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# Overview of Energy Security in Tajikistan during fall-winter 2011-2012

REACT meeting,  
Wednesday, November 2<sup>nd</sup>, 2011

Monitoring and Early Warning System  
Ministry of Economic Development and Trade  
UNDP DRMP MEWS

# Rationale

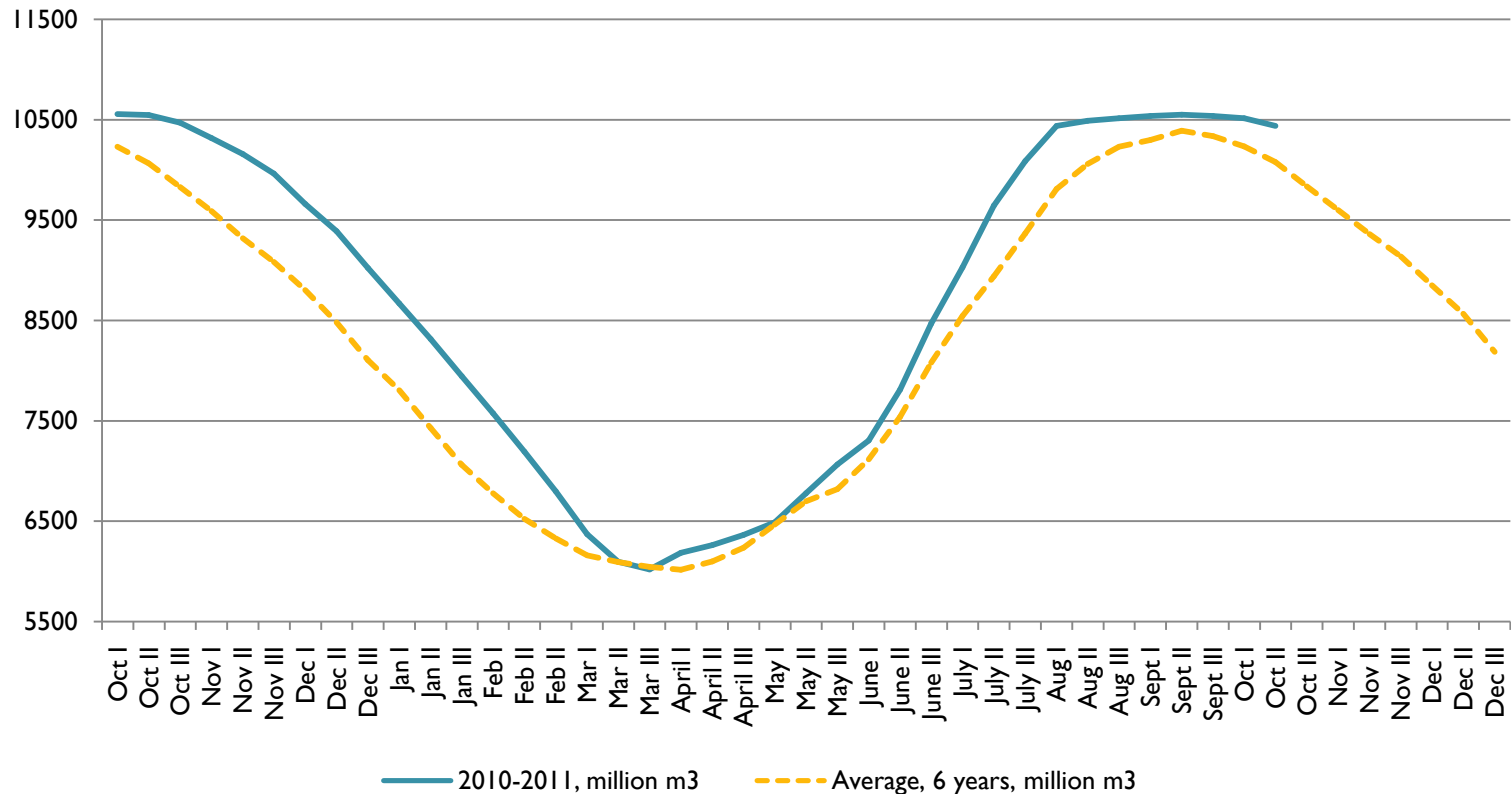
- Early electricity rationing in Tajikistan;
- Drop of inflow in the Vakhsh Cascade;
- Active monitoring of energy security starts during fall-winter season;
  - Electricity Generation
  - Coal Production
  - Natural Gas Imports
  - Fuel Imports
  - Weather Conditions

# Nurek Hydro Electric Plant (HEP)

- Generates over 60% of the domestically produced electricity;
- Water is filled during spring-summer (March - Sep and stored water is used during fall-winter (Oct – Feb);
- Water during fall-winter should be released rationally, so the reservoir does not run out of water until March next year;

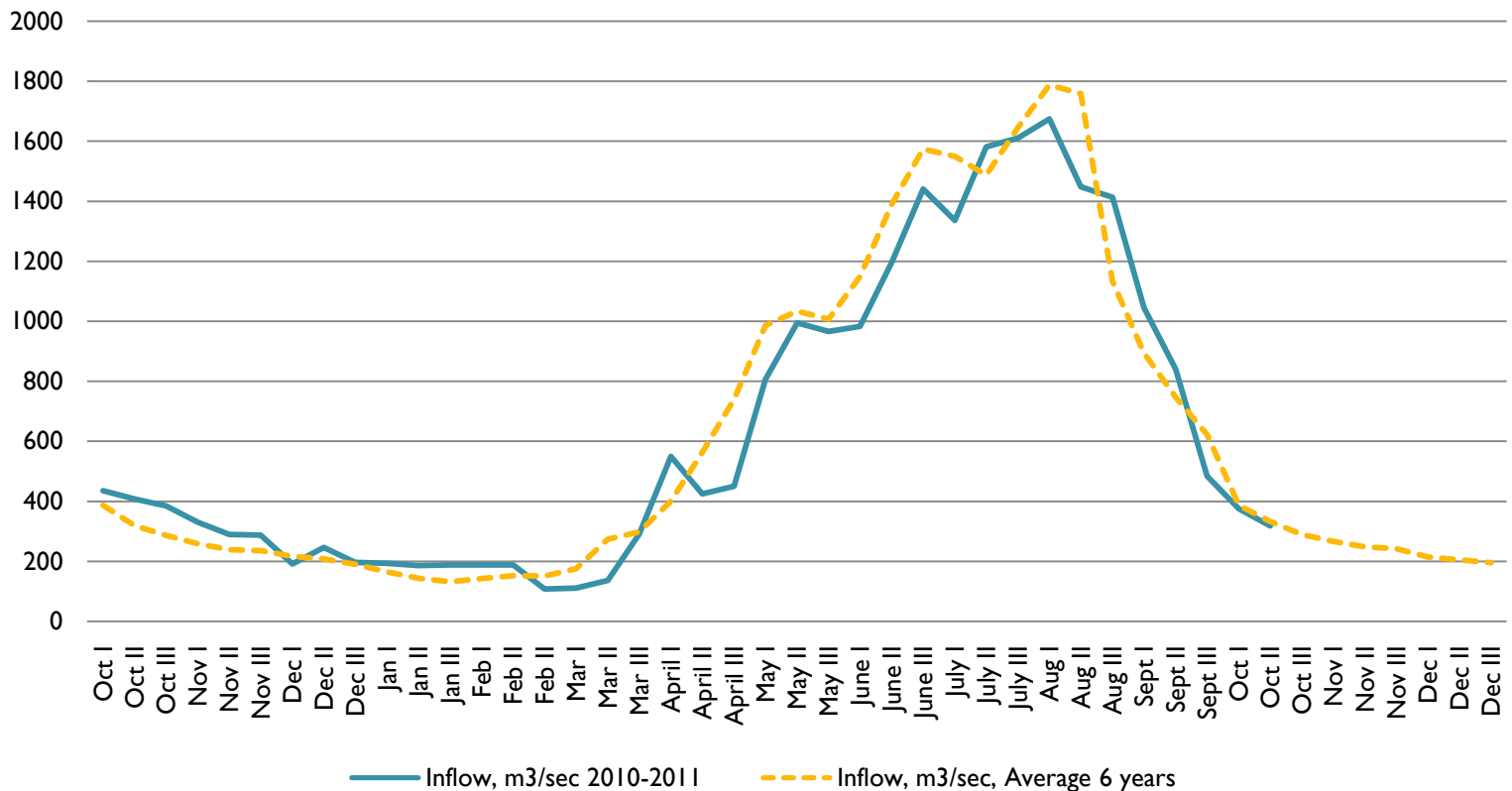
# Water volume in Nurek HEP

- Mid-October 2011: **10,438** million m3 (**10,533** million m3 in 2010);
- Volume is above 6-year average (**10,079** million m3);
- Water level in October 2011: **909.77** m (**52.77** m above dead level).



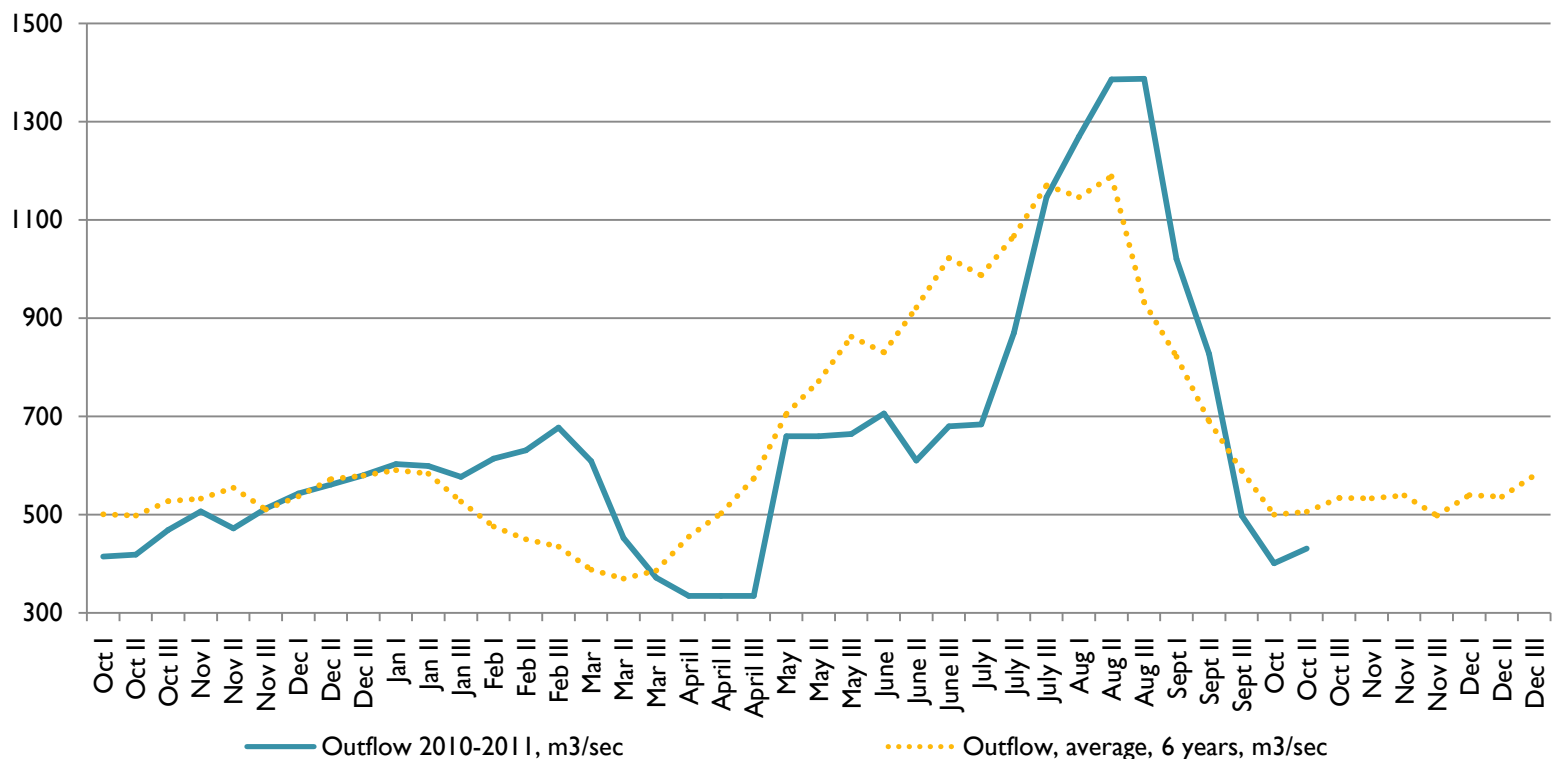
# Water Inflow in Nurek HEP

- Mid-October 2011: **318** m<sup>3</sup>/sec (**425.2** m<sup>3</sup>/sec in 2010);
- Inflow is below 6-year average (**332.6** m<sup>3</sup>/sec);
- Reduced from **1,045** m<sup>3</sup>/sec in September to **318** m<sup>3</sup>/sec in October;



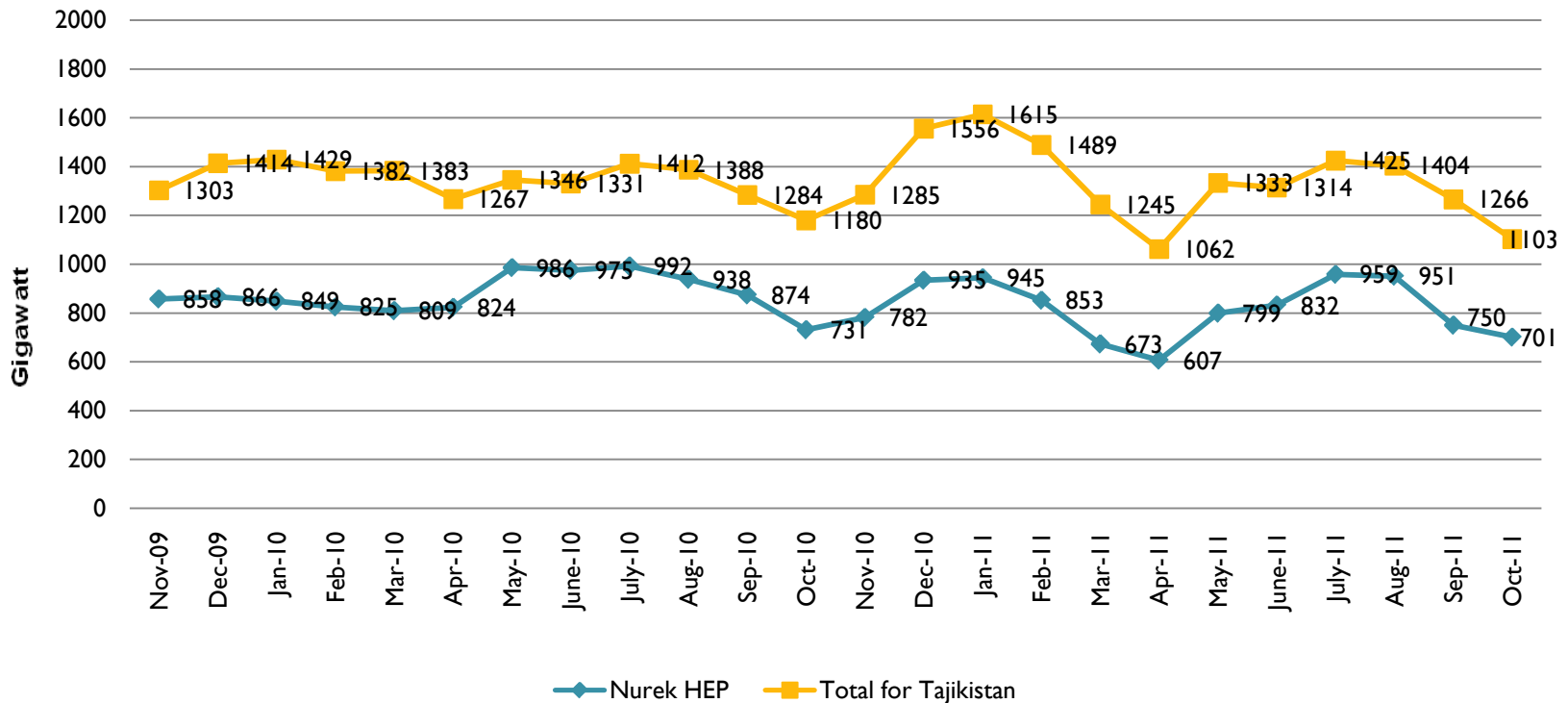
# Water Outflow from Nurek HEP

- Mid-October 2011: **431** m<sup>3</sup>/sec (**453** m<sup>3</sup>/sec in 2010);
- Outflow is below 6-year average (**506.1** m<sup>3</sup>/sec);
- Reduced from **1,020.8** m<sup>3</sup>/sec in September to **431** m<sup>3</sup>/sec in October;



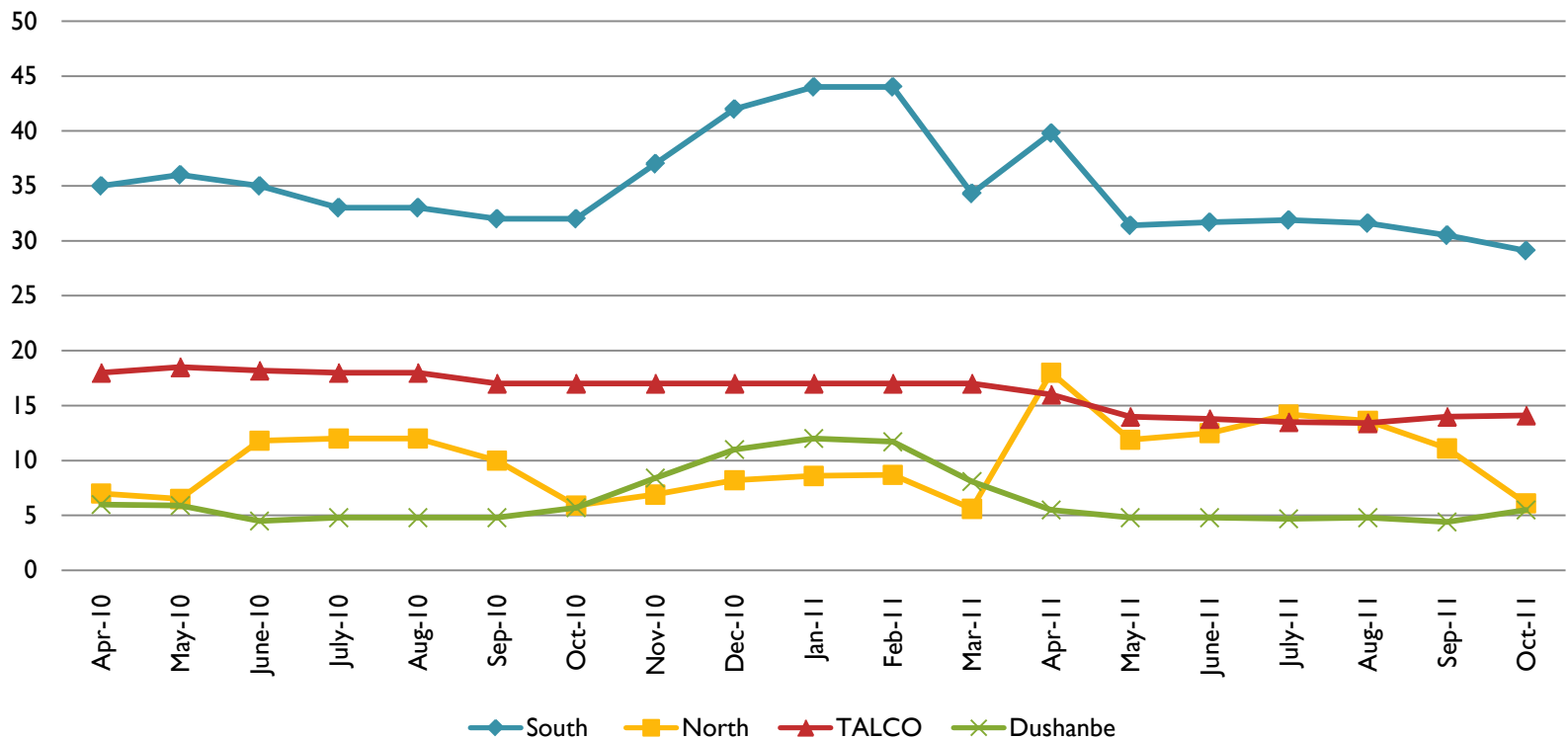
# Electricity Generation

- Total 1,103,988 kW/h was produced in October 2011 (1,180,000 kW/h in 2010);
- Production dropped from 1,266,000 kW/h due to reduced outflows;



# Electricity Consumption

- Total **1,091,977** kW/h was consumed in October 2011;
- Consumption dropped due to electricity rationing from **1,524,000** kW/h in September);



# Weather Conditions

- Temperature

Hydrometeorology Center reports temperatures are expected to be within average range in November 2011;

Location	Average temperature
Lower elevations	+9 to +12°C
Mid-elevations ( 1,500 to 2,000 m)	+1 to +4°C
High elevations (3,000 to 4,000 m)	-7 to - 11°C

- Precipitation

Hydrometeorology center reports precipitation is expected to be within average range in November 2011;

Location	Average precipitation
Lower elevations	10 – 47 mm
Mid-elevations ( 1,500 to 2,000 m)	15 – 66 mm
High elevations (3,000 to 4,000 m)	1 – 6 mm

# Weather Conditions...

- Temperature

Hydrometeorology Center reports temperatures are expected to be within average range in December 2011;

Location	Average temperature
Lower elevations	+ 2 to + 6°C
Mid-elevations ( 1,500 to 2,000 m)	- 2 to - 6°C
High elevations (3,000 to 4,000 m)	- 15 to - 20°C

- Precipitation

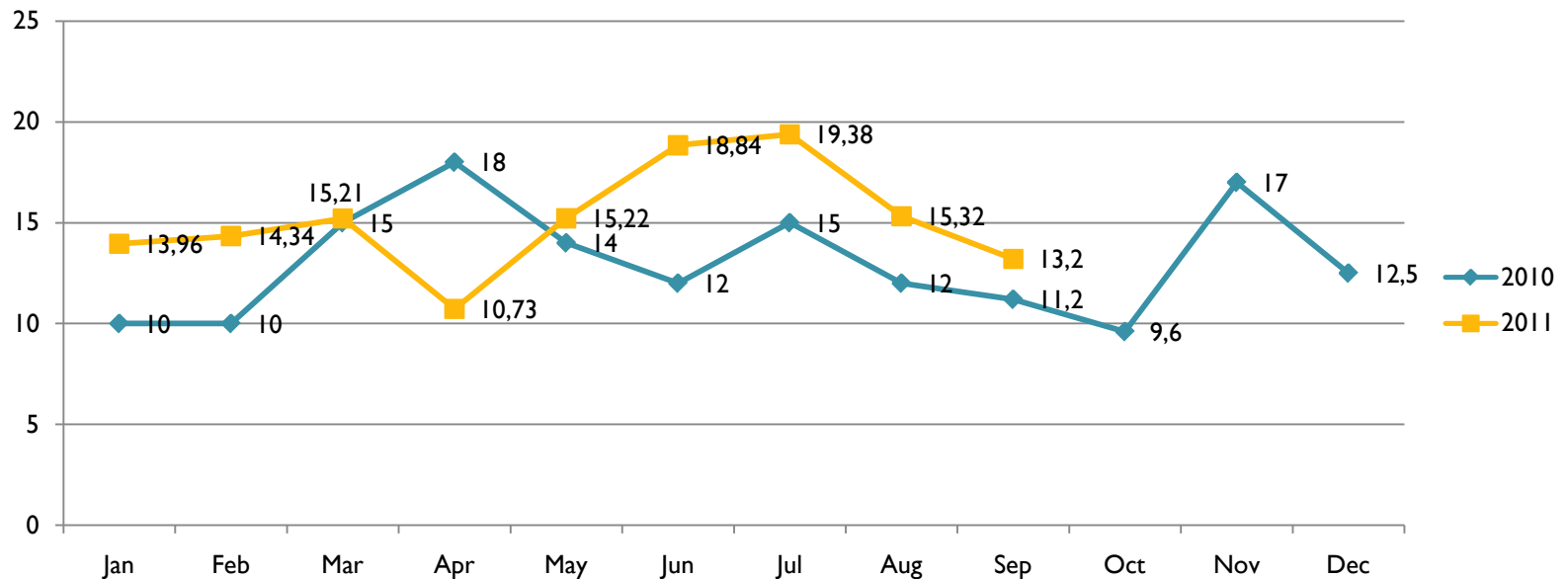
Hydrometeorology center reports precipitation is expected to be within average range in December 2011;

Location	Average precipitation
Lower elevations	15 – 70 mm
Mid-elevations ( 1,500 to 2,000 m)	63 – 130 mm
High elevations (3,000 to 4,000 m)	3 – 15 mm

# Natural Gas

- Total 136.5 million m<sup>3</sup> of natural gas was imported to Tajikistan during Jan-Sep 2011 (average 15 million m<sup>3</sup> per month);
- 44 million m<sup>3</sup> less than the total of 180 million m<sup>3</sup> in imports projected for 2011 (average 14 million m<sup>3</sup> per month);

Year	2004	2005	2006	2007	2008	2009	2010	2011 (projected)
million m <sup>3</sup>	622.5	629	635	644.7	512.7	216.7	156.3	180



# Coal Production

- Total **59,915** tons of coal was produced in September 2011;
- Highest level of coal production per month in Tajikistan for the past 20 years;
- Total **171,273** tons of coal was produced during 9 months in 2011 (**15,595** tons more than in 2010);

# Mini Hydro Electric Plants

- Total 23 mini HEPs were constructed during 9 months in 2011;
  - Khatlon Province – 11 mini HEPs;
  - Sughd Province – 4 mini HEPs;
  - Direct Rule Districts – 7 mini HEPs;
  - GBAO – 1 mini HEP;



# Heating Season in Tajikistan

**Starts November 15, 2011**

## **Winter Preparedness Plan of the Government of Tajikistan**

**(PLEASE contact the Ministry of Economic Development and Trade)**

# Challenges at local level

- Location-by-location allocation of electricity is done at the local level based on the amount of electricity allocated from the overall supply;
- Weak capacity of electric switching yards, and transformers to handle the increased demand during severe colds weather or other high demand can lead to equipment failures cutting electrical supplies.

# Feedback from population

Population reported about cut off of electricity in the regions as follows;

- Regar Districts, village Pakhtaobod: during one month the electricity is supplied in the morning from 06:00 until 08:00 and in the evening from 18:00 until 21:30.
- Shahrinav District, jamoat Khasanov: during one month the electricity is supplied in the morning from 05:00 until 07:00 and in the evening from 18:00 until 22:00. In the center of the district there is no electricity from c 09:00 until 18:00.
- Yavan District: there is no fixed electricity rationing schedule. Electricity is supplied and cut off out of the schedule. In the morning electricity is available from 05:00 until 11:00, in the evening from 17:00 (18:00) until 23:00. Yavan district has many manufacturers.
- Kanibadam: electricity is available in the morning from 05:30 until 17:00 and in the evening from 17:00 until 21:00.

# Feedback from population...

- No fixed time schedule for electricity cut off;
- Some people believe electricity is sold to Afghanistan;
- Lack of communication between Barki Tojik and population;

# Conclusion

- Electricity rationing is needed for better water management at Nurek HEP during fall-winter season;
- Electricity in rural areas can be substituted by coal and wood for heating/cooking purposes;
- Water volume is above 6-year average;
- Energy security depends on weather conditions;
- Local level constrains (transformers, electricity switching yards, local decision to distribute electricity).

# Contacts!

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**THANK YOU!**