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BUILDING PARTNERSHIPS FOR ENERGY SECURITY

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# INOGATE Study Tour/Workshop

## Energy Efficiency & Renewable Energy Sources




# Financing structures, Models and Norms Renewable Energy

**25 February – 01 March 2014| Yerevan, ARMENIA**

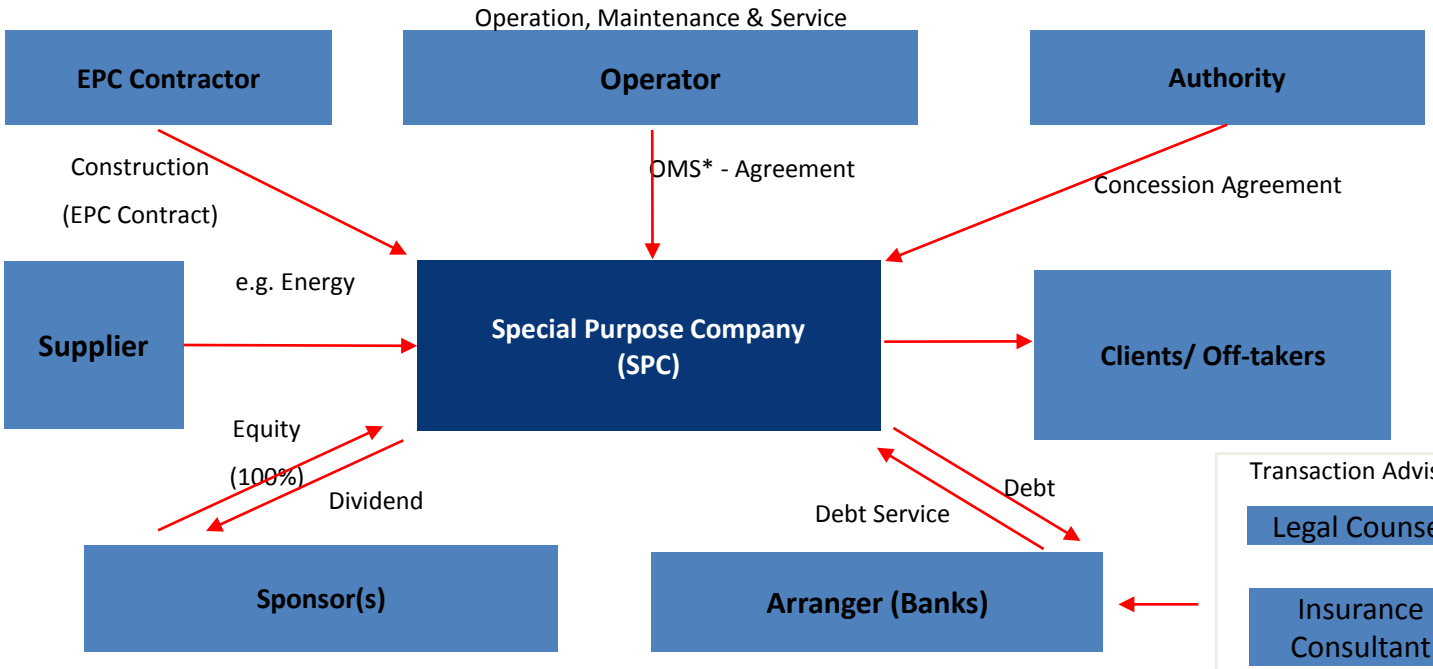
Presentor: Werner Weihs-Raabl – Head Group Infrastructure Finance, Erste Group

Source: Erste Group

# Financing Infrastructure

## Key Aspects - Transaction Structure





# Financing Infrastructure

## Key Aspects - Phases



### Project Finance Phases

Two phases can be distinguished:

- **Construction phase:**
  - project related assets are **designed, engineered** and **constructed**
  - this phase generates **no cash inflows**
  - drawdown of the loan facility is synchronous with the payment schedule of the construction contract (**progress-orientated**)

- **Operating phase:**
  - project starts business and generates cash flows,
  - cash flow used for redemption of the loan facility

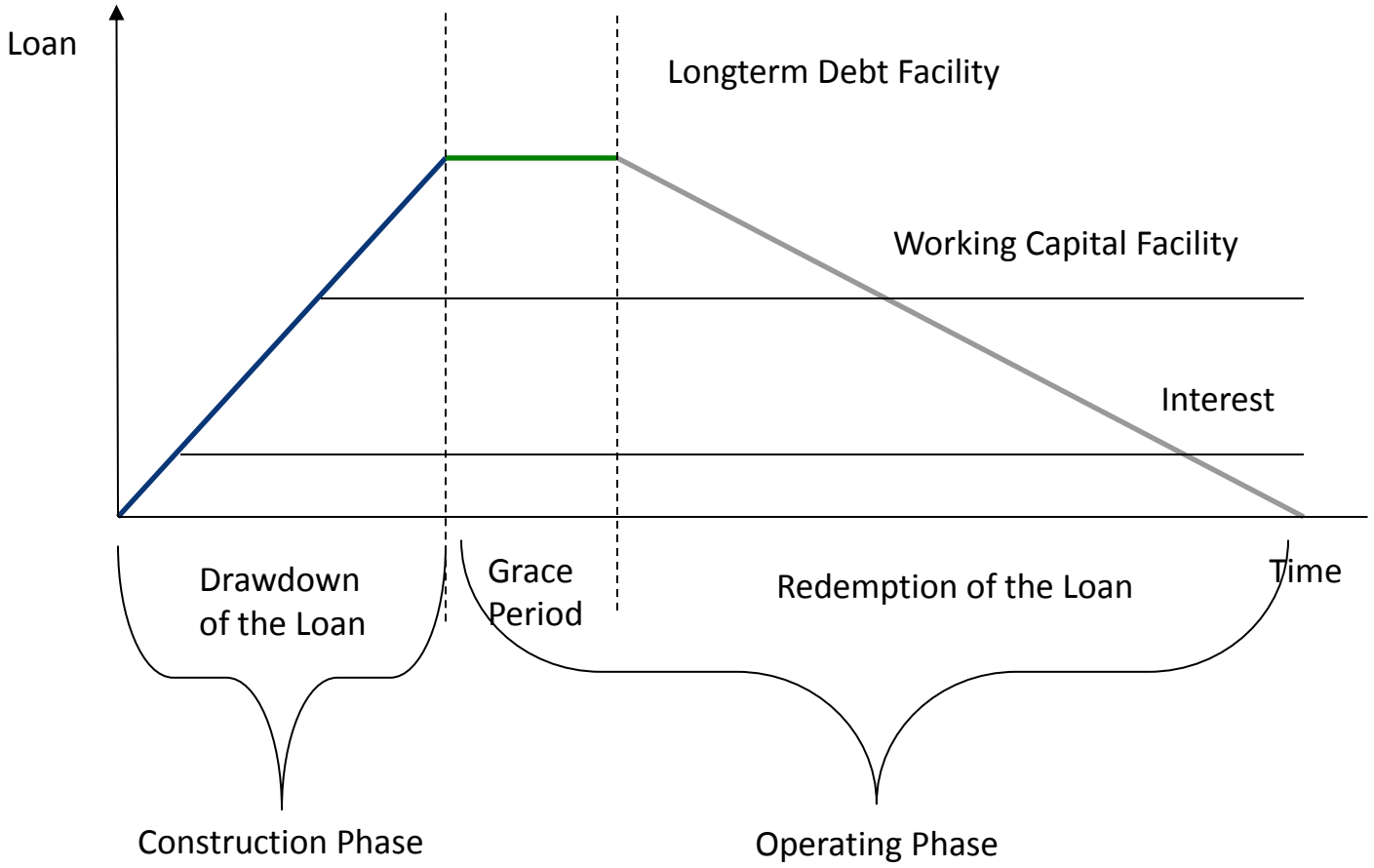
- the **transition between these two phases** is characterised by an **interim phase** (some days up to several months)
  - a pilot operation generates first revenues
  - plant construction is not finished for lack of turn key delivery or final settlement

# Financing Infrastructure

## Key Aspects – Debt Profile



### Term Loan Facility: Drawdown and Repayment Profile



# Financing Infrastructure

## Key Aspects – The Feasibility Study



### Feasibility Study

- done by a technical or industrial expert
- **independent** to the project parties
- **accepted** by the lender
- goal: to **prove** that the cash flows cover the requirements of the project facility even in a worst case scenario
- an instrument to support the decision making process of
  - the lender
  - the sponsor

# Financing Infrastructure

## Key Aspects – Due Diligence I



### Due Diligence

- DD is an abbreviation for **a comprehensive and substantial plausibility check of main project** parameters based on
  - a business plan
  - a possible feasibility study
  - other information and documents required

- especially lenders look closely for **deal breakers** (facts or circumstances which conflict with Project Finance)

- identified risk can **lead to**
  - stronger commitment by sponsor(s)
  - optimization of risk allocation
  - introduction of additional risk mitigation strategies
  - consideration in pricing

# Infrastructure Financing

## Key Aspects – Due Diligence II



### Due Diligence

- **based on provisions in the mandate agreement**
  - appropriate term
  - disclosed information
  - break up fee
- due diligence goes far **beyond the scope of banking know how**;
  - cooperation with experts, lawyers, auditors
- goal of due diligence: **best possible transparency in respect of the risk profile of a project**

# Financing Infrastructure

## Key Aspects – Financial Engineering



### Financial Engineering

**Steps**

1. **definition** of relevant **sources** of finance
2. **analysis** of the identified sources of finance
3. identification and evaluation of **securities**
4. **analysis and evaluation of risk allocation** and narrowing down **the risk adequate pricing** of a project facility
5. adapt **debt finance potential** to the cash flow
6. adapt **redemption structure** according to the annual cash flow
7. analysis of the impact of the finance structure on the **solvency** and creditworthiness of the project company
8. specifications in respect of the **excess cash flow**
9. determinations of the **financial covenants**

# Financing Infrastructure

## Key Aspects - Cash Flow Analysis (I)



### Financial Model

**Purpose of a financial model**

- Assessment of the financial feasibility
- Development of the financial structure
- Support in negotiations
- Support for developing the term sheet
- Analysis of downside scenarios
- Risk analysis
- Testing the risk mitigants
- Stress-testing of the repayment capacities

**Typical Downside Scenarios**

- Completion delay
- Cost overrun
- Interest rate level
- Exchange rates
- Reduction of off-take price and/or quantity
- Cost increase
- Combined Downside Case,

# Financing Infrastructure

## Key Aspects - Cash Flow Analysis (II)



### Cash Flow Scenario Analysis

- Scenario analysis is the process of analysing alternative financial outcomes by determining critical cash-flow sensitivity factors and assessing the impact on the financial viability of a project
- In Project Finance in particular it is possible to test what would happen to the key project ratios or project's return if some of the key drivers were altered particularly in the downside / worse case scenarios such as
  - CAPEX increase
  - Unexpected Maintenance need
  - Revenue drop
  - Operating expenditure increase
  - Interest Increase for Senior Loan
  - Different Maturity/ Debt Repayment profile

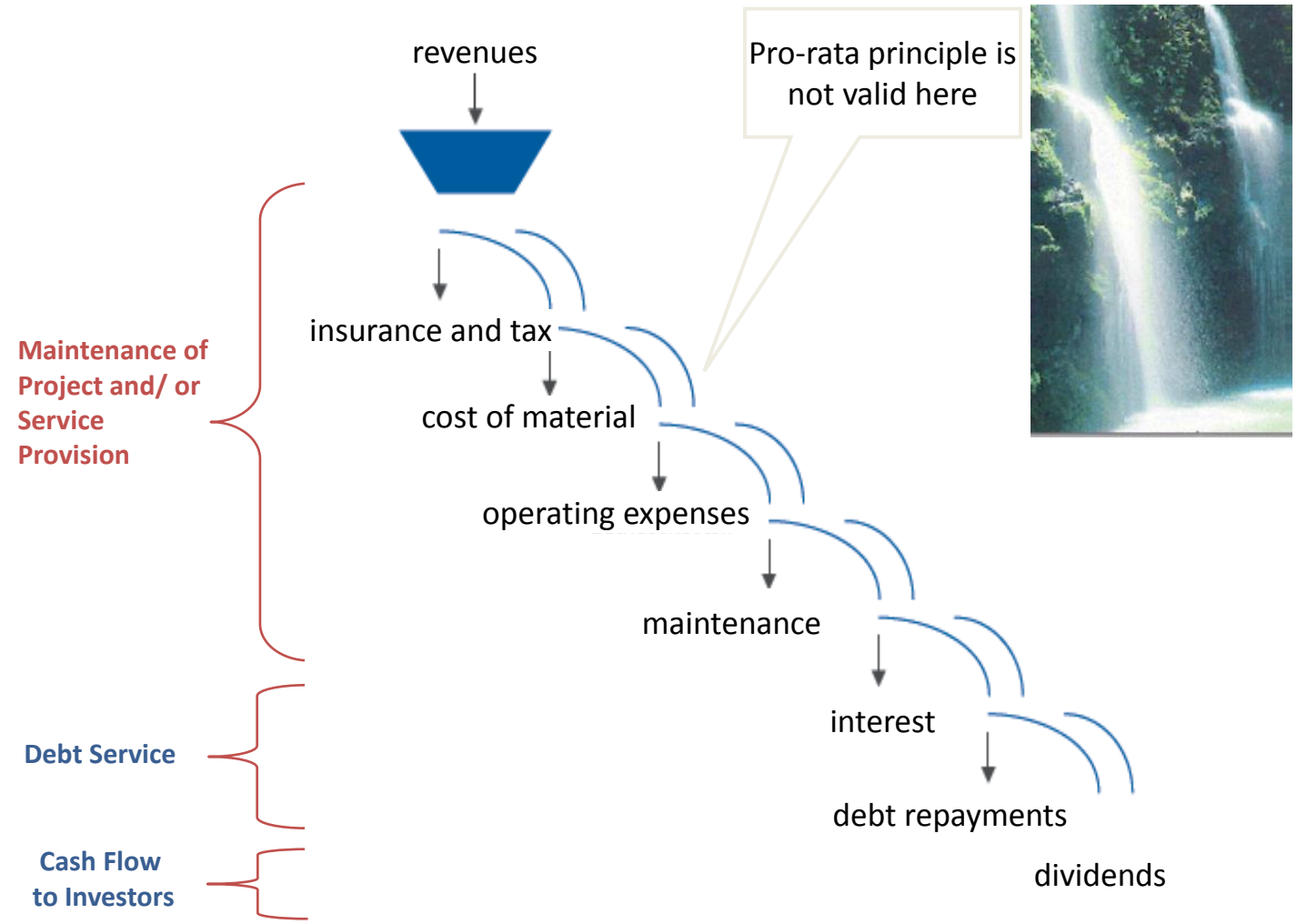
### Cases

- Because it is simply not possible to predict the future, it is common to set up alternative scenarios as: pessimistic, expected and optimistic, and run them through a model
- Each scenario will consist of a set of assumptions and inputs chosen by the user.
- Scenario testing is quick and it is easy to show the results in a comprehensive way, presenting best & worst case extremes

# Financing Infrastructure

## Cash Flow Analysis – Cash Flow Waterfall





# Financing Infrastructure

## Erste's View: Required Documents for Analysis

DOCUMENTS | WORKFLOWS

### Mandatory documents

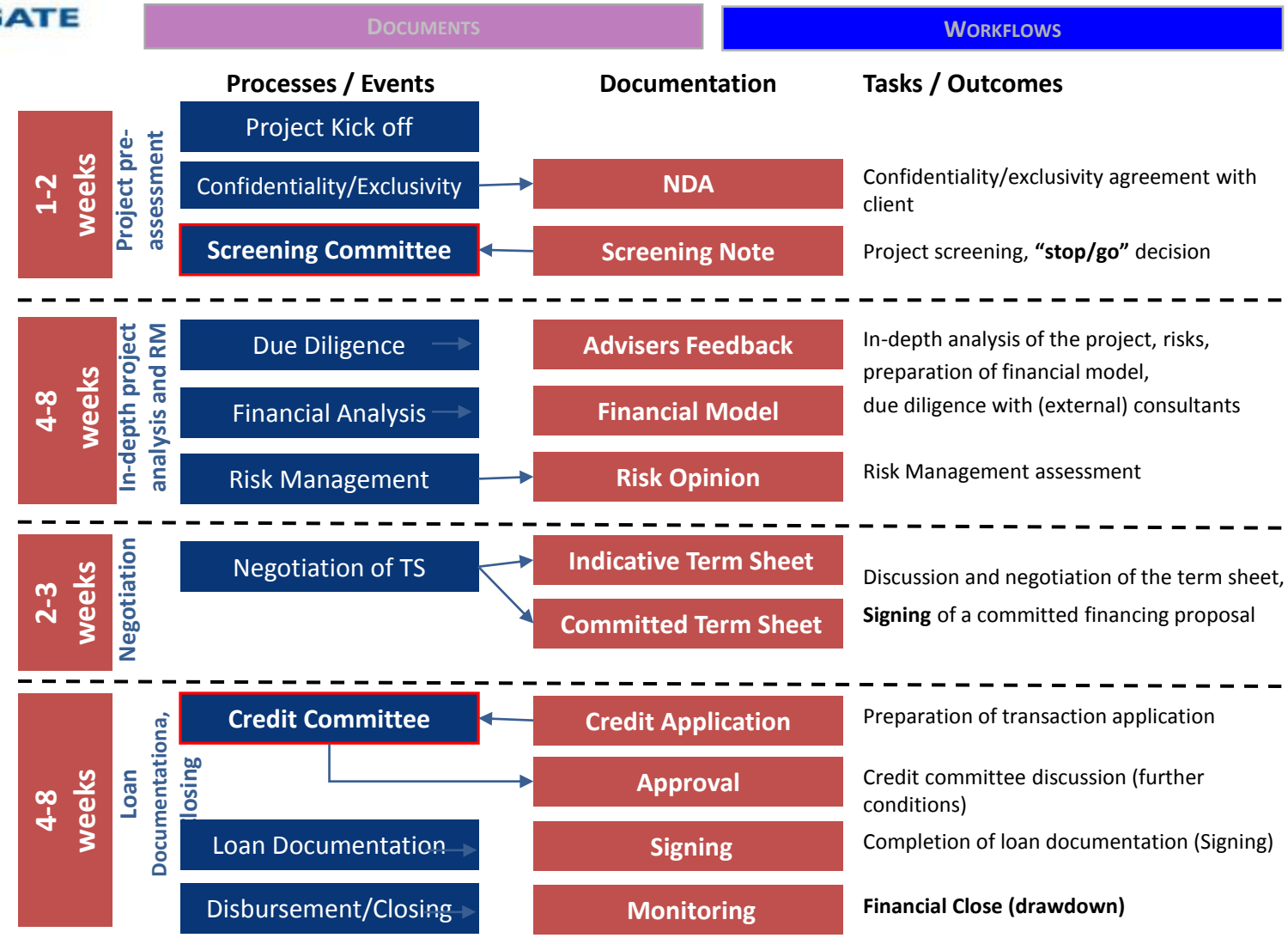
- Business Plan
  - Cash Flow forecast
  - Sources and uses of funds
  - Asset cost split
  - Financing Parameters
  - Financial Model on Cash Flow basis
    - → hard and soft costs and detailed exit year calculations
    - → a development budget
- Project Information Memorandum:
  - Key project stake- and shareholder, initiators
  - Asset description, capacities, technical data
  - Regulatory framework and market description
  - Risk analysis
  - Project economics and financial plan
- Feasibility Study
  - Macro and micro environmental assessment
  - Technical assessment of equipment used
  - Demand and growth potential assessment
  - Benchmark and competition analysis
- Financials
  - CF Statement, P&L Statement
  - Annual Report of Sponsors (if available)

### Supplementary documents

- An initial outline architectural master plan;
- An environmental and a social impact assessment;
- Local and government authority permits to allow the construction and operation of the project
- Project Contracts
  - EPC
  - Operation & Maintenance … ect.
- Concession Deed
- Shareholders Agreement
- Off-take Agreement
- Contracts with relevant advisers
  - legal
  - tax
  - technical

# Financing Infrastructure

## Group Infrastructure Finance – Internal Workflows

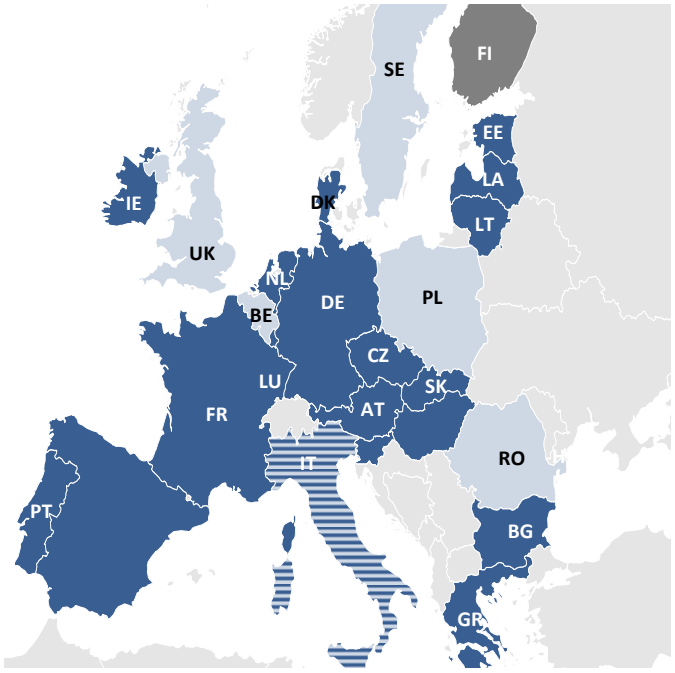


# Introduction to Case Study

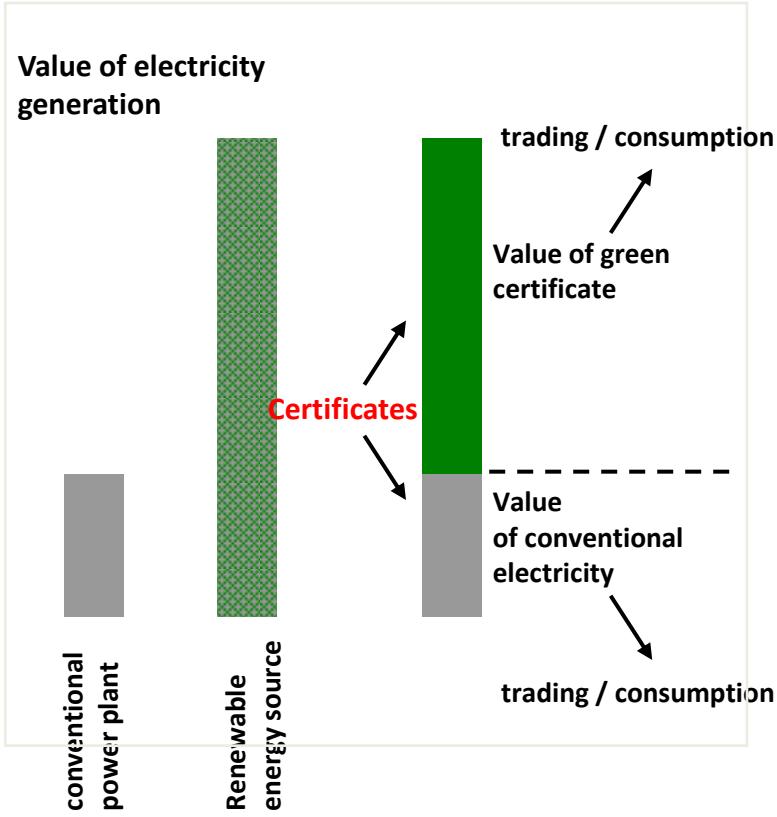
## Support Instruments: **Green Certificates** vs. Feed in Tariffs

- The majority of EU Member States applies a Feed in Tariff system.
- 6 countries use a quota obligation based on tradable green certificates as main instrument.

### Support Instruments in Europe




### Green Certificate Mechanism



# Introduction to Case Study

## 80 MW Wind Farm "Chirnogeni" – Glossary (I)

### EPC (engineering, procurement, construction)

- Under an EPC contract a contractor is obliged to deliver a complete facility to a developer who only needs to turn a key to start operating the facility, hence EPC contracts are sometimes called turnkey construction contracts. In addition to delivering a complete facility, the contractor must deliver that facility for a guaranteed price by a guaranteed date and it must perform to the specified level.

### Full load hours

- A full-load hour is an hour in which a wind turbine produces at full capacity. An annual number of full-load hours is the time it will take a given wind turbine to yield its annual production if it is able to produce with its installed capacity all of the time. Depending on the placement of the wind turbine with respect to the wind, the annual average full-load hours onshore is between 1500 and 3000, with an average for all land-based wind turbines of approximately 2000 hours. At sea, 3500-4000 full-load hours are calculated.

### Net capacity factor

- Production assumed under probability case (P50, P75, P90,..) /maximal possible production*8760 (hours per year)

- The net capacity factor of a power plant is the ratio of the actual output of a power plant over a period of time and its potential output if it had operated at full nameplate capacity the entire time. To calculate the capacity factor, take the total amount of energy the plant produced during a period of time and divide by the amount of energy the plant would have produced at full capacity. Capacity factors vary greatly from plant to plant.

# Introduction to Case Study

## 80 MW Wind Farm "Chirnogeni" – Glossary (II)

### P50/P90 Confidence Level

- P50 / P90 denotes the level of annual wind-driven electricity generation that is forecasted to be exceeded 50% / 90% of the year.

### PPA (Power Purchase Agreement)

- A Power Purchase Agreement (PPA) is a legal contract between an electricity generator (provider) and a power purchaser (buyer, typically a utility or large power buyer/trader). Contractual terms may last anywhere between 5 and 20 years, during which time the power purchaser buys energy, and sometimes also capacity and/or ancillary services, from the electricity generator.