

# Technical workshop: Practical aspects of sustainable energy development in Kyrgyzstan

Promoting small hydropower development in Kyrgyzstan

Bishkek, October 5, 2023

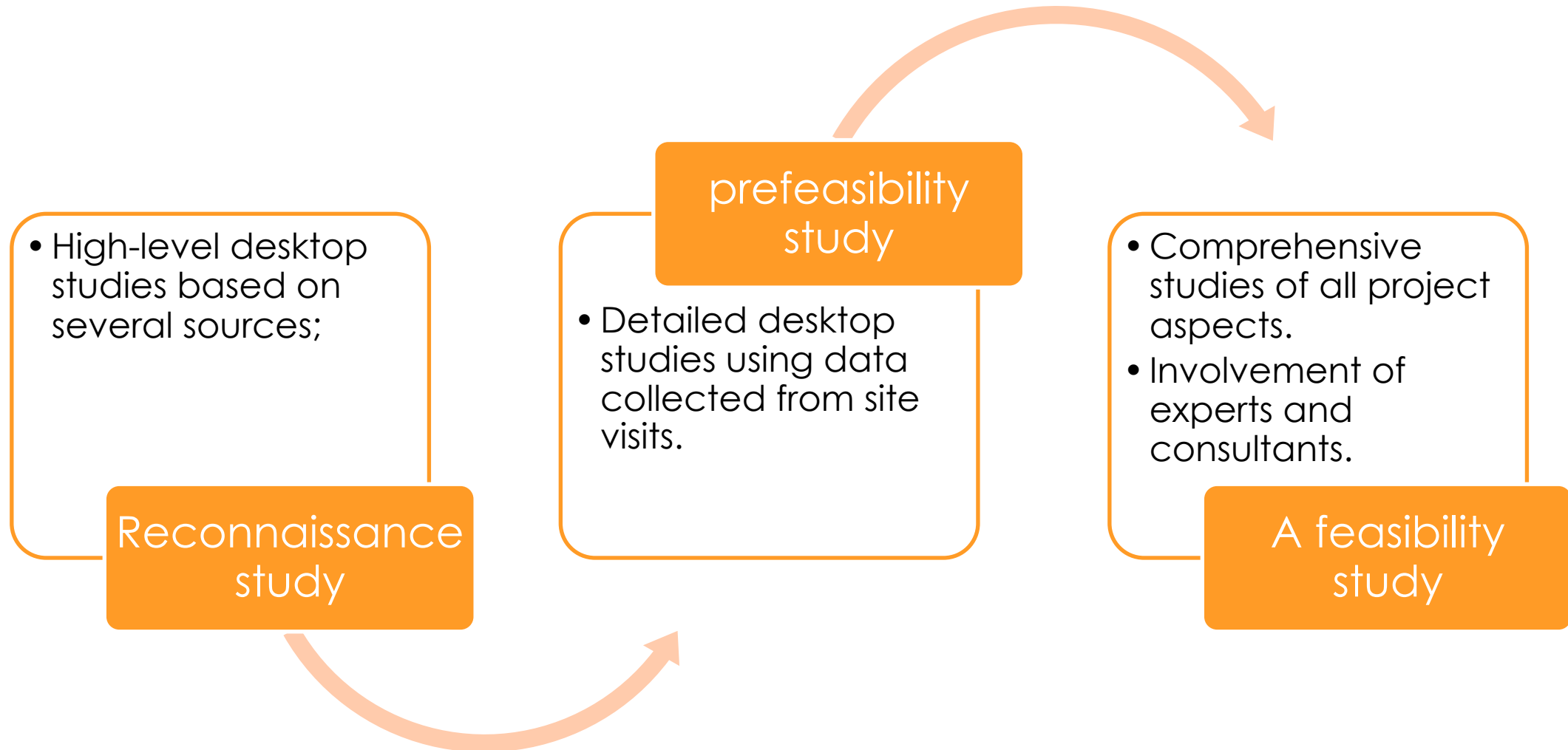
## GEDF approach to the development of pre investment documentation

Nugzar Khaindrava, Project Management Director  
Georgian Energy Development Fund (GEDF)

# GEDF approach to the development of pre investment documentation

Bishkek, 2023

# Decision making process.



# Main criterias of the project documents

## Bankable Feasibility Studies According to the Applicable Laws and Regulations:

**Bankable:** Recognizing and addressing potential risks, outlining measures to minimize or prevent them; presenting energy production forecasts, cost estimates, and financial evaluations to enable investors to decide on project participation.

**Applicable Laws:** Taking into account the current legal framework within the country to meet the official institutions for permitting / approval process;

**Regulations:** Developing studies in accordance with established engineering best practices, acknowledged guidelines, codes, and standards.

# Content of the Feasibility Study (1/2)

- Definitions of the location and key parameters;
- Topographic survey and preparation of maps;
- Geology, geophysics (investigations), seismic risk analysis;
- Construction materials study;
- Meteorological and hydrological studies;
- Alternative analysis;
- Hydraulic studies;
- Technical design;
- Infrastructure;

# Content of the Feasibility Study (2/2)

- Energy generation;
- Connection to the grid and transmission line;
- Bill of Quantities and Costs estimates;
- Economical and financial analysis;
- Procurement planning and implementation schedule;
- Environmental Impact and Social Risk Assessment

# Some key challenges / aspects to be taken into consideration at early stage in the development of HPP Project

- Geological risks / natural hazards risks assessment;
- Climate changes impact assessment;
- Environmental Impact and Social risks assessment.

# Financial Model (1/2)

## Key Inputs:

- **Capital Expenditure (CAPEX):** Initial investment required for project development.
- **Operating Expenses (OPEX):** Costs associated with running and maintaining the HPP.
- **Revenue Assumptions:** Projections of income generated through energy sales.
- **Capital Structure:** Funding composition of company.
- **Interest Rates:** The cost of borrowing and discount rate for cash flows.
- **Construction Timeline:** Duration and phases of project development.



# Financial Model (2/2)

## Key Outputs:

- **Financial Projections:** Forecasted income statements, balance sheets, and cash flow statements.
- **Net Present Value (NPV):** Present value of future cash flows.
- **Internal Rate of Return (IRR):** Discount rate at which NPV equals zero.
- **Payback Period:** Time required to recoup the initial investment.
- **Sensitivity Analysis:** Assessing how variations in inputs affect outcomes.



Funded by  
the European Union

Nugzar Khaindrava  
n.khaindrava@gedf.com.ge

