



Wastewater Treatment Plant Privatization initiatives in Saudi Arabia

Presentation to: -SAWEA 2007 Workshop, Dhahran
Date: -04 -December 2007

Presented by: Loay Al-Musallam
Deputy Minister for Planning & Development
Ministry of Water & Electricity (MOWE)
Kingdom of Saudi Arabia

Table of Contents

1 Global issues of wastewater

2 Water and wastewater sector key challenges in KSA

3 MOWE's Vision and Approach to Privatization

4 Business opportunities in Wastewater Treatment plants & Effluent reuse

Table of Contents

1 Global issues of wastewater

2 Water and wastewater sector key challenges in KSA

3 MOWE's Vision and Approach to Privatization

4 Business opportunities in Wastewater Treatment plants & Effluent reuse

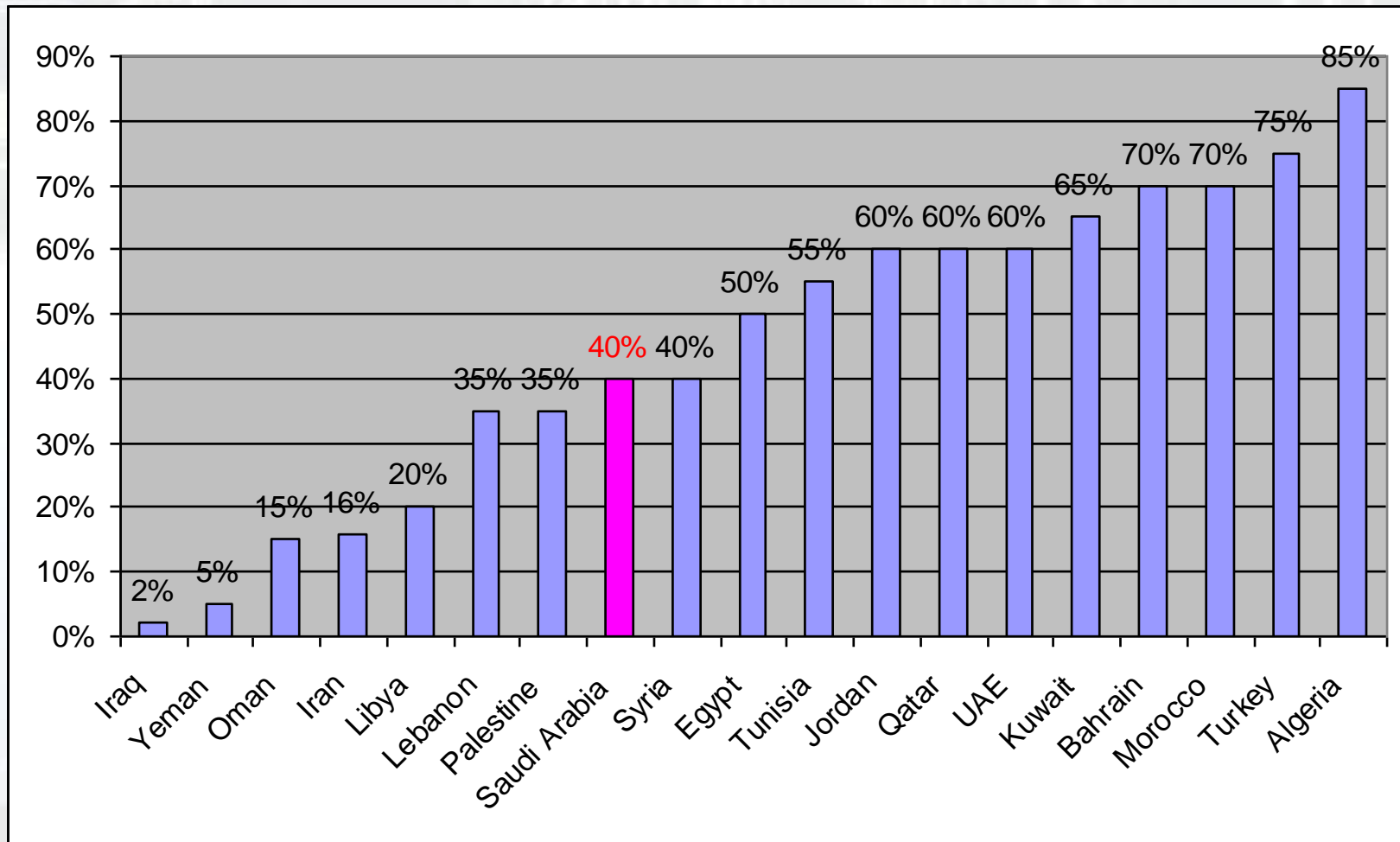
Global issues of wastewater

- ❖ About 90% of sewage and 70% of industrial wastes in developing countries are discharged without treatment
- ❖ At present, only 10 % of the domestic wastewater in developing countries is collected
- ❖ Only 10 % of existing wastewater treatment plants operate reliably and efficiently
- ❖ Beginning of year 2000, 40 % of world population (2.4 billion people) will have no access to sanitation

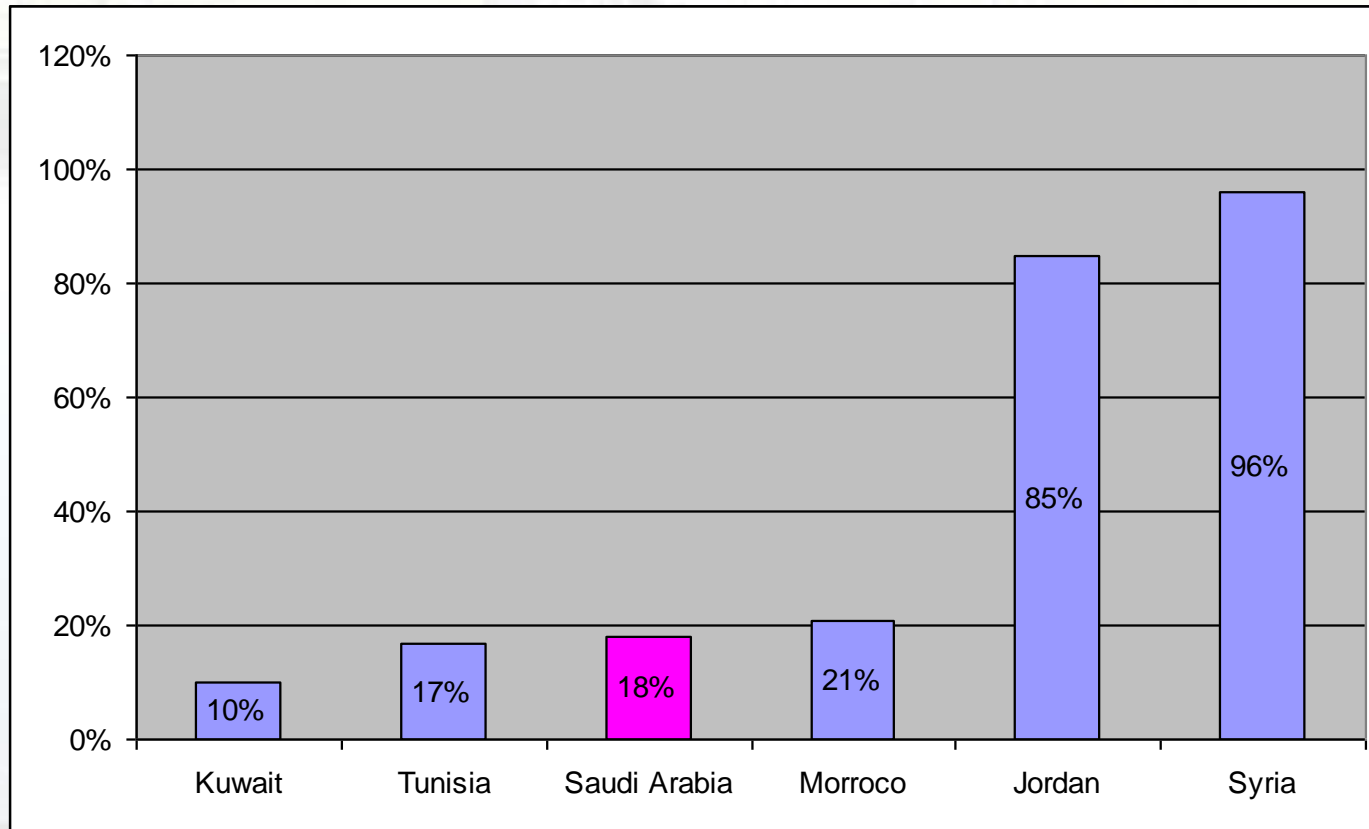
Source : World Water Week 22nd August 2006 Series Issue Global water supply and sanitation assessment 2000 report



Sewerage coverage - MENA Region



Treated Effluent Reuse (% of treated volume)



Source: Water Reuse in MENA, Summary Report of the Regional Workshop held in Cairo, July 2-5, 2001, based on country submissions

Source : A. BAHRI, National Research Institute for Agricultural Engineering, Water, and Forestry, Tunisia

Reuse applications

- ❖ Industries - *process, refineries, power plants*
- ❖ Districts cooling systems – *big commercial buildings, multi-story apartments, large housing units*
- ❖ Agriculture – *farms irrigation*
- ❖ Public parks – *landscaping, public fountains*
- ❖ Groundwater and aquifer recharge
- ❖ Non-potable use – *fire hydrants, toilet flushing, car washing, gardening Industries.*

Table of Contents

1 Global issues of wastewater

2 Water and wastewater sector key challenges in KSA

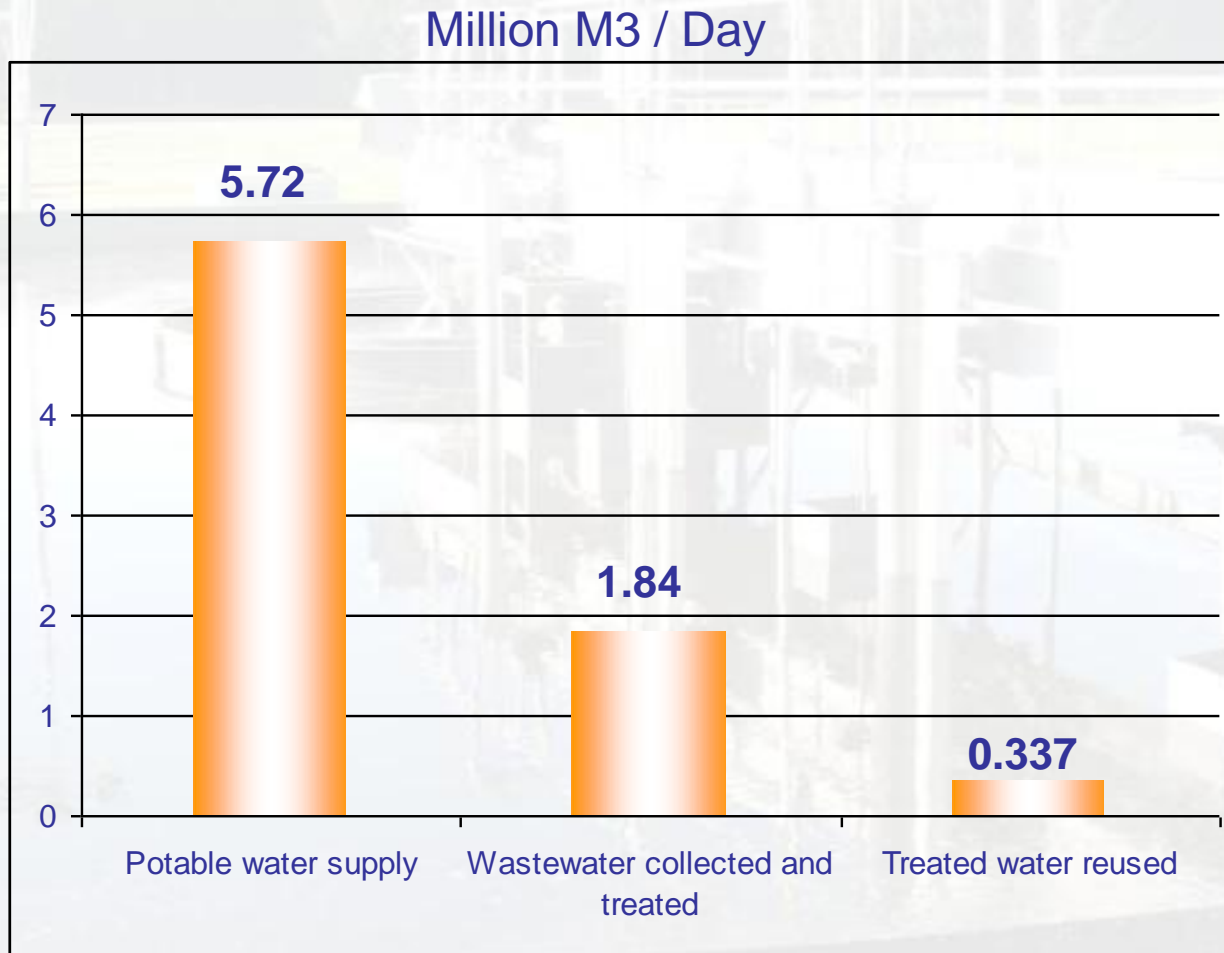
3 MOWE's Vision and Approach to Privatization

4 Business opportunities in Wastewater Treatment plants & Effluent reuse

Key Challenges In the Kingdom

- ❖ Saudi Arabia is listed under “absolute water scarcity category ” (i.e. will NOT be able to meet needs in 2025)
- ❖ Due to growing population, and rapid economic growth water demand in the kingdom is increasing rapidly by 6% annually
- ❖ Water production & transportation costs are the world’s highest
- ❖ The Kingdom’s sewage collection coverage is only 45 %
- ❖ Treated effluent reuse is very limited (6 % of potable water supply)
- ❖ Wastewater treatment plants and networks requires huge investments (85 billion SR for next 20 years)

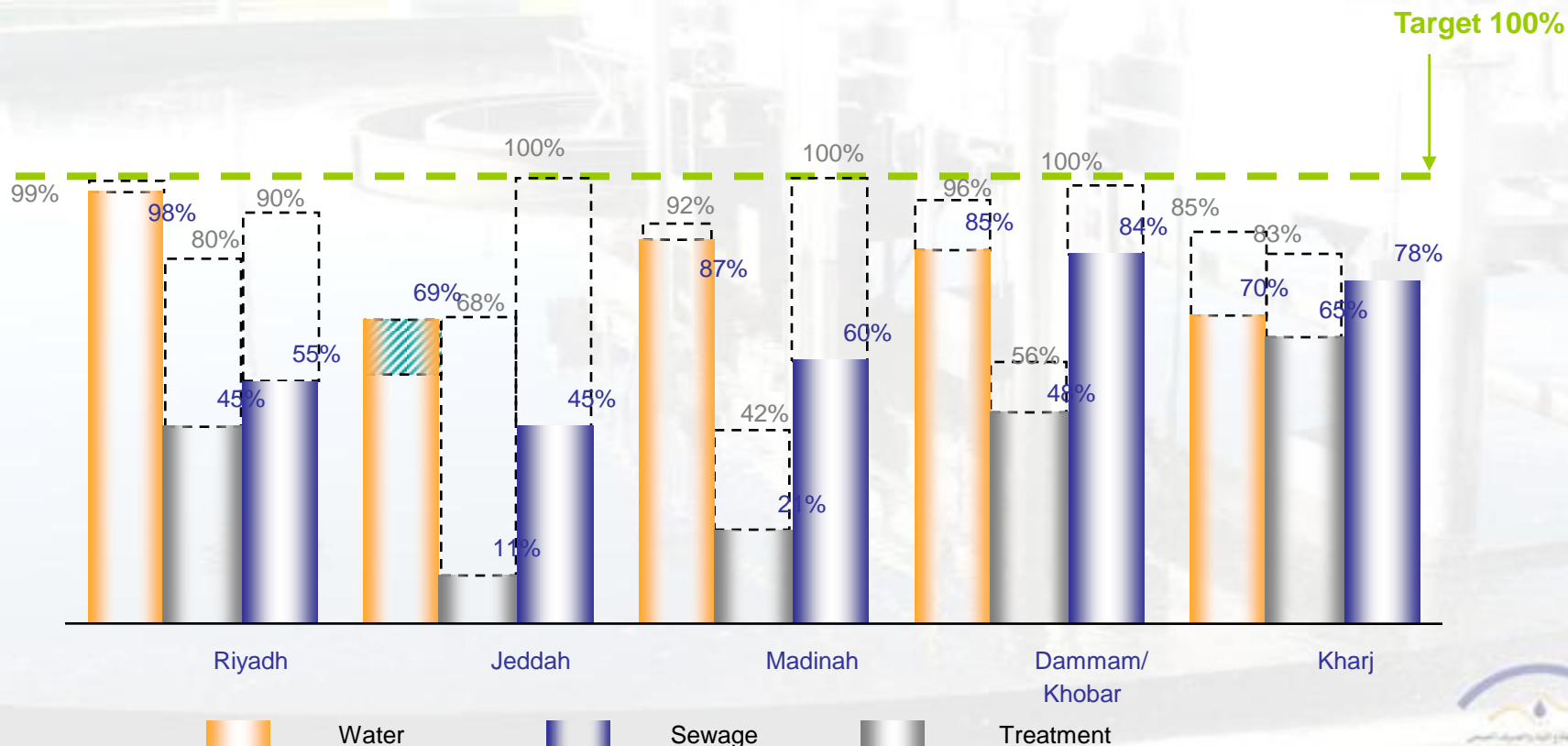
Wastewater Statistics in KSA



REUSE – 337,000 m3/day= 6 % of potable supply 18 % of treated water

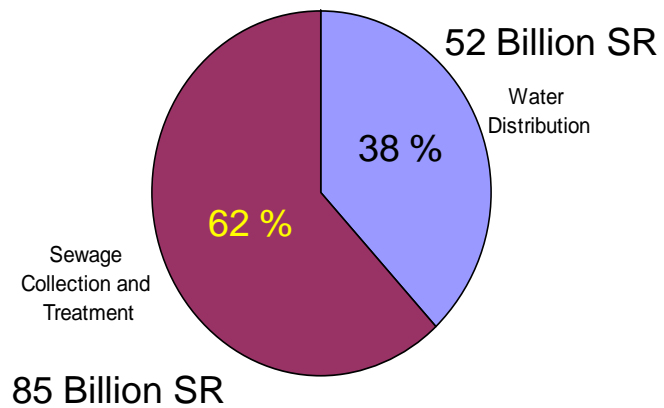
Current coverage versus a 100% coverage

Water Distribution, Sewage Collection and Waste Water Treatment
Current and Under Construction Coverage by City

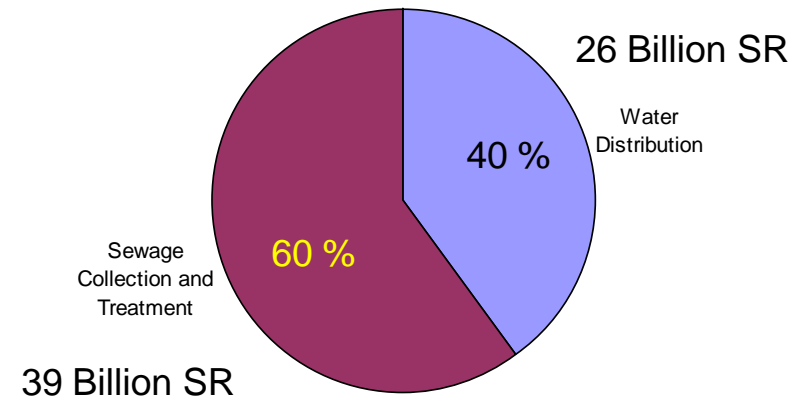


Requirement for 100 % coverage in KSA for next 20 years

Total CAPEX (Billion SR)



Total OPEX



Why Privatization?

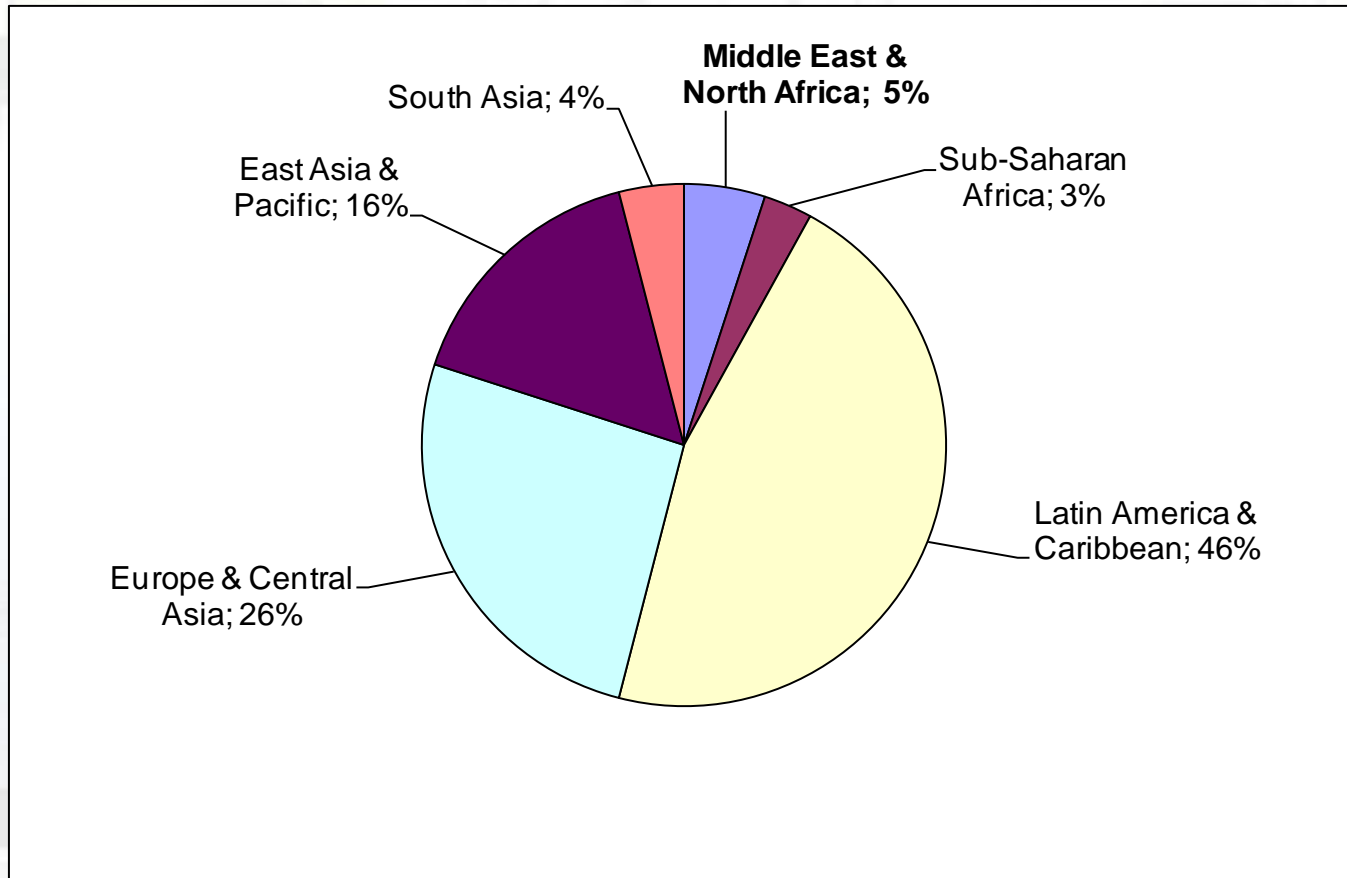
Why privatization?

- ❖ **Adopting international best practices**
- ❖ **Improved operating efficiency and reduce costs**
- ❖ **Helps in better management of CAPEX and OPEX**
- ❖ **Create enabling environment for private sector participation**
- ❖ **Build Commercially Viable Organization**
- ❖ **Attract International Investors/ Operators**
- ❖ **Manpower training, knowledge transfer and capacity building**
- ❖ **Technology applications like ERP, GIS, SCADA, CRM Asset Management etc.**
- ❖ **world Class Customer Services**

Privatization trend

Between 1990 and 2003, 120 developing countries carried out nearly 8,000 privatization transactions, raising US\$410 billion in privatization proceeds.

Regional distribution of privatization proceeds, 1990-2003



Privatization trend

Investment in infrastructure projects with private participation in developing countries, by region, 1990-2004

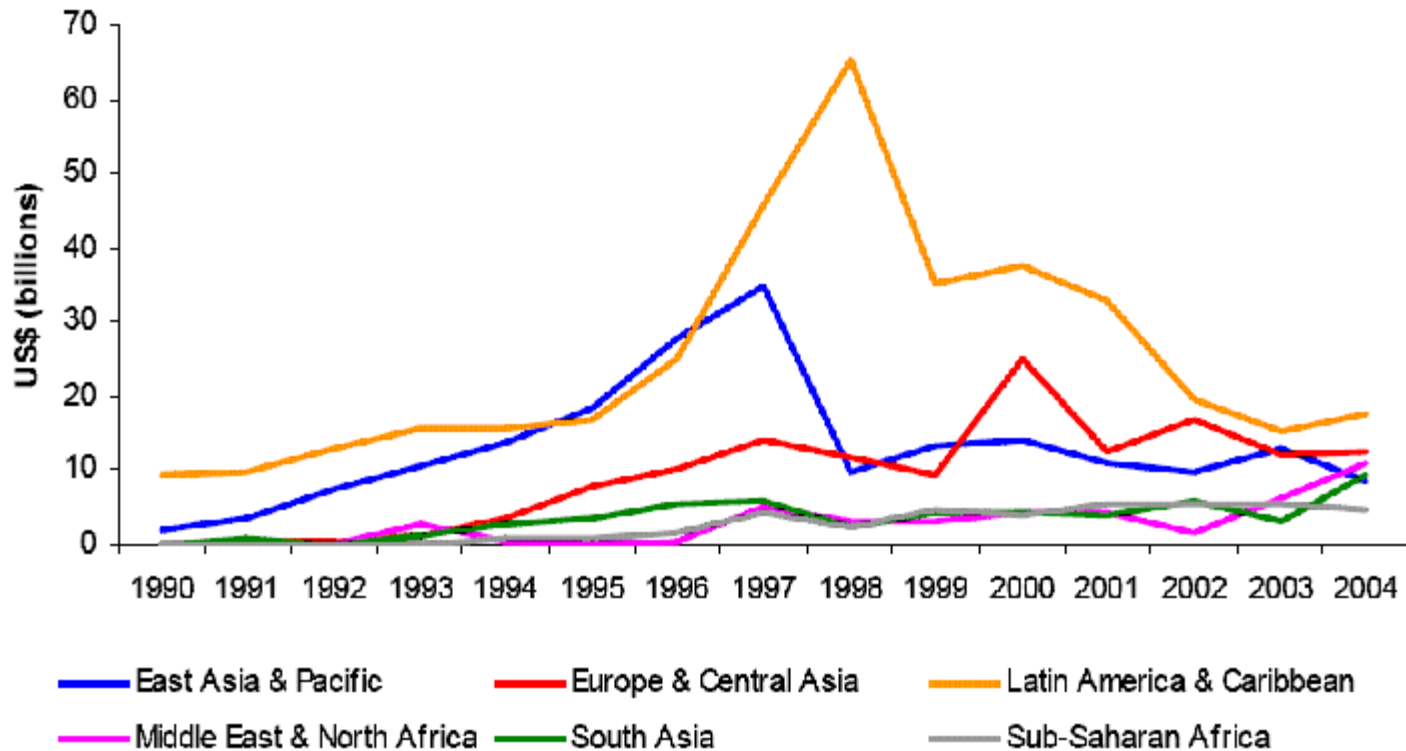
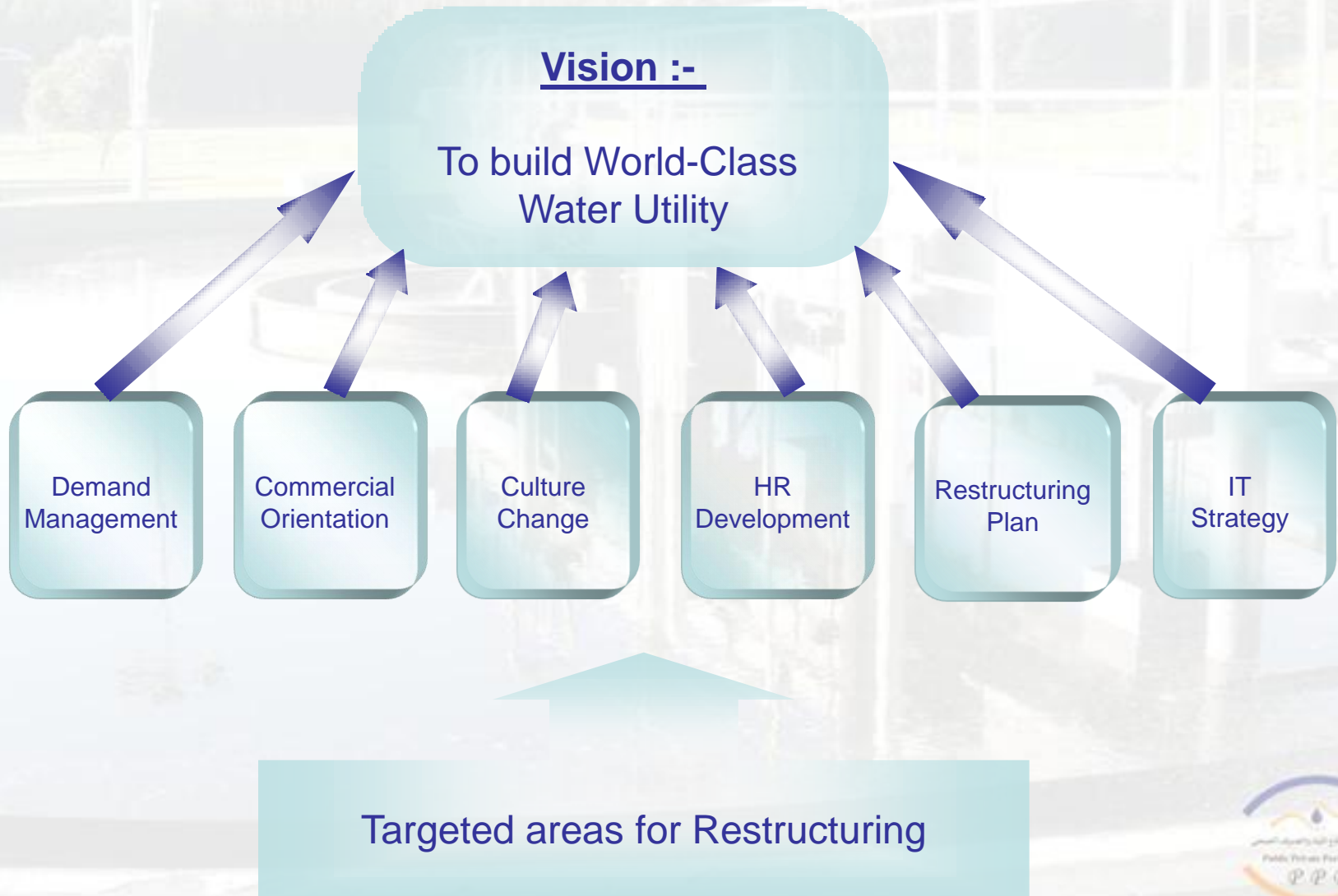


Table of Contents

- 1 Global issues of wastewater
- 2 Water and wastewater sector key challenges in KSA
- 3 MOWE's Vision and Approach to Privatization**
- 4 Business opportunities in Wastewater Treatment plants & Effluent reuse

MOWE's Vision:



Develop/Implement Strategic Transformation Plan (STP)

Identify Opportunities for Improvement

Management /O&M contracts (5 years transition)

Concession/ total privatization

- Operational Audit
- Organisational Diagnostics
- Benchmarking
- Develop action plan

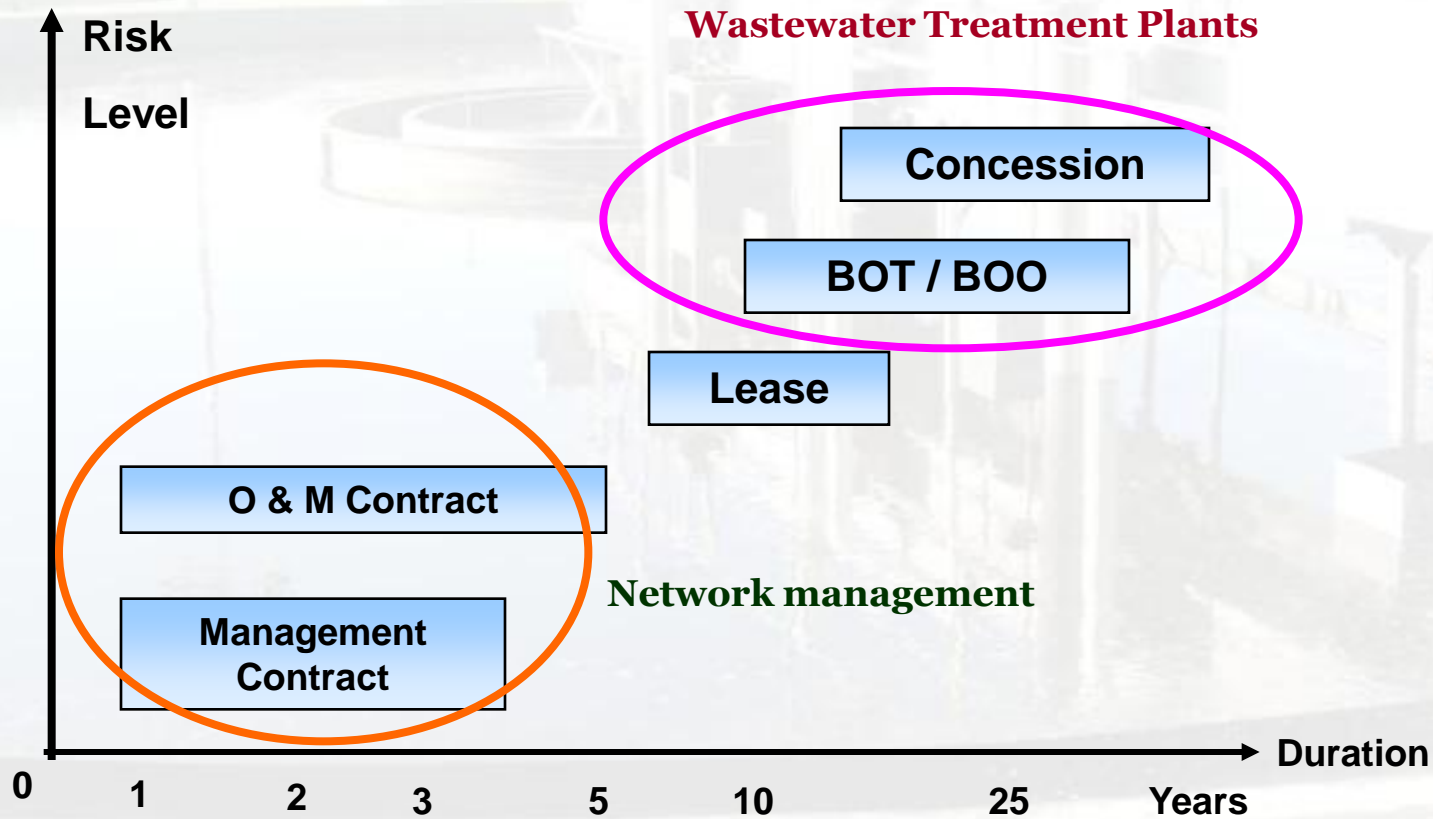
- Establish NWC
- Boost sector performance
- Make water sector more attractive

- Tariff restructuring
- Transfer asset & employees

- Early PPP successful paving the way for complex contract
- Move to Concession/ total privatization

MoWE's Privatization Model / Scheme

Public Private Partnership chosen models



Why unbundling?

- ❖ **Reduces risk and better management**
- ❖ To provide equal focus and enhanced services in both water and wastewater
- ❖ **Helps in addressing the immediate customer needs**
- ❖ **Reduces risk and easy to manage**
- ❖ To improve and build new infrastructure rapidly
- ❖ Helps in quicker full sewage coverage, collection and treatment
- ❖ Improve level of treatment and disposal methods
- ❖ **Involve specialized companies with wastewater treatment as core activity**
- ❖ Improve in technical and efficiency of WWTPs
- ❖ **Increase reuse of Treated effluent on commercial basis**

MOWE preferred Option of sector unbundling

Water distribution and wastewater collection

Wastewater treatment and Reuse

Management Contract

Concession / BOO

Reuse locations



Wells

Water
Treatment
Plants

Reservoirs

Households



P

Existing Wastewater
Treatment Plants



Future WWTP based on
BOO basis



Agriculture

District cooling

Industries

Public Parks

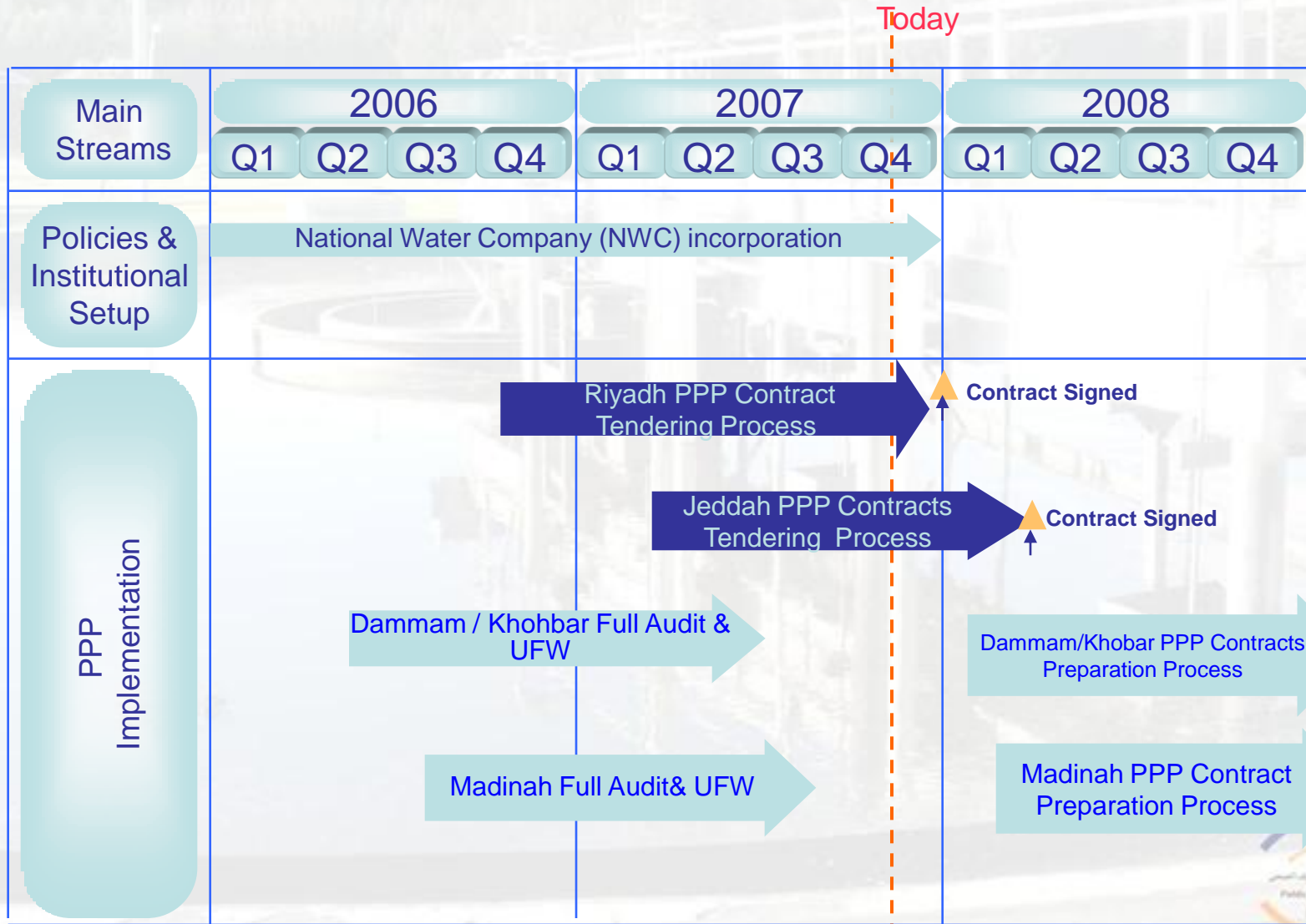
Aquifer recharge

Non-potable use

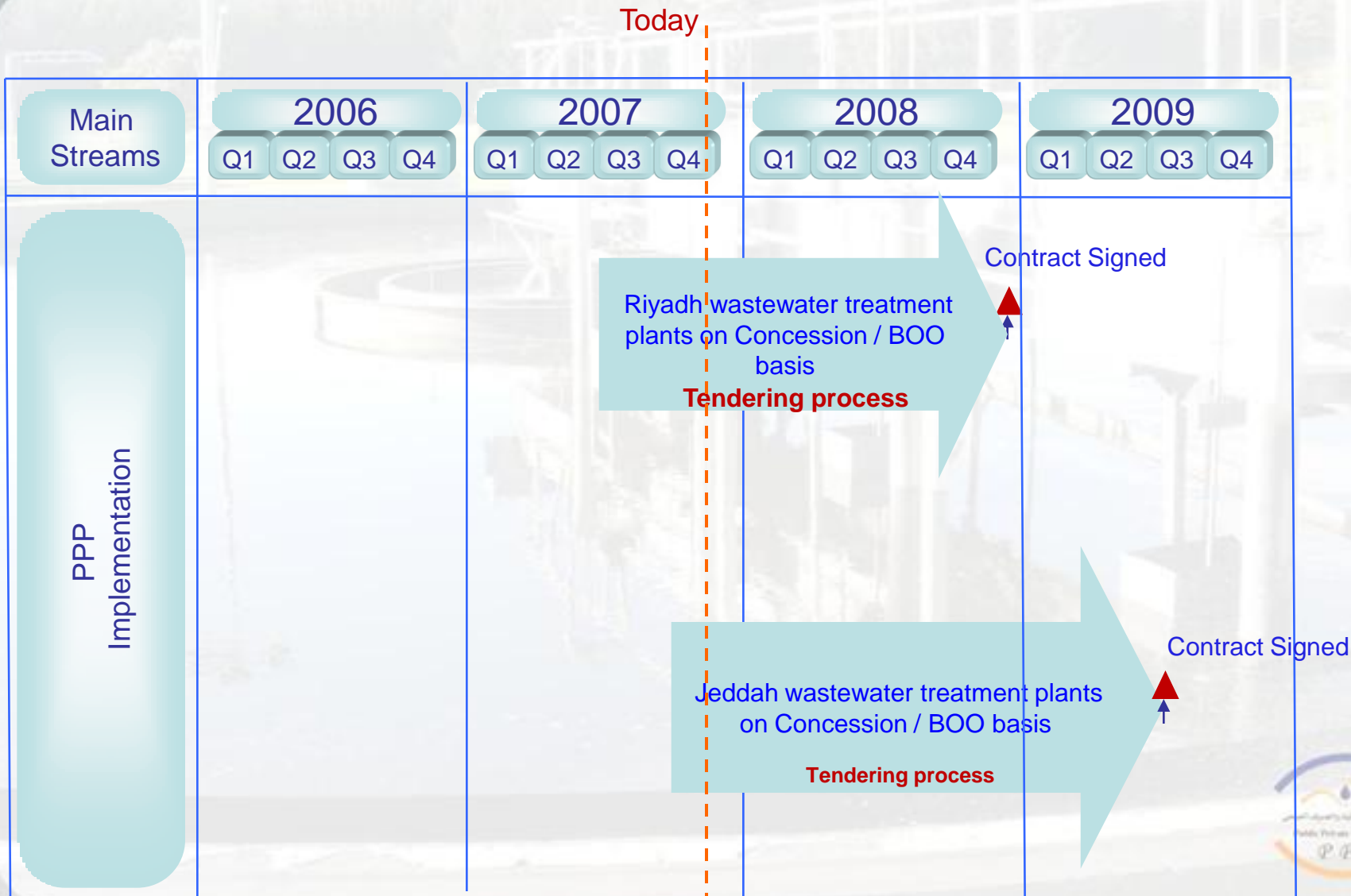
Current/ Future PPP Projects



MOWE Privatization Roadmap (Potable water & sewage collection)



MOWE Privatization Roadmap (Wastewater Treatment Plants)



Formation of NWC



Formation of NWC

- ❖ Supreme Economic Council has already approved the setting up of National Water Company (NWC) and the Royal Decree is expected soon
- ❖ NWC will be formed as a Joint Stock Company
- ❖ Initially NWC's authorized capital will be around SR 22 billions
- ❖ All the existing water and wastewater assets will be transferred to NWC . Expected total capital (4 major cities only) will be around SR 70 Billions
- ❖ NWC will be responsible for the privatization of the urban water and sewage sector in the Kingdom
- ❖ NWC will attract international investments and know-how

Table of Contents

1 Global issues of wastewater

2 Water and wastewater sector key challenges in KSA

3 MOWE's Vision and Approach to Privatization

4 Business opportunities in Wastewater Treatment plants & Effluent reuse

Details of Wastewater Treatment Plants projects



KSA WWTP Projects in comparison with GCC Projects

The Project transaction (treatment capacity) is of significant scale compared to other tendered / planned GCC offers:

Location	Total Design Capacity
Riyadh (Saudi Arabia)	1,700,000 m3/day *
Jeddah (Saudi Arabia)	1,300,000 m3/day
Wathba/Saad (Abu Dhabi)	365,000 m3/day
Sulaibiya, Kuwait	375,000 m3/day
Samra, Jordan	270,000 m3/day
Muharraq (Bahrain)	170,000 m3/d
Ajman	90,000 m3/day

* - (Existing : 5 plants (700,000 M3/day) + 2 under construction (500,000 M3/day)+ 2 future (500,000 M3/day)

WWTP Riyadh city Project

The Project comprises a mix of “Brownfield” and “Greenfield” WTP assets:

Location	Plant name	Year of commission	Design Capacity (M3/Day)	Current Status
Manfouha	South plant C2	1975	80,000	Existing plants (Brownfield)
	South plant C3	1981	120,000	
	North Plant	1994	200,000	
	East Plant	2005	200,000	
Al-Kharj	Phase-1	2007	100,000	Under Construction (EPC)
	Phase-2	2008 / 2009	100,000	
	Future Expansions		200,000	BOO (Greenfield)
Hayer	Phase-1	2011/2012	400,000	Under Construction (EPC)
	Phase-2		400,000 – 800,000	BOO (Greenfield)

Total Number of WWTPS = 9

Total design Capacity = 1.7 Million M3/day

Jeddah city WWTP Project:

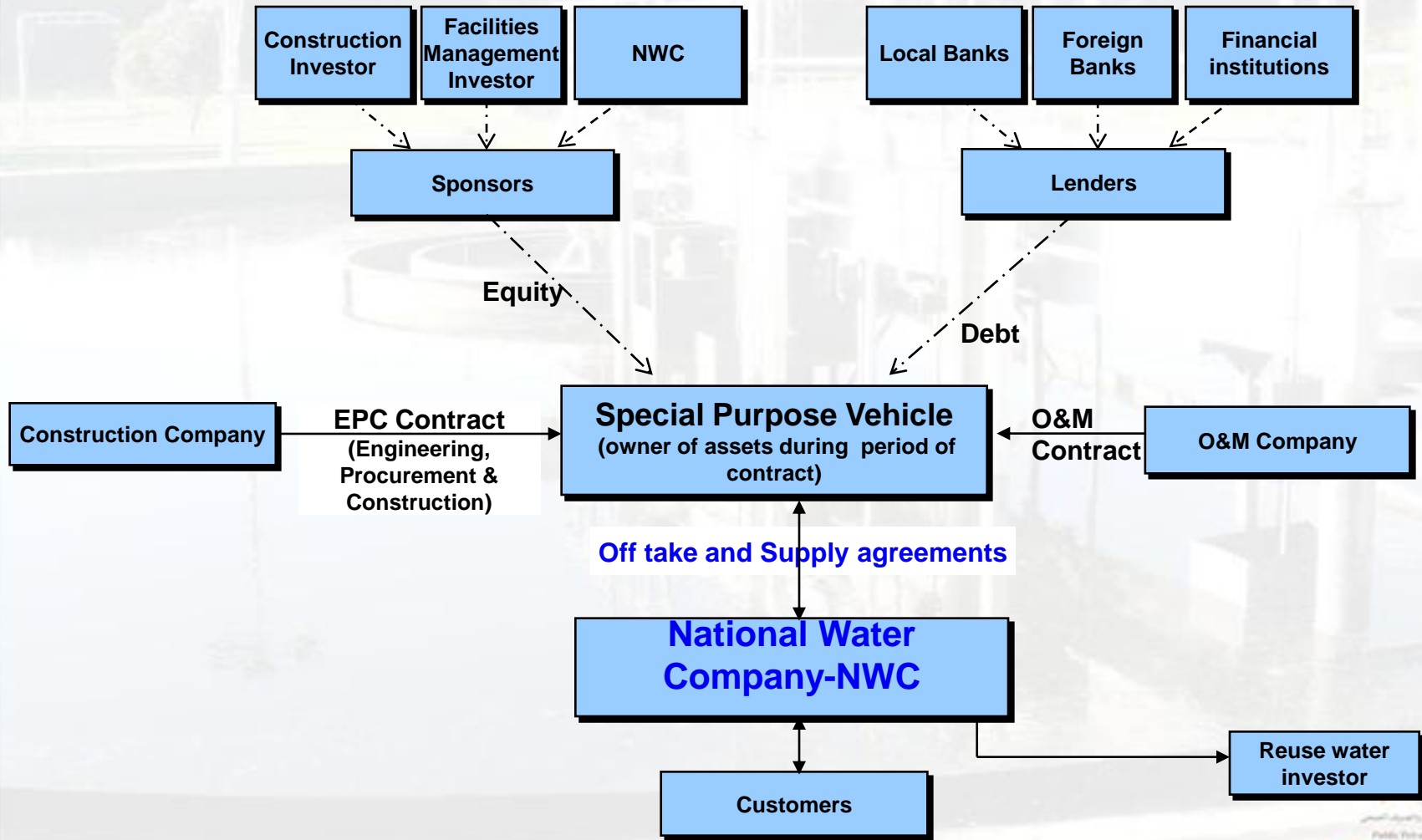
Plant Location	Design Capacity (M3/Day)	Year of Commissioning	Current Status
Khumra 1	40,000	1977	Existing plants (Brownfield)
Khumra 2	60,000	1997	
Khumra 3	140,000	2005	
Other Small Plants	60,000	--	
Khumra 4	250,000	EPC Contract awarded	Under Construction (EPC)
Airport 1	250,000	EPC Contract awarded	
Khumra 5	250,000	Under study	BOO (Greenfield)
Airport 2	250,000	Under study	

Total Number of WWTPS = 8

Total design Capacity = 1.3 Million M3/day



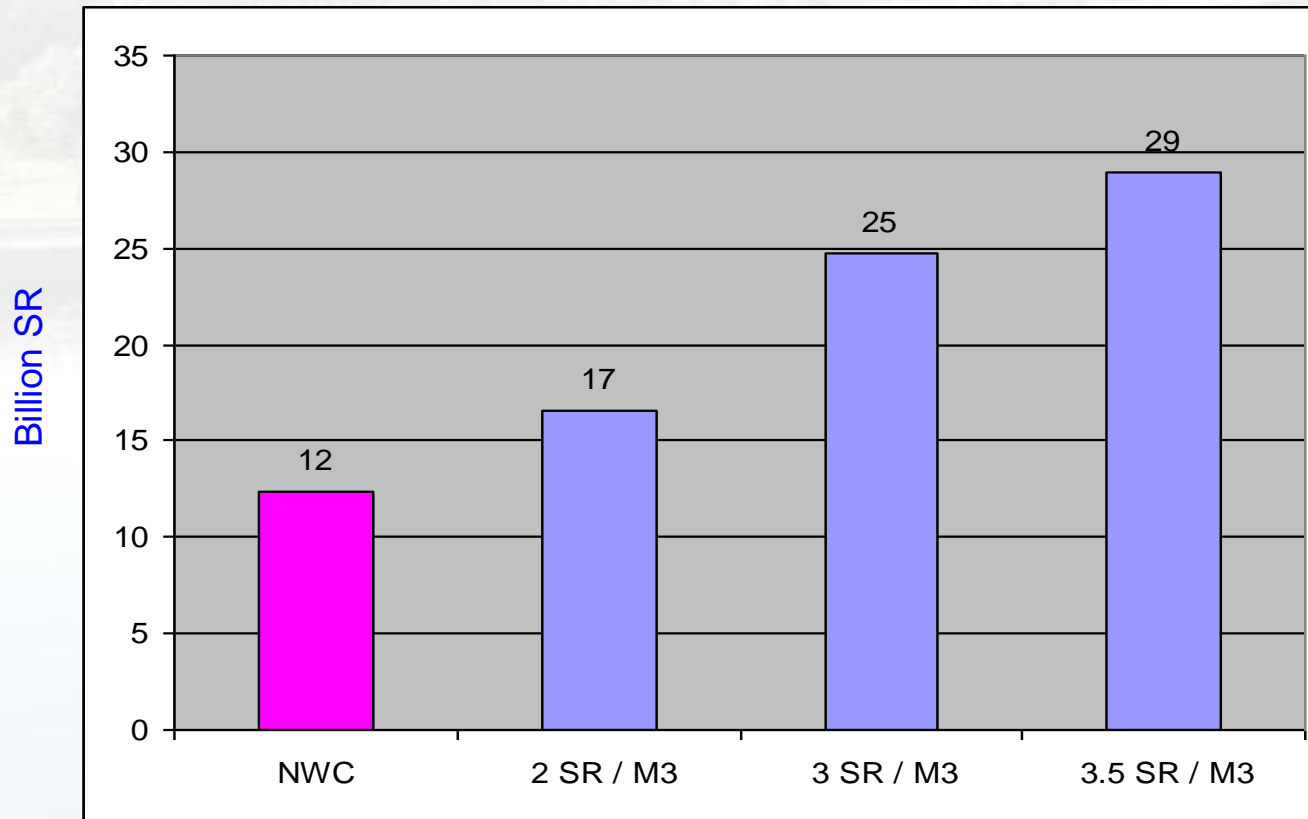
Commercial Contracts Matrix:



Potential Reuse of Treated water in Riyadh City



Different scenario for treated effluent sales In Riyadh city



Payment to NWC
at 1.5 SR / M3

Potential sales at price of

Calculations based on assumption of :

70 % of treated water could be used during next 25 years

NWC sells at 1.5 SR / M3 to private investors



Examples of potential customers for waste water effluent in Riyadh City

Company	Utilization of Recycled Wastewater	Expected future daily Demand (M3/day)
Prince Turkey Bin Saud Al-Kabeer	Irrigation	50,000
Tabreed	Cooling Water	50,000
Current Manfouha reuse	Irrigation Cooling Water	179,000
Muzaimiya and Dirab	Irrigation	280,000
Dareiya and Hebilla	Irrigation	120,000
Other farms	Irrigation	25,000
Total Future daily Demand Expected Currently		704,000

Other potential customers:

- ❖ ADA – Al-Riyadh Development Authority.
- ❖ SEC - Saudi Electricity Company.
- ❖ Yamama Cement Factory.
- ❖ Mansouria Farm.
- ❖ Rajhi Cement Factory .

Awards



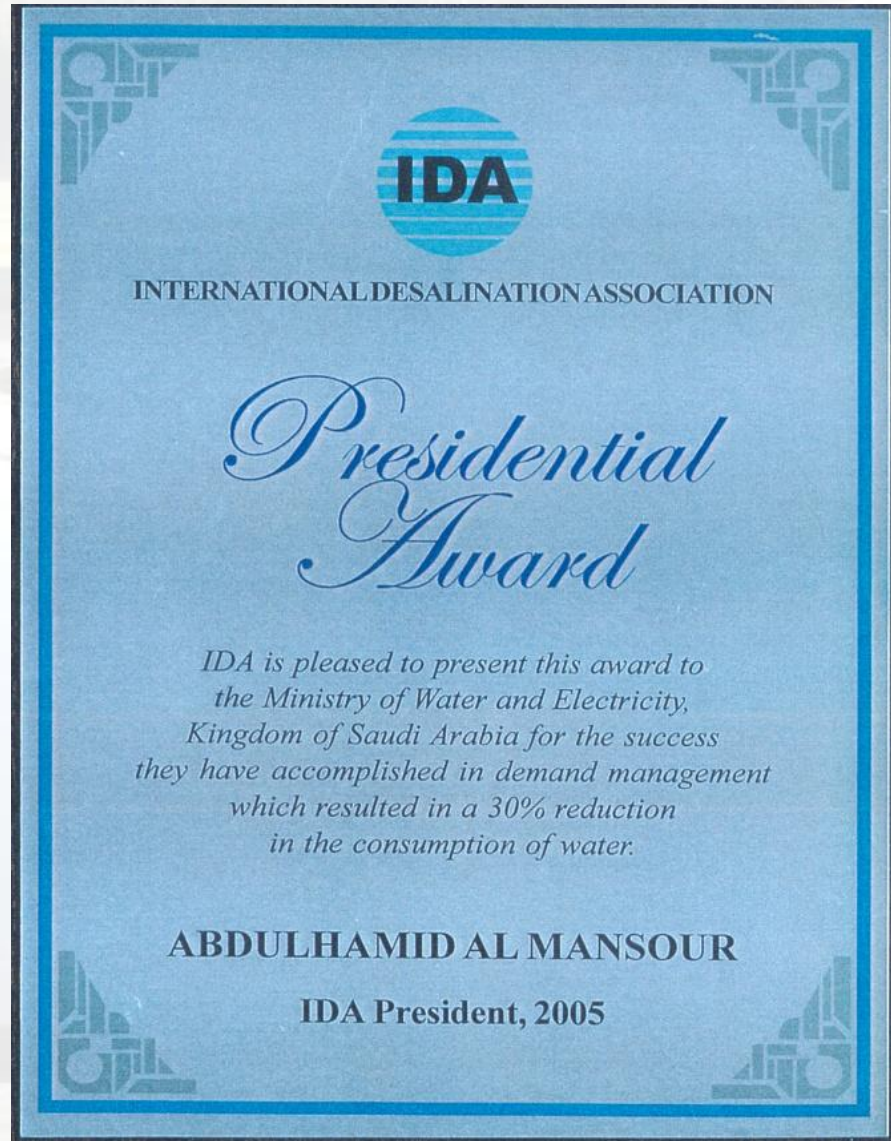
Best privatization award by Arabian Business Magazine June 2007



***GLOBAL WATER AWARDS 2007
as the best public water agency of the year 2006***



IDA award for water conservation campaign



Recognition letters from UNDP for the water conservation efforts

United Nations Development Programme
Kingdom of Saudi Arabia

برنامج الأمم المتحدة الإنمائي
المملكة العربية السعودية



Ref.: SAU/MWE

التاريخ: ٢١ أغسطس ٢٠٠٦م

معالي المهندس عبد الله بن عبد الرحمن الحصين
وزير المياه والكهرباء
وزارة المياه والكهرباء
الرياض - المملكة العربية السعودية
السلام عليكم ورحمة الله وبركاته ...

الموضوع: حملة ترشيد المياه دعماً لالتزام المملكة بالأهداف التنموية للألفية الجديدة

أود أن أعرب لمعاليكم عن تقدير وإشادة برنامج الأمم المتحدة الإنمائي بجهود وزارة المياه والكهرباء في سبيل ترشيد استهلاك المياه وتغيير النمط السلوكي تجاه هذا باعترافها المورد الطبيعي الأكثر أهمية وقيمة للإنسان.

إن جهود وزارة المياه والكهرباء، والتي تمثل في الحملة الوطنية لترشيد المياه بما تضمنته من برامج توعوية تامة إلى جانب تطبيق أوسع التحول العملية من خلال توزيع أجهزة حديثة لترشيد استهلاك المياه، تعتبر اسهاماً عملياً في مساعي المملكة للالتزام بمقررات قمة الألفية التي عقدت في سبتمبر ٢٠٠٠م والتي تمخضت عن بيان الأهداف التنموية للألفية الجديدة، وتعلمون معاليكم أن تلك القمة قد شارك فيها ملوك ورؤساء ١٩٦ دولة حول العالم، وعلى رأسها المملكة العربية السعودية إذ مثلها حينئذ ولي العهد وقتها الملك عبد الله بن عبد العزيز، حفظه الله. وبمثل هذه الأهداف للتنمية للألفية الجديدة، نشير على وجه الخصوص إلى الهدف السابع الذي يتعلق بترشيد الموارد الطبيعية واتاحة مياه الشرب العذبة لجميع المواطنين.

كما يسرني أن أؤكد لمعاليكم أن الذي حدا بنا لتبني هذه الجهود الوزارة هو انتباهها للنظرة الاستراتيجية العميقة لواقع ومستقبل المياه في المملكة العربية السعودية وضرورة إدارتها إدارة متكاملة أخذاً في الحسبان حق الأجيال الحالية والمستقبلية فيها. وفي هذا الصدد، فإن البرنامج الإنمائي لن يدخر جهداً في مساندة تلك الجهود سواء من خلال مشروع التعاون الفني ثنائي لمساندة تطوير استراتيجية متكاملة لإدارة موارد المياه أو استجابة لأي طلب دعم فني وعلمي من جانب معاليكم والمستحقين لديكم.

وافتك الله وسدد على طريق الخير خطاكم، وتفضلوا بمعاليكم بقبول فائق التقدير ...



المصطفى بن الميخ
المنسق للمقيم للأمم المتحدة
الممثل لتقييم برنامج الأمم المتحدة الإنمائي



P.O. Box: 94623 Riyadh 11614, Kingdom of Saudi Arabia Tel: 4885301 Fax: 4885309 Email: registry@undp.org.sa
م. ب. ٩٤٦٢٣ الرياض ١١٦١٤ المملكة العربية السعودية ت. ٤٨٨٥٣٠١ ف. ٤٨٨٥٣٠٩ ب. إ. registry@undp.org.sa



Recognition letters from UNU for the water conservation efforts



UNITED NATIONS
UNIVERSITY

International Network on Water,
Environment and Health

Downtown Centre, 1st Floor Telephone 1 905 525-9140 ex. 24517
50 Main Street East Fax 1 905 529-4261
Hamilton, Ontario Email contact@inweh.unu.edu
Canada L8N 1C9 www.inweh.unu.edu

19 January 2007

H.E. Engineer Abdullah Al Hussayen
Minister of Water and Electricity
King Fahd Road
Riyadh, 11233
Kingdom of Saudi Arabia

Subject: Letter of Appreciation for the Saudi Water Conservation Campaign

Your Excellency,

It is my pleasure to write to you and congratulate you on the remarkable success of the Saudi Water Conservation Campaign. The Campaign has demonstrated some outstanding results in reducing the urban water usage. Through the 30 million retrofits provided to the communities by your ministry, the daily savings in domestic water use are estimated to be about 30% or 524,000 cubic meters of water; this is roughly equal to the production of four large desalination plants. This approach of water conservation and demand management is crucial for water-scarce countries like the Kingdom of Saudi Arabia.

The core concern of UNU-INWEH's mission is the global water crisis. Our organization specifically focuses on the efforts to meet this global crisis, through capacity development and directed, policy-relevant research. For many years, UNU-INWEH has been focusing its work on water management and conservation in dryland countries. We strongly believe that integrated water resources management is the key to achieving sustainable development, and that demand management must be an essential element in water-scarce settings. Therefore, the campaign by your Ministry is a remarkable success in this direction, and sets an example for other dryland countries. We hope that we can partner with your Ministry to bring the results of this achievement to the attention of the other water-scarce countries in the region.

On behalf of UNU-INWEH, I take advantage of this occasion to address to Your Excellency the assurance of our highest consideration.

Sincerely,

Dr. Zafar Adeel
Director, UNU-INWEH



Lessons learnt

- ❖ **Choosing the right PPP option**– contract should clearly address objectives, level of risks and responsibilities
- ❖ **Establish the enabling environment** in terms of government approvals, institutional, legal, and financial framework
- ❖ Well defined responsibilities & obligations of both parties (NWC & the private sector)
- ❖ **The PPP contracts should be tailored to meet the local objectives** and provided the risk sharing, ROI, incentives, flexible payment mechanism, etc
- ❖ **Gradual privatization (Do-lean-Do approach)**
- ❖ **Avoid erroneous KPI's baseline.** Targets / KPIs need to be realistic / achievable
- ❖ Fair, transparent and competitive bidding process

Thank You For Your Attention

