implemented by HEP T is not yet in place. However, as demonstrated by the pilot program in Zagreb, the DSM measures will result in savings of 10-20% in energy consumption at the apartment level. This will result in fuel savings, yielding a higher ERR on the project compared to the numbers mentioned above. The incremental benefits assumed are:

- savings in fuel cost;
- savings in treated water cost;
- savings in repair and maintenance cost;
- additional electricity generated by switching the DH network connection from local boilers to the Osijek CHP plant, in some parts of the city. The supply of 5.6 MW of heat will switch from local heat only boilers to the CHP plant. To supply this additional heat, more electricity will be generated in the CHP plant which is more economic compared to the generation of electricity in a standard condensing plant; and

- savings due to switching customers from steam to hot water in Osijek.

Energy savings constitute about 50% and 60% of the benefits of the project in Zagreb and Osijek, respectively. As gas prices play a large factor in determining the magnitude of the energy savings due to the project, a sensitivity analysis on the ERR by varying the price of gas has been carried out. Under a base case scenario, an economic gas price of € 200/1000m³ has been assumed which results in an ERR of 17.0% for the entire project. If the gas price increases by 20%, the ERR for the entire project is 18.9%. In the event of a 20% decrease in gas prices, the ERR is 15.0%.

Financial Analysis

HEP (the Borrower)

HEP is a national holding company for a number of subsidiary companies that provide multiple services including: (i) electricity generation, transmission, and distribution; (ii) district heating; and (iii) gas distribution. On July 1, 2002, HEP T was formed through a restructuring in HEP. Prior to this date, DH services were provided in Zagreb and Osijek by HEP. The assets for DH services are held by HEP but leased to HEP T for a fee, which is a practice followed by HEP with its other subsidiaries. There is a Management Board and a Supervisory Board for the HEP holding company and each subsidiary company is headed by a Director who reports to HEP's Management Board. For this project, HEP will be the Borrower of the Bank loan and it will on-lend to HEP T the Bank loan proceeds at terms and conditions that are identical to the loan between the Bank and HEP.

Past and recent results: As of December 31, 2005, HEP had total assets of about HRK 28,087 million (€ 3.8 billion equivalent). About 90% of HEP's revenues come from electricity where the average tariff is HRK 0.55/kWh (€ 0.08/kWh), 6% from district heating, and the remaining 4% from the gas distribution and other activities. Since 2003, HEP has been generating an after-tax profit, and its internal cash generation has been strong. In 2005, HEP's total revenues were HRK 9,653 million and the operating profit was HRK 544 million. HEP has also been undertaking a large investment program averaging about HRK 2 billion per year in the last three years. To help finance this program, HEP has increased its medium and long term borrowings. Nevertheless, HEP's debt service coverage ratio (2.5) and the debt to equity ratio (28:72) remain at adequate levels.

Future performance: Under its four-year Business Plan for 2004 -2007, HEP is projecting profitable operations with an annual growth of around 3.6% in electricity demand. Based on a conservative extrapolation of the trends beyond 2007, it is projected that HEP will continue to maintain profitable operations and will meet its financial obligations with respect to the Bank loan.

HEP T (Project Implementing Entity)

Past and recent results: HEP T is a subsidiary of HEP and provides DH services to Zagreb and Osijek. Under a lease agreement, HEP T purchases heat and steam from HEP's CHP plants and supplies them to household and other consumers. The price of heat and steam purchased from HEP by HEP T reflects the costs of production. In the future, once the tariff methodology is in place, it will establish the price HEP T will have to pay HEP for the purchase of heat and steam.

As of December 31, 2004, HEP T had total assets of about HRK 791 million (€ 109 million). HEP T has been incurring annual losses due to inadequate tariffs that have not kept pace with the rising costs of heat, fuel and other inputs. In 2005, HRK had total revenues of HRK 528 million, an operating loss of HRK 60 million, and it had accumulated payment arrears of around HRK 175 million to HEP for the purchase of heat and steam. At prevailing tariff levels, HEP T is not able to cover its depreciation charges, provide

local counterpart financing for investments, and reduce its payment arrears to HEP. HEP T also has accumulated receivables (amounting to about 3.5 months of sales revenues) mainly due to difficulties in collecting revenues from household consumers. However, the annual collection performance has been improving and was about 99% in 2005, including collection of arrears from earlier years.

Future performance: HEP T will need to progressively increase its tariffs to reach full cost recovery levels that would cover operating expenses, including depreciation; debt service payments; counterpart financing for the project; and payments to HEP to eliminate arrears. Concurrently, HEP T will also have to maintain a strong collection performance. Financial projections (Annex 9) indicate that, for HEP T to meet its financial obligations, the average tariff for Zagreb and Osijek will have to be progressively increased from the 2005 levels (Zagreb - HRK 202/kWh; Osijek - HRK 232/kWh). For HEP T to be profitable in 2007, these average tariffs would have to be at HRK 258/kWh and HRK 319/kWh, in Zagreb and Osijek, respectively. To reach full cost recovery levels, over the period of 2005 to 2010, the average tariff for heat will have to be increased in real terms by 27% and 29% in Zagreb and Osijek, respectively. However, the Government approves the tariffs, after they are endorsed by HERA. Thus, the Guarantee Agreement reflects the need for the Government to facilitate an increase of tariffs for HEP T. With the increased tariffs and sustained collection performance, HEP T would be able to progressively reduce its arrears. HEP T's performance in reducing payables and receivables will be monitored regularly during project implementation.

Financial Rate of Return

The overall financial rate of return (FRR) for the project is estimated at 13.8 % (15.5% for the Zagreb component and 5.9% for the Osijek component). The main incremental financial benefits of the project are the fuel savings due to reduction of heat losses, savings due to water losses, and reduction in repair costs. As DH is a basic necessity, the FRR is not the most appropriate measure of the project's worth. However, at the FRRs mentioned above, HEP T will be able to meet its financial obligations under the project.

2. Technical

A detailed feasibility study was conducted which defined the proposed investments and the expected benefits of the project. The proposed investments are technically viable, well tested, and not complicated to put in place. The Project Report, prepared on a semi-annual basis will monitor project progress, highlight any technical issues that may arise during implementation, and recommend measures to address the issues that may arise.

3. Fiduciary

A financial management review was undertaken in October 2005 with a follow-up review in February 2006. The financial management arrangements of the project are acceptable to the Bank. The Borrower is in compliance with its audit covenants of existing Bank-financed projects. Formats for the un-audited interim financial reports (IFRs) have been developed. Under the Bank's Energy Efficiency Project, where HEP is also the Borrower, all audit reports have been submitted to the Bank on time, the auditor's opinions are unqualified, and there are no internal control issues raised in the management letters.

A procurement review of HEP T was conducted in November 2005 and the conclusion was that HEP T will be able to implement the project (details in Annex 8).

4. Social

In 2001, a social assessment on DH services was carried out in the cities of Zagreb and Osijek where about 750 and 600 consumers were sampled in the two cities, respectively. In general, consumers have a positive opinion of DH and some highlights of the assessment were:

- Majority of consumers considered the service quality to be ‘good’ or ‘very good’ – 72% in Zagreb; 85% in Osijek;
- Only a small percentage of the people sampled expressed an interest to move to other forms of heating – 2.8% in Zagreb; and 0.8% in Osijek;
- Consumers expressed satisfaction with DH as it is clean a source of heating and affordable; and
- While consumers were satisfied with DH, the majority of them expressed an interest to have DSM – 80% in Zagreb; and 85% in Osijek. Consumers now control room temperatures by opening windows, leading to energy losses.

As shown in the table below, in 2005, the average cost per apartment on DH was around 3.3% in Zagreb and 3.4% in Osijek which are at affordable levels for most consumers. For the low income households, as part of the DH Strategy, the Government is considering to introduce an Energy Benefit Program to be included under the general social assistance program. In addition, for all consumers, discussions are underway to have a two-part tariff system where the fixed costs would be paid over the non-winter months and the variable costs (mainly fuel costs) during the winter months. If such a method is adopted, the cost of DH would be spread over the year for the consumer, without causing sharp increases in heating bills in the winter months.

Comparison of DH Costs and income			
	Unit	2005	
		Zagreb	Osijek
Number of apartments	Number	96,000	10,100
Heat sales (to residential sector)	GWh	1,261	106
Heat sales/apartment	MWh	13.1	10.5
Heat tariff	HRK/MWh	202	232
Heat costs/apartment	HRK/year	2,646	2,436
Average household income ²	HRK/month	6,685	6,077
Average household income	HRK/year	80,220	72,924
Heating costs/annual income	Ratio	3.3%	3.4%

For this project, a survey will be carried out in the first year of implementation to learn more about consumer preferences and satisfaction. Household income levels will also be updated to see how many consumers need assistance to pay for DH services and this information will be provided to the Government for it to incorporate the Energy Benefit Program within the general social assistance program. At the end of the project, another survey will be carried out to determine the impact of the project.

² The survey mentions that the average household incomes were HRK 5,500 and 5,000 in Zagreb and Osijek, respectively. These incomes were increased with an annual growth rate of 5%.

5. Environment

The project, which is classified as an environmental category B project as per Bank's policies, mainly addresses rehabilitation of the existing network and as a result there are no major environmental concerns. The project will have positive environmental effects due to reduction of energy and water losses. During construction, some minor environmental issues may arise (noise, dust, and traffic disruption). These will be addressed through the Environmental Management Plan (EMP) which was discussed in public meetings in Zagreb (December 13, 2005) and Osijek (December 7, 2005) where no major environmental concerns were raised by participants.

6. Safeguard policies

Safeguard Policies Triggered by the Project	Yes	No
<u>Environmental Assessment (OP/BP/GP 4.01)</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Natural Habitats (<u>OP/BP 4.04</u>)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Pest Management (<u>OP 4.09</u>)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Cultural Property (<u>OPN 11.03</u> , being revised as OP 4.11)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Involuntary Resettlement (<u>OP/BP 4.12</u>)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Indigenous Peoples (<u>OD 4.20</u> , being revised as OP 4.10)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Forests (<u>OP/BP 4.36</u>)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Safety of Dams (<u>OP/BP 4.37</u>)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Projects in Disputed Areas (<u>OP/BP/GP 7.60</u>)*	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Projects on International Waterways (<u>OP/BP/GP 7.50</u>)	<input type="checkbox"/>	<input checked="" type="checkbox"/>

The Bank's safeguard policy on Environmental Assessment will be triggered. To this end, an EMP has been prepared to address minor environmental concerns during construction. The project involves no Involuntary Resettlement. However, a Land Acquisition Policy Framework – satisfactory to the Bank - has been prepared in case HEP T has to acquire land. It is unlikely that land acquisition will be required as HEP T has the right of way for the existing networks. The framework has been prepared in case there are alterations in the layout of networks in areas where HEP T does not have the right of way. As per Bank's policy, since a Land Acquisition Policy Framework has been prepared and publicly disclosed, the OP/BP 4.12 is considered relevant and as a result, the above box has been checked. HEP T has adequate capacity to implement the EMP and the land acquisition process, if required, in line with Bank's guidelines.

7. Policy Exceptions and Readiness

The project is ready to be implemented as:

- the fiduciary arrangements are in place;
- project staff have been identified in HEP and HEP T that will implement the project;
- HEP T has already started the procurement for works contract that will be carried out in the first year of project implementation;
- disclosure requirements for the project have been met;
- results assessment has been completed; and
- an Environmental Management Plan and a Land Acquisition Framework are in place.

* *By supporting the proposed project, the Bank does not intend to prejudice the final determination of the parties' claims on the disputed areas*

Annex 1: Country and Sector or Program Background

CROATIA: DISTRICT HEATING PROJECT

Background of DH sector

In Croatia there are 10 district heating (DH) companies in the major cities and towns. The DH sector started in the mid 1960s with the construction of the Zagreb DH network. The two largest DH companies are in Zagreb and Osijek which are owned and operated by HEP T. Other major towns where DH services are provided are: Rijeka, Karlovac, and Slavonski Brod. Some of the characteristics of the DH sector are briefly described below:

- **The total number of DH customers** in the country is about 150,000, of which 95% are household consumers. The breakdown of consumers in percentage terms, in major cities is: Zagreb 75%; Osijek 7%; Rijeka 6%; Karlovac 5%.
- **The total length of DH network** in Croatian DH companies is about 300 km of which about 180 km and 40 km are in Zagreb and Osijek, respectively.
- **The annual heat supply** of all the DH companies in Croatia in 2004 was about 2,300 GWh of which Zagreb and Osijek's share was 75% and 8%, respectively.
- **Ownership of the DH companies** differs from town to town. In Zagreb and Osijek the DH system is operated by the HEP T which is a subsidiary of HEP. In Sisak, another HEP subsidiary called Toplinarstvo Sisak provides DH services. These HEP subsidiaries purchase heat and steam from HEP CHP plants located in the cities. In other cities, the DH companies are owned by municipalities, excepting in Rijeka where the ownership is shared between the municipality and the private sector.

Sector Development Issues

The Government intends to strengthen the sector as it is an economical way to provide heat to densely populated areas where DH networks exist. To this end, in March 2005, the Law on Production, Distribution and Supply of Thermal Energy (DH Law) was adopted. In early 2005, the energy regulator (HERA) was also formed which has a mandate to regulate the entire energy sector including the DH segment. Further, on May 5, 2006, the Government adopted a Conclusion (No. 310-02/06-02/05) which sets the framework for the development and implementation of the District Heating Strategy (DH Strategy). In Section A1, the development issues and the Government actions are outlined.

Current DH System in Zagreb

In Zagreb, most of the consumers live in apartment buildings with each building having a sub-station, equipped with regulating valves that control heat distribution within a building. The sub-stations are in good condition and they are equipped with heat meters so the actual heat consumption in a building is known. However, at the apartment level, cost allocators are not installed and as a result for billing purposes, the building level consumption is distributed to the apartments based on the area of an apartment and not actual consumption.

The construction of the DH transmission and distribution network started in 1965 and the total length of the network is about 180 km (2-pipe trench). Between 2000 and 2004, HEP T started a network

rehabilitation program from its own financing and has replaced about 10% of the network. Currently about 35% of the network is about more than 30 years old where the pipes have a large amount of heat and water losses and repair costs are high due to frequent breakdowns. The number of breakdowns has grown from 43 in 2000 to 137 in 2004. During the same period, the annual water leakages have increased from 320,000 tons to 960,000 tons and the current energy loss is around 12.5% of the heat generated, indicating the need to urgently carry out the rehabilitation of the network.

The heat to the network is provided by two CHP plants (TE-TO and EL-TO) which are owned and operated by HEP. Natural gas is the main fuel in both the plants and heavy fuel oil is used as a reserve and supplementary fuel. The heat generation capacity of the TE-TO-plant is about 950 MW (including the CHP units and heat-only-boilers) and the electricity capacity about 177 MW. The newest unit in TE-TO is a combined cycle CHP-unit with 190 MW heat output and 150 MW electricity output, which was installed in 2003. The total heat generation capacity in the EL-TO-plant is about 750 MW and the electricity generation capacity about 94 MW. The heat transmission from the CHP plants to the DH network is done by DH pumps which are operated in variable flow mode, which is a modern and efficient way to operate a DH system as heat is supplied based on demand. The CHP plants are well maintained and in good condition.

Current DH System in Osijek

In Osijek, similar to Zagreb, there are building level sub-stations and heat meters but the billing is based on the area of an apartment and not actual consumption. The network construction started in the late 1960s and the current network length is about 40 km (2-pipe trench). About 30% of the network is more than 30 years old where the energy and water losses are high. It is estimated that about 15% of the heat generated is lost due to leaks in the network. In Osijek, HEP T also supplies steam to industrial and domestic consumers. The current estimated loss is around 30% for the steam supply. Through the project, some of the consumers will switch from steam to hot water that will lead to savings for HEP T.

The heat to the DH network is provided through a CHP plant in Osijek, owned and operated by HEP. The main fuel is natural gas and heavy fuel oil is used as a reserve and supplementary fuel. The heat generation capacity is high compared to the needs of DH system, where the total heat generation capacity is about 430 MW and the electricity capacity is about 95 MW. The CHP plant is well maintained and in good condition.

Annex 2: Major Related Projects Financed by the Bank and/or other Agencies

CROATIA: DISTRICT HEATING PROJECT

The following ongoing Bank projects are relevant as they cover energy efficiency and reduction of greenhouse gas emissions. In the proposed Croatia District Heating Project, the rehabilitation of the DH networks and the proposed DSM Program will lead to energy savings and result in reduction of greenhouse gas emissions. Further, the implementation of the following projects has made the Bank familiar with energy issues in Croatia and the operation of HEP.

Energy Efficiency Project (P079978/P071461)

The project's objective is to increase the demand for and supply of energy efficiency projects and services. This will be achieved by:

- creating a core developer of energy efficiency projects within HEP. This new energy service company (ESCO) of HEP will develop, finance and implement energy efficiency projects on a commercial, for profit basis, using local businesses as key delivery agents; and
- providing a framework for other emerging service providers to tap into the new energy efficiency business opportunities.

Progress in meeting the development objective and implementation are both satisfactory. The project is financed by the Bank and the Global Environmental Facility (GEF) and implemented by the Bank.

Renewable Energy Project (P071464)

The project's objective is to help develop an economically and environmentally sustainable market for renewable energy resources in Croatia. Development of this market will support Croatia in its EU accession efforts. The project is targeting both the production of electricity and heat from renewable energy sources.

Progress in meeting the development objective and implementation are both satisfactory. The project is financed by the Global Environmental Facility (GEF) and implemented by the Bank.

Annex 3: Results Framework and Monitoring
CROATIA: DISTRICT HEATING PROJECT

Results Framework

PDO	Project Outcome Indicators	Use of Project Outcome Information
Promote efficient operations by HEP Toplinarstvo (HEP T)	<ul style="list-style-type: none"> • Decrease in energy and water losses • Improve profitability of HEP T, assuming that the Government allows tariffs to be adjusted as per HEP T's proposal • Improvement in customer satisfaction 	Improvements in HEP T will be a benchmark to show how other DH companies can improve their operations
Intermediate Outcomes	Intermediate Outcome Indicators	Use of Intermediate Outcome Monitoring
Outcome 1: HEP T is able to rehabilitate the networks in Zagreb and Osijek efficiently.	Percentage of the rehabilitation completed	Measures taken to complete the network rehabilitation in a timely manner
Outcome 2: HEP T is able to collect its bills	Decrease in ratio of receivables to sales	Measures taken to collect bills in a timely manner
HEP T is able to progressively reduce payment arrears	Decrease in ratio of payables to cash operating expense	Measures taken to reduce payables
HEP T is able to increase its operating revenues more than its increase in operating costs	Decrease in operating ratio	Measures taken to: increase revenues, including an increase in tariffs, if allowed by the Government, and reduced operations and maintenance costs
Outcome 3: HEP T increases focus towards providing customer satisfaction.	Total number of household connections	Measures taken to improve customer satisfaction

**Arrangements for results monitoring
Zagreb**

Project Outcome Indicators	Baseline (2005)	Target Values				Data Collection and Reporting			Responsibility for Data Collection
		YR1	YR2	YR3	YR4	Frequency and Reports	Data Collection Instruments	HEP T	
						6 months Project Report	Technical reports Technical reports Financial statements Surveys		
Energy loss (% of heat generated)	12.2%	11.2	10.7	10.3	10.2				
Ratio of water added to the network volume	26.5	26.0	25.0	24.0	23.0				
Net profit/revenues (%)	-11.3	-1.5	0.2	0.3	0.5				
Customer satisfaction	*	ibd	n/a	n/a	90%				
Intermediate Outcome Indicators									
Percentage of rehabilitation completed	0%	25%	50%	75%	100%	6 months Project Report	Project documents Financial statements		HEP T
Ratio of receivables to sales (days)	102	87	84	80	78				
Ratio of payables to cash operating expense (days)	259	206	180	151	122				
Operating ratio	1.11	1.01	0.99	0.99	0.98				
Total number of domestic connections	96,000	96,500	97,000	97,500	98,000				

Osijek

Project Outcome Indicators	Baseline (2005)	Target Values				Data Collection and Reporting			Responsibility for Data Collection
		YR1	YR2	YR3	YR4	Frequency and Reports	Data Collection Instruments	HEP T	
						6 months Project Report	Technical reports Technical reports Financial statements Surveys		
Energy loss (% of heat generated)	11.0%	11.0%	10.5%	10.3%	10.0%				
Ratio of water added to the network volume	11.5	11.4	10.0	9.5	9.0				
Net profit/revenues (%)	-11.3	-1.5	0.2	0.3	0.5				
Customer satisfaction	*	ibd	n/a	n/a	90%				
Intermediate Outcome Indicators									
Percentage of rehabilitation completed	0%	25%	50%	75%	100%	6 months Project Report	Project documents Financial statements Financial statements Financial statements		HEP T
Ratio of receivables to sales (days)	102	87	84	80	78				
Ratio of payables to cash operating expense (days)	259	206	180	151	122				
Operating ratio	1.11	1.01	0.99	0.99	0.98				
Total number of domestic connections	10,100	10,200	10,300	10,400	10,500				

* will be determined after YR1 survey

Annex 4: Detailed Project Description
CROATIA: DISTRICT HEATING PROJECT

The project will have two components – Infrastructure Rehabilitation and Consultancy Services. The estimated cost and the proposed financing plan are presented below. The cost includes physical and price contingencies, and taxes and duties of 8%. Value added tax (VAT) is not included as HEP and its subsidiaries do not include this tax in contracts with suppliers. VAT is paid separately to the suppliers by HEP and its subsidiaries and fully recovered from the consumers.

Project Cost and Financing Plan (in € millions)			
Component	Cost	Financing	
		Total	Bank
A. Infrastructure Rehabilitation			
Zagreb DH Rehabilitation			
Pipe parts, valves and installation works	18.47	18.47	0.00
Steel pipes and their insulation	6.84	0.00	6.84
Sub-total for Zagreb	25.31	18.47	6.84
Osijek , DH rehabilitation			
Pipe parts, valves and installation works	5.47	5.47	0.00
Steel pipes and their insulation	1.97	0.00	1.97
Sub-total for Osijek	7.44	5.47	1.97
Total for component A	32.75	23.94	8.81
B. Consultancy Services			
DSM Program/2 surveys	0.40	0.00	0.40
Design and supervision consultancy	1.70	0.00	1.70
Financial audits	0.80	0.00	0.80
Total for component B	2.90	0.00	2.90
Total Project Cost	35.65	23.94	11.71
Front end fee	0.06	0.06	0.00
TOTAL	35.71	24.00	11.71

A. Infrastructure Rehabilitation This component includes the following investments in Zagreb and Osijek:

- **Zagreb:** Network rehabilitation, including replacement of a dual pipe trench (35 km), transmission pipes (20 km), and distribution pipes (15 km). These investments were identified as priority rehabilitation investments where energy and water losses are high. HEP T will contribute by procuring the pipes and the Bank loan will finance the installation works and pipe parts.
- **Osijek:** Network rehabilitation, including replacement of distribution pipes (15 km) that are in poor condition and connection of customers to the main CHP plant who are currently connected to the inefficient local heat only boilers. In addition, rehabilitation of 25 heating sub-stations will be supported. Further, for some consumers (heat load of 6 MW) the heat supply will be switched from steam to hot water.

B. Consultancy Services This component includes the following and will be fully financed by HEP T.

- Development of a DSM Program by December 31, 2006. Under this program, HEP T will look at options to promote voluntary installation of DSM equipment. To the extent possible, HEP T will provide incentives to consumers to install the equipment. The incentives that are currently being considered are: a different tariff structure for consumers that install the equipment compared to those that do not; and a one-time rebate for consumers that install the equipment. From 2007, HEP T will implement its DSM Program which is expected to be implemented rapidly once the DH Law is amended making the installation of the equipment mandatory;
- Completion of 2 surveys in the cities of Zagreb and Osijek to understand and respond to the needs of the consumers. The first survey will be carried out in the first year of project implementation. The second survey will be carried out in the fourth year of project implementation to determine the impact of the project;
- Preparation of bidding documents;
- Construction supervision; and
- Preparation of annual audits of the financial statements of the project and HEP T.

Annex 5: Project Costs
CROATIA: DISTRICT HEATING PROJECT

Project Cost By Component and/or Activity	Local € million	Foreign € million	Total € million
A. Infrastructure Development	10.00	22.75	32.75
B. Consultancy Services	2.00	0.90	2.90
Total Project Costs¹	12.00	23.65	35.65
Front-end fee	0.00	0.06	0.06
Total Financing Required	12.00	23.71	35.71

¹This cost includes physical and price contingencies, and taxes and duties of 8%. Value added tax (VAT) is not included as HEP and its subsidiaries do not include this tax in contracts with suppliers. VAT is paid separately to the suppliers by HEP and its subsidiaries and also fully recovered from the consumers.

Annex 6: Implementation Arrangements
CROATIA: DISTRICT HEATING PROJECT

There will be a Loan Agreement between the Bank and HEP which will on-lend the Bank loan proceeds to HEP T through a Subsidiary Agreement. There will be a Project Agreement between the Bank and HEP T which will outline the implementation role of HEP T. In addition, there will be a Guarantee Agreement between the Bank and the Republic of Croatia, for the loan to HEP, which will provide the financial and performance guarantees related to the project. Further, there will be a Subsidiary Guarantee Agreement between the Ministry of Finance and HEP.

There will be a PIU responsible for project implementation. External consultants will not be members of the PIU but provide technical services, as needed. Staff members from HEP and HEP T will work in the PIU and also carry out their other duties in these companies. HEP T has the capacity to implement the project in line with the Bank's policies on financial management, procurement, environment, and land acquisition.

Annex 7: Financial Management and Disbursement Arrangements

CROATIA: DISTRICT HEATING PROJECT

Country Issues: The Croatia CFAA report (May 2005) concludes that the level of fiduciary risk attached to the primary elements of Croatia's public financial management systems (legal framework, institutional capacity and practices for the core financial control processes such as budgeting, treasury and cash management, accounting, financial reporting, internal control, internal audit, external audit and Parliamentary oversight) is significant. However, additional project level safeguards have been established in order to mitigate the risks inherent in Croatia's public financial management (PFM) systems, e.g. the requirement for an independent external audit or ensuring that there are adequate counterpart funds to complete the project in a timely manner.

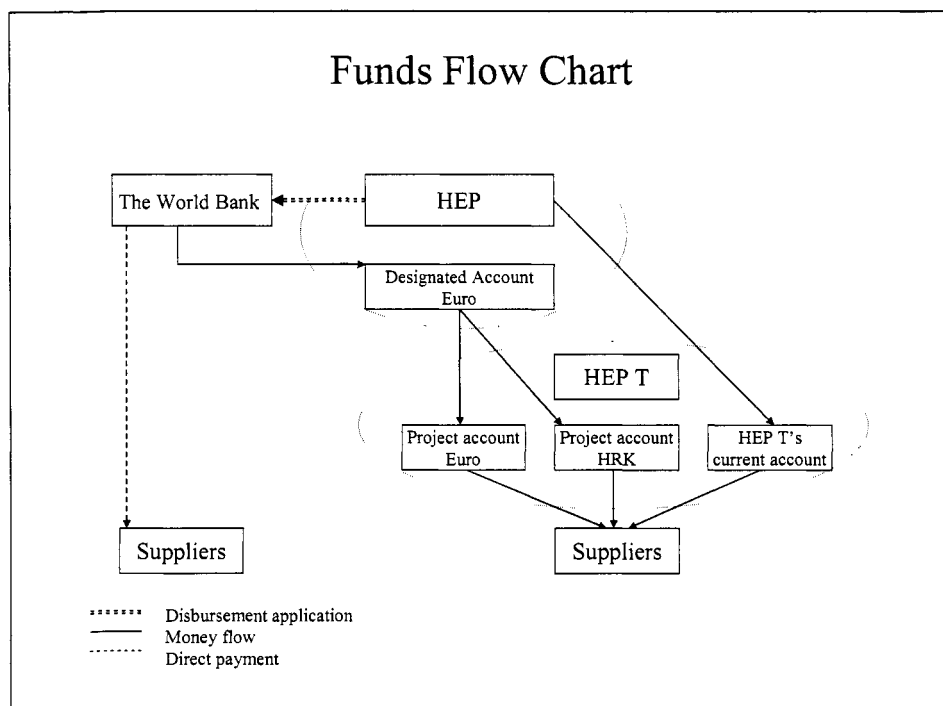
Financial Risk Analysis HEP: The financial management risk has been assessed as modest, with mitigation measures indicated below.

RISKS	Risk Rating	Risk Mitigating Measures
INHERENT RISK		
<i>Country level</i>		
Quality of PFM institutions, standard of financial accounting, reporting and auditing, quality of FM professionals	S	Measures have been taken under the project to mitigate the risks inherent in Croatia's public financial management systems
<i>Entity level</i>		
Independence of entity's management, appropriateness of the organizational structure, impact of civil service rules	M	Entity subject to annual audit report
<i>Project level</i>		
Relative size of the Bank loan, type of lending instrument, complexity of the project	M	The project will be subject to annual audit performed by independent auditors acceptable to the Bank. The flow of funds in the project is streamlined and not complex
OVERALL INHERENT RISK	M	
CONTROL RISKS		
Budget	M	PIU members are employees of HEP and HEP T and funding for them are assured through the Loan and Project Agreements
Accounting	M	Process to be reviewed during regular FM supervision
Internal Controls	M	PIU has developed an accounting and internal control manual acceptable to the Bank. Updates on the manual will be subject to Bank's review
Funds flow	M	The fund flow mechanism has been agreed with HEP and HEP T. It will be monitored during regular FM supervision
Financial Reporting	M	PIU will send quarterly IFRs to the Bank for review
Auditing	M	Annual audit performed by independent auditors acceptable to the Bank and review of audit reports by the Bank
OVERALL CONTROL RISK	M	
RESIDUAL RISK RATING	M	

Financial viability assessment: The Borrower, HEP, is a profitable enterprise and details of its financial situation are provided in Annex 9.

Strengths and Weaknesses: The significant strengths that provide a basis to rely on the project's financial management arrangements include: the existence of staff in HEP with prior experience in Bank projects; HEP and HEP T use a well known accounting system, which can be adjusted to record the Bank project and produce Interim Un-audited Financial Statements (IFRs); and a satisfactory internal control system in HEP.

Funds Flow: Bank will make funds available to HEP and project funds will flow from: (i) the Bank through a Designated Account, opened by HEP, in a commercial bank acceptable to the Bank; (ii) HEP will open for HEP T two project accounts in the same commercial bank. The accounts will be in HRK and Euro. HEP will transfer the funds from the Designated Account to these project accounts for HEP T to pay the suppliers; (iii) counterpart funds for the project will be available in HEP T's current account, which is used for regular transfers from HEP or collection of HEP T's own revenues. This current account will also be used by HEP T to pay suppliers, as needed. The PIU will prepare relevant documents (e.g. application for withdrawal) and obtain necessary clearances.



Staffing: A Project Implementation Unit (PIU) comprising staff from HEP and HEP T has been established. The PIU are qualified for the following matters: technical, procurement, legal, accounting, and financial. A PIU member has experience in implementing the Bank's ongoing Energy Efficiency Project and other staff have attended Bank's procurement training. The CVs and job descriptions of the PIU members have been submitted to the Bank and this information is included in the project's Accounting and Internal Control Manual.

Accounting Policies and Procedures: The project's financial statements will be prepared on an accrual basis and in accordance with International Financial Reporting Standards (IFRS). This is in line with the standards currently used by HEP. Also, there is an internal accounting manual in HEP which contains details about the accounting procedures to be followed in the company. For the project, this manual may be used and references to it are made in the project's Accounting and Internal Control Manual.

Reporting and Monitoring: The PIU will maintain the project accounts and will ensure appropriate accounting of the funds in these accounts. The PIU will be responsible for preparing Interim Financial Reports (IFRs) on a quarterly basis for HEP. The IFR will include the following and format of the following reports are included in the project's Accounting and Internal Control Manual:

- Project Sources and Uses of Funds
- Uses of Funds by Project Activity
- Special Account Statement
- Procurement Report
- Physical Progress Report
- Cash Flow Forecast.

The first IFRs will be furnished to the Bank no later than 45 days after the end of the first calendar quarter after the effectiveness date, and will cover the period from the effectiveness date to the end of the first calendar quarter. IFRs formats have been agreed with the PIU and are included in the accounting manual.

Information System: HEP and HEP T use an Oracle accounting and reporting system which will also be used for the project as the system can be separated to record transactions of the project, generate analytical accounts, produce trial balance sheet, and generate detailed account listing. The access to the system is password protected, users have restricted access to the different modules, and there is a back-up procedure. The project's financial statements will be generated through the current accounting system of HEP and HEP T. From detailed trial balance in Excel, manual IFRs will be produced. The same procedure is being used for the Energy Efficiency Project, implemented by HEP.

Budgeting: The budgeting process is clearly defined and will be used for the purposes of the project. Each year, HEP sends budget instructions to its subsidiaries. The budget is prepared both in physical units and financial measures. There is also a process of comparing the actual expenditures against budgeted amounts on a monthly basis. HEP seeks clarification on variances between actual expenditures and budgeted amounts prior to its monthly Board meeting on the budget.

Supervision Plan: The Project Report will outline the implementation progress. IFRs will be reviewed jointly by the Bank's Financial Management Specialist and Procurement Specialist who will address any issues that may arise on financial management matters. The frequency of on-site Bank supervision will depend on the project's financial management and procurement risk rating, generated by a model used by the Bank. Audited financial reports of the project will be reviewed and as necessary follow up actions will be taken.

Internal Audit: HEP has an internal audit department that reports to the Board and audit committee of the company. The fields covered by the internal audit department are: corporate governance, internal audit and internal control. The internal audit department follows the Croatian Operational Rules of Internal Auditors and Code of Ethics. Its work program is approved by HEP's Management Board, and guidelines are established within HEP on the operation of the internal audit department. This department carries out inspection and audit of all business activities, functions, and processes across all companies in the HEP group. The focus of the internal audit is on the purchases and all HEP subsidiaries are under close

scrutiny and inspected against Croatian regulations and HEP rules. Due to lack of sufficient staff HEP does not plan to include the project in its internal audit plan. Thus, no reliance will be placed on the internal audit arrangements of HEP.

External Audit: Both HEP and HEP T are audited by independent auditors. In recent years, Deloitte (2004) and Price Waterhouse Coopers (2003) conducted the audits. HEP's 2003 and 2004 audits are qualified: in 2003 it was an issue on accounting treatment of an investment; and in 2004 it was an issue related to jubilee awards and retirement bonuses which were not treated in accordance with IAS 19. For HEP T, the 2003 and 2004 audits are unqualified. The current external audit arrangements are in line with Bank's financial management requirements. An independent auditor, in accordance with ISA and IFRS, will also audit the project's financial statements.

Disbursement Arrangements: Disbursements will follow the traditional method, either through direct payments to suppliers or through replenishment of the DA. Withdrawal applications for the replenishments of the DAs will be sent to the Bank by the PIU every quarter, or when about a third of the initial deposit in the DA has been utilized, whichever comes first. During the life of the project, if PIU develops cash flow forecast capabilities, they can move to IFR based disbursements.

Under the traditional method, the loan funds will be disbursed through Bank procedures on direct payments and Statement of Expenditures (SOEs). Supporting documentation for SOEs, including completion reports and certificates, will be retained by HEP and HEP T and made available to the Bank during project supervision. Disbursements for expenditures above the SOE thresholds will be made against presentation of full documentation relating to the expenditures. The following shows the allocation of loan proceeds.

Disbursement Categories				
Expenditure Category	Total Cost (€ million)	Financing (€ million)		Bank Financing
		Bank	Counterpart	
Zagreb Works	8.01	5.27	2.74	100% of contracts financed by the Bank
Zagreb Goods	17.30	12.60	4.70	
Osijek Works	2.60	2.60	0.00	
Osijek Goods	4.84	3.47	1.37	
Consultant Services	2.90	0.00	2.90	Not Bank financed
Project Cost	35.65	23.94	11.71	67% of total cost
Front End Fee	0.06	0.06	0.00	N/A
TOTAL	35.71	24.00	11.71	67% of total cost

The Bank financing in Euros as mentioned in the Loan Agreement for the above categories is as follows: (a) Works - €7.87 million; (b) Goods - €16.07 million; (c) Consultant Services - € none; and (d) Front End Fee - €0.06 million. Retroactive financing of €2.4 million is available for Works and Goods contracts identified in the Procurement Plan. The Bank will finance 100% of certain contracts while HEP T will fully finance other contracts. The overall Bank financing will be 67% of total costs. Value added tax (VAT) is not included as HEP and its subsidiaries do not include this tax in contracts with suppliers. VAT is paid separately to the suppliers by HEP and its subsidiaries and also fully recovered from the consumers.

Use of Statements of Expenditures (SOEs): The reimbursement of expenditures made from the DA may be made on the basis of certified SOEs, for the following items: (a) contracts for goods valued at less than € 400,000; and (b) contracts for works less than €4,000,000. Consulting contracts with firms will be financed out of counterpart funds.

Designated Account (DA): HEP will establish, maintain, and operate a DA in a commercial bank, acceptable to the World Bank. The account will be denominated in Euros. The maximum Authorized Allocation for the DA will be €2 million.

Financial Management Covenants: The following covenants will be applicable for the project:

- HEP and HEP T will maintain a financial management system acceptable to the Bank;
- the project’s financial statements, withdrawal applications and Designated Account will be audited by independent auditors under terms of reference acceptable to the Bank. The annual audited statements and audit report will be provided to the Bank within six months of the end of each fiscal year;
- HEP and HEP T will provide the Bank with a copy of the annual audit report of the companies; and
- HEP and HEP T will maintain supporting documentation for all project expenditures up to 6 months after the final withdrawal from the loan and will make these available for Bank review and for other audit reviews.

Annex 8: Procurement Arrangements

CROATIA: DISTRICT HEATING PROJECT

A. General

Procurement will be carried out in accordance with the World Bank's "Guidelines: Procurement under IBRD Loans and IDA Credits" dated May 2004 and the provisions stipulated in the Legal Agreement. Activities not financed by the World Bank Loan can be procured in accordance with the procurement regulations and administrative procedures of HEP T. The general description of various items under different expenditure category is described below. For each contract to be financed by the Bank Loan, the different procurement methods, the need for prequalification, estimated costs, prior review requirements, and time frame are agreed between the Project Implementing Entity and the Bank project team and reflected in the Procurement Plan. The Procurement Plan will be updated at least annually or as required to reflect the actual project implementation needs and improvements in institutional capacity.

Advertising: A General Procurement Notice (GPN) listing all main procurement packages will be advertised on-line in UNDB, dgMarket, national gazette *Narodne Novine*, and on the web-site of HEP T. Specific Procurement Notices (SPN) for ICB Goods and Works packages will be advertised on-line in UNDB, dgMarket, and on HEP's web-site. Advertisement of NCB contracts for goods and works will be done in *Narodne Novine* and the HEP T website. The results of contract awards for goods and works will be posted in UNDB on-line and dgMarket as required under the Guidelines.

Procurement of Works: Eligible investments under this category will include network rehabilitation and customer connections to the main district heating system. All works contracts estimated to cost above € 4.2 million will be procured through International Competitive Bidding (ICB) procedure. The Bank's standard ICB documents for Works (Smaller Contracts) will be used from www.worldbank.org website where the latest versions of the documents are available. All contracts estimated to cost less than € 4.2 million equivalent per contract will be procured through National Competitive Bidding (NCB) procedure. The Bank's sample NCBs documents for Works can be used. Works contracts estimated to cost less than € 80,000 equivalent per contract may be procured through Shopping procedure on the basis of comparing written quotations obtained from at least three qualified contractors. Bank's sample format for Three Quotation Procedures for Minor Works can be used. Supervision on Works contract will be financed by HEP T.

Procurement of Goods: Goods procured under this project will include: pre-insulated pipes and related accessories. Contracts for Goods will be grouped in bid packages as much as feasible to encourage the competition. Goods contracts estimated to cost more than € 0.8 million equivalent per contract will be procured through ICB. The Bank's Standard Bidding Documents (SBD) for procurement of goods will be used for all ICB packages from the www.worldbank.org website where the latest version of the documents are available. Goods contracts estimated to cost less than € 0.8 million equivalent per contract will be procured through NCB procedure similar to the works contracts described above. The Bank's sample NCB documents for procurement of goods will be used. Packages for off-the-shelf goods of standard specifications estimated to cost € 80,000 equivalent per contract may be procured through Shopping procedure on the basis of comparing written quotations obtained from at least three qualified suppliers, using the Bank's sample format for Invitation to Quote.

HEP and HEP T will follow the World Bank's anti-corruption measures and will not engage services of firms and individuals debarred by the Bank. The list of such debarred firms and individuals is located at <http://www.worldbank.org/html/opr/procure/debarr.html>.

Thresholds for Procurement Methods and Prior Review

CIVIL WORKS			
Estimated cost (€)	Procurement method	Domestic preference (Yes/no)	Prior review by Bank
Above € 4,200,000	ICB	N/A	All
Below € 4,200,000	NCB	N/A	as per Procurement Plan
Below € 80,000	Shopping (Small Works)	N/A	as per Procurement Plan
GOODS			
Estimated cost (€)	Procurement method	Domestic preference (Yes/no)	Prior review by Bank
Above € 800,000	ICB	Yes	All
Below € 800,000	NCB	N/A	as per Procurement Plan
Below € 80,000	Shopping	N/A	as per Procurement Plan
Any	DC	N/A	All

B. Assessment of the Agency's Capacity to Implement Procurement

HEP T is the Project Implementing Entity. A joint PIU has been established by HEP and HEP T and it will be responsible for day-to-day coordination, management, implementation and monitoring of the project in close collaboration with all other departments within HEP and HEP T. The PIU staff will be assigned to project related responsibilities in addition to their current duties in the HEP and HEP T. All staff have been previously involved in procurement, both under the Croatian Public Procurement Law and in implementing projects financed by other International Financial Institutions (IFIs). The PIU is already participating in the preparation of the project and in the preparation of bidding documents for contracts planned to be retroactively financing by the Loan.

In November 2005, the Bank team carried out the assessment of HEP T and considers that the procurement risk rating of the agency is average. As HEP T has adequate capacity, hiring of a procurement consultant is not planned. No particular training of the staff involved in the project implementation is envisaged. A project launch workshop will take place in Zagreb shortly following the effectiveness of the Loan. In this workshop, there will be procurement training which will include preparation of bidding documents for each procurement method, bid and proposal evaluation, and contract preparation.

C. Procurement Plan

The Procurement Plan provides the basis for the procurement methods and identification of contracts subject to prior review by the Bank. The Procurement Plan will be available at HEP T's web-site. It will also be available in the project's database and in the Bank's external website. The format of the Procurement Plan may be modified during the course of the project implementation to help the PIU to plan and monitor procurement activities. The Procurement Plan will be updated in agreement with the Bank annually or as required to reflect the actual project implementation needs.

Procurement Plan

Ref. No.	Contract Description	Procurement Method	Issuance of Bidding Document	Expected Bid-Opening Date	Expected Award	Expected Start	Expected Completion
A. Infrastructure Development							
Zagreb DH Rehabilitation							
ZG-1	Pre-insulated pipes and elements (retroactive financing)	ICB*	Nov-05	Jan-06	Feb-06	Mar-06	Apr-06
ZG-2	Installation of preinsulated elements (retroactive financing)	NCB*	Aug-05	Sep-05	Nov-05	Mar-06	Jun-06
ZG-3	Preinsulated pipe elements and valves (retroactive financing)	ICB*	Jan-06	Mar-06	Apr-06	May-06	Oct-06
ZG-4	Steel pipes	NBF	Apr-06	May-06	Jun-06	Aug-06	Oct-06
ZG-5	Insulation of steel pipes	NBF	Jan-06	Mar-06	Apr-06	May-06	Oct-06
ZG-6	Installation works of preinsulated pipes (retroactive financing)	NCB*	Jan-06	Mar-06	Apr-06	May-06	Oct-06
ZG-7	Preinsulated pipe elements and valves	ICB*	Nov-06	Dec-06	Jan-07	Mar-07	Oct-07
ZG-8	Steel pipes	NBF	Nov-06	Dec-06	Jan-07	Mar-07	Oct-07
ZG-9	Insulation of steel pipes	NBF	Nov-06	Dec-06	Jan-07	Mar-07	Oct-07
ZG-10	Installation works of preinsulated pipes and elements	NCB*	Nov-06	Dec-06	Jan-07	Mar-07	Oct-07
ZG-11	Preinsulated pipe elements and valves	ICB*	Nov-07	Dec-07	Jan-08	Mar-08	Oct-08
ZG-12	Steel pipes	NBF	Nov-07	Dec-07	Jan-08	Mar-08	Oct-08
ZG-13	Insulation of steel pipes	NBF	Nov-07	Dec-07	Jan-08	Mar-08	Oct-08
ZG-14	Installation works of preinsulated pipes and elements	NCB*	Nov-07	Dec-07	Jan-08	Mar-08	Oct-08
ZG-15	Preinsulated pipe elements and valves	ICB*	Nov-08	Dec-08	Jan-09	Mar-09	Oct-09
ZG-16	Steel pipes	NBF	Nov-08	Dec-08	Jan-09	Mar-09	Oct-09
ZG-17	Insulation of steel pipes	NBF	Nov-08	Dec-08	Jan-09	Mar-09	Oct-09
ZG-18	Installation works of preinsulated pipes and elements	NCB*	Nov-08	Dec-08	Jan-09	Mar-09	Oct-09
Total Zagreb							
Osijek DH rehabilitation							
OS-1	Preinsulated pipe elements and valves	ICB*	Oct-06	Dec-06	Feb-07	Mar-07	Oct-07
OS-2	Steel pipes	NBF	Oct-06	Dec-06	Feb-07	Mar-07	Oct-07
OS-3	Insulation of steel pipes	NBF	Oct-06	Dec-06	Feb-07	Mar-07	Oct-07
OS-4	Installation works of preinsulated pipes and elements	NCB*	Oct-06	Dec-06	Feb-07	Mar-07	Oct-07
OS-5	Substations	ICB*	Oct-06	Nov-06	Dec-06	Feb-07	Oct-07
OS-6	Preinsulated pipe elements and valves	ICB*	Nov-07	Dec-07	Feb-08	Apr-08	Oct-08
OS-7	Steel pipes	NBF	Nov-07	Dec-07	Feb-08	Apr-08	Oct-08
OS-8	Insulation of steel pipes	NBF	Nov-07	Dec-07	Feb-08	Apr-08	Oct-08
OS-9	Installation works of preinsulated pipes and elements	NCB**	Nov-07	Dec-07	Feb-08	Apr-08	Oct-08
OS-5	Substations	ICB*	Oct-08	Nov-08	Dec-08	Feb-09	Oct-09
OS-6	Preinsulated pipe elements and valves	ICB*	Nov-08	Dec-08	Jan-09	Mar-09	Oct-09
OS-7	Steel pipes	NBF	Nov-08	Dec-08	Jan-09	Mar-09	Oct-09
OS-8	Insulation of steel pipes	NBF	Nov-08	Dec-08	Jan-09	Mar-09	Oct-09
OS-9	Installation works of preinsulated pipes and elements	NCB**	Dec-08	Jan-09	Feb-09	Apr-09	Oct-09
Total Osijek							
B. Technical Assistance to HEP							
TA-1	Public Awareness/PR campaign	NBF					
TA-2	Technical design and implementation support	NBF					
TA-3	Annual Financial audits	NBF					
Total TA							

ICB International Competitive Bidding
 NCB National Competitive Bidding
 NBF Non-Bank Financed
 QCBS Quality Cost Based Selection

* Bank's prior review of contract
 ** Bank's post review of contract

D. Frequency of Procurement Supervision

In addition to the prior review carried out by the Bank, there will be at least one procurement supervision per year to carry out post review of procurement actions. The procurement staff in PIU will establish and maintain the procurement filing system in a systematic way. During supervision missions, the Bank will carry out ex-post review of selected contracts in accordance with the Procurement Plan.

Annex 9: Economic and Financial Analysis

CROATIA: DISTRICT HEATING PROJECT

Economic Analysis

A cost benefit analysis was performed for the proposed investment programs in Zagreb and Osijek. The analysis compares the economic costs of the project scenario to the scenario without the project. The investment costs assumed for the calculations are HRK 186.5 and HRK 54.8 million in Zagreb and Osijek, respectively. These costs do not include taxes. The estimated economic rate of return for the Zagreb and Osijek components are 18.4% and 12.0%, respectively.

The benefits of DSM have not been taken into account as the DSM Program to be implemented by HEP T is not yet in place. However, the DSM measures will result in savings of 10-20% in energy consumption at the apartment level, as demonstrated in the pilot program in Zagreb. This will result in fuel savings, yielding a higher economic rate of return on the project compared to the numbers mentioned above. The assumed incremental benefits for the economic analysis are:

- **Savings in fuel cost:** The reduction of energy losses is based on the rehabilitation program and the use of new pre-insulated pipelines. The reduction of energy losses due to the project are: Zagreb – 20 GWh (2007) and 55 GWh (2010); and Osijek – 1 GWh (2007) and 7 GWh (2010). An economic gas price of € 200/1000m³ has been assumed to estimate the fuel savings due to the reduction in energy loss.
- **Savings in treated water cost:** The water leakage in Zagreb is large where the water volume of the DH system is changed over 25 times per year, compared to once in the Scandinavian DH systems. The reduction of water losses due to the project are: Zagreb - 108,000 tons (2007) and 324,000 tons (2010); and Osijek - 11,000 tons (2007) and 30,000 tons (2010). An economic price of HRK 18/m³ for chemically treated water has been used for the analysis.
- **Savings in repair and maintenance costs:** The repair costs of the DH networks are high and expected to grow if the project is delayed. The repair costs will reduce with the installation of new pipes and the costs savings are estimated to be: Zagreb – HRK 2.0 million (2007) and HRK 4.4 million (2010); and Osijek – HRK 3.7 million (2007) and HRK 0.3 million (2010). In Osijek, under a no project scenario, a major rehabilitation cost (HRK 3.3 million) of the boilers is included in 2007. In a project scenario, as the boilers will be shut down, there will be no such rehabilitation costs.
- **Additional electricity generated by switching the DH network connection from local boilers to the Osijek CHP plant, in some parts of the city:** The supply of 5.6 MW of heat will switch from the local boilers to the CHP plant. In the CHP plant in Osijek, with every MWh of heat generation, an additional 0.39 MWh of electricity will be generated. The electricity generated in the Osijek CHP plant (efficiency of 85%) is more economic compared to the electricity produced in a standard condensing plant (efficiency of 38%). This difference in the cost of generating electricity between the Osijek CHP plant and a standard condensing plant will benefit the economy and is taken into account. The annual savings are estimated to be HRK 0.9 million.
- **Savings due to switching customers from steam to DH in Osijek:** The steam system, supplying 6 MW of heat, is outdated and the project will switch the steam consumers to the hot water system. Once this switching is completed, the steam system will shut down which will

result in savings due to reduction in energy losses and repair costs. This saving is estimated to be HRK 0.7 million on an annual basis.

Sensitivity on Gas Price

Energy savings constitute about 50% and 60% of the annual benefits of the project in Zagreb and Osijek, respectively. As gas prices play a large factor in determining the magnitude of the energy savings due to the project, a sensitivity analysis has been carried out on the economic rate of return by varying the price of gas. Under a base case scenario, an economic gas price of € 200/1000m³ has been assumed which results in an ERR of 17.0% for the entire project. This base price has been increased and reduced by 20% to show the impact on the ERR. The table below summarizes the results.

Economic Rate of Return			
Gas price	Zagreb	Osijek	Whole project
Base case	18.4%	12.0%	17.0%
Increase by 20%	20.4%	13.9%	18.9%
Decrease by 20%	16.4%	10.0%	15.0%

The tables below show the cost-benefit analysis of the project for Zagreb DH system. The amounts are in real terms (2005 Kuna).

ZAGREB ECONOMIC ANALYSIS WITH PROJECT											
	Unit	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Heat sales	GWh	1,444	1,468	1,487	1,506	1,524	1,545	1,565	1,584	1,604	1,624
Network heat loss, DH	%	12.2%	11.2%	10.7%	10.3%	10.2%	9.7%	9.6%	9.5%	9.4%	9.2%
Network heat loss, DH	GWh	176	165	160	155	154	150	150	150	150	150
Heat purchase	GWh	1,620	1,633	1,647	1,661	1,678	1,695	1,715	1,734	1,754	1,774
Make-up water losses	1,000 m3	740	728	680	676	676	676	676	676	676	676
Make-up water losses	1,000 Kuna	13,320	13,104	12,240	12,168	12,168	12,168	12,168	12,168	12,168	12,168
Repair costs	1,000 Kuna	12,040	11,887	11,027	10,666	11,517	12,434	13,425	14,496	15,653	16,902
ZAGREB ECONOMIC ANALYSIS WITHOUT PROJECT											
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Heat sales	GWh	1,444	1,468	1,487	1,506	1,525	1,545	1,565	1,584	1,604	1,624
Network heat loss, DH	%	12.2%	12.6%	12.8%	12.9%	13.7%	14.2%	14.7%	15.1%	15.6%	16.0%
Network heat loss, DH	GWh	176	185	190	195	209	220	230	240	250	260
Heat purchase	GWh	1,621	1,653	1,677	1,701	1,734	1,765	1,795	1,824	1,854	1,883
Make-up water losses	1,000 m3	787	836	862	888	1,000	1,062	1,127	1,196	1,270	1,348
Make-up water losses	1,000 Kuna	14,163	15,045	15,514	15,984	18,008	19,116	20,291	21,537	22,858	24,259
Repair costs	1,000 Kuna	13,102	13,929	15,329	15,064	15,968	16,926	17,941	19,018	20,159	21,369
ZAGREB COST BENEFIT ANALYSIS											
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Benefits in operation and maintenance											
Fuel savings	1,000 Kuna	75	3,341	4,946	6,551	9,150	11,464	13,102	14,740	16,378	17,972
Reduction of water losses	1,000 Kuna	843	1,941	3,274	3,816	5,840	6,948	8,123	9,369	10,690	12,091
Savings in repair costs	1,000 Kuna	1,062	2,042	4,302	4,398	4,451	4,492	4,516	4,522	4,507	4,467
Total Savings	1,000 Kuna	1,980	7,324	12,523	14,765	19,442	22,904	25,741	28,631	31,574	34,529
Investment Costs (1,000 Kn)	(186,535)	(9,327)	(37,307)	(46,634)	(46,634)	(46,634)					
Net Benefits (1,000 Kn)		(7,347)	(29,983)	(34,111)	(31,869)	(27,192)	22,904	25,741	28,631	31,574	34,529
Economic Rate of Return (from 15 years)		18.4%									

The tables below show the cost-benefit analysis of the project for Osijek DH system. The amounts are in real terms (2005 Kuna).

OSIJEK ECONOMIC ANALYSIS WITH PROJECT											
	Unit	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Heat sales	GWh	195	198	206	211	214	219	222	225	228	231
Network heat loss, DH	%	11.0%	11.0%	10.5%	10.3%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
Network heat loss, DH	GWh	21.5	21.8	21.6	21.6	21.4	21.9	22.2	22.5	22.8	23.1
Heat purchase	GWh	216	220	227	232	235	241	244	248	251	254
Make-up water losses	1,000 m3	45.8	44.0	37.0	32.0	30.0	30.0	30.0	30.0	30.0	30.0
Make-up water losses	1,000 Kuna	824	792	666	576	540	540	540	540	540	540
Repair costs	1,000 Kuna	864	916	939	961	1,019	1,080	1,145	1,213	1,286	1,363
OSIJEK ECONOMIC ANALYSIS WITHOUT PROJECT											
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Heat sales	GWh	195	198	206	211	217	219	222	225	228	231
Network heat loss, DH	%	11.0%	11.5%	12.0%	12.5%	13.0%	13.5%	14.0%	14.5%	15.0%	15.3%
Network heat loss, DH	GWh	21.5	22.8	24.7	26.3	28.2	29.6	31.1	32.6	34.2	35.8
Heat purchase	GWh	216	221	230	237	245	249	253	258	262	267
Make-up water losses	1,000 m3	48	55	58	59	63	66	70	74	79	84
Make-up water losses	1,000 Kuna	869	990	1,044	1,062	1,126	1,193	1,265	1,341	1,421	1,506
Repair costs	1,000 Kuna	4,590	2,240	2,501	1,215	1,336	1,470	1,617	1,778	1,956	2,152
OSIJEK COST BENEFIT ANALYSIS											
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Benefits in operation and maintenance											
Fuel savings	1,000 Kuna	0	162	505	776	1,607	1,255	1,454	1,658	1,867	2,081
Reduction of water losses	1,000 Kuna	45	198	378	486	586	653	725	801	881	966
Savings in repair costs	1,000 Kuna	3,726	1,324	1,563	254	317	390	472	565	670	788
CHP benefit from LBP's and new customers	1,000 Kuna	430	929	929	929	929	929	929	929	929	929
Net benefit from conversion from steam to DH	1,000 Kuna	231	693	693	693	693	693	693	693	693	693
Total Savings	1,000 Kuna	4,432	3,306	4,068	3,137	4,131	3,920	4,273	4,645	5,040	5,457
Investment Costs (1,000 Kn)	(54,833)	-	(13,708)	(13,708)	(13,708)	(13,708)					
Net Benefits (1,000 Kn)		4,432	(10,402)	(9,641)	(10,571)	(9,577)	3,920	4,273	4,645	5,040	5,457
Economic Rate of Return (from 15 years)		12.0%									

Financial Analysis

For HEP and HEP T, historical and projected financial statements, together with a summary of performance indicators, are presented in Tables 1 to 5 of this Annex. In accordance with HEP's request for confidentiality for some aspects of its financial operations, including details of input purchase prices and composition of the investment program, these details are not included in this Annex, but are available in the project files.

HEP (the Borrower)

HEP is the holding company for a number of subsidiary companies that cover (i) electricity generation, transmission and distribution; (ii) district heating; (iii) gas distribution; and (iv) other activities. As of December 31, 2005, HEP had total assets of about HRK 28,087 million (€ 3.8 billion equivalent). About 90% of HEP's total revenues come from electricity, 6% from district heating, and the remaining 4% from gas distribution and other activities.

Past and recent financial results: In recent years HEP has been generating an after-tax profit each year. For 2004 (with figures for 2003 in parentheses), HEP had total revenues of HRK 8,616 million (HRK 8,217 million), operating profit of HRK 610 million (HRK 181 million) and net after-tax profit of HRK 439 million (HRK 30 million). In 2005, the average electricity tariff was about HRK 0.555/kWh (€ 0.08/kWh). For 2005, HEP had sales revenues of HRK 9,653 million, an operating profit of HRK 544 million, and a net after-tax profit of HRK 441 million. Revenue collection performance has improved in recent years with the collection ratio (annual collections/annual billings) reaching about 100% in 2003, 2004 and 2005, but this also includes collection of overdue amounts from earlier years. Due to the improved collection, the total amount of overdue receivables accumulated prior to 2003, has been declining. HEP also plans to reduce its current liabilities, thereby improving its current ratio (current assets/current liabilities) which was about 0.9 in 2004 and 2005. The operating ratio (operating expenses/collected revenues) and the working ratio (operating expenses excluding depreciation/collected revenues), which measure operating efficiency, were 0.96 and 0.77 respectively in 2005 (0.93 and 0.72 in 2004). Although HEP's internal cash generation has been strong, it has been undertaking a large investment program averaging about HRK 2 billion per year in the last three years. To help finance this program, HEP has increased its medium and long-term borrowings. Nevertheless, HEP's debt service coverage ratio (2.5) and the debt to equity ratio (28:72) remain at adequate levels.

Future performance: HEP has been preparing a rolling four-year Business Plan that is updated each year. Under the current Business Plan, HEP is projecting continued profitable operations for the period up to 2007 with an annual increase of 3.6% in electricity demand. Beyond 2007, HEP is expected to continue to have profitable operations with steady improvements in the key financial indicators – operating ratio, working ratio, current ratio, and debt service coverage (Annex 9; Table 1). The financial appraisal indicates that HEP will be able to meet its obligations towards the Bank under the project.

HEP T (the Sub-borrower and Beneficiary)

HEP T provides DH services in Zagreb and Osijek and under a lease agreement with HEP it purchases heat and steam from HEP's CHP plants. As of December 31, 2004, HEP T had total assets of about HRK 791 million (€ 109 million).

Past and recent financial results: For 2004 (with figures for 2003 in parentheses), HEP T had total revenues of HRK 530 million (HRK 493 million), an operating loss of HRK 18 million (HRK 40 million) and an overall loss of HRK 18 million (HRK 28 million). For 2005, HEP T had total revenues of HRK

528 million, and an operating loss of HRK 60 million. The losses are the result of inadequate tariffs that have not kept pace with the increasing cost of heat and other inputs. HEP T has also built up large arrears of payables to HEP for heat and steam purchases, amounting to about HRK 175 million at the end of 2005. At prevailing levels of tariffs, HEP T is not able to cover its annual depreciation charges or to reduce its arrears of payables to HEP. In addition, HEP T will not be able to provide its share of the local counterpart financing for the project unless tariffs are increased appropriately. HEP T's annual revenue collection ratio (annual collections/annual billings) is about 99% but this reflects also collection of some arrears from previous years.

Future performance: HEP T's tariffs will need to be progressively increased to generate adequate internal funds to cover its operating expenses, debt service, local counterpart financing needs of the project, and progressive elimination of the payment arrears to HEP. It is estimated that, in the period 2005 to 2010, heat and steam tariffs will have to be raised in real terms by about 27% for Zagreb and 29% for Osijek (Annex 9, Table 3). Although HEP T plans to increase tariffs, the Government ultimately decides on the tariff level. Thus, provisions will be included in the Guarantee Agreement for the Government to facilitate an increase of tariffs proposed by HEP T. Financial covenants for HEP and HEP T related to the project are mentioned in section D1 of this document.

Financial Rate of Return

The financial rates of return (FRR) have been estimated based on financial prices, including taxes and duties where applicable (Annex 9, Table 5). The main incremental benefits under the project are from fuel savings, water loss reductions, and reductions in repair costs. The FRRs are estimated at 15.5% for the Zagreb component, 5.9% for the Osijek component, and 13.8% for the two combined. As district heating is a basic necessity, the FRR is not the most appropriate measure for assessing the worth of the project. Rather, the project should be measured by its economic benefits that have been discussed earlier in this Annex. However, the FRRs are adequate to enable HEP T to meet its financial obligations under the project.

Table 1: HEP Consolidated – selected financial indicators

	2003	2004	2005	2006	2007	2008	2009	2010
	Actual	Actual	Actual	Projections				
(In HRK million)								
Electricity revenues	6,580	7,187	8,156	8,428	8,736	9,589	10,223	10,898
Other revenues	1,637	1,429	1,497	1,737	1,867	1,945	2,022	2,092
Total revenues	8,217	8,616	9,653	10,165	10,603	11,534	12,244	12,991
Cash operating expenses	6,480	6,213	7,266	7,719	8,066	7,967	7,919	7,914
Total operating expenses	8,036	8,006	9,109	9,728	10,143	10,119	10,142	10,208
Operating margin	181	610	545	437	460	1,415	2,103	2,782
Net profit before tax and minority interest	86	506	480	239	266	1,267	1,948	2,620
Net profit after tax and minority interest	30	439	441	136	152	725	1,115	1,499
Ratios								
Annual collection/billings ratio (%)	100.0	100.1	99.5	98.0	98.0	98.0	98.0	98.0
Working ratio (%)	0.79	0.72	0.77	0.77	0.78	0.70	0.66	0.62
Operating ratio (%)	0.98	0.93	0.96	0.98	0.98	0.90	0.85	0.80
Debt service coverage ratio			2.5	2.4	2.5	3.3	3.8	4.2
Current ratio	0.7	0.9	0.9	1.0	1.1	1.4	1.7	2.2
Debt:debt + equity ratio	0.26	0.28	0.28	0.29	0.30	0.30	0.29	0.27

**Table 2: HEP consolidated – Financial Statements
(HRK million)**

	2003	2004	2005	2006	2007	2008	2009	2010
	Audited	Audited	Audited	Projected				
INCOME STATEMENTS								
Revenues from electricity sales	6,580	7,187	8,156	8,428	8,736	9,589	10,223	10,898
Revenues from thermal sales	474	470	488	596	690	731	769	801
Other operating revenues	1,163	959	1,010	1,141	1,177	1,214	1,252	1,292
Total operating revenues	8,217	8,616	9,653	10,165	10,603	11,534	12,244	12,991
Electricity purchase expense	934	1,047	1,832	2,046	1,723	1,451	1,222	1,029
Fuel expense	1,687	1,356	1,466	1,586	2,194	2,303	2,419	2,540
Personnel expense	1,338	1,449	1,494	1,646	1,700	1,756	1,813	1,873
Other operating expense	2,520	2,360	2,474	2,441	2,449	2,457	2,465	2,473
Depreciation	1,556	1,634	1,719	1,856	1,918	1,979	2,039	2,099
Provision for bad debt		159	125	152	159	173	184	195
Total operating expenses	8,036	8,006	9,109	9,728	10,143	10,119	10,142	10,208
Operating margin	181	610	545	437	460	1,415	2,103	2,782
Interest and financial charges	95	104	241	229	226	181	189	197
Financial income			176	31	32	33	34	35
Income before tax	86	506	480	239	266	1,267	1,948	2,620
Corporate tax	15	30	11	94	104	496	763	1,026
Income after tax	71	477	469	145	162	771	1,185	1,594
Minority interest	41	37	28	9	10	46	70	95
Net income after tax	30	439	441	136	152	725	1,115	1,499
BALANCE SHEETS								
Gross fixed assets	55,099	56,869	59,277	61,343	63,408	65,458	67,508	69,558
Less: accumulated depreciation	32,744	34,378	36,097	37,954	39,872	41,851	43,891	45,990
Net fixed assets	22,355	22,490	23,180	23,389	23,537	23,607	23,618	23,569
Other non-current assets	2,088	2,057	2,053	2,073	2,094	2,115	2,136	2,157
Total non-current assets	24,443	24,547	25,232	25,462	25,630	25,722	25,754	25,726
Gross trade receivables	1,511	1,497	1,630	1,874	2,128	2,405	2,699	3,010
Less: provisions for doubtful receivables	316	308	326	509	700	907	1,128	1,361
Net trade receivables	1,195	1,190	1,304	1,365	1,428	1,498	1,571	1,649
Other receivables	255	550	439	559	530	577	612	650
Inventories	920	778	943	926	975	1,000	977	1,003
Cash and cash equivalents	107	102	169	212	845	1,348	2,374	3,805
Total current assets	2,477	2,620	2,855	3,062	3,778	4,422	5,534	7,106
Total assets	26,920	27,167	28,087	28,525	29,409	30,144	31,288	32,832
Share capital	19,792	19,792	19,792	19,792	19,792	19,792	19,792	19,792
Reserves	-1,891	-1,950	-2,013	-2,013	-2,013	-2,013	-2,013	-2,013
Retained earnings	-629	-400	41	177	329	1,054	2,169	3,668
Total equity	17,272	17,442	17,820	17,956	18,108	18,833	19,948	21,447
Minority interest	197	181	154	154	154	154	154	154
Long-term borrowings	3,975	3,728	3,337	3,545	4,163	4,224	4,285	4,346
Other non-current liabilities	2,052	2,952	3,675	3,675	3,675	3,675	3,675	3,675
Total non-current liabilities	6,027	6,680	7,013	7,221	7,838	7,899	7,961	8,022
Trade payables	1,745	1,271	1,595	1,518	1,591	1,553	1,526	1,510
Current portion of long-term debt	689	782	750	750	750	750	750	750
Other current liabilities	989	811	757	926	968	956	950	950
Total current liabilities	3,423	2,864	3,101	3,194	3,309	3,258	3,226	3,210
Total liabilities and equity	26,920	27,167	28,087	28,525	29,409	30,144	31,288	32,832

Table 2 continued

	2003	2004	2005	2006	2007	2008	2009	2010
	Audited	Audited	Audited	Projected				
CASH FLOW STATEMENTS								
Net income after interest and tax	30	439	441	136	152	725	1,115	1,499
Add: depreciation	1,556	1,634	1,719	1,856	1,918	1,979	2,039	2,099
Add: provisions for bad debt	0	159	125	152	159	173	184	195
Net internal cash generation	1,586	2,233	2,285	2,145	2,229	2,877	3,338	3,793
(Increase)/decrease in trade receivables		14	-132	-244	-254	-277	-294	-312
(Increase)/decrease in other receivables		-295	111	-120	29	-47	-36	-37
(Increase)/decrease in inventories		142	-166	17	-49	-25	23	-26
Increase/(decrease) in trade payables		-474	324	-77	73	-39	-26	-16
Increase/(decrease) in other current liabilities		-178	-55	170	42	-12	-6	-1
Increase/(decrease) in VAT payable			25	30	32	35	37	39
Changes in working capital		-792	107	-223	-128	-364	-302	-352
Cash from operating activities	1,441	2,392	1,922	1,922	2,102	2,513	3,036	3,441
Additions to fixed assets		-1,769	-2,408	-2,066	-2,066	-2,050	-2,050	-2,050
Changes in other non-current assets		32	4	-21	-21	-21	-21	-21
Cash used in investing activities		-1,738	-2,404	-2,086	-2,087	-2,071	-2,071	-2,071
New drawings from long-term loans		534	359	958	1,367	811	811	811
Less: repayment of long-term debt		-689	-782	-750	-750	-750	-750	-750
Less: changes in minority interest		-16						
Changes in other non-current liabilities		522	408					
Changes in reserves		-59	-64					
Cash from financing activities		292	-78	208	617	61	61	61
Net increase/(decrease) in cash		-5	66	44	632	504	1,026	1,431
Cash at the beginning of the year		107	102	169	212	845	1,348	2,374
Cash at the end of the year	107	102	169	212	845	1,348	2,374	3,805

Table 3: HEP Toplinarstvo – Selected Financial Indicators

	2004	2005	2006	2007	2008	2009	2010	2011	2012
	Actual	Actual	Projections						
Average tariffs in current prices									
Zagreb - heat (HRK/MWh)	198	197	236	258	269	280	288	295	303
Zagreb - steam (HRK/ton)	138	144	173	189	198	206	212	217	222
Osijek - heat (HRK/MWh)	230	236	283	319	333	346	353	361	369
Osijek - steam (HRK/ton)	143	138	166	186	195	202	206	211	215
Inflation index (2004=100)	100.0	103.0	106.1	109.3	112.6	115.9	119.4	123.0	126.7
Average tariffs in constant (2004) prices									
Zagreb - heat (HRK/MWh)	198	191	222	236	239	242	241	240	239
Zagreb - steam (HRK/ton)	138	140	163	173	176	177	177	176	176
Osijek - heat (HRK/MWh)	230	229	267	292	296	299	296	294	291
Osijek - steam (HRK/ton)	143	134	156	171	173	174	173	172	170
Financial ratios for HEP Toplinarstvo									
Net profit/revenues (%)	-3.4	-11.3	-1.5	0.2	0.3	0.5	0.6	0.4	0.6
Operating ratio (%)	1.03	1.11	1.01	0.99	0.99	0.98	0.98	0.98	0.98
Working ratio (%)	0.97	1.04	0.95	0.93	0.92	0.92	0.91	0.92	0.92
Collection ratio (%)	98	98	95	95	96	96	97	97	97
Debt service coverage	2.4		17.5	17.0	5.7	5.6	5.4	3.7	2.9
Current ratio	0.6	0.6	0.7	0.8	0.8	0.9	1.0	1.2	1.3
Receivables/sales (number of days)	96	102	87	84	80	78	72	66	61
Trade payables/non-personnel cash expenses (number of days)	278	259	206	180	151	122	91	76	61

**Table 4: HEP Toplinarstvo – Financial Statements
(HRK million)**

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
	Audited	Audited	Audited	Actual	Projections						
INCOME STATEMENTS											
Revenues from heat sales			360.5	374.7	460.3	514.8	546.9	576.9	601.4	623.4	647.7
Revenues from steam sales			94.1	93.7	125.1	140.4	149.4	157.7	164.4	170.4	177.0
Subtotal of heat and steam sales	197.5	460.8	454.6	468.4	585.4	655.3	696.3	734.6	765.8	793.8	824.7
Other revenues	7.5	31.7	75.6	59.3	59.9	60.5	61.1	61.7	62.3	62.9	63.6
Total operating revenues	205.0	492.5	530.2	527.7	645.3	715.7	757.4	796.3	828.2	856.7	888.2
Heat and steam purchase expense	0.0	310.6	286.8	330.1	362.0	410.5	439.5	465.3	485.1	504.8	525.5
Fuel expense	0.0	70.8	58.4	61.6	67.3	69.3	71.4	73.5	75.7	78.0	80.3
Subtotal heat and fuel expense	135.8	381.3	345.2	391.7	429.3	479.8	510.9	538.9	560.8	582.8	605.9
Other materials expense	9.3	18.7	17.3	18.1	17.6	16.7	16.7	16.0	15.8	16.8	17.9
Personnel expense	16.7	35.9	43.9	43.1	43.9	45.2	46.5	47.9	49.4	50.9	52.4
Other expenses	39.8	48.8	32.3	32.5	84.5	85.7	88.0	91.9	97.0	101.0	103.9
Depreciation	21.5	47.4	46.1	47.3	49.6	52.1	54.6	55.8	55.8	55.8	55.8
Provision for bad debt					25.8	28.8	30.6	32.3	33.5	34.7	35.9
Total operating expenses	223.1	532.2	548.1	587.5	650.7	708.3	747.4	782.8	812.3	842.0	871.7
Gross operating margin	-18.1	-39.8	-17.9	-59.8	-5.4	7.4	10.0	13.5	15.8	14.8	16.5
Financial income		11.4									
Interest and other financial expense		0.2			4.0	5.2	6.4	7.7	9.0	9.4	8.9
Net income (loss) before tax	-18.1	-28.5	-17.9	-59.8	-9.4	2.3	3.6	5.8	6.9	5.3	7.7
Tax					0.7	0.7	1.1	1.7	2.1	1.6	2.3
Net income (loss) after tax	-18.1	-28.5	-17.9	-59.8	-9.4	1.6	2.5	4.1	4.8	3.7	5.4

Table 4 continued

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
	Audited	Audited	Audited	Actual	Projections						
BALANCE SHEETS											
Gross fixed assets	1209.1	1278.2	1360.1	1360.1	1369.7	1422.0	1483.8	1545.7	1607.5	1607.5	1607.5
Less: accumulated depreciation	710.3	757.7	803.8	851.2	900.8	952.9	1007.4	1063.2	1119.0	1174.8	1230.6
Net fixed assets	498.8	520.5	556.3	509.0	468.9	469.1	476.4	482.5	488.5	432.7	376.9
Other non-current assets	1.7	2.4	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.9	4.0
Gross trade receivables	109.4	116.4	119.7	130.9	166.0	205.4	238.8	274.0	301.6	330.2	359.9
Less: provisions					25.8	54.6	85.3	117.6	151.1	185.8	221.7
Net trade receivables	109.4	116.4	119.7	130.9	140.3	150.7	153.5	156.5	150.5	144.4	138.2
Other current assets	65.0	21.7	53.5	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0
Inventories	29.1	38.5	40.7	25.3	51.0	51.2	52.4	53.9	56.4	58.9	60.9
Cash and other current assets	7.3	8.6	18.0	19.2	29.7	47.9	44.6	37.4	32.2	59.5	79.4
Total current assets	210.8	185.2	231.9	220.4	266.0	294.8	295.5	292.8	284.1	307.8	323.5
Total assets	711.3	708.0	791.4	732.6	738.3	767.4	775.4	778.9	776.3	744.4	704.4
Medium and long term payables	361.0	379.7	341.9	341.9	348.7	386.1	420.3	454.6	488.8	469.9	442.2
Other non-current liabilities	81.5	98.3	126.4	126.4	126.4	126.4	126.4	126.4	126.4	126.4	126.4
Total non-current liabilities	442.5	478.0	468.3	468.3	475.2	512.5	546.8	581.0	615.2	596.4	568.7
Trade payables	221.6	194.9	300.8	313.4	300.5	287.9	255.4	215.5	168.2	145.7	121.2
Other payables	18.7	31.8	29.3	17.7	33.7	30.7	28.3	27.0	25.9	24.7	24.3
Other current liabilities	46.5	49.8	57.3	57.3	57.3	57.3	57.3	57.3	57.3	57.3	57.3
VAT payable					5.2	10.9	17.1	23.5	30.2	37.2	44.3
Total current liabilities	286.8	276.6	387.4	388.4	396.7	386.9	358.1	323.4	281.7	264.9	247.2
Capital and reserves	-18.1	-46.5	-64.4	-124.2	-133.6	-132.0	-129.5	-125.4	-120.6	-116.9	-111.5
Total liabilities and equity	711.3	708.0	791.4	732.6	738.3	767.4	775.4	778.9	776.3	744.4	704.4

Table 4 continued

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
	Audited	Audited	Audited	Actual			Projections				
CASH FLOW STATEMENTS											
Net after-tax income	-18.1	-28.5	-17.9	-59.8	-9.4	1.6	2.5	4.1	4.8	3.7	5.4
Add: depreciation	21.5	47.4	46.1	47.3	49.6	52.1	54.6	55.8	55.8	55.8	55.8
Add: provisions for bad debt					25.8	28.8	30.6	32.3	33.5	34.7	35.9
Net internal cash generation	3.4	18.9	28.2	-12.4	66.0	82.5	87.7	92.2	94.1	94.2	97.1
(Increase)/decrease in trade receivables		-6.9	-3.3	-11.2	-35.1	-39.3	-33.4	-35.3	-27.6	-28.6	-29.7
(Increase)/decrease in other current assets		43.3	-31.8	8.5							
(Increase)/decrease in inventories		-9.4	-2.2	15.5	-25.8	-0.2	-1.2	-1.6	-2.5	-2.5	-2.0
Increase/(decrease) in trade payables		-26.7	105.8	12.6	-12.8	-12.7	-32.4	-39.9	-47.3	-22.5	-24.5
Increase/(decrease) in other payables		13.1	-2.5	-11.6	16.0	-2.9	-2.4	-1.3	-1.0	-1.2	-0.4
Increase/(decrease) in other current liabilities		3.3	7.5								
Increase/(decrease) in VAT payable		0.0	0.0	0.0	5.2	5.8	6.1	6.5	6.7	6.9	7.2
Changes in working capital	16.7	16.7	73.5	13.6	-52.6	-49.4	-63.3	-71.6	-71.7	-47.9	-49.4
Cash from operating activities	35.6	35.6	101.8	1.2	13.4	33.1	24.4	20.6	22.5	46.3	47.7
Additions to fixed assets		-69.1	-81.9	0.0	-9.6	-52.3	-61.9	-61.9	-61.9	0.0	0.0
Other non-current items		-0.7	-0.8	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Cash used in investing activities	-69.8	-69.8	-82.7	-0.1	-9.7	-52.4	-62.0	-62.0	-62.0	-0.1	-0.1
New drawings from long-term loans		18.8			6.8	37.4	44.2	44.2	-10.0	-18.8	-27.7
Less: repayment of long-term debt		0.0	-37.8								
Other non-current liabilities		16.7	28.2								
Cash from financing activities	35.5	35.5	-9.7	1.1	6.8	37.4	34.2	34.2	34.2	-18.8	-27.7
Net increase/decrease in cash	1.3	1.3	9.4	18.0	10.6	18.1	-3.3	-7.1	-5.3	27.4	19.9
Cash at the beginning of the year		7.3	8.6	18.0	19.2	29.7	47.9	44.6	37.4	32.2	59.5
Cash at the end of the year	7.3	8.6	18.0	19.2	29.7	47.9	44.6	37.4	32.2	59.5	79.4

**Table 5: Net Present Value and Financial Rate of Return
(HRK 000 in constant prices)**

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015-2025 Annually
ZAGREB COMPONENT										
Capital expenditure (including taxes & duties)	-9,560	-38,240	-47,800	-47,800	-47,800	11,464	13,102	14,740	16,378	17,972
Fuel savings	75	3,341	4,946	6,551	9,150	6,948	8,123	9,369	10,690	12,091
Water loss reduction	843	1,941	3,274	3,816	5,840	4,492	4,516	4,522	4,507	4,467
Repair cost savings	1,062	2,042	4,302	4,398	4,451	4,492	4,516	4,522	4,507	4,467
Net benefits without tariff increase	-7,580	-30,916	-35,278	-33,035	-28,359	22,904	25,741	28,631	31,575	34,530
NPV =	48,881.37									
FRR =	15.5%									
OSIJEK COMPONENT										
Capital expenditure (including taxes & duties)	0	-14,051	-14,051	-14,051	-14,051	1,255	1,454	1,658	1,867	2,081
Fuel savings	0	162	505	776	1,607	653	725	801	881	966
Water loss reduction	45	198	378	486	586	390	472	565	670	788
Repair cost savings	3,726	1,324	1,563	254	317	929	929	929	929	929
CHP benefit from LBPs and new customers	430	929	929	929	929	929	929	929	929	929
Net benefits without tariff increase	4,201	-11,438	-10,676	-11,606	-10,612	3,227	3,580	3,953	4,347	4,764
NPV =	(7,702.16)									
FRR =	5.9%									
ZAGREB AND OSIJEK COMPONENTS										
Capital expenditure (including taxes & duties)	-9,560	-52,291	-61,851	-61,851	-61,851	12,719	14,556	16,398	18,245	20,053
Fuel savings	75	3,503	5,451	7,327	10,757	7,601	8,848	10,170	11,571	13,057
Water loss reduction	888	2,139	3,652	4,302	6,426	4,882	4,988	5,087	5,177	5,255
Repair cost savings	4,788	3,366	5,865	4,652	4,768	4,882	4,988	4,988	4,988	4,988
CHP benefits from LBPs and new customers	430	929	929	929	929	929	929	929	929	929
Net benefits without tariff increase	-3,379	-42,354	-45,954	-44,641	-38,971	26,131	29,321	32,584	35,922	39,294
NPV =	41,179.21									
FRR =	13.8%									

Annex 10: Safeguard Policy Issues
CROATIA: DISTRICT HEATING PROJECT

This project is classified as an environmental category B project, as per Bank's policies. To this end, HEP T has prepared an Environmental Management Plan (EMP) acceptable to the Bank. The EMP was discussed at public meetings in Osijek and Zagreb on December 7 and 13, 2005, respectively, and is available at HEP T's internet site and the Bank's Infoshop. The environmental concerns raised for the project are mainly during construction. As part of project implementation, HEP T will implement the recommendation of the EMP by making sure that the contractor carries out the following environmental impact mitigation measures in line with Croatian legislation:

- traffic disturbance – construction should be carried out when traffic is light. Further, proper traffic safety measures, in consultation with the local officials and the police, should be taken by marking roads, installing fences, and using temporary traffic lights;
- air pollution – the ground should be sprinkled with water to minimize high air pollution;
- silt run-off – sediments/silt arising from construction should not be rinsed off-site and will not block a storm drain or waterway; and
- noise pollution – equipment that meet noise pollution levels should be used and the construction should be carried out during the day.

A Land Acquisition Framework (Framework for Real Estate Acquisition and Establishment of the Right of Servitude) has also been developed which will be implemented by HEP T, in case the activities of the project require land acquisition. It is unlikely that land will have to be acquired as HEP T already has the right of way for the existing network that will be rehabilitated. This framework is available at HEP T's website.

Annex 11: Project Preparation and Supervision
CROATIA: DISTRICT HEATING PROJECT

Activity	Planned	Actual
PCN review	10/18/2005	10/17/2005
Initial PID to PIC	10/21/2005	10/21/2005
Initial ISDS to PIC	12/09/2005	12/09/2005
Appraisal	3/17/2006	4/5/2006
Negotiations	4/24/2006	5/8/2006
Board/RVP approval	6/20/2006	
Planned date of effectiveness	10/30/2006	
Planned date of mid-term review	6/1/2008	
Planned closing date	6/30/2010	

Key institutions responsible for preparation of the project: HEP; HEP T; and MoELE which provided policy advice during project preparation.

Bank staff and consultants who worked on the project includes:

Name	Title	Unit
Sudipto Sarkar	Lead Specialist	ECSIE
Stjepan Gabric	Project Officer	ECSIE
Pekka Kalevi Salminen	Sr Energy Specialist	ECSIE
Hana Huzjak	ET Temporary	ECSIE
Ljiljana Boranic	Team Assistant	ECCHR
Yukari Tsuchiya	Program Assistant	ECSIE
Kishore Nadkarni	Consultant	ECSIE
Irina Kichigina	Senior Counsel	LEGEC
Andrina Ambrose	Senior Finance Officer	LOAG1
Antonia Viyachka	Procurement Analyst	ECSPS
Mirela Mart	Financial Management Specialist	ECSPS
Ruxandra Maria Floroiu	ET Consultant	ECSSD
Norval Stanley Peabody	Lead Social Scientist	ECSSD

Bank funds expended to date on project preparation:

1. Bank resources: \$ 155,995 (as of May 19, 2006)
2. Trust funds: -
3. Total: \$ 155,995

Estimated Approval and Supervision costs:

1. Remaining costs to approval: \$20,000
2. Estimated annual supervision cost: \$80,000

Annex 12: Documents in the Project File
CROATIA: DISTRICT HEATING PROJECT

The following documents are available in IRIS:

- Croatia Heating Project, Social Assessment Research Report; prepared by Target; October 2001;
- Short Feasibility Study of Main DH Pipeline Replacement in the City of Zagreb; prepared by Ekonerg; September 2005;
- Short Feasibility Study of District Heating Network Replacement and DH Revitalization and Local Boilers Connection to DH in the City of Osijek; prepared by Ekonerg; September 2005;
- Environmental Management Plan for District Heating Pipeline Replacement in the City of Zagreb; prepared by Ekonerg; January 2006;
- Environmental Management Plan for District Heating Network Replacement and District Heating Revitalization and Local Boiler Connection to DH System in Osijek; prepared by Ekonerg; January 2006; and
- Framework for Real Estate Acquisition and Establishment of the Right of Servitude for the Needs of Reconstruction and Extension of the Distribution Network; prepared by HEP Toplinarstvo; November 2005.

Annex 13: Statement of Loans and Credits
CROATIA: DISTRICT HEATING PROJECT

Project ID	FY	Purpose	Original Amount in US\$ Millions					Difference between expected and actual disbursements		
			IBRD	IDA	SF	GEF	Cancel.	Undisb.	Orig.	Frm. Rev'd
P086671	2006	EDUC SECTOR DEV PROGRAM (CRL)	85.00	0.00	0.00	0.00	0.00	80.98	0.00	0.00
P082278	2006	PAL	184.90	0.00	0.00	0.00	0.00	180.77	0.00	0.00
P080258	2006	SCI & TECH	40.00	0.00	0.00	0.00	0.00	37.90	0.00	0.00
P076730	2005	SOC & ECON REC	45.68	0.00	0.00	0.00	0.00	41.76	0.58	0.00
P069937	2005	SOC WELF DEVT	40.00	0.00	0.00	0.00	0.00	37.88	3.83	0.00
P043195	2004	RIJEKA GATEWAY	156.50	0.00	0.00	0.00	0.00	105.63	24.03	0.00
P071461	2004	ENERGY EFF (GEF)	0.00	0.00	0.00	7.00	0.00	6.26	2.97	0.00
P065416	2004	COAST CITIES POLLUT'N CONTROL (APL #1)	47.54	0.00	0.00	0.00	0.00	45.62	25.50	0.00
P079978	2004	ENERGY EFF	5.00	0.00	0.00	0.00	0.00	5.15	1.64	0.00
P067149	2003	REAL PROP REG & CADASTRE	25.70	0.00	0.00	0.00	0.00	23.31	1.90	0.00
P063546	2003	PENSION SYS INVST	27.30	0.00	0.00	0.00	0.00	14.17	9.34	0.00
P042014	2002	KARST ECOSYS CONSV (GEF)	0.00	0.00	0.00	5.07	0.00	2.54	3.45	2.45
P065466	2001	COURT & BANKRUPTCY ADM (LIL)	5.00	0.00	0.00	0.00	0.00	3.42	3.42	3.42
P051273	2000	HEALTH SYSTEM	29.00	0.00	0.00	0.00	1.70	4.16	5.86	-2.20
P057767	1999	TA INST REG REF PSD	7.30	0.00	0.00	0.00	0.00	0.62	0.62	0.00
P043444	1998	MUN ENV INFRA	36.30	0.00	0.00	0.00	0.00	16.66	15.97	2.45
Total:			735.22	0.00	0.00	12.07	1.70	606.83	99.11	6.12

CROATIA
STATEMENT OF IFC's
Held and Disbursed Portfolio
In Millions of US Dollars

FY Approval	Company	Committed				Disbursed			
		IFC				IFC			
		Loan	Equity	Quasi	Partic.	Loan	Equity	Quasi	Partic.
1998	Belisce	5.61	6.01	0.00	1.05	5.61	6.01	0.00	1.05
2002	Belisce	12.30	0.00	0.00	11.90	12.30	0.00	0.00	11.90
2002	Croatia Banka	1.84	0.00	0.00	0.00	1.84	0.00	0.00	0.00
1999	Croatia Capital	0.00	4.21	0.00	0.00	0.00	3.83	0.00	0.00
1999	E&S Bank	5.37	0.00	0.00	0.00	5.37	0.00	0.00	0.00
2002	E&S Bank	22.96	0.00	0.00	0.00	22.96	0.00	0.00	0.00
2005	PBZ	92.24	0.00	0.00	0.00	92.24	0.00	0.00	0.00
2001	Pliva	0.00	0.00	10.00	0.00	0.00	0.00	10.00	0.00
2000	Viktor Lenac	6.00	0.00	0.50	8.18	6.00	0.00	0.00	8.18
Total portfolio:		146.32	10.22	10.50	21.13	146.32	9.84	10.00	21.13

FY Approval	Company	Approvals Pending Commitment			
		Loan	Equity	Quasi	Partic.
2002	Croatia Banka	0.01	0.00	0.00	0.00
2002	ESBank Zagreb II	0.01	0.00	0.00	0.00
2004	Viktor Lenac Exp	0.01	0.00	0.00	0.01
Total pending commitment:		0.03	0.00	0.00	0.01

Annex 14: Country at a Glance

CROATIA: DISTRICT HEATING PROJECT

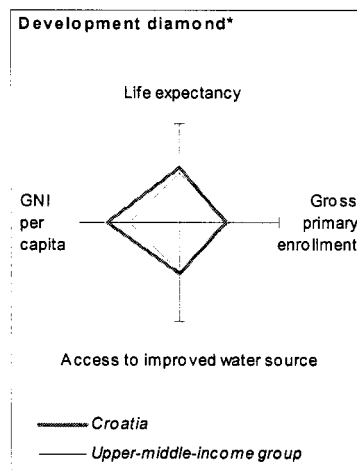
POVERTY and SOCIAL	Europe & Central Asia		Upper-middle-income
	Croatia	Asia	
2004			
Population, mid-year (millions)	4.4	472	576
GNI per capita (Atlas method, US\$)	6,820	3,290	4,770
GNI (Atlas method, US\$ billions)	30.3	1,553	2,748

Average annual growth, 1998-04

Population (%)	-0.2	-0.1	0.8
Labor force (%)	0.7	-0.5	-0.9

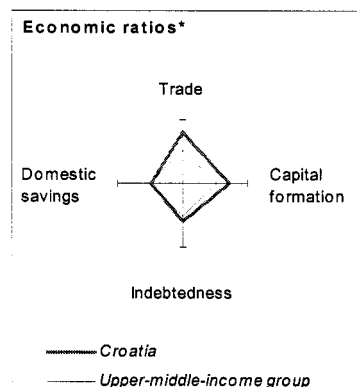
Most recent estimate (latest year available, 1998-04)

Poverty (% of population below national poverty line) / a	11
Urban population (% of total population)	69	64	72
Life expectancy at birth (years)	76	68	69
Infant mortality (per 1,000 live births)	6	29	24
Child malnutrition (% of children under 5)
Access to an improved water source (% of population)	95	91	93
Literacy (% of population age 15+)	98	97	91
Gross primary enrollment (% of school-age population)	97	101	106
Male	..	103	108
Female	..	101	106



KEY ECONOMIC RATIOS and LONG-TERM TRENDS

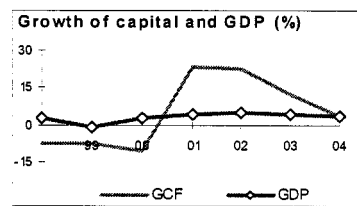
	1984	1994	2003	2004
GDP (US\$ billions)	..	14.6	28.8	34.3
Gross capital formation/GDP	..	17.4	30.4	30.2
Exports of goods and services/GDP	..	45.8	47.1	47.5
Gross domestic savings/GDP	..	17.3	20.7	22.0
Gross national savings/GDP	..	19.8	21.3	24.1
Current account balance/GDP	..	4.9	-7.2	-4.8
Interest payments/GDP	..	0.6	2.4	2.4
Total debt/GDP	..	19.3	81.8	76.8
Total debt service/exports	..	3.1	16.9	15.0
Present value of debt/GDP	81.3	..
Present value of debt/exports	138.3	..



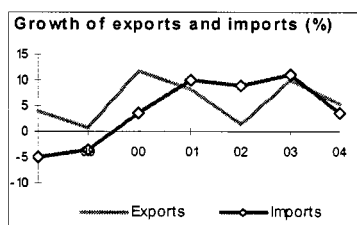
(average annual growth)	1984-94	1994-04	2003	2004	2004-08
GDP	..	3.8	4.3	3.8	4.3
GDP per capita	..	4.3	4.3	3.9	4.3

STRUCTURE of the ECONOMY

	1984	1994	2003	2004
(% of GDP)				
Agriculture	..	11.8	8.4	8.2
Industry	..	34.1	30.1	30.1
Manufacturing	..	28.5	19.3	18.8
Services	..	54.1	61.5	61.6
Household final consumption expenditure	..	53.3	58.7	58.1
General gov't final consumption expenditure	..	29.4	20.6	19.9
Imports of goods and services	..	45.9	56.8	55.7

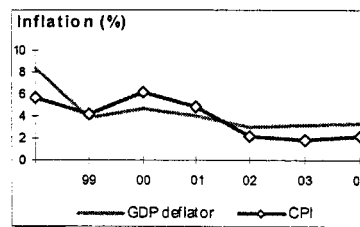


(average annual growth)	1984-94	1994-04	2003	2004
Agriculture	..	-0.1	-5.2	4.2
Industry	..	3.7	7.4	4.3
Manufacturing	..	3.5	3.4	4.0
Services	..	4.5	5.0	4.1
Household final consumption expenditure	..	3.5	4.1	3.9
General gov't final consumption expenditure	..	-0.6	-0.3	-0.3
Gross capital formation	..	7.8	12.0	3.3
Imports of goods and services	..	5.7	10.9	3.5



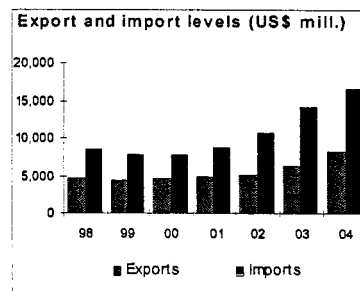
PRICES and GOVERNMENT FINANCE

	1984	1994	2003	2004
Domestic prices				
<i>(% change)</i>				
Consumer prices	..	97.5	18	2.1
Implicit GDP deflator	..	111.8	3.2	3.3
Government finance				
<i>(% of GDP, includes current grants)</i>				
Current revenue	..	45.7	46.2	46.5
Current budget balance	..	5.0	2.4	3.9
Overall surplus/deficit	..	2.0	-3.3	-4.2



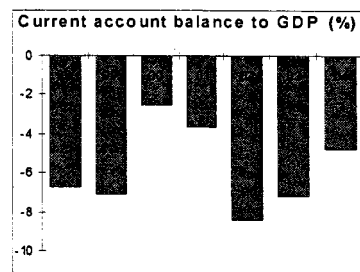
TRADE

	1984	1994	2003	2004
<i>(US\$ millions)</i>				
Total exports (fob)	..	4,403	6,308	8,208
Capital goods	..	29	350	449
Chemicals	..	390	595	909
Manufactures	..	1,760	2,699	3,824
Total imports (cif)	..	5,681	14,216	16,555
Food	..	517	1,001	1,190
Fuel and energy	..	614	1,555	1,987
Capital goods	..	1,449	5,265	5,739
Export price index (2000=100)	81	73
Import price index (2000=100)	80	73
Terms of trade (2000=100)	100	100



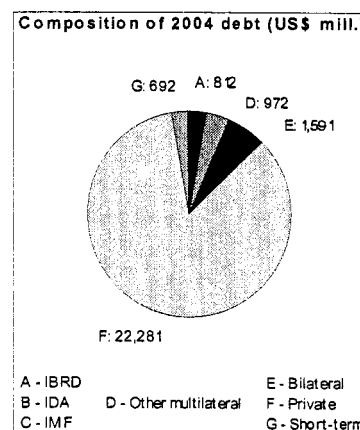
BALANCE of PAYMENTS

	1984	1994	2003	2004
<i>(US\$ millions)</i>				
Exports of goods and services	..	7,260	14,943	17,828
Imports of goods and services	..	6,910	17,198	20,180
Resource balance	..	350	-2,255	-2,353
Net income	..	-165	-1,224	-772
Net current transfers	..	526	1,407	1,483
Current account balance	..	711	-2,072	-1,641
Financing items (net)	..	32	3,473	1,709
Changes in net reserves	..	-743	-1,401	-68
Memo:				
Reserves including gold (US\$ millions)	..	1,405	8,191	8,759
Conversion rate (DEC, local/US\$)	..	6.0	6.7	6.0



EXTERNAL DEBT and RESOURCE FLOWS

	1984	1994	2003	2004
<i>(US\$ millions)</i>				
Total debt outstanding and disbursed	..	2,822	23,570	26,348
IBRD	..	71	762	812
IDA	..	0	0	0
Total debt service	..	241	2,864	3,055
IBRD	..	37	86	102
IDA	..	0	0	0
Composition of net resource flows				
Official grants	..	95
Official creditors	..	-26	196	211
Private creditors	..	99	4,022	3,697
Foreign direct investment (net inflows)	..	10	2,025	898
Portfolio equity (net inflows)	..	11	964	261
World Bank program				
Commitments	..	128
Disbursements	..	1	155	121
Principal repayments	..	29	58	72



CROATIA DISTRICT HEATING PROJECT

This map was produced by the Map Design Unit of The World Bank. The boundaries, colors, denominations and any other information shown on this map do not imply, on the part of The World Bank Group, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries.

- PROJECT SITES
- SELECTED ČITIES AND TOWNS
- ⊙ COUNTY (ŽUPANIJA) CAPITALS
- ⊕ NATIONAL CAPITAL
- RIVERS
- MAIN ROADS
- RAILROADS
- COUNTY (ŽUPANIJA) BOUNDARIES
- - - INTERNATIONAL BOUNDARIES

