



Enhancing
Sustainability
in Hydropower
Development

MEDELLÍN, COLOMBIA
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International Centre
for Hydropower

Project Financing for Private Hydro Power Projects

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Optimo Finance

OPTIMO FINANCE (OF)

- OF is an international consulting firm offering project finance, structured finance, strategic planning and risk management services, based in Oslo, Norway
- OF specializes in project and market evaluation of overseas investments and projects, as well as offsetting risk and structuring financial solutions
- OF arranges funding from multilateral institutions, development cooperation agencies, export credit entities and commercial banks.
- OF has also specialized in assistance to owners in developing renewable energy projects towards favorable Investments.

Public Loans – Sovereign Lending

NOT PART OF THIS PRESENTATION

- It is a reality that investments and ownership in renewable energy have moved more and more towards the private sector during the last 10 years – and this is expected to continue.
- Bilateral Development assistance and multilateral banks are more focused on public social aspects and education.
- The financing to private sector projects is normally based non-recourse Projectfinancing with the project owned by a Single Purpose Vehicle- SPV. The financing entities are then taking the risk on the project performance and cash flow.

Export Credits – ECA Guarantees

- The guarantee for the loan can be given by a Governmental Export Credit Agency – ECA. This means that the risk for the lender will be sovereign risk from the exporters country – hence a much lower interest rate can be offered.
- Export credit can be arranged directly with the project company (SPV) as borrower with the risk covered 85% - 100 % by the ECA
- Loan period can be construction period plus up to 12 years – 18 years for renewable energy projects.
- Interest rate can be fixed under the CIRR arrangement (in the range of 2 -4 % fixed for 12 years in USD) or Libor + margin
- Financial costs like interest during construction and the guarantee premium included in the loan

Pre-requisites for a SPV to be eligible for financing

The project is owned, developed, implemented and operated by a private Single Purpose Vehicle (SPV).

Prime focus to be given to:

- Equity at least 30%
- Availability of bankable PPA under long term guaranteed tariff.
- Acceptable ESIA according to IFC performance standards
- Available public licenses awarded in a transparent process
- Participation of local bank with part of the financing, handling of all project securities for the loans and managing the project cashflow in an escrow account on behalf of lenders.
- Location of project with evaluation of environmental and security aspects.
- Completion guarantee offered from project sponsors.
- Need for Cover of political risk to be assessed

OECD and World Bank rating for Business climate

	OECD (1 best, 7 closed for credit)	WB index for ease of doing business (1 best, 190 worst)
• Panama	3	55
• Colombia	4	53
• Peru	3	54
• Brazil	5	123
• Argentina	6	116
• Venezuela	7	187
• Costa Rica	3	62
• Nicaragua	7	127
• Honduras	5	105
• El Salvador	4	95
• Belize	6	112
• Guatemala	5	88

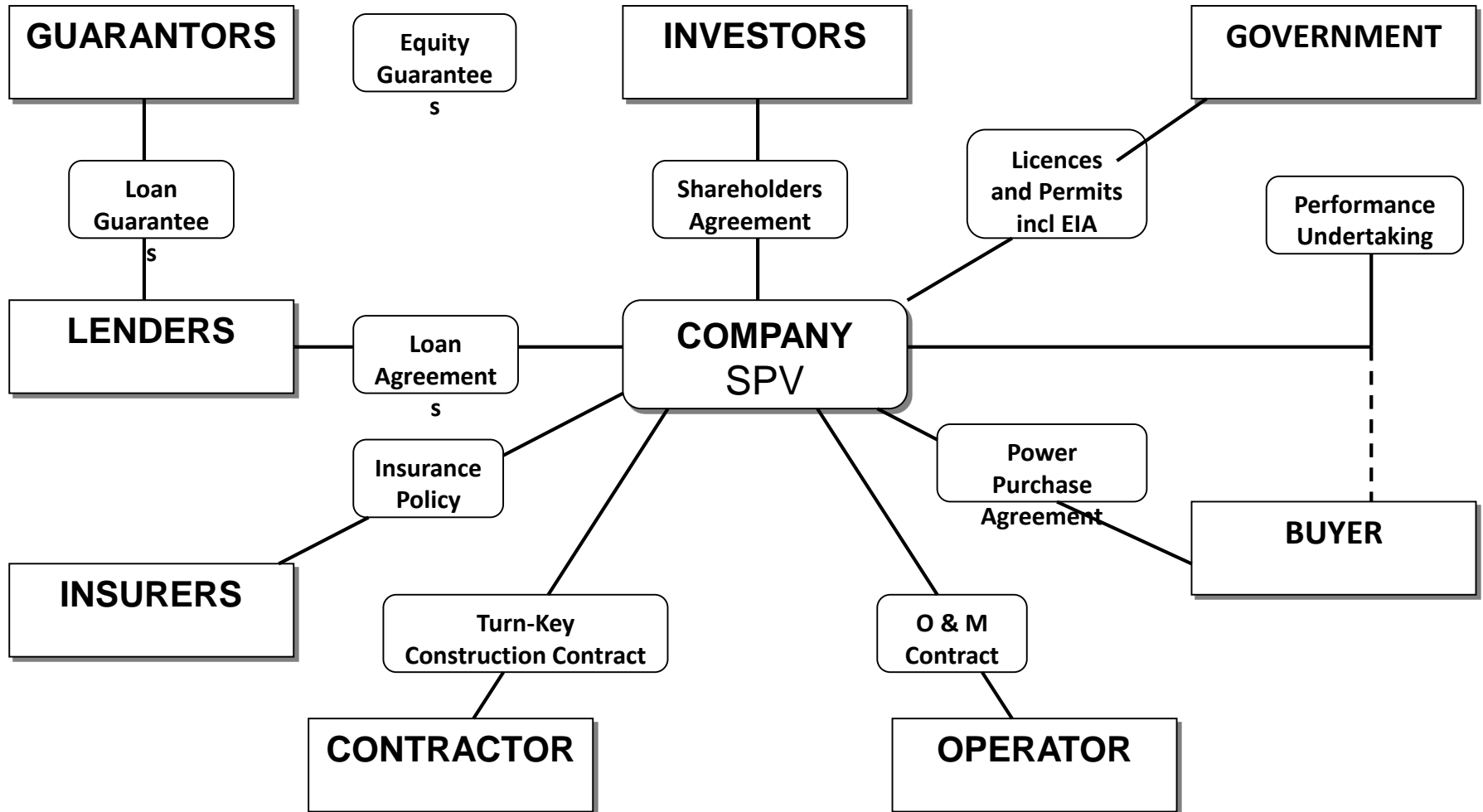
Models for Projectfinancing

Project Financing is typically structured financial solutions for projects, where the project itself is the main collateral and only backed by Investors equity and/or certain income securities.

Among such models are:

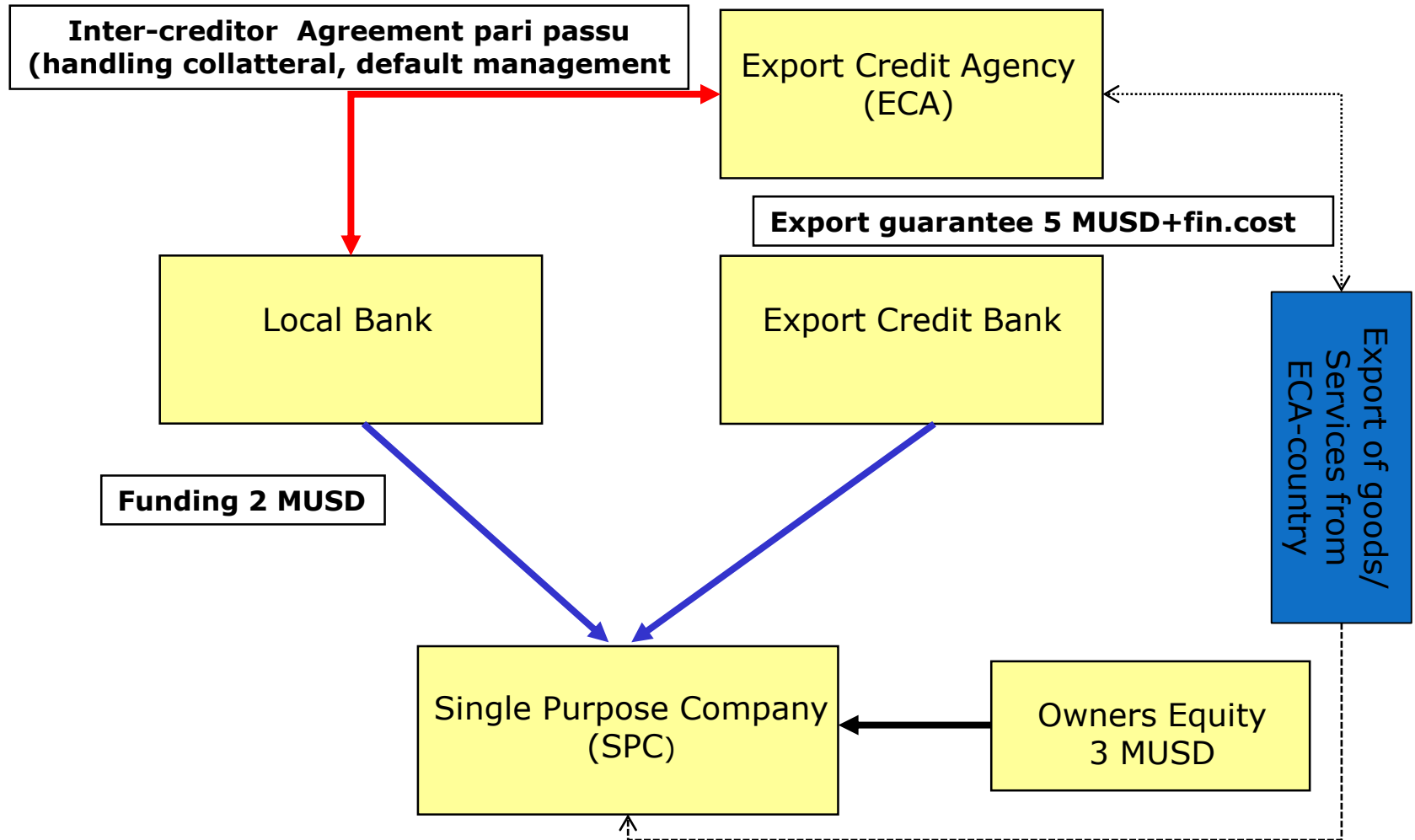
- Model for Single Purpose Vehicle (SPV)
- Risk sharing model
- Lead bank with local bank syndicate

Private Single Purpose Vehicle Project Structure



Risk Sharing Model

Loan structure - example:
Project value 10 MUSD



CIRR fixed interest rate

if fixed 15.09 -14.10.2017
(NOT incl 20bp pre-commitment fee)

CIRR = Commercial Interest Reference Rate

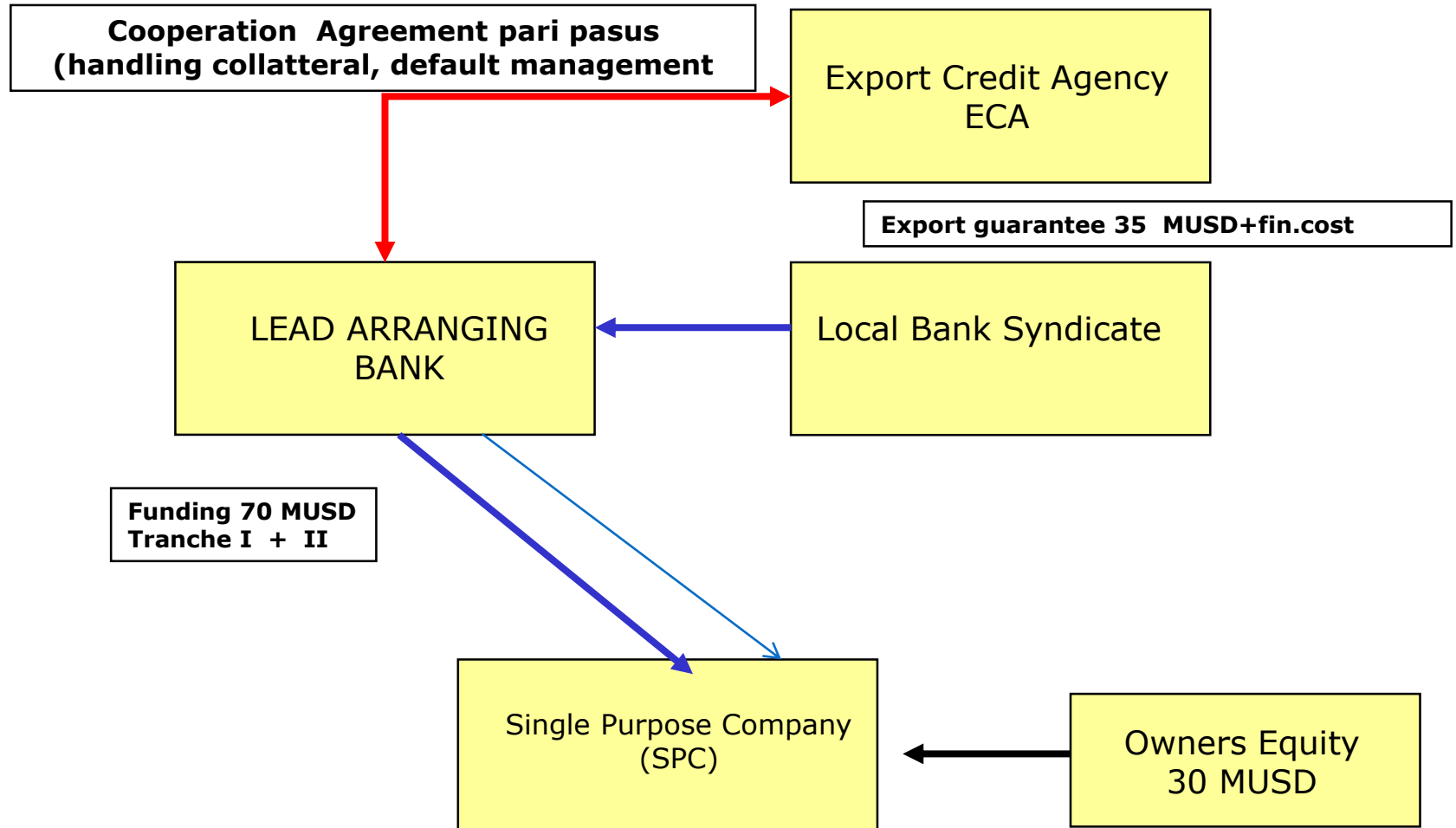
Contract CIRR rates				Renewable Energy	
Tenor:	< 5 yr	5,5-8,5 yr	9-12 yr	15 yr	
USD	2,48	2,78	3,03	4,20	
EURO	0,39	0,70	1,03	2,90	

Comments to Export Credits – ECA Guarantees

- The value of the export content should be at least 40% of the export contract(s) between the exporter(s) and the local SPV company. The rest can be local or third country subcontracts, however as part of the export contract(s).
- The financing can not be more than 85 % of the commercial contract(s).
- Local Bank(LB) is not participating in the money transfers from the export credit. These payments are made directly to the account of the exporter according to invoices approved by the borrower who is the local SPV.
- LB must offer the financing not covered by the export credit and assume the commercial risk of the SPV for this loan. LB must enter into a cooperation agreement with the ECA for management of all project securities as well as do the project appraisal/due diligence for the ECA to accept.
- The 100 % cover given from the ECA to cover the export credit loan can only be offered when LB also is offering a substantial loan – let us say 20% as shown in the schematic model.
- The guarantee premium for the export credit is accepted as part of the loan.

Lead arranging bank in cooperation with syndicate of local banks

Example for project value of MUSD 100



Guarantees and Coverage

The warranty of the project can be arranged as follows:

- **Escrow account:** Formed with the objective of making the credit payments to the banks (in priority order) for the total cash flow amount generated by the project, which come from the energy sale contracts,, as well as any other income generated by the project. Lenders will put covenants to control payments of dividend like a minimum debt cover ratio etc.
- **Guarantees:** Formed for all the industrial unit of the project, including lands, civil works, electromechanical equipment, substations, transmission lines, and pledge in shares.

The escrow account can be managed by the local bank who will then control the full cash-flow of the investment.

Aspects of Project Evaluation for presentation to Financing Entities

- Info Memo describing the project
- Sponsor related issues incl proof of equity , normally 30%
- Contractor related issues
- Technology related issues
- Environmental report and the public license
- Operation related issues
- Licences and concessions for the project
- Financial structure (6-month DSRA up-front, MRA build-up from CF, cash lock-up and dividend depending on DCSR)
- Financial model in (minimum) Excel
- CAPEX ,Costs and expenditures,Revenue build-up, balance sheet ,Profit & Loss,etc
- Latest financial reports of sponsors, suppliers, off-takers, contractors and operators.
- Supply, off-take, contractor and operator agreements.

DSRA = Debt Service Reserve Account, MRA = Maintenance Reserve Account, DCSR = Debt Cover Service Ratio

Environmental considerations

...to be done early in the project development

OECD : RECOMMENDATION OF THE COUNCIL ON COMMON APPROACHES
FOR OFFICIALLY SUPPORTED EXPORT CREDITS AND
ENVIRONMENTAL AND SOCIAL DUE DILIGENCE
(THE “COMMON APPROACHES”)

<http://www.oekb.at/en/osn/DownloadCenter/export-services/international-relations/OECD/OECD-Environment-Common-Approaches-2012.pdf>

IFC : Environmental and Social Performance Standards and Guidance
Notes

http://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/ifc+sustainability/our+approach/risk+management/performance+standards/environmental+and+social+performance+standards+and+guidance+notes#2012

Categories for classification in OECD document

The three categories for classification are:

- **Category A:** A project is classified as Category A if it has the potential to have significant adverse environmental and/or social impacts, which are diverse, irreversible and/or unprecedented. These impacts may affect an area broader than the sites or facilities subject to physical works.

Category A, in principle, includes projects in sensitive sectors or located in or near sensitive areas. An illustrative list of Category A projects is set out in Annex I.

- **Category B:** A project is classified as Category B if its potential environmental and/or social impacts are less adverse than those of Category A projects. Typically, these impacts are few in number, site-specific, few if any are irreversible, and mitigation measures are more readily available.
- **Category C:** A project is classified as Category C if it has minimal or no potentially adverse environmental and/or social impacts.

Some Financial Entities for Projectfinance

- **Multilateral Investment Guarantee Agency - MIGA**
 - MIGA may guarantee the political risk in private investment in the 128 member countries of MIGA.
- **NORFUND** (or similar entities from other countries)
 - Support for the creation of new joint ventures , Participation as shareholder , Participation with loans and/or guarantees
- **International Finance Cooperation (IFC) Interamerican Investment Cooperation (IIC)**
 - World Bank entity (IFC) and IDB (IIC) in charge of financing projects in the private sector.
May participate as lead arranger where export credit can part of the overall financing scheme.
- **Export Credit Agencies – ECAs**
 - Offering guarantees for the political risk in private investments
- **Various Regional Banks and Investment Funds.**
- **CABEI (BCIE) and CAF**

Financial Analysis – spread sheet

1000

COST OF THE PROJECT	(USD.Million)	Percentage	Deprec. rate
Dev. cost, land	6,50	5,1%	2,0%
Buildings & Civil Works	63,42	50,2%	5,0%
EI- Mech Eqv, transmission, hydro mech etc	18,78	14,9%	5,0%
IDC, DRSA, guarantee costs , ECA premium, fees	23,50	18,6%	5,0%
Contingency 10% on Building & Civil	7,46	5,9%	5,0%
Inventory & Spare parts, O&M reserve	1,00	0,8%	5,0%
Engineering,supervision,adm	5,65	4,5%	5,0%
TOTAL invested	126,31	100 %	
Initial investment	126,31		

MEANS OF FINANCE	(USD.Million)	%
Loan 1 Export credit	39,16	31,0 %
Loan 2	49,26	39,0 %
Subordinated loan	8,00	6,3 %
Preferred Stock	10,51	8,3 %
Equity Share Capital 30 % of CAPEX	19,39	15,4 %
TOTAL	126,31	100,00 %
Sum equity	37,89	30,0 %

LOAN CONDITIONS	Loan 1	Loan 2	Equity Loan	Reinvestment
Loan Repayment - Years	10,0	10	8	10
Interest on Loan - CIRR pr Dec-16	2,56 %	6,00 %	9,00 %	5,00 %
Grace period on loan (months)	6	6	0	0
Preferred Stock interest rate	11,0 %			

Assumptions

ASUMPTIONS ABOUT THE PROJECT	
Construction period (12, 24 or 36months)	24
Installed Capacity (MW)	30,4
Annual Generation	144,18
INCOME	
Tariff US c KWh	11,41
	0,00
Yearly Ecsalation on Tariff first 5 years	1,5 %
Capacity payment USD	314
Yearly Ecsalation on Tariff (0= flat price, 1= growth)	1,5 %
Emission Factor	0,3
CDM (USD/MWh)	0,0
USD/Euro rate	1,4
Cer price Euro/t	0,0
OPERATIONS	
Annual lease cost in % of powersale	0,0 %
OM (On Civil& Elector.Mec)	0,40 %
Adm. Investor, insurance etc (on annual income)	5,00 %
Yearly Escalation in O & M	1,0 %
Major maintainance K USD investment every 5. year	0,00 %
Transmission losses	1,0 %
Own powerconsumption	0,4%

Assumptions and results

MISCELLANEOUS		REINVESTMENT	
Start year of dividends	1	After 20 years % of initial cost	10 %
Debt service reserve (DSRA 6 months) 1. year	3200	Amount reinvested	0
Investor ownership	100 %	Reinvestmen y20 (No=0 yes =1)	0
Upfront payment before construction start 3 trances	0	Inflation costs	1,0 %
Interest on bank account	2 %		
Escrow	0		

		20y oper.	40y oper.
Investor	Discount rate for NPV on cash flow	10,0%	10,0%
	IRR after tax on equity cash flow	17,1 %	18,1 %
	NPV after tax on equity cash flow	27,0	42,4
0%shares =	NPV	0,0	0,0
Project		10,0%	10,0%
	IRR on project before tax and interest expence	11,1 %	12,3 %
	NPV on project cash flow (adjusted for income tax)	14,7	23,7

P75% HYDROLOGY

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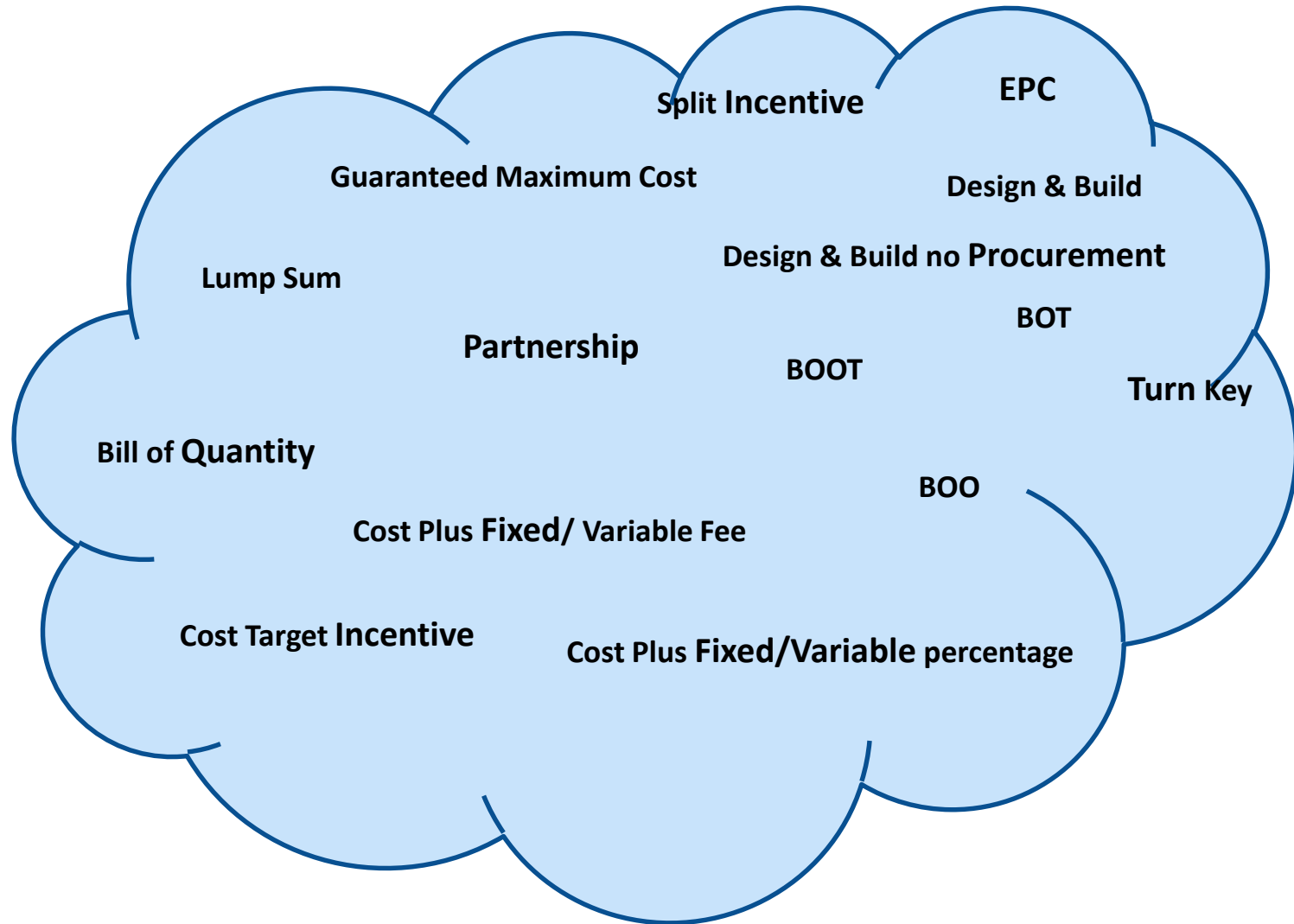
Profitt & Losses – Result sheet

Year	Coeffisient	1.driftsår								
		2018	2019	2020	2021	2022	2023	2024	2025	2026
Year Number		0	1	2	3	4	5	6	7	
Production			144,2	144,2	144,2	144,2	144,2	144,2	144,2	144,2
Power revenue			18096	18342	18593	18847	19105	19367	19633	
Sale of CER certificates			0	0	0	0	0	0	0	0
Other income			314	314	314	314	314	314	314	314
Transmission losses	1,00 %		-181	-183	-186	-188	-191	-194	-196	
Own powerconsumption	0,40 %		-72	-73	-74	-75	-76	-77	-79	
Total Revenue			18156	18399	18646	18897	19152	19410	19672	
O&M as % of powersale	0 %		-	-	-	-	-	-	-	-
O&M as % of total investment	0,4 %		329	332	335	339	342	346	349	
Administration	5,0 %		908	920	932	945	958	970	984	
Major maintainance (every 5th year US\$ 000s)	0,0 %		-	-	-	-	-	-	-	-
Total Costs			1237	1252	1268	1284	1300	1316	1333	
EBITDA			16920	17147	17379	17613	17852	18094	18339	
Depreciation			5788	5788	5788	5788	5788	5788	5788	5788
Other expences										
EBIT			11132	11359	11591	11825	12064	12306	12551	
Interest Income			69	132	123	119	115	111	107	
Interest on bank Loan 1			1002	927	827	727	626	526	426	
Interest on bank Loan 2			2956	2734	2438	2143	1847	1552	1256	
Interest on subordinated loan			697	607	517	427	337	247	157	
Interest on reinvestment loan										
EBT			6546	7223	7931	8648	9368	10092	10819	
Income tax			0	0	0	0	0	0	0	0
Sum Income taxes			0	0	0	0	0	0	0	0
Net Income			6546	7223	7931	8648	9368	10092	10819	
Debt cover ratio			2,0	1,4	1,4	1,5	1,6	1,7	1,7	

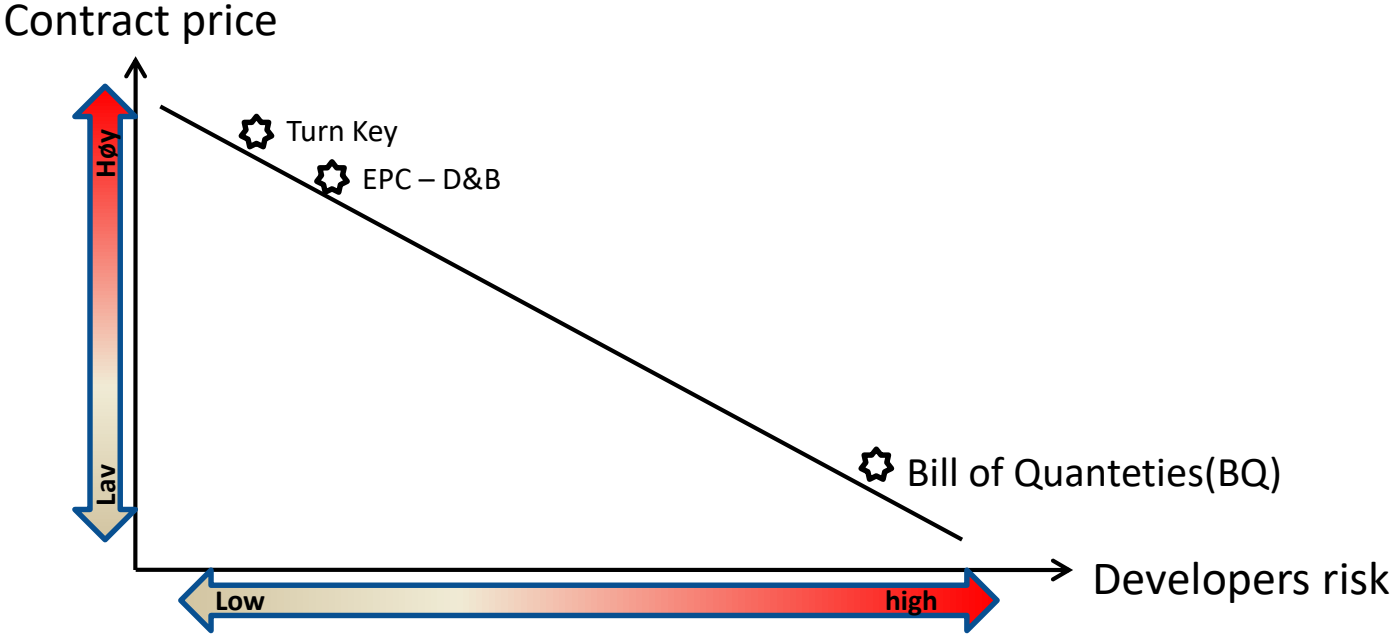
Cash Flow Analysis

Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
	-3	-2	-1	0	1	2	3	4	5	6	7
Operating Activities											
EBT				0	6546	7223	7931	8648	9368	10092	10819
+ Profit/loss on current assets				0							
+ Depreciation				0	5788	5788	5788	5788	5788	5788	5788
+ Charges on current assets				0							
- Income taxes				0	0	0	0	0	0	0	0
Changes in Non-Cash Working Capital		0	-500	-500							
= Total from operational activities		0	-500	-500	12334	13011	13719	14436	15156	15880	16607
Investing Activities											
- Capital Expenditures		0	62655	62655	0	0	0	0	0	0	0
+ Proceeds on Disposition of Assets					0	0	0	0	0	0	0
(+/-) Changes in other Non-current investments					0	0	0	0	0	0	0
= (B) From Investing Activities		0	-62655	-62655	0	0	0	0	0	0	0
Financing Activities											
+ Loan 1		0	19578	19578	-1958	-3916	-3916	-3916	-3916	-3916	-3916
- Loan 2		0	24630	24630	-2463	-4926	-4926	-4926	-4926	-4926	-4926
Reinvestment loan											
Subordintaed loan		0	3998	3998	-999	-999	-999	-999	-999	-999	-999
+ Equity Share Capital		0	9694	9694							
+ Preferred Stock		0	5254	5254							
- Repayment of shareholder equity				0							
= (C) Total from finance		0	63 155	63 155	-5 420	-9 841	-9 841	-9 841	-9 841	-9 841	-9 841
(A+B+C) Yearly change before dividends		0	0	0	6913	3170	3878	4595	5315	6038	6766
Available for dividens					0	3831	4076	4793	5513	6236	6964
Dividens on Preferred stock					0	2312	1156	1156	1156	1156	1156
Dividens on Common stock					0	1519	2920	3637	4357	5080	5808
Net change Cash					6 913	-662	-198	-198	-198	-198	-198
Debt service reserve (6 months debt service target +escrow)					3200	6251	6054	5856	5658	5460	5262
IB Bank		0	0	0	0	6913	6251	6054	5856	5658	5460
UB Bank		0	0	0	6913	6251	6054	5856	5658	5460	5262

Various contractual models



Contract Mechanisms



Project definition	Prelim. design		Detailed design drawings	Construction phase	Commisioning
	Consept	Basic design			

Bill of quantities(BQ)

Design & Build

EPC

Turn Key

LEGAL AGREEMENTS

- Legislation of Authorities
- Concession agreements
- Licenses
- Right of ownership / use of land, buildings and infrastructure
- Company project agreements, SPC, shareholders, etc
- Turn Key Contract
- Sale Contract. Power Purchase Agreement (PPA)
- Project Financing
- Guarantees
- Operation and Maintenance Contract
- Transfer agreements of shares, end concession, etc.
- Certified Development cost; Carried Interest Value
- Count on up-to 100 agreements and high legal costs.

**THANK YOU
HASTA LUEGO**