

Developing Decentralized Cogeneration in Romania: RAEF experience

Alexandru-Valeriu Binig
Director Energy&Utilities

Enterprise Capital – a management company of the
Romanian American Enterprise Fund

UN – ECE – Committee on Sustainable Energy –
European Clean Energy Fund Seminar
Geneva 21.02.2008

Romanian-American Enterprise Fund (RAEF)

- *Mission:*

Established by the President and the US Congress in 1994 to promote free enterprise and entrepreneurship in Romania, capitalized initially with USD 61 million by the USAID

- *LT Objective:*

To play a formative role in securing the market economy by establishing a powerful center for private capital investment in Romania

- *Focus:*

Financial and energy sectors for direct investment and investment banking services

EU countries in transition

- Have to reconcile:
 - Need for huge investment in the sector
 - Adoption of *acquis communautaire* in view of accession = liberalization
 - Keeping tariffs/prices low = attracting development finance at lowest costs = reducing risks perception
- Apparent Solution = sovereign investment.
- If no sufficient funds, back to initial problem...

Future of power generation in Romania - 1

- “Termoelectrica” (state owned generators) hold injection points in the HV transmission system. New injection points might necessitate network reinforcement, may delay due to authorisations, etc.
- JVs with “Termoelectrica” are still difficult - who are the partners, in-kind contribution, what is to be demolished, defining the new project, assessing feasibility, etc
- Market arrangements do not allow guaranteeing off-take (PPA) for long term - recourse to wholesale market did not bring in till now private investors in large scale generation
- Cernavoda NPP unit 2 completed (state investment)
- **Conclusion: one cannot identify large private power generation projects in advanced development phase**

Future of power generation in Romania - 2

- Meanwhile, industrial and urban solutions for heat supply use obsolete boilers
- A solution could be decentralised power generation. Combined with covering a heat demand, it leads to distributed cogeneration.
- A pure electricity project at this stage would have problems in surviving on the Romanian electricity market – heat sales are a must for a high overall efficiency
- It is an EU and worldwide trend

RAEF Idea – RIEEC

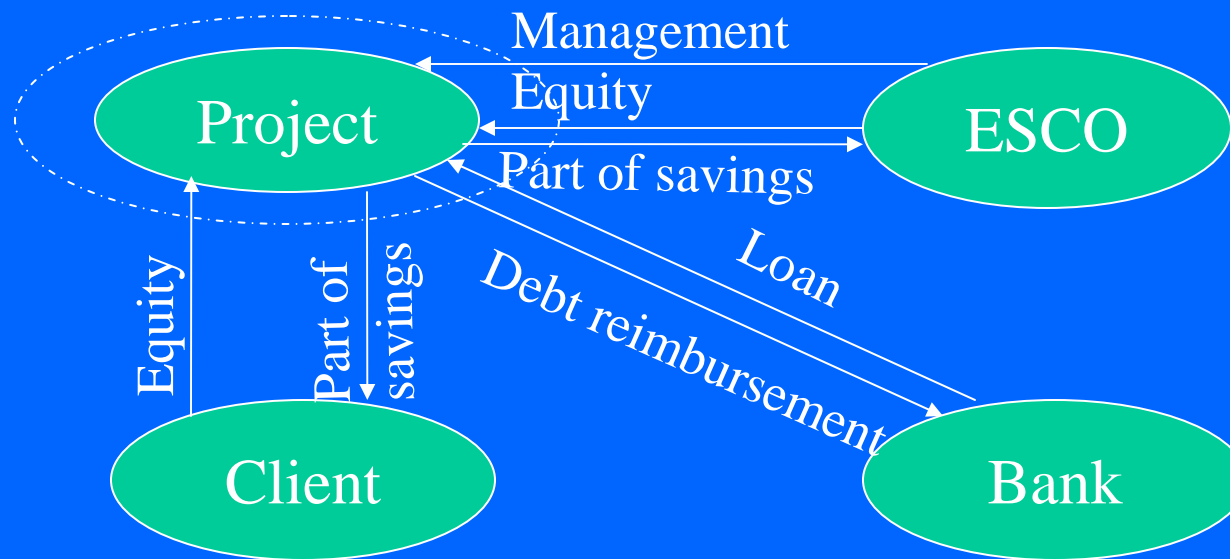
(Romanian Industrial Energy Efficiency Company)

- Development of cogeneration capacities at premises of industrial consumers initially in BOOT schemes
- In principle, the power and heat consumption is partially covered, so as to avoid needs to sell electricity to the grid (Electrica)
- Investment recovery by payment of electricity and heat (with reduction of total expenses for the Client)
- **The project developer takes the risk of a single client, not of the wholesale electricity market still in reform**
- 15 MUSD (3-4 MUSD RAEF, 11 MUSD BERD)
- 3 projects up and running
- Portfolio of candidate projects in development phase (pulp&paper, beer, wood, medicines, rubber, chemistry, etc)

ESCO utilization

Classical “project finance” solution

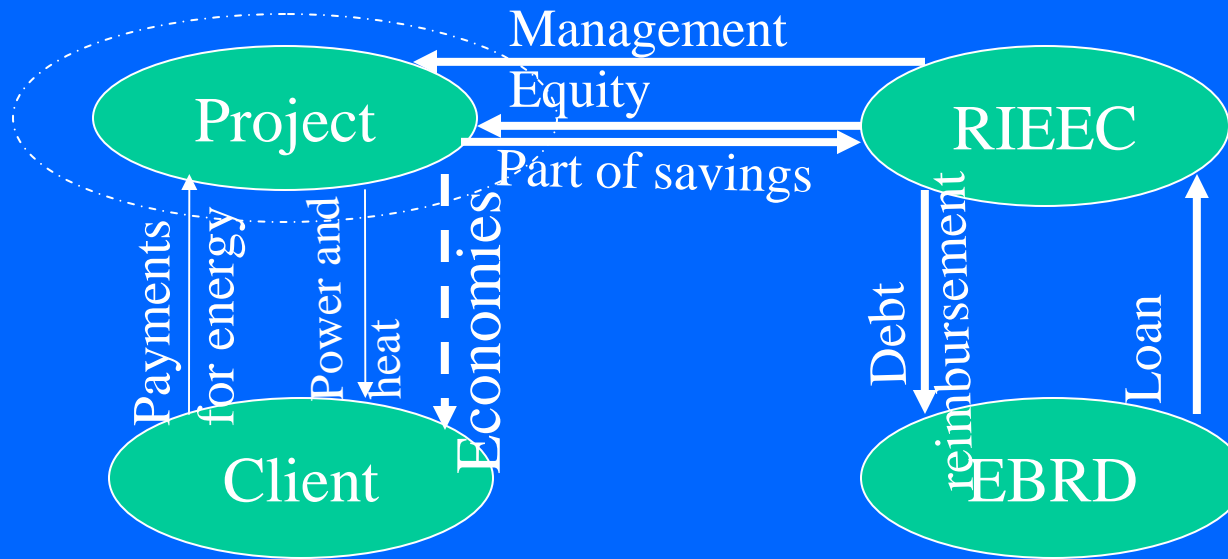
Credit based on project cash-flow



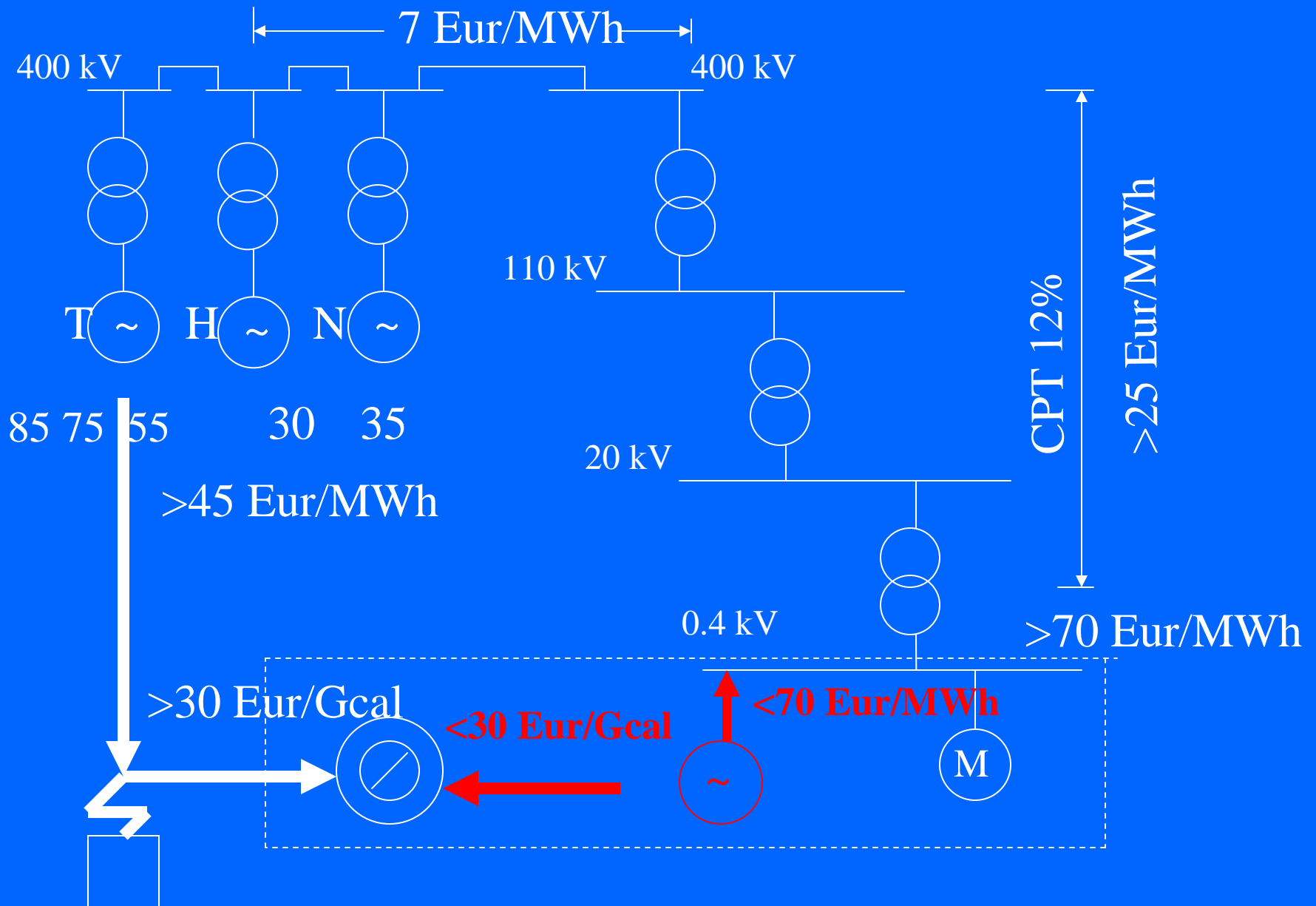
RIEEC Solution

Third Party Financing

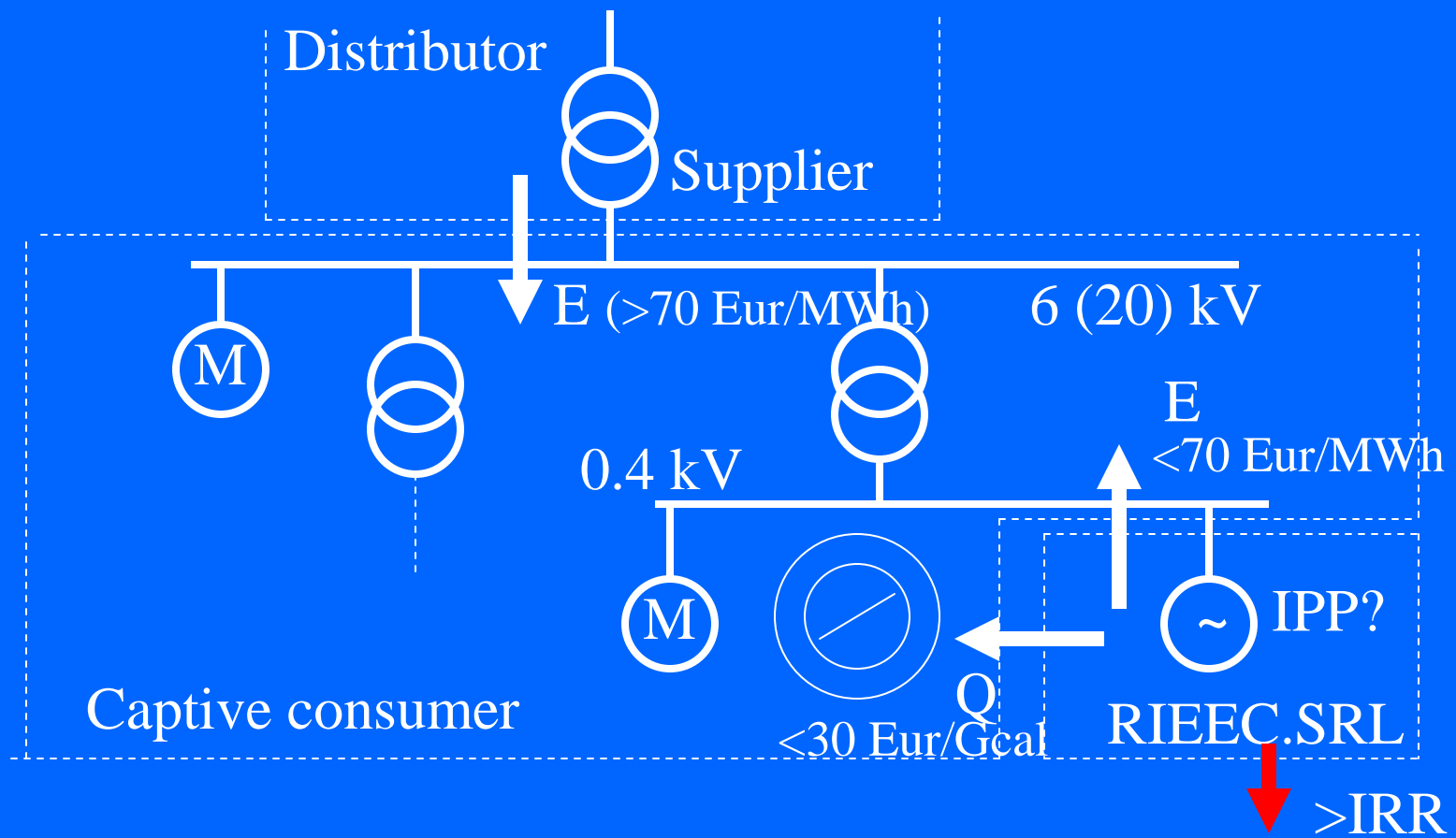
Credit based on project portofolio cash-flow -
Inovative financing mechanism



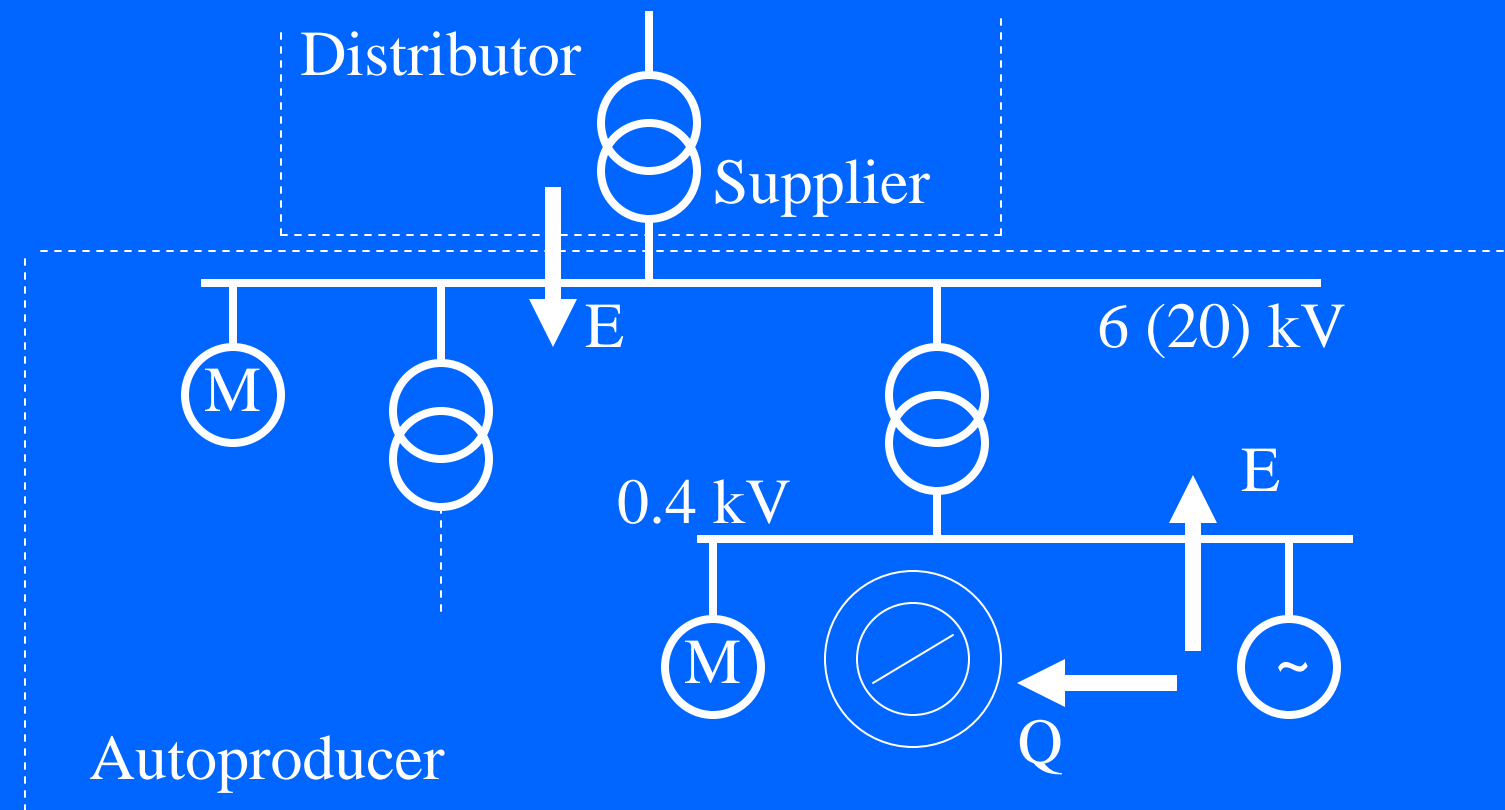
Where are the opportunities ?



Regulating the commercial relationship with the client-host - years 1-7(?) - RIEEC version

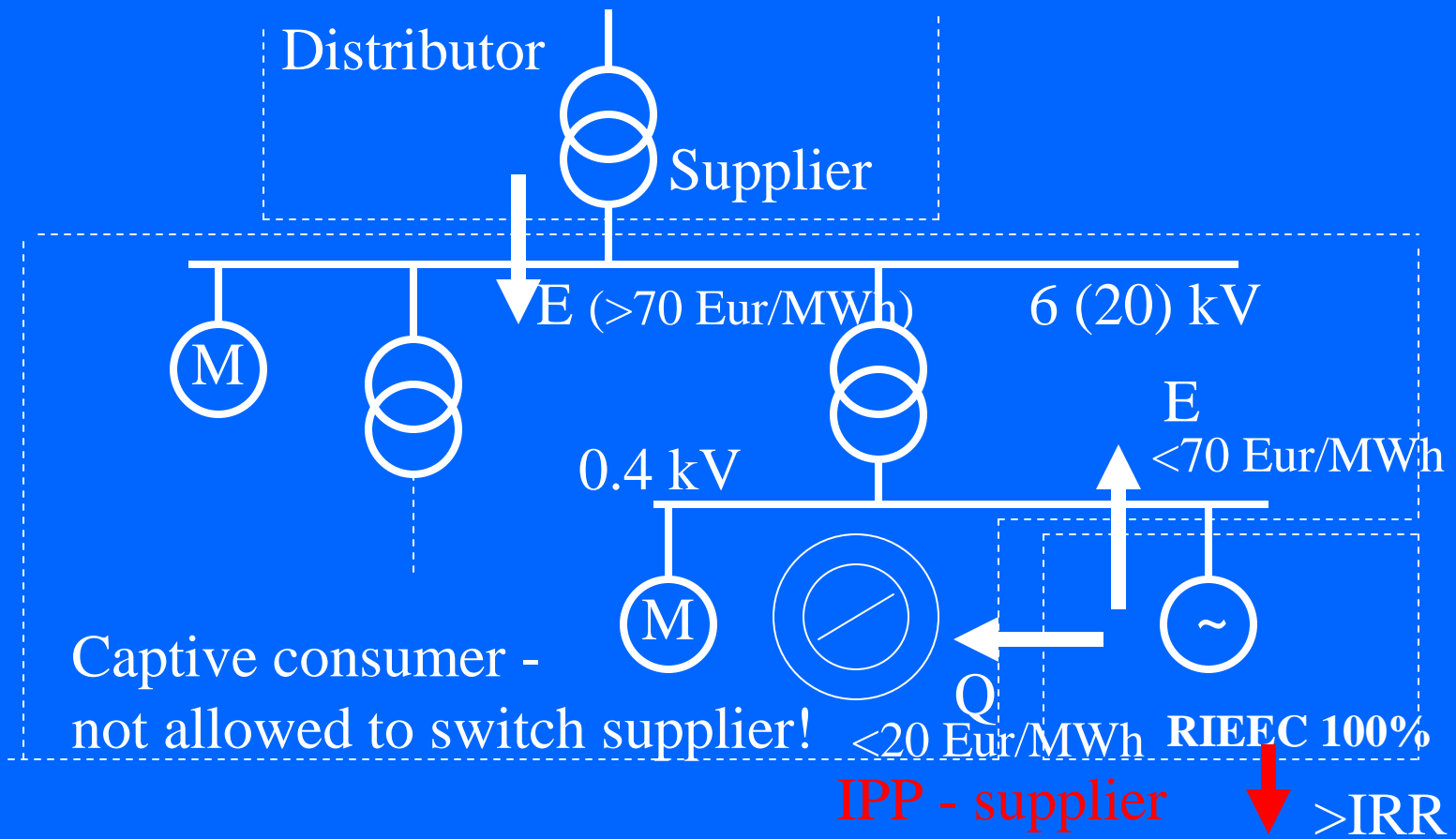


Regulating the commercial relationship with the client-host - year 7 on - RIEEC version



RIEEC - 1\$!

Regulating the commercial relationship with the client-host -present regulatory framework



Overcoming barriers

- **Autoproducer:**
 - “Physical or legal person that produces, besides its basic activities, the power and heat in cogeneration, necessary mainly for the own consumption.”
(Electricity Law)
- **RAEF/RIEEC proposal**
 - Assimilating the industrial customers at whose premises, on whose networks, third parties develop (in BOOT schemes) decentralized cogeneration facilities, as AUTOPRODUCERS. Anyhow, they will become owners of the capacities

Other problems encountered

- Equipment in leasing
 - financial
 - operational
- Impact of consumption diminishing on average price of electricity supplied to the client by Electrica/other suppliers
- Should Client's network be reinforced? Stranded costs on Electrica network?
- Other permits, authorizations, licenses
- Choice of technologies (gas engine, gas turbine, etc) starting from local conditions, consumption patterns, etc
- Equipment suppliers, specialized service providers, speed of intervention in cases of equipment failure
- General contractors

RIEEC vision

- A new type of utility, managing a flexible portfolio of efficient generation capacities, monitoring from one center by on-line IT links the operation of all decentralized capacities, dispatching maintenance staff only upon need, managing better the supplies, thus reducing many costs still encountered by traditional utilities.
- “Moving away from commodity transactions towards contracts for services” (Walt Patterson)
- Better risk management while wholesale market still in reform process
- Political/geographical borders not relevant
- Fiscal, legislative, regulatory regimes might create borders

Lessons learned by RAEF (for use by ECEF)

- Why not competing with clean energy on the wholesale electricity market?
- Why not supplying electricity&heat for municipalities?
- How to deal with industrial customers/hosts?
- Some regulatory risks
- Lack of “bankable” feasibility studies
- Conclusion: clean energy projects are not necessarily investment grade at this stage in Romania

Why not competing with clean energy on the wholesale electricity market?

- Competing an average (hydro, thermal, nuclear) remote state-owned generator
- Incentive schemes for RES – insufficient
 - Green certificates 24-42 Eur/MWh - Scheme valid until 2012
 - Future of support scheme not yet predictable
 - Problems in Brussels with the NAP for Romania
 - No clear horizon for joining the ETS, no clear image of heritage of AAUs to be traded
- Grid connection investment is in charge of developer
- Scheme for cogeneration support offers Market Closing Price for Day Ahead Market
- New Regulator proposal for feed-in tariff at low level, no approval yet

Why not supplying electricity&heat for municipalities?

- DH is practically bankrupt in Romania
- Households seek individual solutions for cheaper or higher quality heating – the trend will be hard to revert
- Customer base not certain – even legislative movements to prevent disconnections from DH did not prove successful
- Existing CHPs are overdimensioned for present residential consumptions, after collapse of industrial consumers
- No new residential projects counting on DH
- Inadequate energy concepts for large cities
- Lack of education in large project management with local authorities
- Short local election cycles make decision making delicate
- Lack of PPP legislation
- DH transmission/distribution systems not fully rehabilitated – losses not completely under control
- Lack of payment capability by population – subsidies (local, central)

How to deal with industrial customers/hosts?

- Predicting market evolution for electricity and for primary energy (gas, water, biomass, etc) is still difficult
- Defining the Client/Host consumption pattern is tricky
- Hard to make clients accept the valuation of the Third Party Finance merits – they want prices below market level, even if they will inherit (for 1 Euro) a fully refurbished generation facility at the end of the contract
- Additional effects of the investment not acknowledged and paid for (e. g. increase of gas consumption by the industrial premise brings more favourable supply terms)
- Care should be taken about penalising customers/hosts for not meeting contractual consumption obligations (they should pay, but they are the hosts...)
- Many aspects to be covered by the long terms contractual framework: separation of property, access to facilities, liabilities, safety procedures, unforeseen events, etc
- The Client buys the balancing energy at worse terms than before and the effects on the overall electricity bill are not clear

Some regulatory risks

- Lack of experience in permitting such projects – some wind power developers complain that they have to obtain 86 different authorisations and permits
- At present, wind projects for some 4000 MW are under development, and (too) many received initial endorsements from the grid operators; if all projects materialise, problems with back-up power, power evacuation, grid connection investment, grid control, etc
- No possibility to seal long term biomass (wood) supply contracts – annual auctions for wood cutting, restricted tenders, intermediaries in the supply chain, increasing costs
- The sum “electricity acquisition price offered by incumbent distributors/suppliers + price of green certificate” is still insufficient for feasibility of pure electricity projects
- The incumbent distributor/supplier that loses industrial clients will always invent technical obstacles regarding grid connection – recourse to Regulator not immediately efficient
- The incumbent distributor will not pay for the excess electricity not consumed by the Client and injected into the grid – “residual electricity”

Other risks/barriers

- Lack of sufficient investment project management, EPC contracting, engineering experience due to lack of projects in the clean energy sector
- Clean energy/Efficient technologies insufficiently advertised – customers lack necessary information and select traditional solutions even for new investment – mentality barriers
- Principle of structural funds “we reimburse expenses that you have already incurred” – discouraging; developers hoped for advance payments – opportunity window for “bridge financing”
- Lack of “bankable” feasibility studies
- Insufficient engineering skills design in connecting generators to the LV networks
- Insufficient engineering skills in designing cooling systems, for efficient tri-generation projects

Lack of “bankable” feasibility studies

- Lack of awareness by management of industrial units, local authorities, on technological solutions available and energy efficiency project management principles;
- Lack of trustworthy data on energy consumption patterns – crucial for correct project design
- Project finance – not a fashion in Romania – mostly on-balance sheet financing, or sovereign guarantees for large state-owned projects
- Lack of preoccupation and competence/experience in energy efficiency project finance at local banks level (assessment procedures, application forms, etc) – now the EBRD scheme has launched a rush for projects by intermediary banks
- Insufficient number of experienced elaborators based in Romania

Conclusion: clean energy projects are not necessarily investment grade at this stage in Romania

- Support schemes not efficient for political reasons:
 - Elections approaching, electricity prices should be low
 - Romania is self sufficient in electricity (net exporter)
 - Deadlines for meeting EU pollutions norms (FGDs, ash&slag evacuation, etc) approaching but still not reached
 - Romania committed by Council Directive on promotion of electricity from RES to a 33% target; 30% already covered with existing hydro (3% means some 270-300 MW new capacities)
 - Emission rights trading did not take off
- The electricity market design has promoted a savage liberalisation and has discouraged private investors – no long term PPAs, generation almost fully in state hands
- The primary energy markets (except gas) not friendly for power generation

Some final suggestions for ECEF:

- Set-up a facility for financing feasibility projects at national/local level –bridge finance recoverable from later project financing
- Create data-base/promote access to information on candidate technologies applicable – raise awareness/interest
- Finance an elastic pool of experts that would do quick assessments/pre-feasibility studies for candidate projects in view of financing feasibility studies as proposed above
- Lobby for improved support schemes
- Play the card of the synergy between emission trading expertise and clean energy project development/funding expertise
- Use local partners
- Aggressive promotional campaign