



المؤسسة العامة لتحلية المياه المالحة
Saline Water Conversion Corporation (SWCC)



Governing Business in the Sea-Water Desalination Sector Through Terotechnology (#81)

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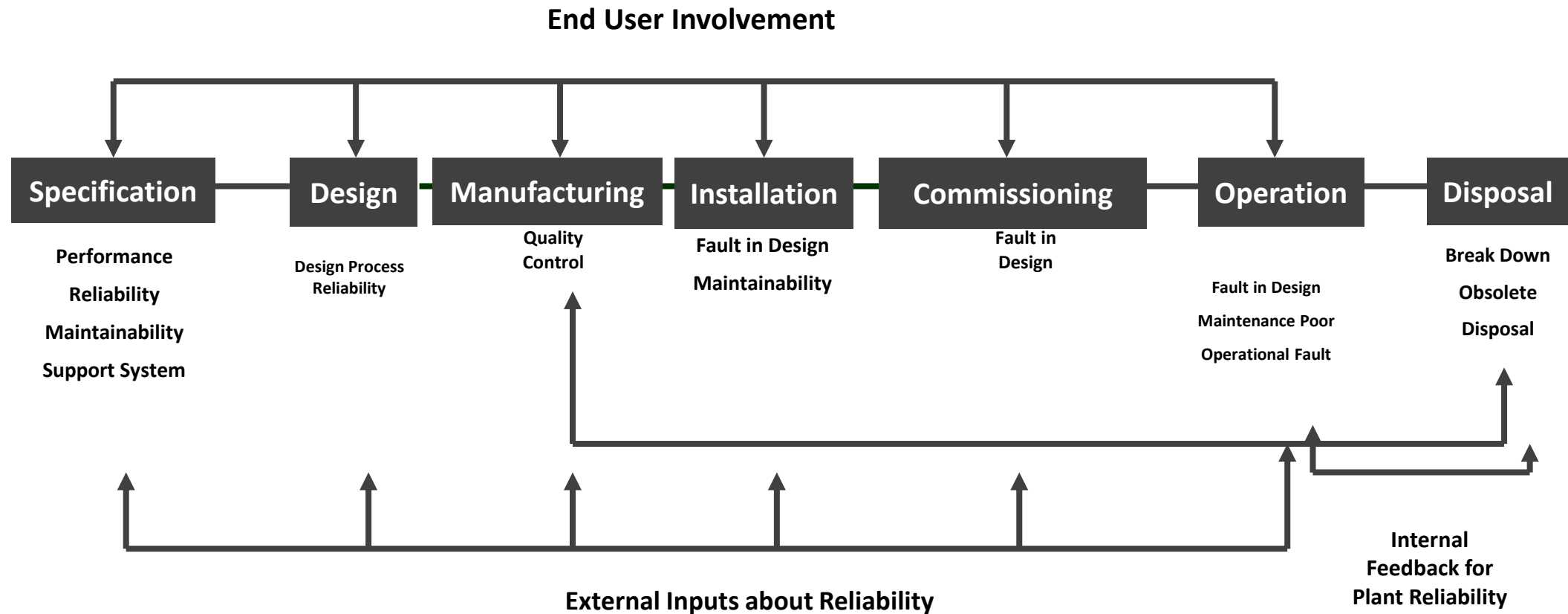
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Overview

- Introduction
 - Problem Description
 - Setting Objectives
 - Proposed Solution
- Methodology
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- Discussion
- Conclusion & Recommendations
- Acknowledgement

Introduction - Problem Description



Terotechnology in Brief - the optimization of total maintenance costs over the equipment's life-cycle

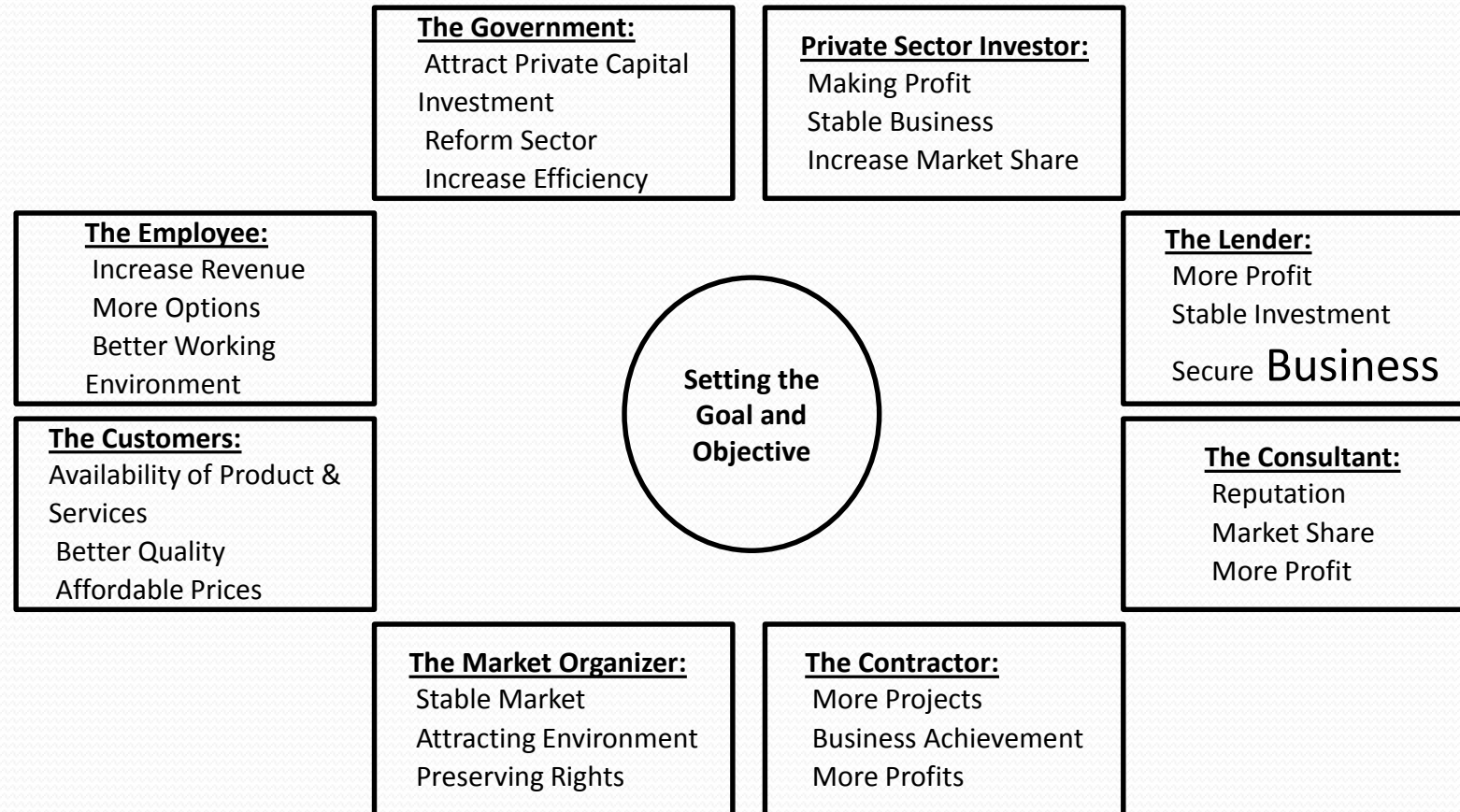
Down-Stream Management			Time	Up-Stream Management				
Terotechnology				Privatisation				
Let the Machine Work	International	United Kingdom			United Kingdom	International	Private Sector Ownership	
			1945-1955	Before 1945 All Services & Assets were Private Sector Owned				
				After 1950 All Services were transferred to State Ownership				
Optimise Process			1965	1955		Dec 1960 The Organization for Economic Co-operation and Development (OECD)	State Ownership	
		1967 Government noticed of Decrease in Efficiency	1970	1965				
		1973 Terotechnology Concept	1970-1980		The economy of socialists			
	1978 German Translation	Terotechnology Conferences						
		Terotechnology Periodical				1979 election of Thatcher		
			1980-1990		The Privatisation Concept (Idea Formulation)		The Privatisation Program	
					British Privatisation Program			
					1981 British Aerospace 51.6%			
					1982 Britoil 51%			
					1984 British Telecom 50.2%			
		1986 British Gas 97%			1986-88 France, Jacques Chirac privatised 22 companies			
		1987 British Airports Authority 100%						

Down-Stream Management			Time	Up-Stream Management		
Terotechnology				Privatisation		
	International	UK		UK	International	
Optimise Business		1993 BSI Dependability System	1990-2000		1990 Italy, Germany and Spain Start Privatisation Program	Business Governance
	Sweden, Växjö University terotechnology college	1998 Manchester University Master in Maintenance Engineering & Asset Management				
		2008 BSI 15686 Life Cycle Costing	2000-2010	2008 Combined Code was published on the Financial Reporting Council website	2009 OECD Corporate Governance	
		2008 BSI 3845 Guide to Terotechnology		2013 Margaret Thatcher passed away	2013 The Economist Thatcherism	
Industry 4.0	2010 ISO 55000 Asset Management – Overview, principles and terminology		2010-2020	2018 FRC announced the publication of a revised UK Corporate Governance Code	2019 OECD Guide to Privatisation Policy Maker	

Introduction - Setting Objectives

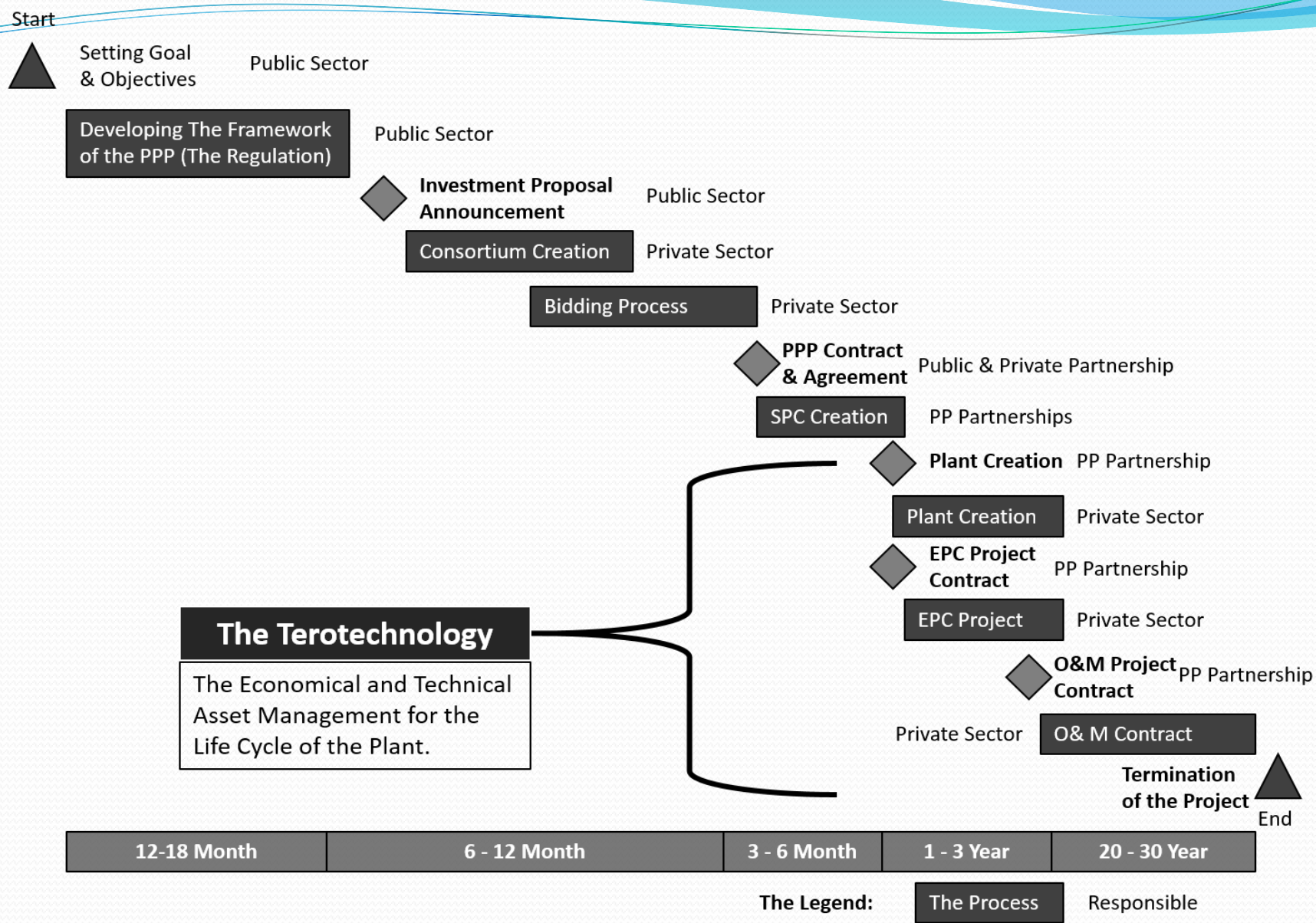
- The main objective of this paper is to discuss
- the controlling of the whole-life asset cost related to the desired efficiency and the optimization of total operation and maintenance costs over the equipment's life-cycle in the sea water desalination sector
- through
- integrating the Terotechnology System into the Business Governing System and Code.

Introduction - Proposed Solution



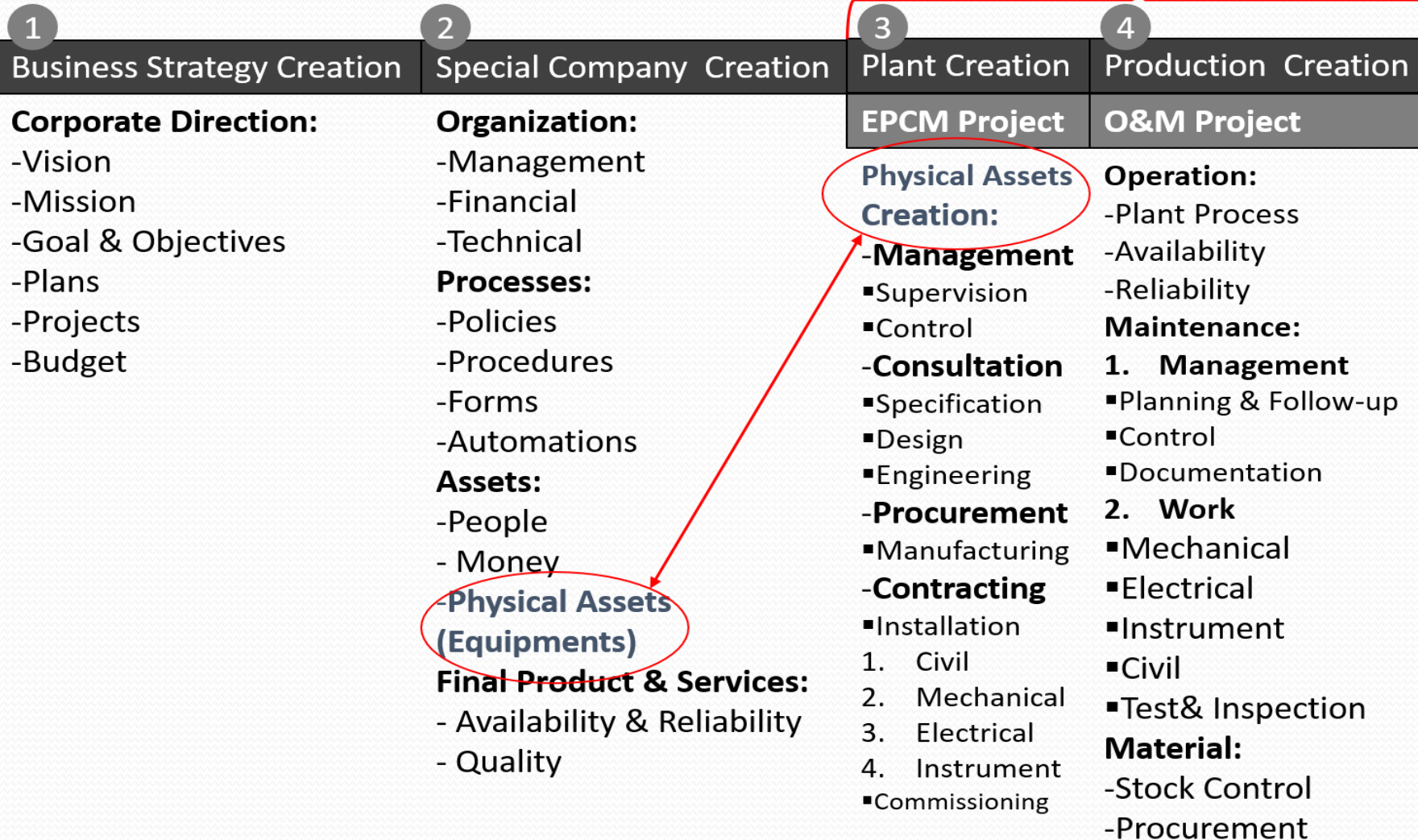
Setting the Goal and Objective of the Various Business Stakeholders

IWPP		Public Sector	Public Private Partnership	Private Sector	Asset		
Technical Investors Consortium Creation	Success of Transformation	Demand/ Supply					
		Feasibility Studies		Investment Proposal			
		Legalization		Feasibility Studies			
		Government Guarantee		Loan/ Financing			
		Bidding Start		Investor Agreements			
		Concept Report		Financial Closure			
		RFP Invitation		Investor Consortium			
Special Purpose Company Creation				Bidding			
				RFP Submission			
		RFQ Invitation		RFQ Submission			
		Quotation Analysis					
		Successful Bidders					
		PPP Contract		SPC Creation		PPP Contract	
Plant Creation		Success of Performance Improvement		EPC Project Invitation			
	Bidder Invitation			Specification			
	RFP Invitation			Engineering			
	RFQ Invitation			Manufacturing			
	Contracts Signing			Installation			
	Production Operation Maintenance Start				Commissioning		Commissioning
					Operation Activities		Operation and Maintenance
					Maintenance Activity		
					Procurement Activity		
					Financial Activities		

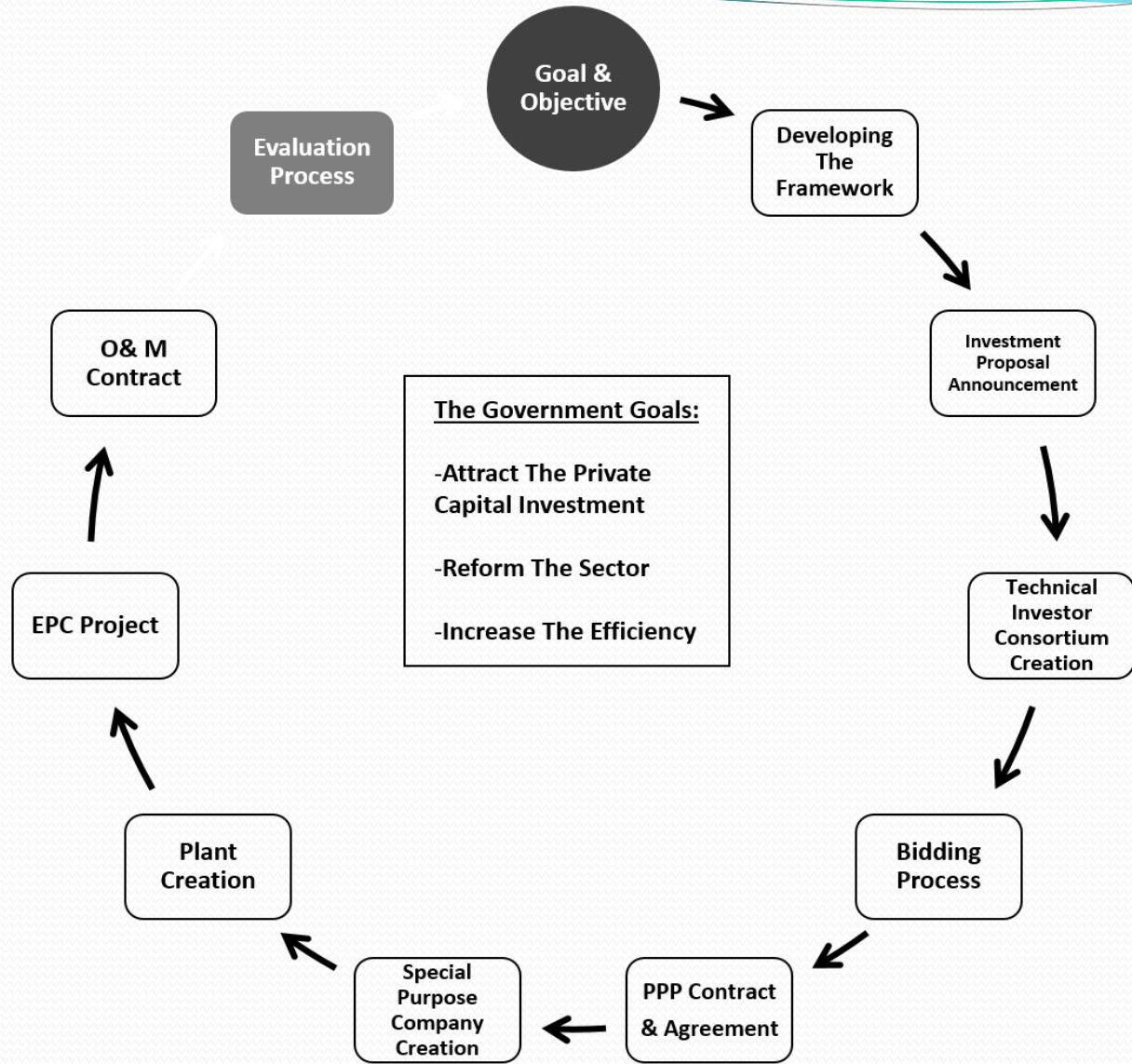


Terotechnology location on Public-Private-Partnership Projects (BOOT)

The Terotechnology



Why Terotechnology fits in Public-Private-Partnership Projects (BOOT) Option

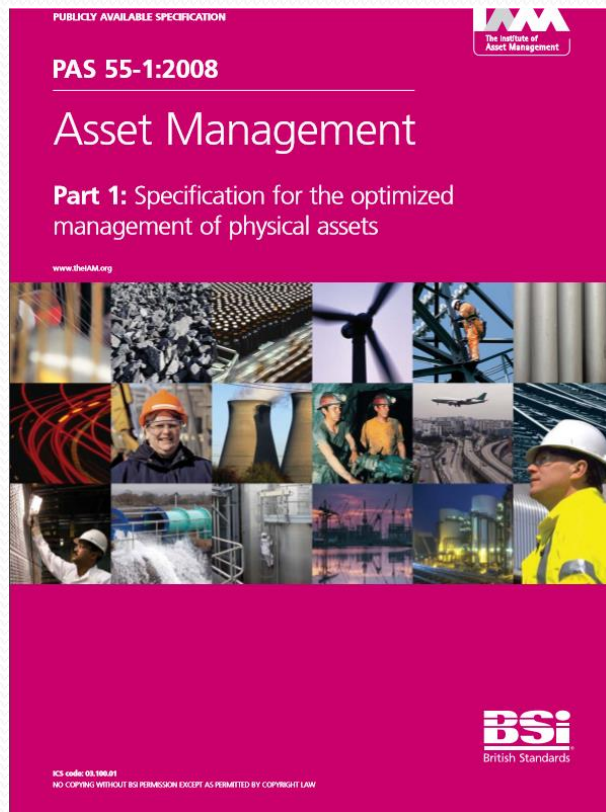


The Evaluation and the Assessment Process (Reaching the Gap)

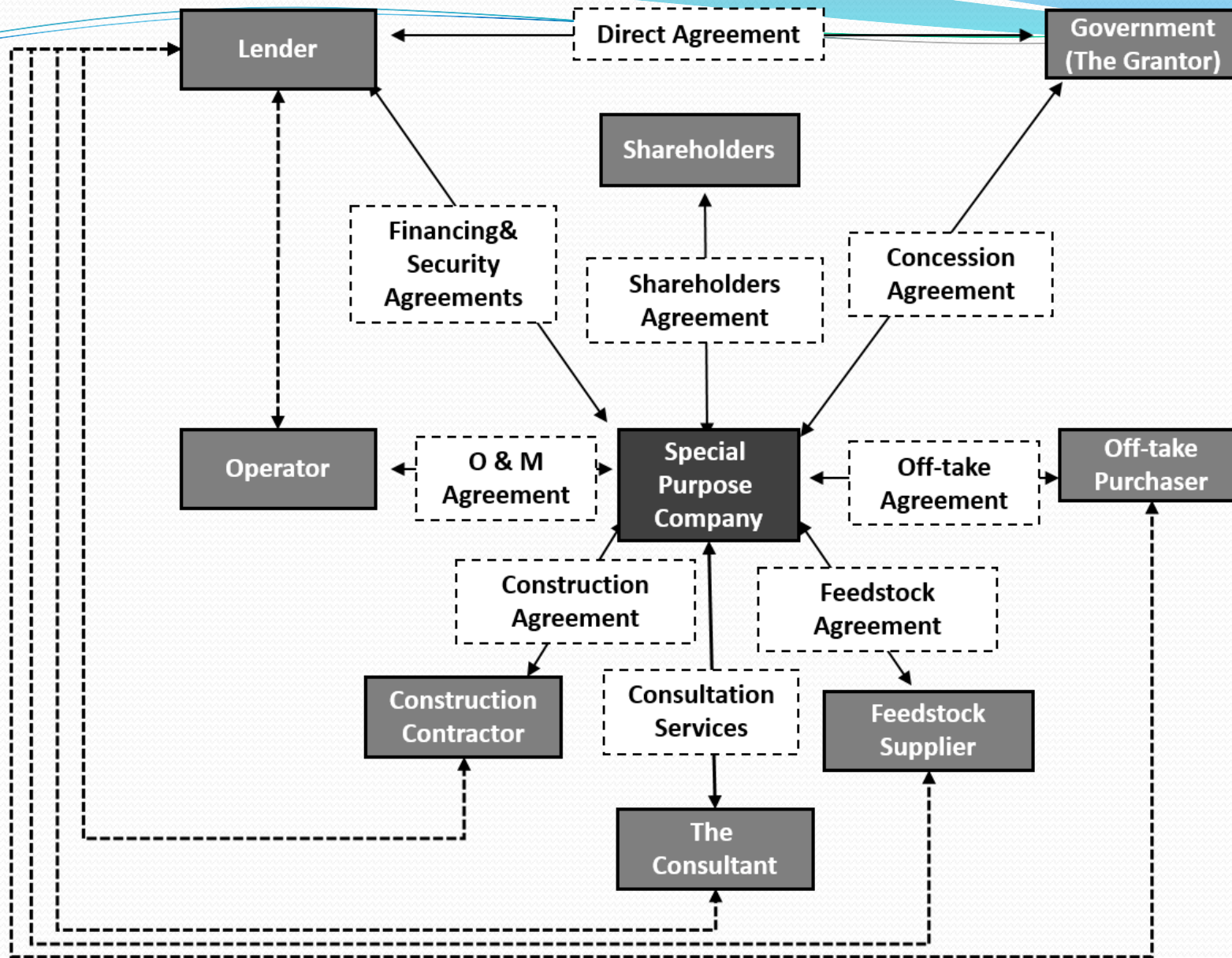
Methodology

The British Standard Institute had issued BSI PAS 55:2008 for Asset Management as guide for terotechnology implementation.

ISO 55000 series comprise of ISO 55000, ISO 55001 and ISO 55002,



The difference between the two standards, BSI PAS 55:2008 focus on the physical assets whereas ISO55000 is a standard for any asset type.



Public-Private-Partnership Stakeholders Relationship & Contractual Agreements

Results

Qualitative

- The study and application of terotechnology is not an exact science, as there are many different variables that need to be estimated and approximated.
- However, a company that does not use this kind of study may be worse off than one that approaches an asset's life cycle in a more ad hoc manner.

Quantitate

- Terotechnology uses such financial analysis tools such as net present value (NPV), internal rate of return (IRR), and discounted cash flow (DCF) in an attempt to minimize the costs associated with the asset in the future.
- These costs can include engineering, maintenance, and wages payable to operate the equipment, operating costs, and even disposal costs.

Discussion

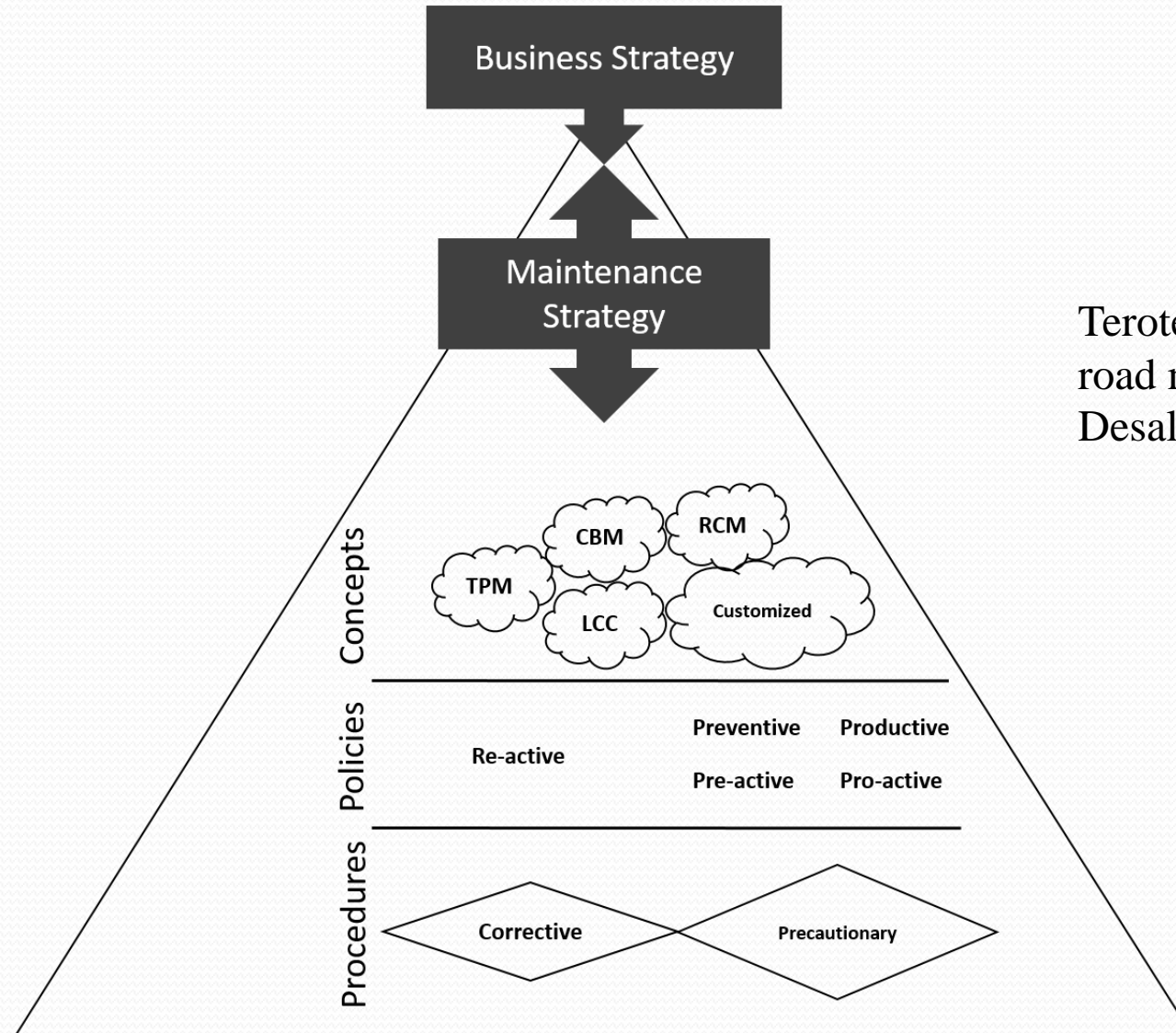
The Need of Terotechnology Guide in the Desalination Sector

- In order to implement Terotechnology in the desalination sector, we need to create a guide; “Terotechnology guide for implantation”. It is defined as framework and standard for measuring quality in the area of asset management.
- Fortunately, there are two international standards available to refer to:
- BSI PAS 55:2008 – the international benchmark for optimal management of assets
- ISO 55000 series comprise of ISO 55000, ISO 55001 and ISO 55002

The Need of Terotechnology Hub

- The Institute of Assets Management, UK
- The International Standard Organisation, ISO55000, USA
- Centre for Cost-effective Industrial Asset Management, Sweden
- Centre of Excellence in Maintenance (CEIM), Kingdom of Saudi Arabia
- Water Science and Technology Association (WSTA), Kingdom of Bahrain

Conclusion & Recommendations



Terotechnology implantation
road map and plan in the
Desalination Sector

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