

**Case 19**

**Tajikistan**

**Energy Sector**

**Pamir Private Power Project (PPPP)**

**Daler Jumaev**

# Tajikistan's First Energy Sector PPP

Daler Jumaev, General Director  
[daler.jumaev@pamirenergy.com](mailto:daler.jumaev@pamirenergy.com)



## Partners:

Ministry of Energy and Water Resources, Republic of Tajikistan	Sponsor, Contributor of Assets
Aga Khan Fund for Economic Development	\$8.1m Equity
International Development Agency (World Bank)	\$12.5m Debt
International Finance Corporation	\$3.5m Equity, \$4.5m Debt
Swiss Economic Cooperation Office (SECO)	\$9.68m Grant, Customers Support Scheme

## Summary:

Following the humanitarian crisis, years of traditional development revealed a growth choke point – energy. Working with the Government of the Republic of Tajikistan, World Bank Group and SECO, AKFED developed a PPP solution to turn around a decrepit, loss making utility and create a sustainable, viable, replicable energy system in the most remote, harsh and poverty stricken region in Tajikistan.



## Region (Viloyati Mukhtori Kuhistoni Badakhshon (VMKB), East Tajikistan):

- The largest (47% of the country), poorest (40% below the poverty line) and most remote (220k people, 4% of the total pop.) region;
- Economic and human development crippled by energy shortages.

## History:

- Soviet: A subsidized region. 70% of electricity produced by diesel generators - 100% fuel from Russia;
- Post Soviet: A 5 year civil war, no diesel power plants working, only mini - hydels and 11 small HPPs producing very limited electricity;
- 70% of the region's forests decimated within a decade and increased respiratory disorders.

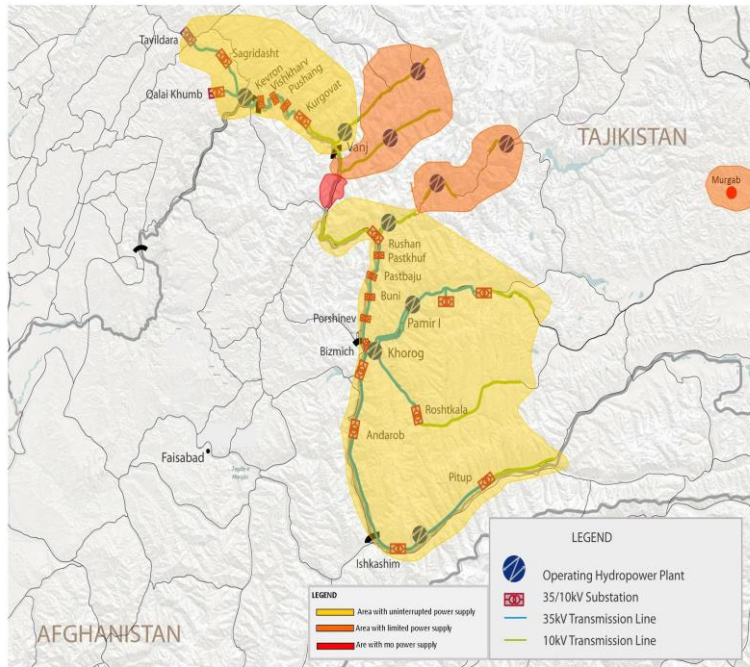
## Response

- Following development initiatives in land reform, food self sustainability, health and education, the energy shortage was the major choke point for further development:
  - No energy in all districts in winter;
  - Schools, hospitals & businesses forced to close;
- Region was cut off from the national energy grid, which itself suffered from chronic shortages;
- New generation options were reviewed and found to be too expensive.

## PPP

- Utilize existing Government assets, but under private sector management;
- Invest \$26.8m from IDA (on-lent debt), IFC (debt and equity) and AKFED (equity);
- To bring 14 MW new capacity and upgrade some existing generation capacity;
- \$9.8m in customers support (SECO) to a) gradually increase tariffs and b) provide lifeline support
- Under a 25 year Concession Agreement





Available (42 MW) and planned (135 MW) capacities	
HPPs	MW
1. Pamir 1	28.00
2. Khorog	8.60
3. Namangut	1.80
A. Sub-total Main Grid	38.40
4. Shujand	0.55
5. Siponj	0.80
6. Savnob	0.40
7. Andarbak	0.28
8. Vanj	1.00
9. Tekharv	0.28
10. Qala-i Khumb	0.10
11. Murgab	0.15
B. Sub - Total Off-Grid	3.56
<b>Total Existing</b>	<b>41.96</b>
<b>Sebzor</b>	<b>10</b>
Sanobod	125

### Project Design – Key Issues

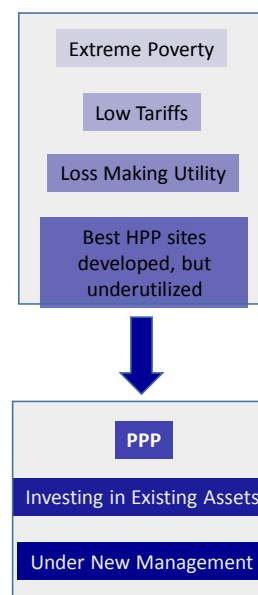
- Extremely low tariffs nationwide – Different tariffs in one region politically unacceptable
- Extreme poverty – Lowest cost model required, some form of customer support for defined period
- A loss making utility, strained Government finances – IPP model excluded
- Lowest cost hydropower site already taken, but under-developed

### Key Parties

- Government of Tajikistan – Sponsor and Contributor (Owner) of Assets, Regulator
- Aga Khan Fund for Economic Development – Sponsor and Shareholder
- International Finance Corporation – Shareholder and Lender
- International Development Agency – Lender
- Swiss Economic Cooperation Office – Catalytic Early Stage Financing, Social support

### Feasibility Study

- Financial: How to reconcile low tariffs (<2 US cents/KWh) with private sector financing and the need for massive investment in generation, transmission & distribution (>\$50m) and deliver results to international benchmarks.
- Operational: How to manage implementation in this remote region, utility restructuring, and on-going management
- Technical: Pamir 1 HPP expansion, Lake Yashilkul retention structure, headrace tunnel, penstocks, etc.
- Environmental & Social: How to manage social aspects of tariff increases, collections (disconnections!) and Yashilkul water impact



### Documentation

- The Concession Agreement between the Government of Tajikistan and Pamir Energy (2002) enshrined key terms by Law.
- Loan Agreements included the Development Credit Agreement between the Government of Tajikistan and World Bank (IDA) and a Subsidiary Loan Agreement between the Government of Tajikistan and Pamir Energy
- Social Protection Agreements were signed between the Government of the Swiss Federation, Government of Tajikistan and the World Bank (Adminstrating the Swiss Funding).
- Shareholder Agreements were fairly standard, and included an Investment Agreement between IFC and Pamir Energy and a Shareholders Agreement between AKFED and IFC.

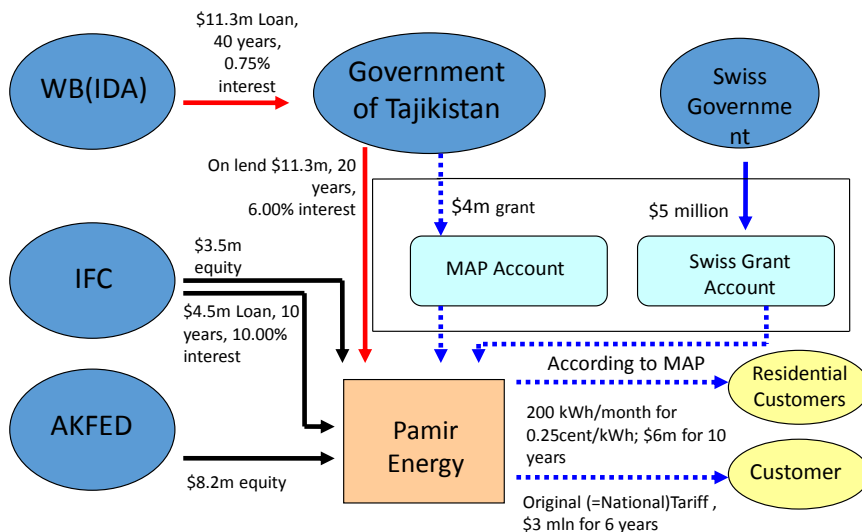


### Project Finance was structured to achieve 4 key objectives:

- Sufficient funding to deliver additional capacity
- Manageable weighted average cost of capital
- Affordable tariffs
- Returns to investors

### Key Components Included:

- WB IDA Loan: \$11.3m to GoT at 0.75%, 40 years
- GoT On Lend: \$11.3m to PE at 6%, 20 years
- Interest differential deposited into a special account for social protection costs
- IFC debt at 10%
- Equity (10% ex ante returns)
- Due to catastrophic accident in 2007, IDA gave a grant of \$1.2m to the GoT, which was on-lent to PE at 0.75% for 15 years



Social Protection Expenses

### PE's Structure includes:

#### Project Finance in 2003

1. \$11.3m IDA debt @0.75% (40 years) lent to the Government of Tajikistan (hereafter GoT)
2. GoT on-lend @6% to PamirEnergy for 20 years
3. \$3.5m IFC equity
4. \$4.5m IFC debt (10 years, 10%)
5. \$8.2m AKFED Equity
6. In 2008 \$1.2m IDA grant to the GoT
7. GoT on-lend @0.75% to PamirEnergy for 15 years

#### Social Protection Mechanism

1. Government of Switzerland \$5m grant initially to special account
2. PamirEnergy pays interest differential (6% - 0.75%) into special account



## The PamirEnergy Story

**Project Preparation (1999-2002):** With funding from SECO, a consultant completed the study, and recommended a full utility model.

**Project Implementation Stage ( 2002-2006):** Implementation of four key components was challenging.

1. Lake Yashilkul regulating structure
2. Headrace Tunnel & Penstocks
3. Turbines & Generators
4. Transmission & Distribution improvements

Contractors, equipment, materials & management were all challenges

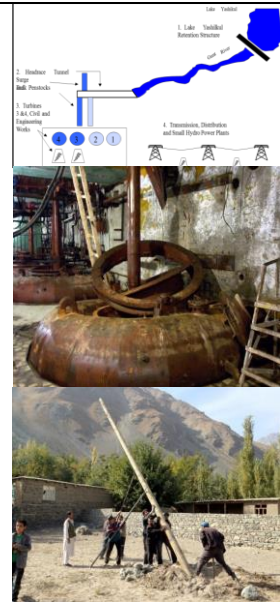
**But the project was completed on-time and to-budget. The local community, however, had not adjusted to higher tariffs and the culture of non-payment was rife.**

**Accident & Turn (2007).** In 2007, the main power plant was flooded and one turbine destroyed in a natural disaster.

### Growth & Expansion (2008 – 2027).

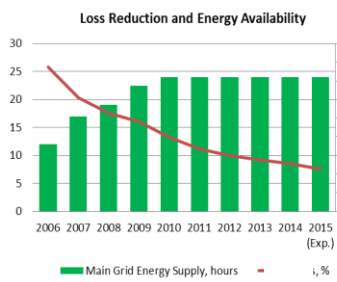
- New (local) management were brought in, the community rallied around the project following the accident, and a clear strategic direction was established.
- Lines loss reduction, energy availability, and community focus were prioritized
- VKMB became the only region in Tajikistan with excess energy in winter, and in 2008, the first cross border line into Afghanistan was inaugurated.

**Leveraging the initial project cost of \$26.5m, a total of \$47.3m has been invested in the region's energy sector so far, as donors recognize the commitment, implementation capacity and development impact.**

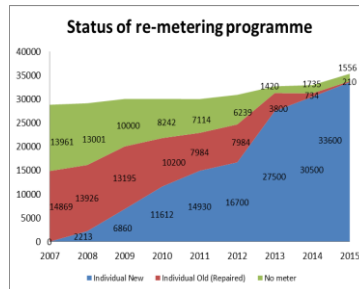


## Measuring Project Output

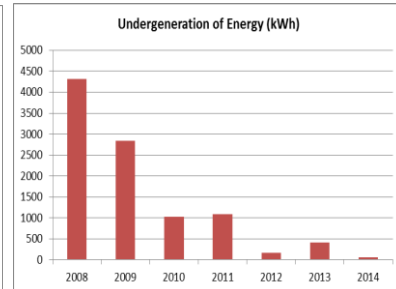
**Technical Performance.** The company measures technical performance based on 4 key metrics:



Energy Availability has increased to 24 hours on the Main grid. Technical and commercial losses have been reduced to 12% and should be further reduced down to 9% in pursuance with best engineering practice.



New meters have been installed for 96% of PE's customers, the remaining 4% of customers should be provided with meters by 2017.



Rapid reaction to natural disasters and outages has reduced under-generation significantly.

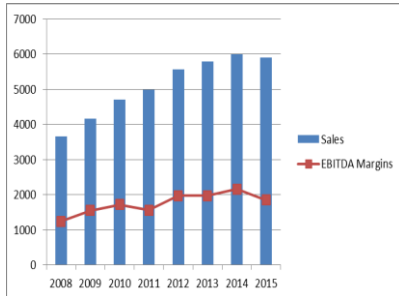
**Customer Support:** In 2013, Thanks to SECO technical and financial support, PE shifted to a winter based, increasing block tariff support system based on consumption levels.

- 53% of PE's customers receive 85% of their bill paid in winter, and 47% have to pay 100% of their bills
- Current total social protection cost per year: \$350k.

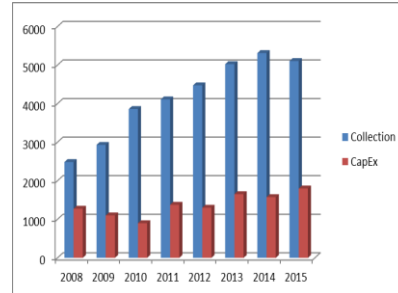
**Customer Service:** PamirEnergy has opened 6 customer service centers - previously unimagined for the utility, and a call center has been established. Customer complaints have reduced 17 times (1700%) since 2009.

# Measuring Project Output

**Financial Results.** Sales, EBITDA and PBT are tracked, as well as collections rates and CapEx, to ensure sufficient reinvestment to return a world class utility to the Government of Tajikistan.



Sales have been steadily increasing, despite no tariff increase since 2010, due to increased sales made possible by loss reductions.



Collections rates remain strong, at around 100%, due to clear billing, strong communication, low tariffs and strict disconnections

**Is the project financially viable?** PamirEnergy currently generates a modest PBT of \$ 450K per year and pays no dividends. IFC debt was converted to equity following a devastating accident in 2007. However, the company is currently on all obligations, and a more commercial approach (not taken by the project sponsors and shareholders) could re-consider CapEx for dividends.

# Project Outcomes

- **People:** 226,000 people in East Tajikistan and 28,500 in North Afghanistan receive clean, affordable and reliable electricity
- **Planet:** PamirEnergy is 100% renewable energy
- **Prosperity:** Affordable energy drives economic growth
- **Partnership:** PamirEnergy has created a partnership between the community, local government, national government, international investors and donors, reaching across the border into Afghanistan.
- **Peace:** PamirEnergy supports cross border bridges, markets, training, technical assistance and other projects of the Aga Khan Development Network, to promote regional integration, contributing to trust and positive relations across borders.



**Significant improvements to quality of life as a result of 24/7 supply of electricity to 91% of the VMKB population:**

- **Income - Savings in household energy costs** (from \$98/month to \$15/month – an 653% decrease)
- **New economic activities:** small enterprises increased by 53% (consumption increased by 80% in VMKB & 25% in Northern Afghanistan)
- **Improved health:** medical facilities offer advanced services (such as eHealth) and perform operations otherwise not possible
- **Better built environment:** reduced in-home smoke, fewer respiratory problems
- **Enhanced education possibilities:** now possible to study when it is dark, test scores improved from 50% to 80%; computers at schools and in some homes
- **Improvement in government effectiveness:** use of computers and cellular phones improving efficiencies
- **Enhanced community life:** evening gatherings enabled in Afghanistan; access to news and media

**PE Impact: 17 SDGs**

	Sustainable Development Goals	Impact	Description
1	End poverty		Savings in household energy cost (from \$98/month to \$15/month – an 653% decrease)
2	End hunger		Contribution to food storage in home and stores, and food processing
3	Well being - healthy lives		Significantly lower in-home smoke & improved storage of medicines & energy at clinics
4	Quality education		Improved lighting and heat in classrooms, internet access & light in the evening to study longer
5	Gender equality		Women spend four hours less per day preparing family meals, less time gathering wood
6	Water and sanitation for all		Supply of electricity for the Khorog Water Supply Company (32,000 people) and pumps throughout the region
7	Affordable and sustainable energy		Supply of 24/7 electricity to 91% of the population in VMKB and 3% in Northern Afghanistan at 3.25 US cents/KWh
8	Economic growth and decent jobs for all		PE provides 651 permanent & some 200 seasonal jobs and enables economic growth
9	Resilient infrastructure, sustainable industrialization, foster innovation		Regional enterprises based on sustainable tariffs & renewable energy generated by assets designed to withstand disasters
10	Reduce inequalities within and among countries		Supply of low cost electricity in remote areas reduces income inequality
11	Cities inclusive, safe, resilient and sustainable		Energy supply improves city resilience and sustainability
12	Responsible consumption by all		Re-metering, support schemes and education foster responsible energy use
13	Combat climate change		PamirEnergy was the first Tajik entity to use carbon credits and generates 100% renewable energy
14	Protect the ocean		Tajikistan is a landlocked country
15	Take care of the earth		Reduced consumption of fossil fuel (Lower-carbon emission and deforestation prevention)
16	Peaceful and inclusive societies, justice for all, accountable institutions at all levels		As an Aga Khan Development Network institution, PamirEnergy holds to the most stringent transparency and equity standards
17	Mechanisms and partnerships to reach the goals		Partnerships with the Government, the private sector, neighboring country utility and donor community

**Escalation**

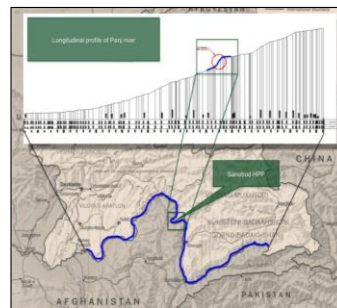
- **In Tajikistan:** Aspects of PamirEnergy’s success are applicable in the energy sector across Tajikistan: private sector capacity & capital, loss reduction, metering, billing and collections, human resource management, project management. Technical and management strategies are particularly applicable.
- **Globally:** The PamirEnergy model is fortunate to have an anchor investor with a deep appreciation for the triple bottom line, allowing a long term approach and flexibility with respect to returns. However, the project’s key success factors (technical and management strategies) are highly applicable in many circumstances, and PE’s sponsors have sought out new opportunities in other geographies.
- **Across Sectors:** The PamirEnergy model is highly applicable to the water sector, which is frequently joined electric utilities, and potentially for transportation infrastructure as well.

**Key Success Factors for Escalation**

Do	Don't
Strong stakeholder support and ownership	Increase tariffs before service improvement
Strong management, preferably local	Build customer support into revenue models; support should be separate
Listen to communities	Alienate local government
Clearly explain bills structure, changes and support	Underestimate local culture & traditions in communication
Focus on loss reduction, rather than production increase or lower cost gains	
Use technology in mobile payments, pre-paid, etc. that all helps	

## PamirEnergy's Future

- **Expansion:** In the next 5 years, PE aims to add some 20,000 customers (pop. 170,000) to its network in the North Afghanistan, possibly reaching up to Faizabad a major city in the North Afghanistan (pop. 220,000).
- **Generation Increase:** To serve these new customers, PamirEnergy is developing a new, 11 MW HPP in the East Tajikistan.
- **Game change - Sanobood HPP:** A new HPP (IPP) is being developed at 125 - 250 MW for regional energy.



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## People First is also about “those” that made it happen:

### 1) Public organizations:

- The Government of Tajikistan:
  - The Ministry of Energy and Water Resources of the Republic of Tajikistan
  - The Ministry of Finance of the Republic of Tajikistan
  - The Ministry of Economic Development and Trade of the Republic of Tajikistan
  - Anti-Monopoly Agency under the Government of Tajikistan
  - Regulating Agency in the Energy Sector in Tajikistan
  - The Customs Services under the Government of the Republic of Tajikistan
  - The Tax Committee under the Government of the Republic of Tajikistan
  - The National Bank of Tajikistan

### 2) Private organizations:

- World Bank Group (IFC, IDA)
- Swiss Government (SECO)
- Government of Norway
- Government of Germany through PATRIP Foundation and the German Development Bank (KfW)
- United States Agency for International Development (USAID)
- Aga Khan Foundation for Economic Development (AKFED)

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# People First is also about “those” that made it happen:

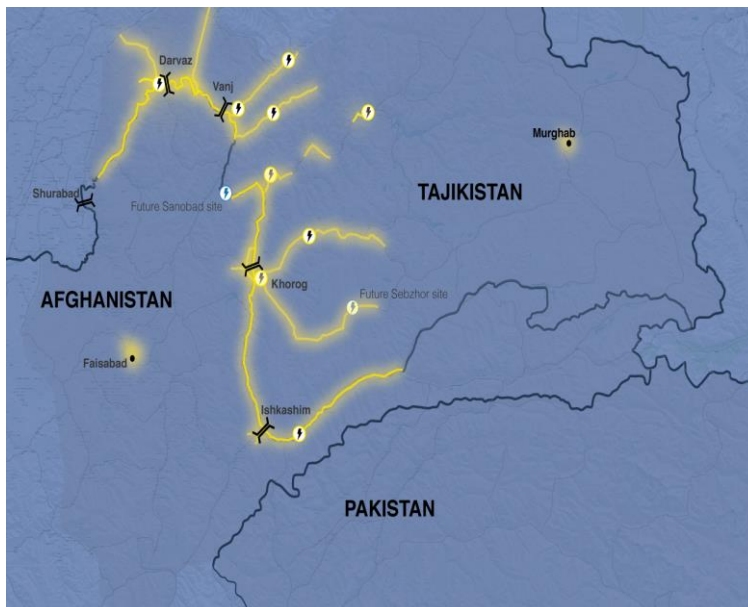
It is all about the team work... – PE Management Team

### 3) The management teams

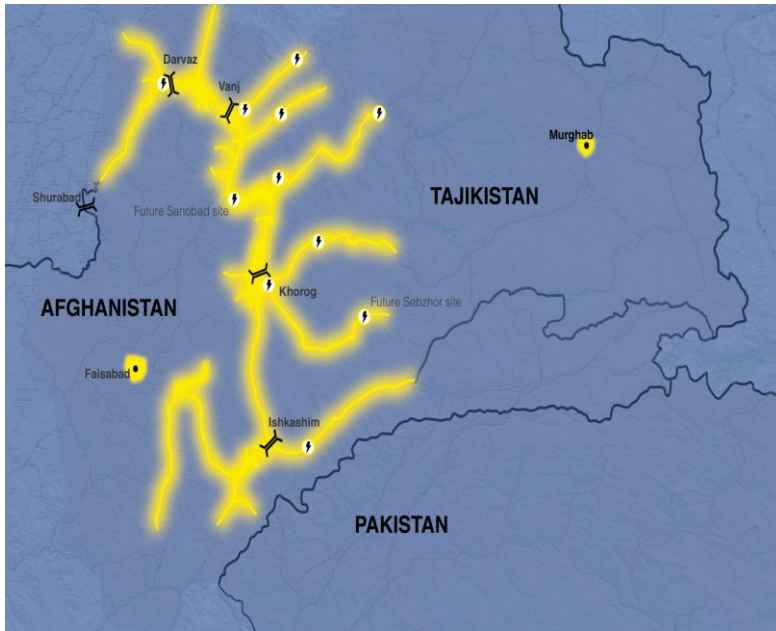
- The General Director(s)
- Department Directors: Generation; Transmission&Distribution; Human Resource, Health, Safety and Environment; Sales & Marketing, Business Development, Finance, Administration
- Seven Regional Managers
- Strategic Partnership Unit – four high flyers staff

### 4) PE growth strategy

- Further expansion within the East Tajikistan and to connect its grid to the National Grid;
- Continue to connect more areas of the North Afghanistan (20'000 customers) to commence export of electricity to the North Pakistan (10'000 customers)
- Increasing of generation capacity by construction of 10 MW hydro power project (Sebzor) in VMKB, Tajikistan



This is Today...



**This will be  
Tomorrow!**