PILOT PPP CASE STUDY:

Malyn Biofuel Heating

MARCH 2015
Malyn Biofuel Heating
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ABOUT THE PUBLIC-PRIVATE PARTNERSHIP DEVELOPMENT PROGRAM

The goal of the Ukrainian Public-Private Partnership Development Program (P3DP), implemented by FHI 360 and funded by the United States Agency for International Development (USAID), is to broaden the use of PPPs in Ukraine and expand the role of private sector finance, expertise, and modern technology to improve infrastructure, the quality of public services, and the environment. The program provides assistance to the Government of Ukraine at national, regional and municipal levels to improve the legal and institutional framework, enhances the capacity of individuals and organizations to design and engage in PPP activities, and supports the implementation of pilot PPP projects. Importantly, P3DP assistance is developing the capacity of government to work effectively with the private sector in building or rehabilitating infrastructure, improving or restoring public services, and developing the economy.

Beginning operations in October 2010, the Program is pursuing the achievement of four interrelated, mutually-reinforcing objectives, each contributing to the development of PPPs in Ukraine in full alignment with USAID’s Country Development Cooperation Strategy for Ukraine:

1. **Create a Legal and Regulatory Framework Conducive to PPPs** by improving legislation, regulations, and policies that support PPP initiatives at national and municipal levels.

2. **Strengthen the MOEDT’s Capacity to Guide and Support PPPs** so that it serves as valuable resource for municipalities and government agencies seeking to improve the efficiency and quality of public services and infrastructure through private sector participation. The MOEDT coordinates much of its PPP support work through the recently established PPP Unit.

3. **Develop PPP awareness and capacity** of municipalities to create and implement PPPs while improving local governance practices. Training, workshops, seminars, conferences, and study tours contribute to the growing body of knowledge on PPPs at the local level. P3DP also demonstrates how strategic communication programs that reach out to the general public and media provide valuable input during the PPP development process.

4. **Implement Pilot PPPs in key sectors** by providing technical assistance to selected municipalities in all phases of development, from initial concept through the transparent, competitive tendering process. Practical experiences and lessons learned provide valuable feedback to further improve the PPP environment and processes in Ukraine.
P3DP CASE STUDY SERIES

P3DP assisted efforts of municipal leaders to introduce pilot PPP projects to improve infrastructure and public services. The practical insights and lessons learned through these experiences guided the work to improve Ukraine’s PPP regulatory and legal environment and were fed into the Program’s training events. The efforts also resulted in creating replicable PPP models for improving infrastructure and public services.

P3DP has created a series of case studies – each with complementing videos, sectoral briefs, guidance notes and other knowledge tools – to share these experiences and lessons learned for future PPP practitioners in Ukraine. The series includes:

- **Parks & Recreation**
  - Kyiv Hydropark Sports Facility
  - Simferopol City Park

- **Municipal Waste Management**
  - Ivano-Frankivsk and Vinnytsia SWM and Landfill Gas Energy Production

- **Municipal Heating**
  - Malyn Biofuel Heating

- **Healthcare**
  - Zaporizhia Health Care Facilities and Services

- **Education**
  - Kyiv Education Facility Maintenance and Management

- **Urban Transportation**
  - Lviv Parking

Each case describes the problem being addressed, steps taken by municipalities with P3DP support to resolve the problem, the anticipated benefits, and the result. Key lessons learned and insights gained from pursuit of the pilot PPP projects are described.

Government and city officials, private firms, and other stakeholders with an interest in developing PPPs will benefit from the many lessons of P3DP’s experience. Several Ukrainian municipalities are already adapting the processes, diagnostic tools, and contracts to replicate PPPs in key sectors of education, parks & recreation, municipal heating and solid waste management.
### PROJECT SUMMARY

<table>
<thead>
<tr>
<th>Malyn Municipal heating with Alternative Fuel</th>
<th>Processes completed:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sector:</strong> Renewables &amp; Alternative Fuel</td>
<td>• PPP bidding completed and private partner selected;</td>
</tr>
<tr>
<td><strong>Type:</strong> Build-Operate-Transfer (BOT)</td>
<td>• Contract signed with Energiya Tepla, a private Ukrainian firm, and approved by MOEDT;</td>
</tr>
<tr>
<td>Heats three public schools using pellets made from renewable, alternative fuel sources.</td>
<td>• Equipment installation completed and operational;</td>
</tr>
<tr>
<td>Expected benefits:</td>
<td>• P3DP captured lessons learned, is sharing the project findings among sector participants, and has used project structure to identify legal drawbacks which fed into certain legislative initiatives;</td>
</tr>
<tr>
<td>• Heating costs reduced by at least 10%; initial savings were as high as 40%;</td>
<td>• Environmental evaluation completed in February 2015;</td>
</tr>
<tr>
<td>• Four jobs created;</td>
<td>• Municipalities, including Kyiv and Oster, Chernigiv Region adapting and replicating the PPP.</td>
</tr>
<tr>
<td>• Estimated $150,000 in private investment (in part depending on exchange rate);</td>
<td></td>
</tr>
<tr>
<td>• Carbon emissions reduced by 11,000 tons</td>
<td></td>
</tr>
<tr>
<td>• Increases energy independence.</td>
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</table>

### SECTOR SUMMARY

Since independence, Ukraine has been dependent on natural gas imports from Russia for heating. But reliable gas supplies have been threatened by ongoing price disputes and the armed conflict between Ukraine and Russia that broke out in 2014. Several times – in 2006, 2009 and again in 2014 – Russia cut off gas supplies, sometimes in the middle of winter. The high cost of Russian gas to Ukraine, sometimes exceeding the market level, was a strain to Ukrainian industry and governments.

Ukraine, however, is rich in forests and agricultural waste. These resources can provide large amounts of biofuel – in the form of wood or compressed pellets – that can be used in place of natural gas to provide heat and hot water for buildings. Numerous municipalities are exploring boiler conversions to biofuel in response to high gas prices and unreliability of gas supplies.
BACKGROUND

In 2012, Malyn, a city of 27,000 located in the Zhytomyr region of Ukraine, began to explore the possibilities of greater energy efficiency and use of alternative fuels, particularly wood or agricultural waste. This would reduce dependency on imported gas, eliminate exposure to rising gas tariffs, and enable the city to use locally-available resources. It would also stimulate the creation of new jobs and provide opportunities for local small businesses.

Zhytomyr region has significant potential for using alternative energy sources for generating heat and electricity. One-third of its territory – 1.1 million hectares – is covered in forests, which generate an estimated 563 thousand m³ of wood waste annually. Its agriculture sector produces over 1 million tons of agricultural waste per year, which generates heat equivalent to 510.9 million m³ of natural gas. It also has significant amounts of peat.

An analysis of municipal holdings led to the selection of a boiler house that provided heating to three schools serving a total of over 1,800 students and teachers. The total area of nearly 17 thousand m² was heated by boilers consuming a maximum annual consumption of 2,000 gcal per year. This facility was designed in Soviet times and was in poor condition, leading to excess fuel and electricity consumption. The city aimed to convert the facility to run on biofuel before the winter of 2014-15.

However, numerous technical and legal issues prevented Malyn from moving forward on the project. Malyn had no capacity to develop the project and was not able to analyze legal, technical, financial, tariff and other issues on its own. In consultation with the Mayor, the Secretary of the City Council, Alexei G. Shostak, turned to the Public-Private Development Project (P3DP) to help execute the project as a public-private partnership (PPP).

P3DP’S ROLE

Well-structured PPP project in an enabling environment is an effective mechanism for attracting private sector financing, technology, and management expertise for infrastructure and public service projects. In Malyn, the project aimed to select a private partner on a competitive basis according to Ukraine’s PPP Law that would replace one or more existing gas boilers with one that operate on alternative fuel, such as compressed wood or straw pellets. The boiler capacity would be sufficient to heat two secondary schools and one sports school. The private partner would provide financing and equipment and would sell heat to the city at a discount of at least ten percent during the life of the contract. A 15-year PPP was anticipated.

Project Characteristics

1. **All participants in the PPP should benefit under a “win-win” scenario.** Under the PPP contract, the city would receive heating at a reduced cost while reducing its dependence on imported gas. The project duration would be for a sufficiently long period to allow the private partner to earn
a reasonable return on its investment. Both the private and public sector partners would therefore have a financial incentive to collaborate. In addition, the arrangement would create jobs and improve the local business environment.

2. **Public engagement.** Throughout the project, local authorities would keep the public informed about the project through the media. It would provide published materials and solicit comments and feedback. Information about the impact on the city budget, safety of the technology, project progress, and details about the PPP mechanism would be made public.

3. **Role of the private operator.** Unlike traditional approaches to providing heating in Ukraine, the private partners would be responsible for raising capital, making investments, installing equipment, and provided long-term operational and management responsibilities. These tasks would be done without municipal or state guarantees or any form of state funding.

4. **Transparent competition.** Of critical importance was the principle of open, transparent tender procedures for selecting the private partner. This approach is consistent with global best practices and ensures that the public interest is served.

5. **Optimal timing for an alternative fuel PPP.** Events in Ukraine in 2013-14 made an alternative fuel heating PPP highly attractive for other municipalities. This is because (a) Ukraine must increase its energy independence by finding alternatives to imported natural gas; and (b) it needs to make tariffs economically justifiable, and (c) there is growing interest in public-private partnerships in Ukraine.

6. **Local competitive advantages.** Zhytomyr region is heavily forested. This led to the development of timber and woodworking industries, which produce scrap wood that can be used for heating. Malyn can realize substantial savings by generating heat from alternative sources. The combination of natural gas shortages and high tariffs means that many regions of Ukraine could potentially benefit from using alternative fuel made from wood, such as chips, briquettes or pellets.

7. **Environmental protection.** Another benefit lay in protecting the environment and mitigating climate change. The PPP program included an environmental assessment that identified the major impacts of the project on the environment and proposed recommendations. The use of biofuels in carbon-neutral (this is because the quantity of emissions is balanced out by the carbon captured in new growth), it does not contribute to climate change.

The project was developed by representatives of the City Council of the city of Malyn under the leadership of the Secretary of Municipal Council Alexei G. Shostak. A working group that included the Deputy Mayor, the heads of key city departments (housing, education, and legal management), the Chairman of the Budget Committee of the City Council, and experts from P3DP was formed to guide the process. Experts were consulted as needed, for example, on energy, heating or tariffs. As the project developed, potential private operators, for example, producers of pellets for solid fuel boilers, equipment vendors, and entrepreneurs in related fields were also consulted.
As transaction advisor, P3DP worked with the Municipality on the feasibility study, legal review, and environmental assessment for the project. It also brokered discussions between the municipality, producers of biofuel pellets, and technical experts. It also drafted the PPP contract and tender documents in accordance with Ukrainian legislation. Crucially, it communicated key information about the Project to all affected stakeholders, including affected schools, government, the private sector and the general public.

The key stages of the PPP development and implementation process were as follows:

1. **Ensuring political support of the project.** P3DP held several meetings with the Mayor of Malyn, the Secretary and deputies of the City Council, and the heads of key departments of the Executive Committee. The meetings focused on providing an overview of the principles of public-private partnerships in context of Ukraine’s PPP Law, presenting the technical assistance to be provided by P3DP, discussing key legislative features regarding heat supply, budgeting, pricing, and a review of potential technical solutions (for example, the types of boilers that could operate on alternative fuel sources) that potential market operators could propose in the PPP tender. After reaching general agreement on these issues and gaining an understanding of the potential interest from the private sector, P3DP and the Malyn City Council signed a Memorandum of Understanding in 2013 that described the key principles for cooperation on the PPP project.

2. **Preparation of feasibility study.** P3DP supported the Working Group in preparing a feasibility study of the PPP project in accordance with Ukrainian legislation as described by MOEDT Order № 255 dated February 27, 2012. This document provides guidance on the content and structure of PPP feasibility studies. It should be noted that in preparing feasibility studies, expert consultants should participate and appropriate training should be provided. Malyn officials participated in training on financial models and PPP development as part of the overall feasibility study development process.

3. **Development of financial models and sources of financing of the project.** P3DP helped Malyn officials prepare the financial model for the project taking into account the current cost of capital and the estimated payback period. The model showed that the city could achieve savings of at least 10 percent when paying for heat generated from alternative sources. The financial model was critical for determining the level of capital expenditures the private partner could reasonably be expected to bear and the recommended PPP contract term. In this case, it was clear that under various scenarios cost recovery could take between six and twelve years, suggesting that a contract of 15 years would be sufficient to guarantee that the private operator would be able to recover its investment.

4. **Passage of legal procedures to enable local authorities to implement PPP projects.** In accordance with the law On Public-Private Partnerships and the Implementing Regulatory Legal Acts on PPPs (namely, Cabinet of Ministers Resolution № 384 dated April 11, 2011 as amended by Order № 255), the City of Malyn passed the full procedures to allow the PPP to proceed, including:
Establishment of the Executive Committee of the PPP project and the working group;
The decision of the City Council authorizing relevant executive bodies to prepare the feasibility study, approve the analysis of the PPP project’s effectiveness, and dispose/store existing heating equipment after project completion;
The authority of the Executive Committee to approve and refer the PPP to the Ministry of Economic Development and Trade (note: due to Cabinet of Ministers Resolution № 384 of October 2014, this approval is no longer required).

5. Passage of prerequisites for conducting a competitive PPP tender. P3DP and city officials conducted a strategic communications campaign to disseminate information about the project, including details of its preparation and terms of the tender. This included information about relevant meetings of the Zhytomyr Regional Administration, relevant conferences and seminars, meetings of government bodies including the MOEDT, the Ministry of Regional Development, Construction and Public Utilities; development of a website on the PPP project and dissemination of information through the mass media. These activities, conducted over a 12 – 18 month period, contributed to the active dissemination of information about the PPP tender and provided interested companies with the opportunities to prepare for and participate in the process.

6. Conducting the PPP tender. In accordance with legislation, the following decisions were taken in Malyn regarding the tender:
   - The decision of the City Council regarding the implementation of the PPP to recognize that the project was appropriate and in the public interest; approval of regulations for the Tender Commission; appointment of members of the Tender Committee; definition of terms; and delegating responsibility for PPP preparation;
   - The decision of the Tender Committee approving the tender documentation, including the criteria for selecting the private partner and the decision to publish announcement in the media;
   - The decision of the City Council on the tender, including approval of tender documentation; approval criteria for assessing proposals; approval of the essential terms of the PPP contract; established procedures for publication of the tender documents; and the announcement of the PPP tender.

7. PPP Tender and Contract Award.
   - The Tender Commission was responsible for reviewing bids and determining whether bidders meet qualification criteria. It also announced the winner and articulates the key conditions of the PPP contract;
   - The City Council was responsible for approving the results of the PPP and awarding the PPP contract to the winner. A copy of the contract is to be provided to the MOEDT.

8. Replicating the project PPP in other cities of Ukraine. The experience of implementing a PPP in Malyn can be replicated in other Ukrainian cities independently or with some assistance from
experts. P3DP will make information about the project, including key documents, publically available. These include tender documentation, feasibility analyses, and sample PPP contracts. P3DP will also provide advice to interested municipalities in the preparation of similar projects. Interested parties can also contact representatives of Malyn to learn more about the key issues in preparing documents and implementing PPPs.

**CHALLENGES**

Several issues that arose in the implementation of the PPP:

1. **Current budget legislation complicates PPP projects.** The budget code does not allow cities to commit to purchasing heat from a single provider on a long-term basis, and cannot provide long-term guarantees within a PPP contract. This increases the risks to potential private sector partners in engaging in PPP contracts. Another risk factor is the inability to forecast city revenues. However, these issues are understood and in the near future legislation may be amended accordingly. This would enable cities to provide better assurance to private sector operators in PPP contracts that they will receive payment for their services over the life of the contract. P3DP is addressing this issue at the national level.

2. **Limited examples of PPP projects.** To reduce risks, many government bodies prefer to model their projects on proven PPP arrangements. The pilot PPP project in Malyn can fulfill this function for similar PPPs.

3. **Limited private sector investors and operators.** During preparation of the feasibility study, input from potential private partners provides valuable information for the design phase. In Malyn, for example, potential private partners included local businesses, manufacturers of equipment and raw materials, market operators, energy efficiency, and others. However, in many cities there are few such companies available to participate in PPP tenders.

4. **Financial risks for private operators.** The private operator bears significant risk since the ability of the user (the city) to pay for services in the long-term is not clear, while the private operator must provide funding to execute the project. In preparation of the PPP, the city should mitigate this risk by providing a bank guarantee as part of the bid or provide other assurance that it will be able to honor its financial obligations. The current investment climate does not provide sufficient financial guarantees to the parties; however, both sides need to carry out a full range of measures to the PPP agreement.
OUTCOMES

In February 2014, the City Council of Malyn announced the PPP tender. One qualified bid was received by Energy of Heat Ltd, a private Ukrainian firm that designs and installs boilers.

The bid went through a detailed technical and financial review by the Tender Committee with P3DP support. In April, the Malyn City Council formally approved the Tender Commission’s selection of a private partner, thereby authorizing the mayor to conclude a contract. This made the Malyn project the first in Ukraine to convert a natural gas boiler to an alternative fuel one using the PPP model. Once operational, the project will serve as a model for other Ukrainian cities for using renewable fuel in place of imported natural gas.

The PPP agreement was signed and approved in September 2014. Installation of equipment began shortly thereafter and was operational in time for the 2014-15 heating season.

Benefits include:
- Municipal energy costs are lower – in December 2014, heating from wood was 40 percent cheaper than imported gas. Throughout the project life heating costs are estimated to be ten percent lower;
- Over 1,800 students and teachers are benefitting from warmer and more reliable heating that will not be affected by gas-related issues;
- Carbon emissions are expected to be reduced by over 11,000 tons over the life of the project;
- The feasibility of using alternative fuel as a carbon-neutral renewable fuel source in Ukraine is being demonstrated and has attracted interest from other municipalities;
- Up to $150,000 in new investments from the private sector is expected; and
- Greater energy independence for Ukraine.

The Malyn biofuel project is the first PPP created in accordance with Ukraine’s PPP regulations, approvals and development process. Municipalities, business and the Ukrainian government have expressed strong interest in using the pilot as a model that can be replicated throughout the country.

Although the PPP project is in the early stages, indications are that all stakeholders are benefiting from the arrangement:

City of Malyn. The city is enjoying benefits at several levels:

- **Cost savings:** In the initial stages of operation the boilers are using wood fuel, which is plentiful in the region and much cheaper than imported natural gas.
- **Stable supply of heating:** Ukraine is at risk of a gas shutoff due to pricing issues with Russia and a potential escalation of the war. The schools, however, will remain heated regardless of the outcome of Russia-Ukraine relations.
- **Better local business climate:** In a country widely known for corruption, Malyn stands out as having conducted a transparent, open tender for procuring heating services. Because the tender
was subject to public scrutiny through the PPP’s strategic communications efforts, underwent a
detailed financial analysis, and was reviewed by P3DP experts, the city can provide assurance
that the PPP serves the public interest.

- **Potential for further PPPs:** With one PPP secured, the City of Malyn is developing a reputation
as a reliable partner for the private sector in the provision of public services. The door is open
for further PPP contracts.

- **A model city:** Malyn can also claim, rightfully, that it executed the first PPP under the provisions
of Ukraine’s PPP Law. It can therefore serve as a model for other Ukrainian cities that wish to
develop PPP projects of their own.

**The Private Operator.** The private operator also benefits from the PPP:

- **New business opportunities:** The greatest benefit to the operator is finding a stable, long-term
customer in the Malyn municipality. This strengthens the company’s long-term prospects,
ensures it to create jobs, and positions it to provide similar services with other municipalities.

- **Reputation:** The operator can also demonstrate that it won the transparent tender process
without providing bribes or using traditional business practices. This makes it a more reliable
business partner for other customers.

**Ukraine.** At a national level, Ukraine also benefits:

- **Greater energy independence.** Should the project be adopted more widely, Ukraine will be able
to reduce its dependency on imported natural gas.

- **Mitigating climate change.** By avoiding the use of fossil fuels for heating, Ukraine can decrease
its greenhouse gas emissions. Furthermore, alternative fuel does not contribute to greenhouse
gas emissions, as the carbon released by burning equals the carbon absorbed by crops during the
growing season.

- **Testing the PPP model.** The Malyn PPP provides valuable input for policymakers as they improve
PPP-related legislation. The long-term contracting issue raised by this project is a case in point: it
is being addressed at the national level.

**LESSONS LEARNED**

1. **Local leadership.** The city demonstrated the ability to make quick decisions, give the project an
adequate level of public exposure through outreach to the public, the media and key
stakeholders. The leaders of the city, including the Mayor, City Council Secretary, Head of
Housing, and representatives of Legal Department maintained an ongoing dialogue with P3DP.
This ensured a timely exchange of information necessary to prepare, discuss and approve a
feasibility study within a reasonably quick timeframe of three to four months. In addition, officials were open to the idea of public-private partnerships and did not hesitate to develop this groundbreaking pilot project, even without models of PPPs from other cities.

2. **Capacity Building on PPPs.** P3DP conducted a series of training programs in Zhytomyr region on PPPs. This enabled Malyn officials to better understand PPPs and prepare the project, including the feasibility study and financial models, which helped avoid delays. Based on this experience, PPP preparation should include input from a financial advisor on the financial model; a legal advisor to assist with preparation of quality tender documents that ensure a transparent bidding process that treats all stakeholders equally and fairly; and a technical advisor to provide guidance on technical issues for different stakeholder groups and municipal authorities. If expert advice is problematic for financial or other reasons, cities should approach national or regional officials with relevant PPP experience. Malyn was able to work through P3DP, which increased awareness and skills of officials and helped bring the project to completion.

3. **Expert advice.** P3DP provided technical assistance to Malyn in preparing the PPP. This included consultations with experts in heating, utilities, housing, legal advice, and input from the private sector. Numerous issues arose which required specialized input, for example:

- Technical issues with boilers for using alternative fuel sources;
- Supply issues, including storage;
- Economic issues;
- Legal issues to protect the city and investors given existing legislation on public procurement.

These issues were covered in the feasibility study, tender documents and the PPP contract, all of which were prepared with expert input.

4. **A positive public perception.** Many people in Ukraine are suspicious of private sector participation in the public services, such as healthcare or heating, or water. It is therefore critical to establish a meaningful dialogue with the community and other stakeholders. This helps pinpoint and address reasons for opposition and address concerns. Also important is demonstrating how private sector participation can contribute to the public good. In Ukraine,
where corruption related to public procurement is a widespread problem, this is especially important.

In the case of the Malyn project it was important to keep citizens informed about:

- The technology used (solid fuel boilers of Ukrainian or Belarusian production, certified in Ukraine);
- The economic impact on the community;
- Benefits to the regional economy, for example, through the procurement of raw materials from local producers;
- Transparency in the tendering procedure.

Good communications ensured that the public stood by the project.

5. **Ensuring a balance of interests of the city, community and business.** Although PPPs involve both Government and a private partner, successful local projects should also protect the interests of the community. By balancing the interests of the community, including local businesses and the public, the city can engage in high-quality, long-term cooperation within the framework of a PPP. The private partner provides goods and services more efficiently, the public benefits, and the city fulfills its obligations to its citizens. As a result, a project in the town of Malyn provides an opportunity to provide heat to schools while under an extremely difficult fiscal situation, which is positively received by the community.

6. **Using local competitive advantages.** PPP projects in Ukrainian cities can take advantage of local comparative advantages such as geographic location, local economic characteristics, and the overall development strategy of a particular sector of the economy. In Malyn and Zhytomyr region, alternative fuel sources are available. Because of the long-term nature of a PPP contract, local businesses have an incentive to develop the alternative fuel market.

7. **Improving legislation in the field of PPPs.** P3DP draws from the experience of pilot PPP projects to improve and simplify PPP-related legislation in Ukraine. Legislation related to tariffs, long-term municipal budgeting, and other issues are being addressed in this way.