

Jordan's First BOT Experience in Constructing the Biggest Wastewater Treatment Plant



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Presentation Outline

- Background/Existing conditions/Situation Prior to PSP
- Project Development
- Project Requirements & Description
- Pre-qualifications and Requirements
- Bid Evaluation and Selection Criteria
- Responsibilities of Parties to the Contract
- Financing Plan & Sponsors' Undertakings/Mixed Financing
- Project Company Revenues/Treatment Charges Structure
- Contractual Framework & Securities/ Payments Assurance Scheme
- Risk Sharing, Penalties, exposure and liabilities
- Lessons Learned

Existing Samra Stabilisation Ponds

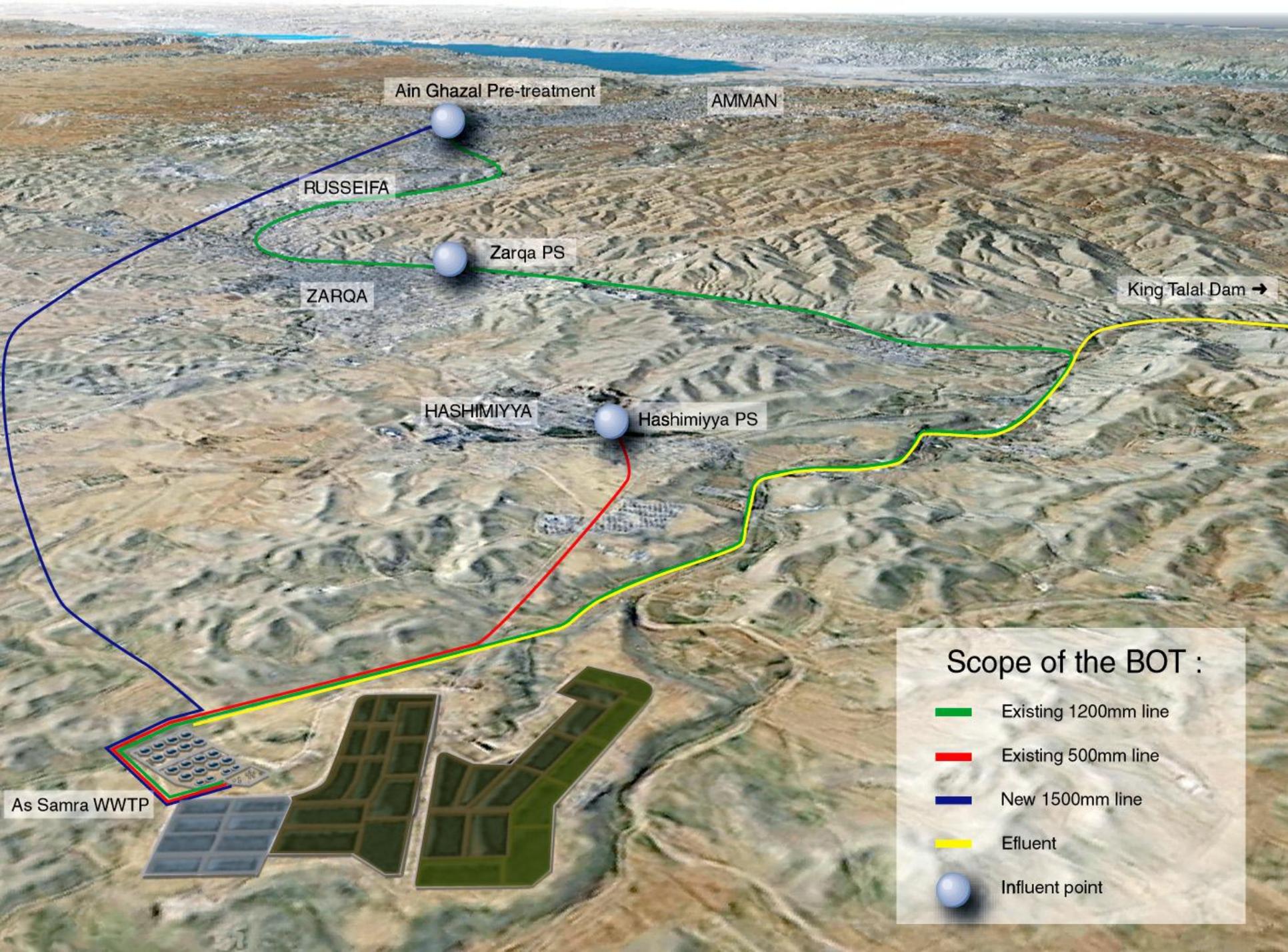
| Constructed in 1985 | Parameter | Effluent quality |
|---|------------------------|----------------------------|
| | | Quality |
| Design Capacity 68,000 CM/Day. Avg. flow in 2002 - 190,000 | BOD5 | 130mg/l |
| | Total Suspended Solids | 200mg/l |
| Plant incapable of treating wastewater to meet JS for discharge | Total Nitrogen | 150mg/l |
| | Nematode Eggs | <1 egg/l |
| | Faecal Coliforms | >10 ⁵ MPN/100ml |
| | DO | < 1 mg/l |
| | pH | 6-10 |
| | Fat, Oil ,Grease | >12mg/l |
| | Odours: H2S | >12mg/l |

Project Development

- 1997: Greater Amman Wastewater Master plan.
- 1999: Study of Different Investment Scenarios with Review of Project Feasibility.
(estimated construction cost \$ 150 million)
- 21 different financial scenarios & implementation options were analyzed
(conventional, BOT, DBO, EPC)
- Because of financial limitations the BOT scheme was selected
- Best Case Scenario for an estimated required 18% IRR
 1. 12% increase in wastewater tariffs
 2. 50% Grant Funds
 3. 20% Private Sector Equity
 4. 30% Private Sector Commercial Loans
- February 8, 2000: USAID issued Implementation Letter to MWI for 50% (\$75M) commitment for the project.

Project Description

- 25 year Build, Operate and Transfer (BOT) contract for a Wastewater Treatment Plant to be built at As Samra
- Expand, Operate, Maintain and Transfer Pre-treatment Plant (Ain-Ghazal)
- Operate, Maintain and Transfer the Siphons from Ain Ghazal Pre-treatment Plant to the Plant, and pumping stations at Hashimiyya and West Zarqa.
- Treat Wastewater generated in Greater Amman area including Russeifa, Zarqa and Hashimiyya: population 2.3 million



Ain Ghazal Pre-treatment

AMMAN

RUSSEIFA

Zarqa PS

ZARQA

King Talal Dam →

HASHIMIYYA

Hashimiyya PS

As Samra WWTP

Scope of the BOT :

Existing 1200mm line

Existing 500mm line

New 1500mm line

Effluent

Influent point

Project Development

1. CBD Notice Published for Pre-qualification 14/02/2000
2. 8 Consortia Submitted Pre-qual. Documents 23/04/2000
3. Five pre-qualified consortia announced 12/06/2000
4. **Draft** RFP issued to Pre-Qualified firms for comments 07/09/2000
5. Formal Issuance of RFP to Pre-qual. Firms 01/03/ 2001
6. Deadline for Submittal of Proposals (2 consortia +
one consortium withdrew before deadline) (Evaluation) 23/07/2001
7. Announcement of Preferred Bidder (Start Negotiations) 10/11/2001
8. Contract Negotiations concluded & Project Agreement Signing 28/07/2002
9. Financial Closing /effective date 10/12/ 2003

Pre-qualification

The PQ documents included:

1. Project description, minimum technical requirements, financing requirements (equity required, treatment charges payment, taxes, guarantees), duration of the contract, indicative contractual structure & agreements.
2. An indicative time schedule was set for:
 - the selection of eligible bidders,
 - draft request for Proposals,
 - the final Request for Proposals,
 - latest date for the submission of proposals,
 - evaluation of the Proposals,
 - announcement of a preferred Bidder,
 - signing the agreements and the Financial close /Effective date
3. The approach to select and pre-qualify not more than five (5) candidates
4. A data room was established to provide each Candidate with equal access to information and uniform data regarding the Project.

Pre-qualification/Requirements for the Candidates

- (i) a firm shall be permitted to pre-qualify either separately or as a member a Consortium, but not both;
- (ii) a Consortium may not include more than five (5) firms, and no member may hold a share less than twenty (20) per cent;
- (iii) a firm may not be a member of more than one Consortium;
- (iv) only one firm within a group of companies may prequalify either separately or as a member of a Consortium.

Bid Evaluation and Selection Criteria (Scoring System)

Two envelop system was adopted (Technical Proposal and Financial)

Evaluation of Technical Proposals

I- Examination of Technical Proposals and Bid Letters and Determination of Substantial Responsiveness:

- Conformance with all the terms, conditions, specifications and requirements in the RFP
- No material deviation or reservation

II- Award of Non-Price Score (240 points maximum)

- Technical approach: design, reliability, operability etc (**Maximum 100 points**)
- Organizational approach: experience of personnel during construction & O&M, use of local resources etc (**Maximum 60 points**)
- Time schedule: time for construction & successive operation of sections (**Maximum 80 points**)

Bid Evaluation and Selection Criteria (Scoring System)

Evaluation of Financial Proposals

I- Examination of Financial Proposals and Determination of Substantial

Responsiveness:

- No conditions
- Full responsiveness

II- Verification of Comparable Bid Price

- Comparable Bid Price shall be verified
- Each Financial Proposal will be awarded a score

III- Award of Financial Score based on the approach: (Maximum 60 points)

- Financial strength during **construction** period
 - Quality of funding commitments and guarantees (15 points)
 - Robustness of liquidity (15 points)
 - Robustness of solvency (15 points)
- Financial strength during **operational** period
 - Quality of funding commitments and guarantees (5 points)
 - Robustness of liquidity (5 points)
 - Robustness of solvency (5 points)

Bid Evaluation and Selection Criteria

The Comparable Bid Price calculated based on quantity and quality of wastewater in million cubic meters in different years throughout the contract period

The net present value of the Comparable Bid Price calculated based on a discount rate of 10 %

An adjustment of the Comparable Bid Price of each Proposal combining non-price score awarded to the Technical Proposal and the Financial Proposal.

Adjusted Bid Price: **$ABP = 0.70 CBP + 0.30 CBP (1 - a/b)$** , where

ABP = Adjusted Bid Price

CBP = Comparable Bid Price

a = Combined non-price score

b = Maximum possible non-price score

Preferred Bidder Selection

- Three consortia were interested by the date of submission
- Two Bidders submitted definite proposals in two envelopes (Technical & Financial)
- ONLY the financial proposal of the consortium consisting of Suez, Infilco Degremont & Morganti (SPC) was opened and evaluated.
- The SPC offer was close to the expected comparable bid price set by the Ministry

Key Terms of the Project Agreement

- Executed with the Government of Jordan (“GOJ”) represented by the Ministry of Water & Irrigation (“MWI”)
- MWI Contribution (USAID grant) payable on Completion of Sections
- Treatment Charges payable when first (of four) Treatment Lines brought into Operation after 30 months
- Treatment Charges (Fixed and Variable) structured to match Project Company’s Liabilities
- Payment Assurance Scheme to address any revenue shortfall

The Project Company's Main Responsibilities

- Design, engineer, procure, construct & complete As-Samra plant and Ain Ghazal Pre-Treatment according to the Company's accepted Design and the Minimum Technical requirements
- Take delivery of wastewater at the influent points, pre - treat at Ain Ghazal & pumping Station, transport WW in the siphons & other pipes to the plant
- Treat and deliver the treated water at the effluent point
- Treat, store, market and sell and /or otherwise dispose of the sludge according to Jordanian standard safe environmental requirements
- Arrange and manage all power, water, telephone & all other services required for the execution/completion of the works
- Operate the Plant and Ain Ghazal for 22 years and two PS until the year 2010
- Procure all necessary proprietary rights, licenses, agreements, etc..
- Transfer the Plant and all MWI property and Tangible Properties to MWI at the end of the contract period renewed and fully operational

MWI'S Main Responsibilities

- Grant the right to use the site & MWI Property to the Project Company
- Provide existing installations for the supply of power, water, telephone & all services.
- Deliver the wastewater at the inlet points
- Enforce Jordanian Laws & Regulations governing industrial discharges to public sewers
- Pay its contribution to the Project Cost (\$92Million) “Tied” to Verifiable Construction Completion Milestones (FAR method of payment)
- Pay the Treatment Charges (according to formula)
- Establish & maintain the Payment Assurance Scheme (Reserve Account Agreement & MOF Guarantee Agreement) to address any revenue shortfall
- Exempt the project company, the sponsors, foreign financiers and contractors from all taxes duties, levies etc. according to the Investment Promotion Law and the government agreement with USAID

Financing Plan & Sponsors' Undertakings

Mixed Financing

Financing Plan:

- MWI contribution **50%** \$ 92 M (GOJ \$ 14 M + USAID \$ 78 M)
- SPC : Minimum **20%** of project costs in equity & **30%** of project costs in commercial financing.

Sponsors' Undertaking:

- Equity Investment ~**11%**
 - ✓ Share Capital \$ 4.66 M
 - ✓ Project Sponsor Loans \$9.47 M
 - ✓ Net Revenues during Interim Operating Period \$3.37 M
- Equity Guarantee \$ 15.5 M ~ **9%**
- Commercial Loan (11 Jordanian Banks & Financial Institutions \$ (45 M+**15.5M**)
- Performance Guarantee \$ 15 Million
- Post completion the Commercial loan guaranteed by the Government
- USAID Mother Companies Repayment Guarantee

Project Company Revenues

➤ *Fixed Treatment Charge*

Payable monthly, made up of five parts to reflect:

↓ Repayment of Principal of Project Loan

↓ Interest on Project Term Loan

↓ Principal and Interest on Shareholder Loans, Dividends (linked to USD/JD exchange rate)

↓ Fixed Renewal cost (indexed)

↓ Fixed Operating Costs (indexed on local inflation)

➤ *Variable Treatment Charge*

Payable monthly, and made up of two parts to reflect:

↓ Additional Volume of Influent (above 160,000 m³/day)

↓ Additional Pollution of Influent (for BOD₅ above 0.55kg/m³)

Treatment Charges: Structure

Fixed Portion:= $\text{Fix (Cap)} + I_I \cdot \text{Fix}_I (\text{Cap}) + I_C \cdot \text{Fix}_F (\text{Cap}) + I_L \cdot \text{Fix (Op)} + I_R \cdot I_C \text{Fix}_R (\text{Op})$

- Fix (Cap) : Repayment of Senior Debt
- $I_I \cdot \text{Fix}_I (\text{Cap})$: Payment of Senior Debt Interests
- $I_C \cdot \text{Fix}_F (\text{Cap})$: Remuneration of Sponsors Investment
- $I_R \cdot \text{Fix}_R (\text{Op})$: Payment of Fixed Renewal Expenditures
- $I_L \cdot \text{Fix (Op)}$: Payment of Fixed Operation Expenditures

Variable Portion:= $I_L \cdot \{ (A \cdot (V_p - 160)) + B [(X_p \cdot (V_p - 160)) + 160 \cdot (X_p - 0.55)] \}$

- $I_L \cdot A \cdot (V_p - 160)$: Payment of Variable OPEX (Flow)
- $I_L \cdot B \cdot (X_p \cdot (V_p - 160) + 160 \cdot (X_p - 0.55))$: Payment of Variable OPEX (Load)

I_I = Interest rate index

I_C = Currency Exchange rate index JD/USD

I_R = Renewal Index – Construction & Machinery index

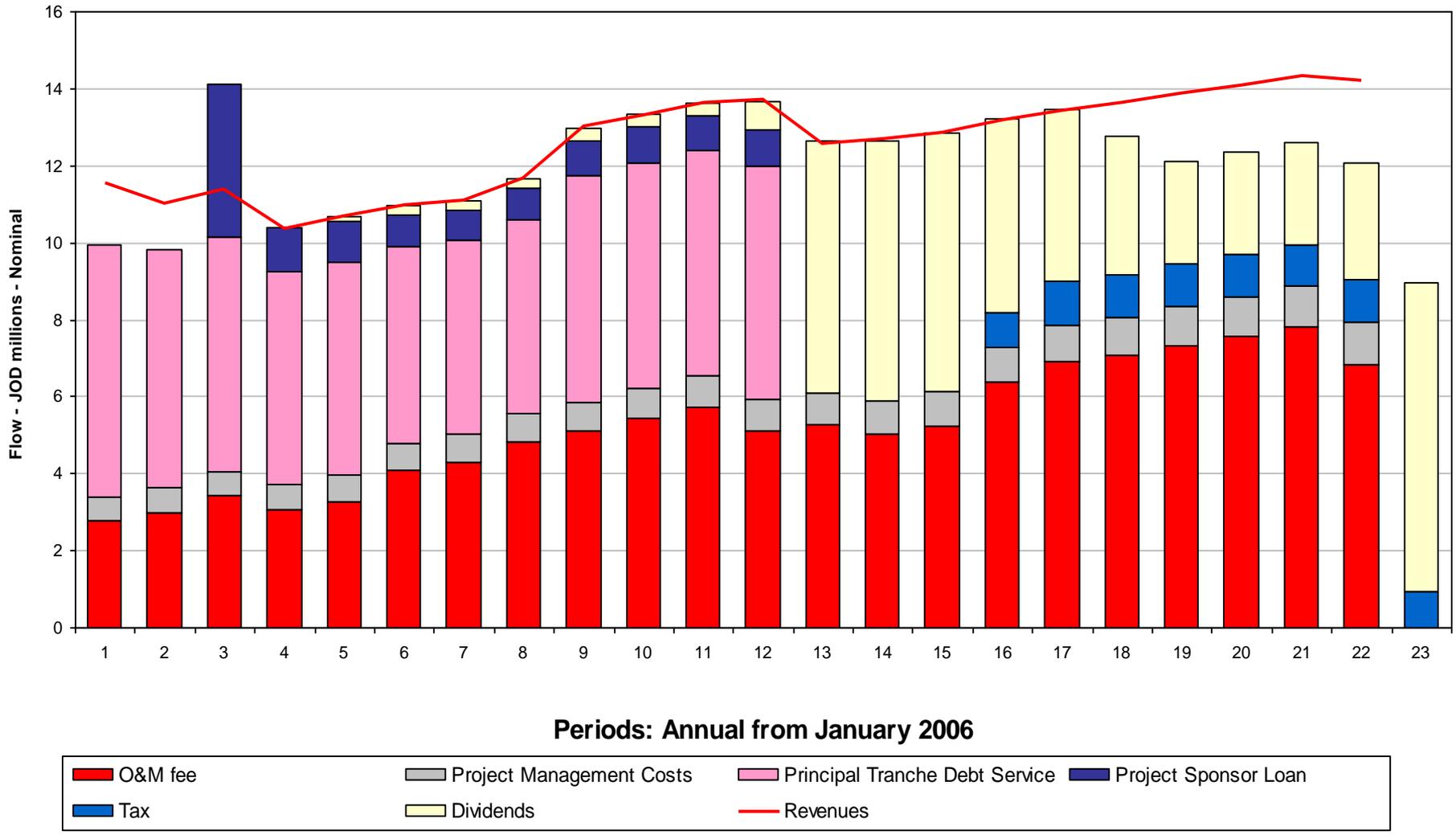
$I_L = (50\% \times A_{Lm} / A_0) + (40\% \times B_{Lm} / B_0) + (10\% \times C_{Lm} / C_0)$

A- Labour Index

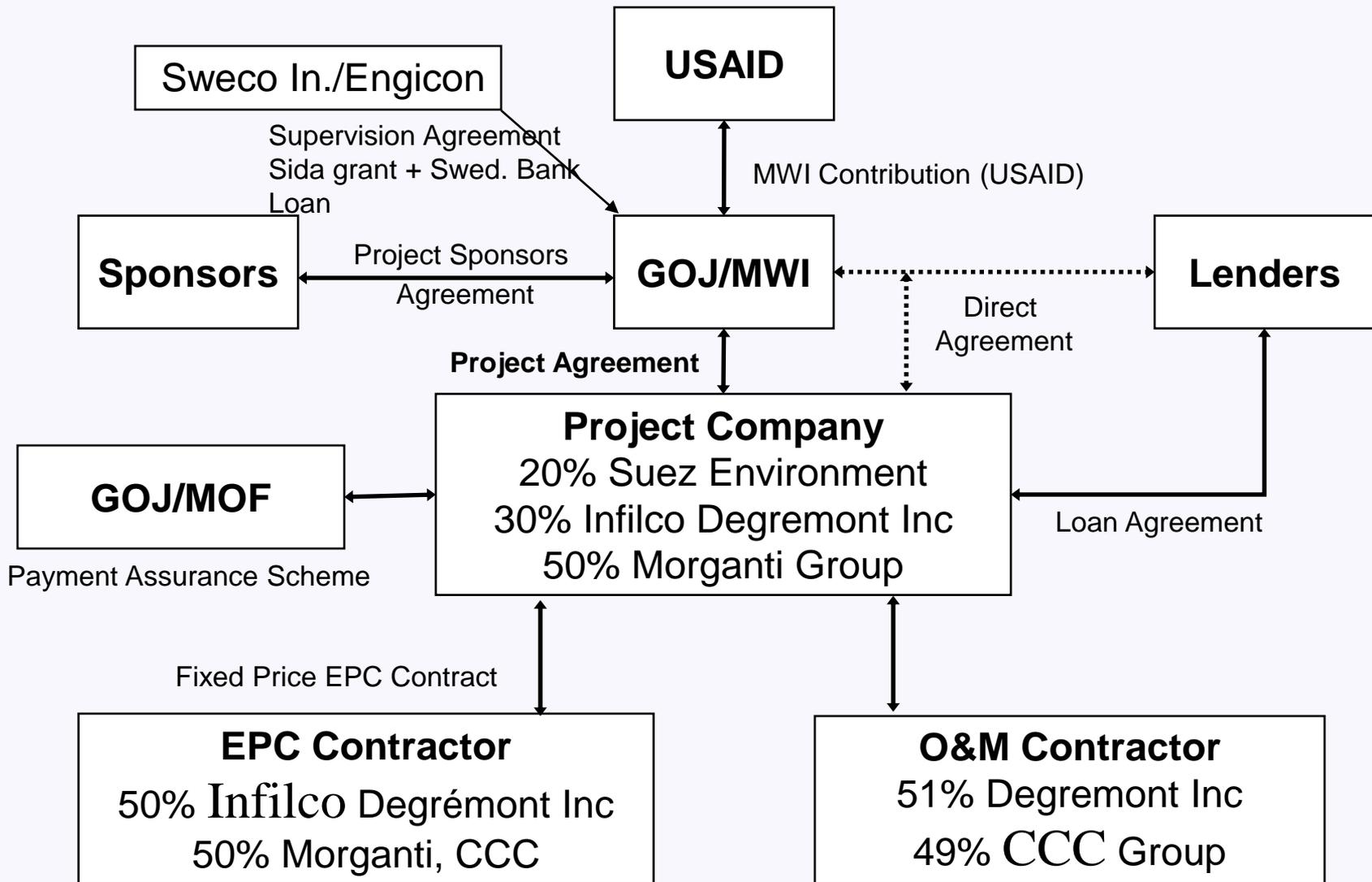
B- Producer price index

C- Electricity Index

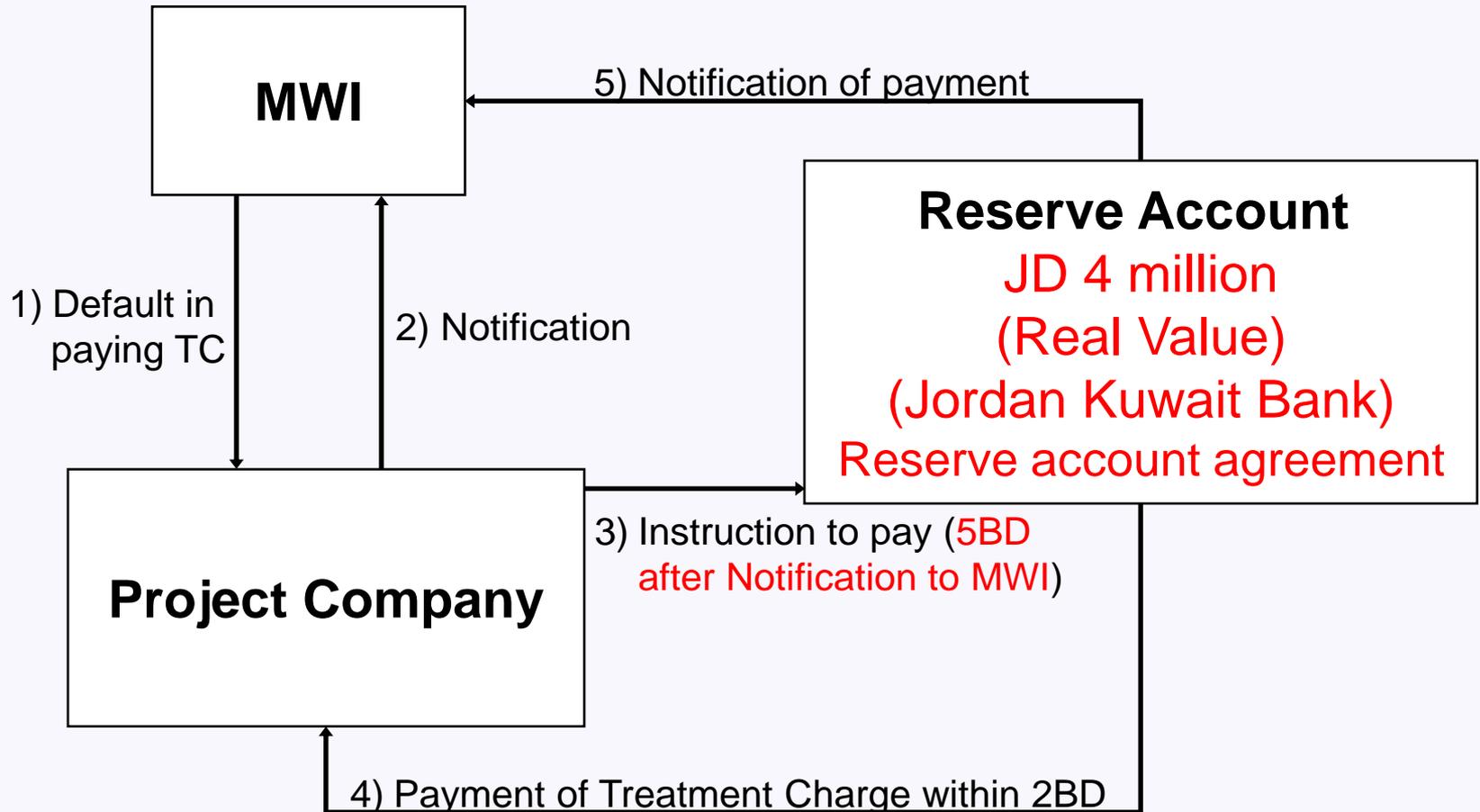
Base Case Operating Cash-flow



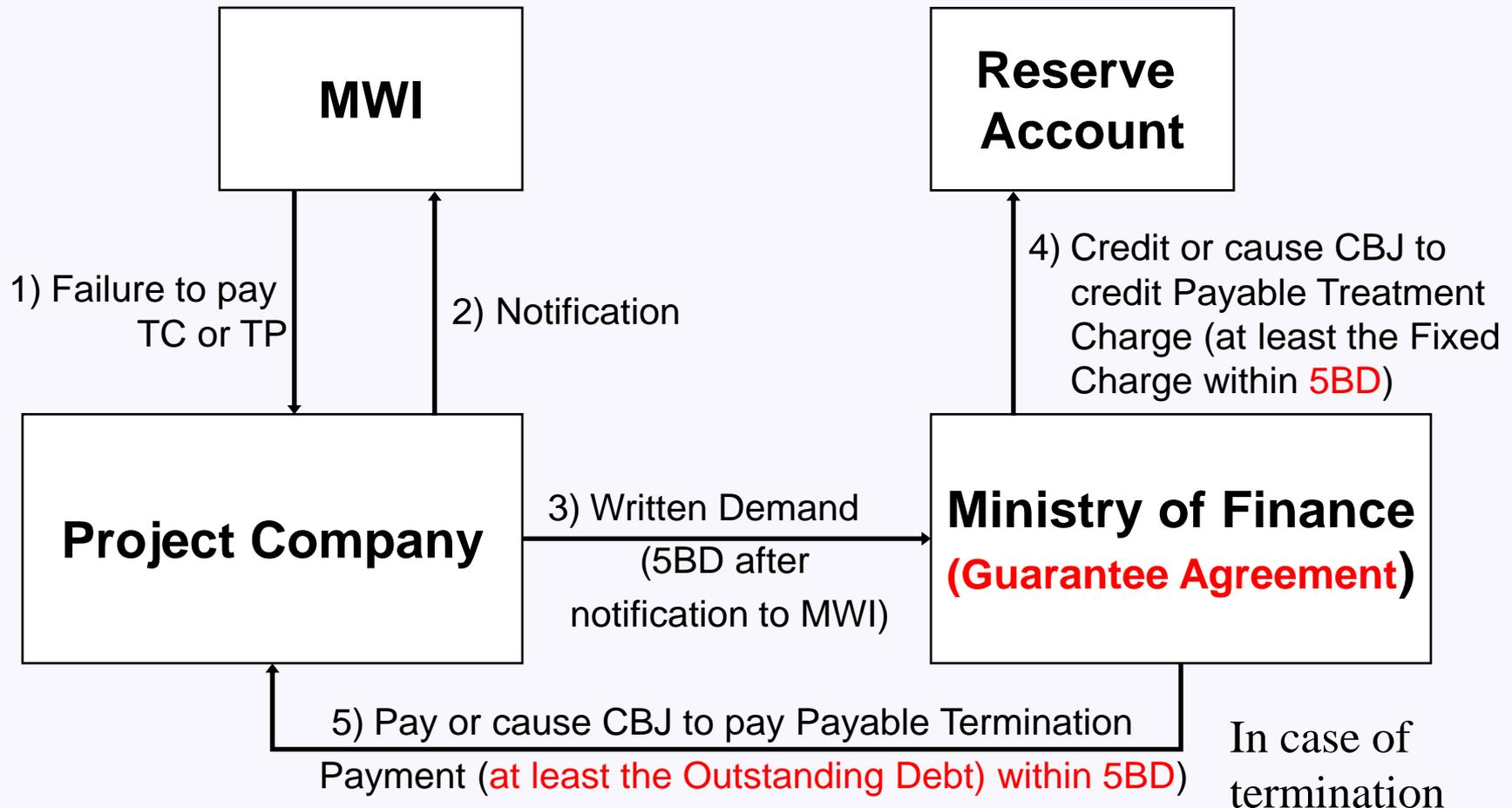
Simplified Contractual Framework



Payment Assurance Scheme- Reserve Account Agreement



Payment Assurance Scheme- Ministry of Finance Guarantee Agreement



Risk Sharing/Project Company's Exposure

1. During Construction

- Equity Investments up to **JD 22** Million
- No profit for acceleration of Works
- Liquidated damages for completion delay
- Mother Companies guarantee for MWI contribution
- Performance guarantee
- Insurance ~ value of MWI Properties

2. During Operations

- Insurance ~ value of MWI Properties
- Performance Guarantee
- Liquidated damages for violating standards & no payment for treatment

Liquidated Damages and Penalties

- Failure to reach the Final Completion Date, the Project Company should pay \$ 15000/ day (Maximum \$ 8,000,000)
- Liquidated damages for insufficient odour treatment is JD 3000/day
- Liquidated damages for excessive levels of noise is JD 3000/day
- Violation of the treated water quality in terms of BOD, Nitrogen & Bacteria
 $T.C/2 * (\% \text{ of BOD exceedance} + \% \text{ of Nitrogen exceedance} + 10\% \text{ of difference log of bacterial Number})$
- The total liquidated damages shall not exceed twice the daily charge
Capped to Fixed F Cap/ month & 50% per year
- Penalties on delay in reporting = 0.05% of TC for the previous month every day
Capped to 2.5% of TC for the previous month

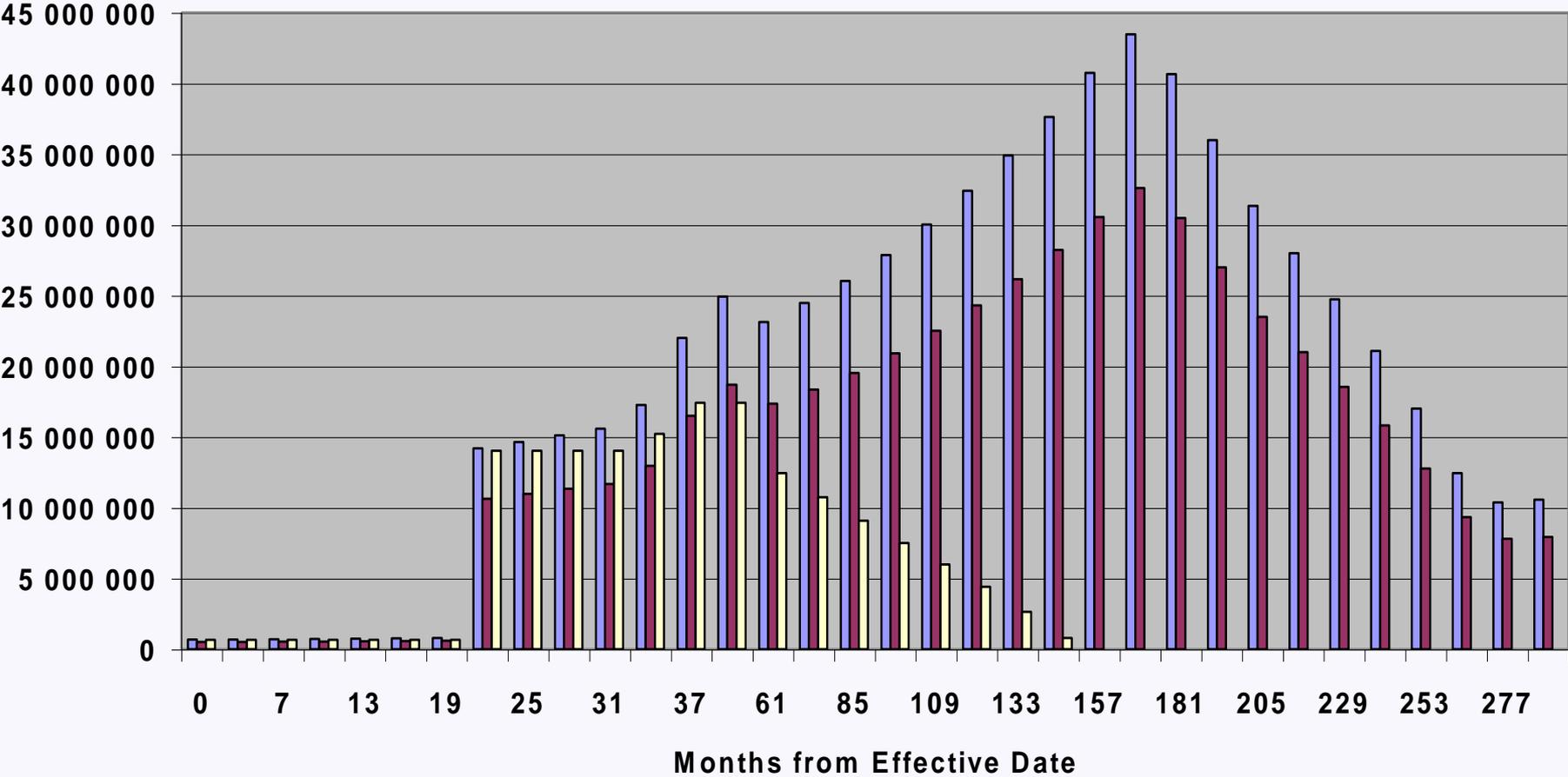
Parties Risks in termination For FM Events

| Force Majeure Event | Outstanding Debt(OD) | Equity | Termination Cost |
|-------------------------------|---|---|----------------------------------|
| Non-Political FM | MWI Pays OD with the difference in the interest rate up to termination date | MWI pays the historical value of equity less dividends with a ceiling | MWI Doesn't pay termination cost |
| Indirect Foreign Political FM | MWI Pays OD with the difference in the interest rate up to termination date | MWI pays the historical value of equity less dividends with a ceiling | MWI Doesn't pay termination cost |

Parties Risks in termination For FM Events

| Force Majeure even | Outstanding Debt | Equity | Termination Cost |
|-----------------------------|---|--|---------------------------|
| Indirect Local Political FM | MWI Pays OD with the difference in the interest rate up to termination date | MWI pays 75% of the equity investment with return (with a ceiling) | MWI pays termination cost |
| Political FM | MWI Pays OD with the difference in the interest rate up to termination date | MWI pays 100% of the of the equity with return (with a ceiling) | MWI pays termination cost |

Equity Compensation (Revised)

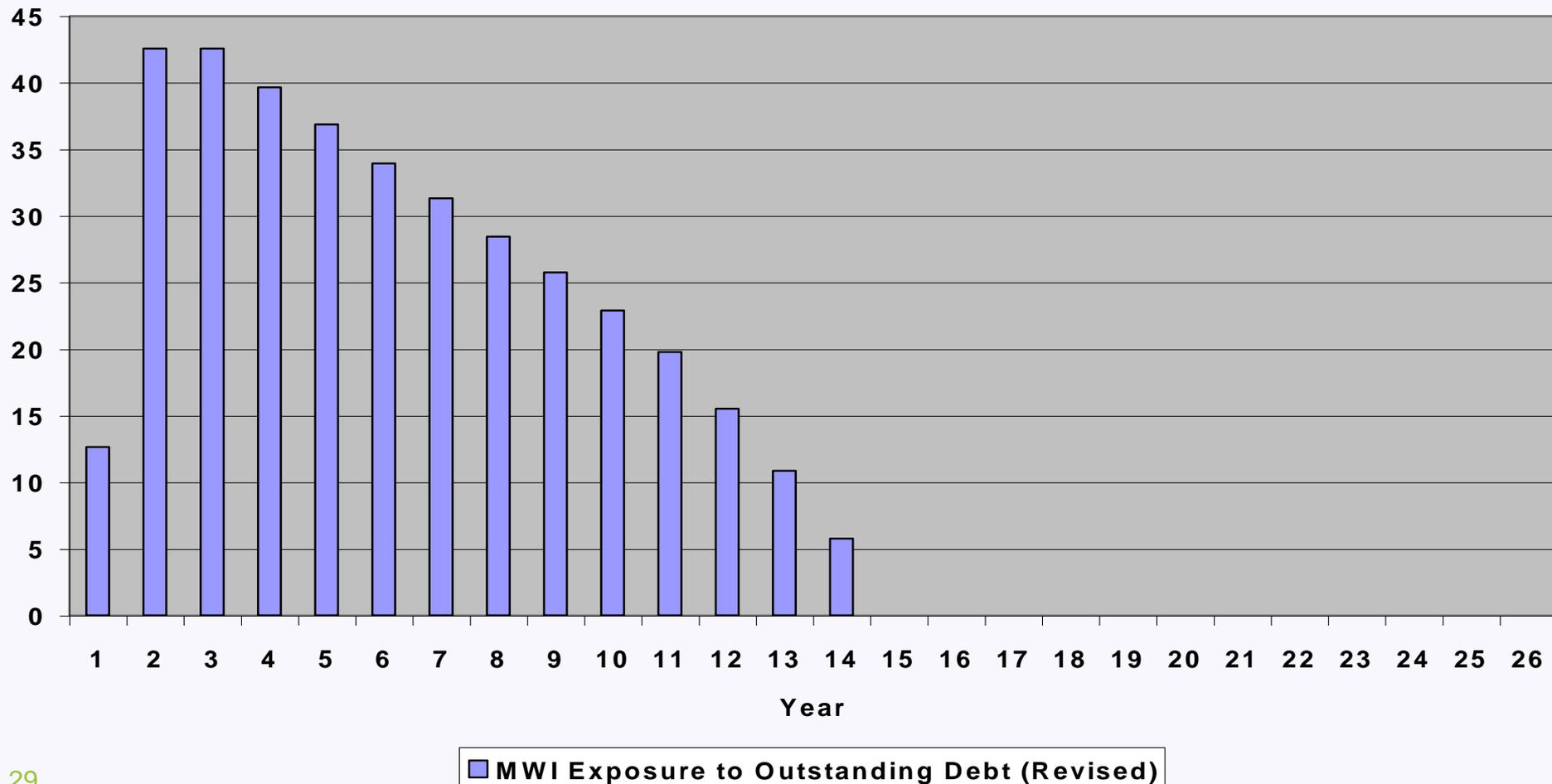


- MWI Event of Default or Political Force Majeure Event
- Indirect Local Political Force Majeure Event
- Non-Political Force Majeure Event and Indirect Foreign Political Force Majeure Event

MWI Exposure to Outstanding Debt

Payable in JODs but adjusted to USD following Termination, in case of step in right is not invoked by Lenders.

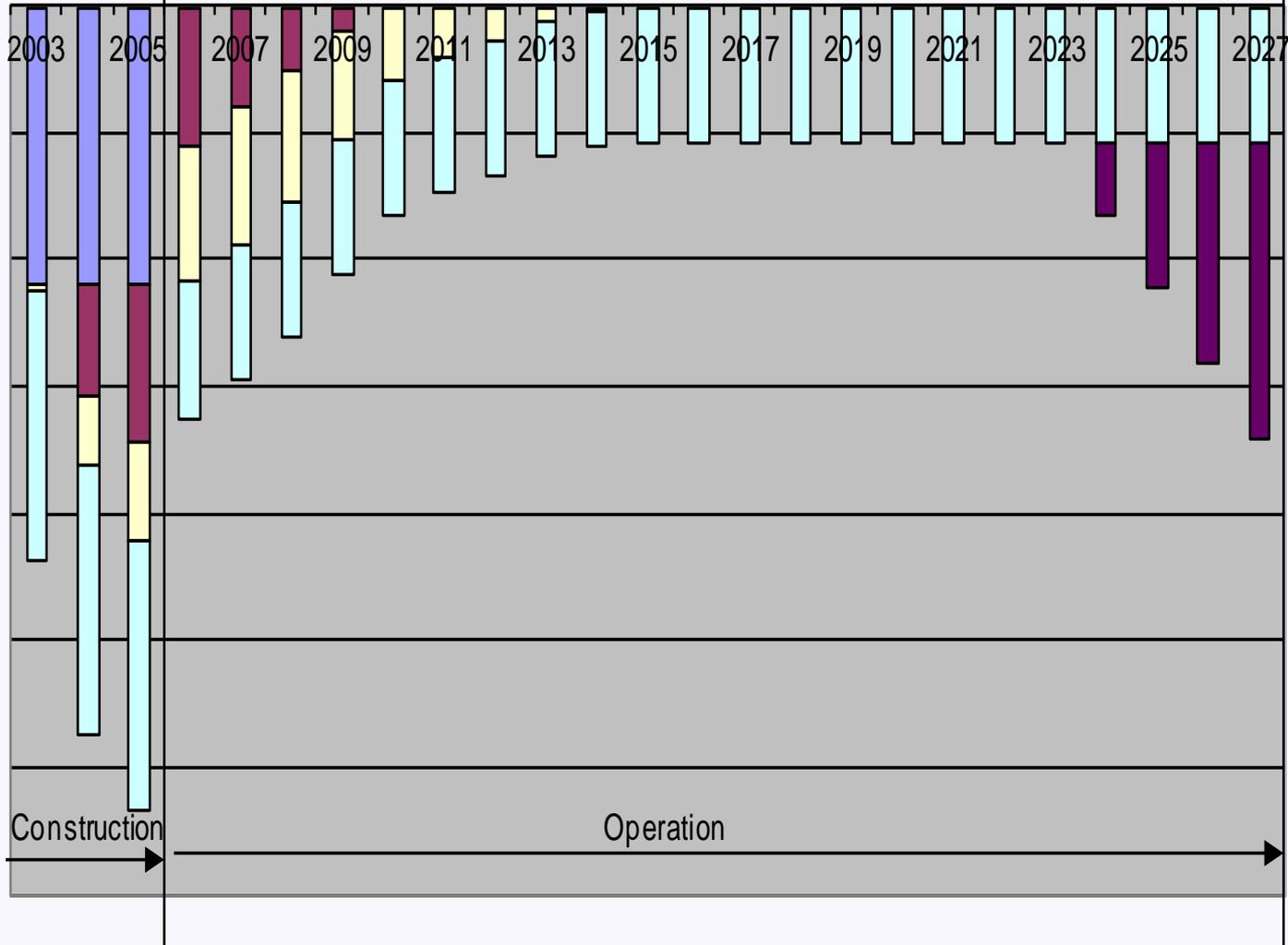
MWI Exposure to Outstanding Debt (Revised)



Completion

SPC Money at Risk on Default

Hand Back



- Retention Account
- Performance Bond
- Share Capital
- Shareholder Loan
- Equity Bridge

Construction

Operation

Parties Liabilities in Restoration cases

| Force Majeure event | SPC Liability | MWI Liability |
|-------------------------------|-----------------------------|------------------------------|
| Non-Political FM | 50% of the restoration cost | 50% of the restoration cost |
| Indirect Foreign Political FM | 50% of the restoration cost | 50% of the restoration cost |
| Indirect Local Political FM | 0% | 100% of the restoration cost |
| Political FM | 0% | 100% of the restoration cost |

Valuable Rules/Lessons Learnt

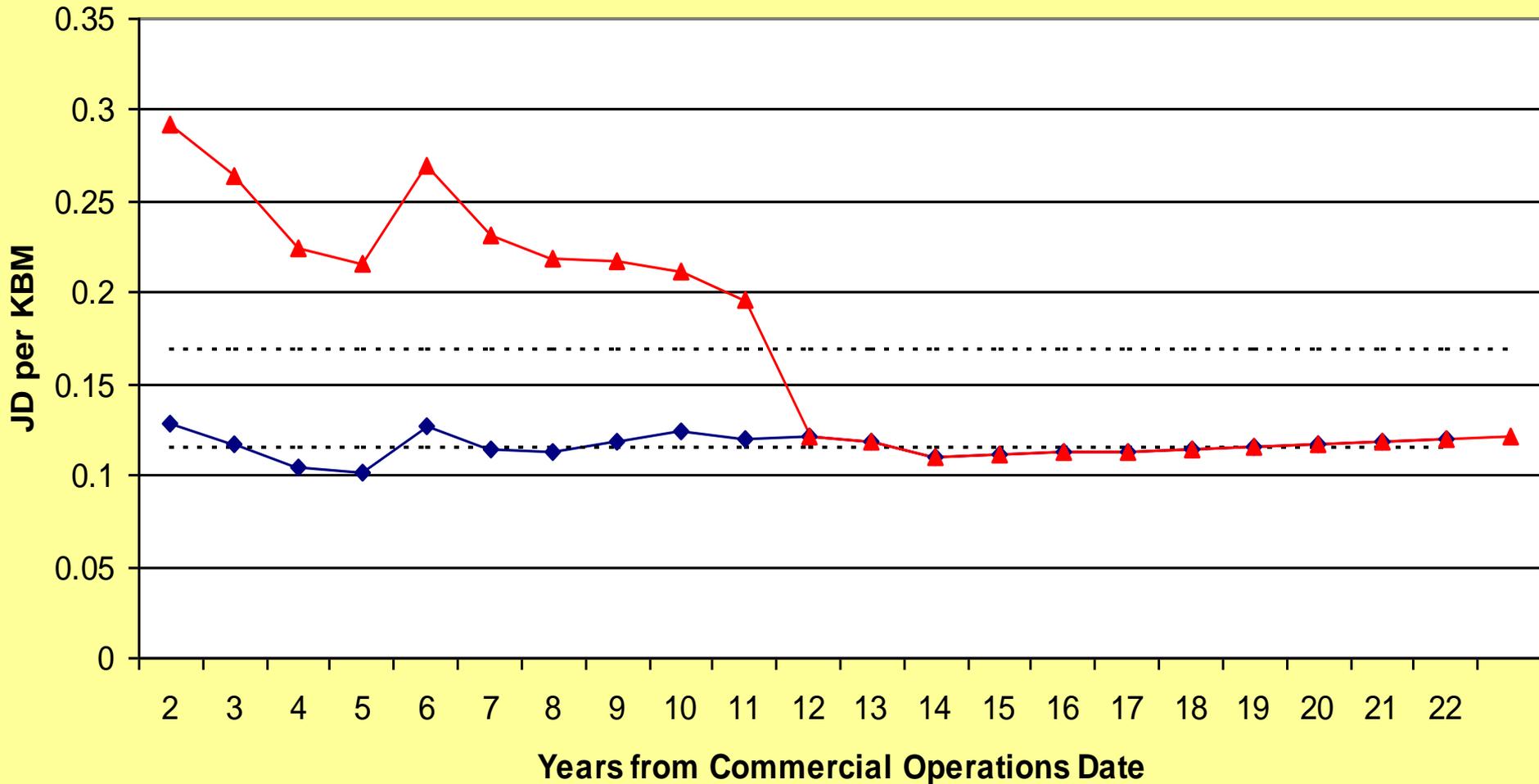
Make sure that:

- Government/Owner is fully committed to project. No changes in policy or personnel involved in the project
- Enabling Legislation is in place (WAJ Law, Investment Promotion Law)
- Well prepared documentation
 - Feasibility Study and EIA
 - Pre-qualification
 - Invitation to Tender
 - Draft Agreements with sensible risk allocation
- Transparent and comprehensible evaluation procedure
- Limited number of strong consortia be prequalified (5 max.)
- Timetable is realistic and deadlines are achieved
- Momentum is maintained, support at high levels, quick decision making and flexibility
- Government is perceived to be able to meet its long term commitments by providing securities
- For maximum leverage Government should contribute say 20-50% of total Project Costs, subject to a minimum of say \$20 million, (a) as little as necessary to make the project affordable to both Government and other stakeholders (b) but enough to attract bidders,

Project that Made Many Firsts

- The first BOT Project in Jordan
- The first electricity self-sufficient Wastewater Treatment Plant
- The first mix-finance project (Government, Donors “USAID”, Sponsors and Lenders)
- First Project under private involvement financed by Jordanian Banks
- First Comprehensive environmental project (full cycle) conveyance, treatment and reuse of by products (water, sludge, hydropower and gas)

Treatment Charge per kbm, with and without Grant



—◆— TC per KBM with Grant Average —▲— TC per KBM no Grant Average

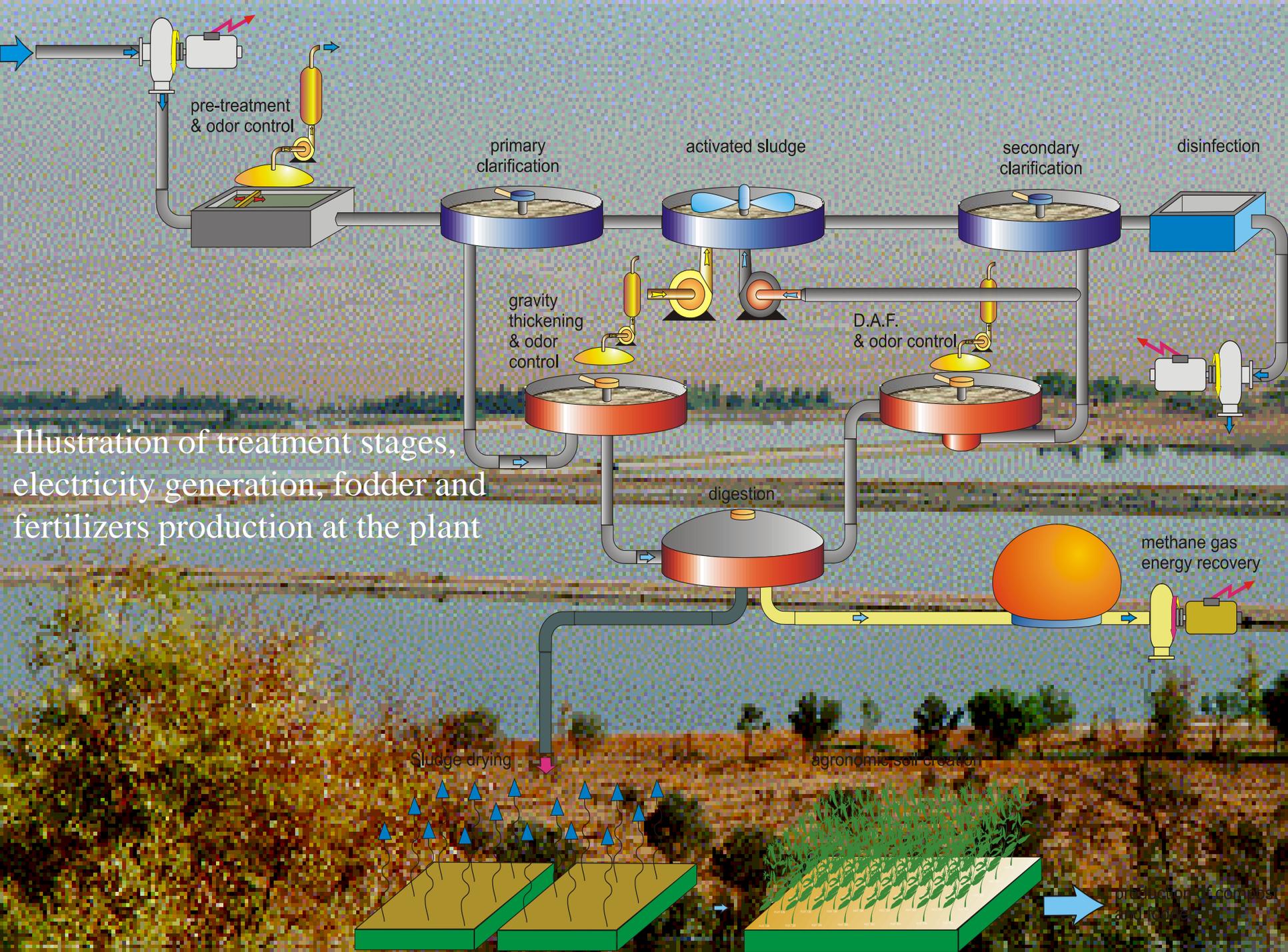


Illustration of treatment stages, electricity generation, fodder and fertilizers production at the plant



Effluent quality

| Parameter | Quality |
|-------------------------------------|----------------|
| BOD5 | 6mg/l |
| Total Suspended Solids | 10mg/l |
| Total Nitrogen | 15mg/t |
| Nematode Eggs | <1 egg/l |
| Faecal Coliforms | < 40 MPN/100ml |
| DO | > 1 mg/l |
| pH | 7-9 |
| Fat, Oil ,Grease | <8mg/l |
| Odours: (H2S, NH3, Mercaptans e.tc) | - < standard |



Thank You

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