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Biofuel in Kyrgyzstan

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Kyrgyzstan in the map of Asia

Biodiversity of Kyrgyzstan

- Rich diversity of resources – species, ecosystems and land forms

- High amount of species diversity – about 1% of all known aspects on 0.13% of Earth surface

Atlas of Kyrgyz SSR. Nature conditions and recourses – State Administration of Geodesy and Cartography.– T.1.–1987
National Strategy and Action Plan on conservation of biodiversity of the Kyrgyz Republic, Bishkek, 1998

Policy / Renewables

- The National Energy Programme (through 2010);
- The Strategy for the Fuel and Energy Complex Development (through 2025)
  - (call for the rapid expansion of renewables, inter alia by building some 100 small hydro power plants)

- The Law of the Kyrgyz Republic "Law on Renewable Energy Sources," #283, December 31, 2008
  - Target – development and production of renewable energy sources, improvement of energy structure, diversification of energy resources, improvement of social condition of local people, providing energy safety of the republic, environmental protection and sustainable development of the economy

New edition is under revision

Renewables potential

- Solar energy
- Biomass energy potential
  - The Kyrgyz Republic, owing to its great number of livestock (cattle, pigs, and poultry), has significant potential for use of livestock waste for production of combustible gas (methane) and high-performance organic fertilizers
    - 1,6 billion cubic meter methane per year
  - However, now, only limited part of this potential is used
    - From 50 to 80 biogas facilities in the republic (commercial and non-commercial use)

Biogas

- Biomass is one kind of renewable energy source. Biogas production is one possibility to produce electricity and heat from this biomass. Within the biogas process, bacteria degrade carbon hydrogen compounds under anaerobe conditions
- Methane, carbon dioxide, some trace gases, and a nutrient rich slurry are produced by this biogas process.
- The originated methane can finally used for heating, electricity generation or fuel production.

Biogas

- Biogas is the gas evolved in the fermentation of organic waste (wastes of livestock breeding, processing industry, and municipal economy; food wastes, etc).
- It was known long ago and called “marsh gas”, in nature, the conditions within a marsh are good for the life activity of methane-producing bacteria, which breaking up organic residues, evolve methane, called “biogas”.
- The heat evolved in wintertime from accumulated manure of livestock farms is evidence of the life activity of methane-producing microorganisms.
- The composition of biogas is analogous to the composition of methane, only with an impurity of carbon dioxide, hydrogen sulfide, hydrogen and other gases. Methane-producing bacteria live in anaerobic (without oxygen) conditions at 15-55°C.
- The main conditions for obtaining biogas are a feed stock (organic waste), temperature conditions, and the absence of oxygen. Under household conditions, it is easy to create such conditions and produce the combustible gas methane, with characteristics close to those of natural gas.

Advantages of biogas production

- Availability of raw materials
  - Farming and animal husbandry – important sources of income in Kyrgyzstan's mountain communities
- Raising crop yields via creating new sources of organic fertilizer
- Increasing natural gas supplies for heating and cooking in rural communities
- Decreasing GHG
- Decreasing of pressure to natural resources
- Possibility of using in household level

Public Fund "Fluid"

- Established in 2000
  - Goal – developing and promoting biogas and energy-saving technologies in Central Asia, which will increase economical and environmental welfare of local people and potential of sustainable development
  - The activity of PFF in KR is addressed to solving problems like utilization of husbandry waste and decreasing of GHG
  - Up to now there're established 24 biogas facilities by PFF
  - Another component of PFF activity is monitoring of operation of biogas facilities and training of biogas facility users

Example of Biogas facility

- Public Fund "Fluid" (PFF)
- Location – Petrovka village, Chui valley
- Association "Farmer" (7 farms)
- Raw material – livestock (cattle, pig) waste
  - 10 ton manure processed per day
    - Fertilizer → 300 ha land
    - Biogas → heating, cooking, fueling of 2 cars and generator of the farms
- The biogas facility in Petrovka village is used in trainings on building and operation of biogas plants

Obstacles in developing biogas production

- Although profitability of biogas production, efforts of international and local organizations on promoting biogas technologies there are not significant results in the republic
- Main impediments of biogas production expansion are:
  - Structural impediments
  - Financial impediments
  - Informational impediments

cont.

- Structural impediments
  - Predominance of transhumance way of husbandry in the republic – the high risk of building biogas plants
  - Conservatism or distrust to new technologies
- Financial impediments
  - Shortage of financial and credit mechanisms of funding biogas production
    - ~45% population is engaged into agriculture
- Informational impediments
  - Low awareness of local people on biogas plant possibilities

Increasing of public awareness

- PFF makes intensive work on public awareness and advertising
- Trainings about potential and ways of biogas technology in KR by PFF supported GEF/UNEP, ADB Project on regional development of agriculture
- With financial support of UNEP, GEF/SFP there has developed and published Guidelines “Biogas Technology in the Kyrgyz Republic” and “Building biogas facilities” by PFF
  - (biogas plants structure, scheme, exploitation norms, service, raw material and its processing, methods of using biogas, biofertilizer)

Thank you

for your attention