

URBAN DEVELOPMENT IN

BORA BORA ISLAND

The private partner contribution

Joël ALLAIN and Roland CATIMEL

Suez Environment, France and SPEA, Papeete

PECC - November 2007

SUEZ ENVIRONMENT

INTRODUCTION

HISTORY

The water STRUGGLE

BORA BORA

WATER CHALLENGE

NEW TEAM 1990

1990-93

Water Map #1

1995-2000

DESALINATION

Water Map #2

SEWAGE

SEWAGE ORG.

OPERATIONS

REUSE

Photo WWTP

TARIFF & COSTS

SIGNAL

CRM

CONCLUSIONS

**SUEZ ENVIRONMENT,
A SUEZ business line, SUEZ Environment
provides equipment and services that
protect the environment and deliver the
essentials of life through 2 main activities:**



**SUEZ Environment's wide-ranging
service offering provides sustainable
solutions to local authorities and
businesses worldwide.**

WATER: population served (per million inhabitants)



INTRODUCTION

HISTORY

The water STRUGGLE

BORA BORA

WATER CHALLENGE

NEW TEAM 1990

1990-93

Water Map #1

1995-2000

DESALINATION

Water Map #2

SEWAGE

SEWAGE ORG.

OPERATIONS

REUSE

Photo WWTP

TARIFF & COSTS

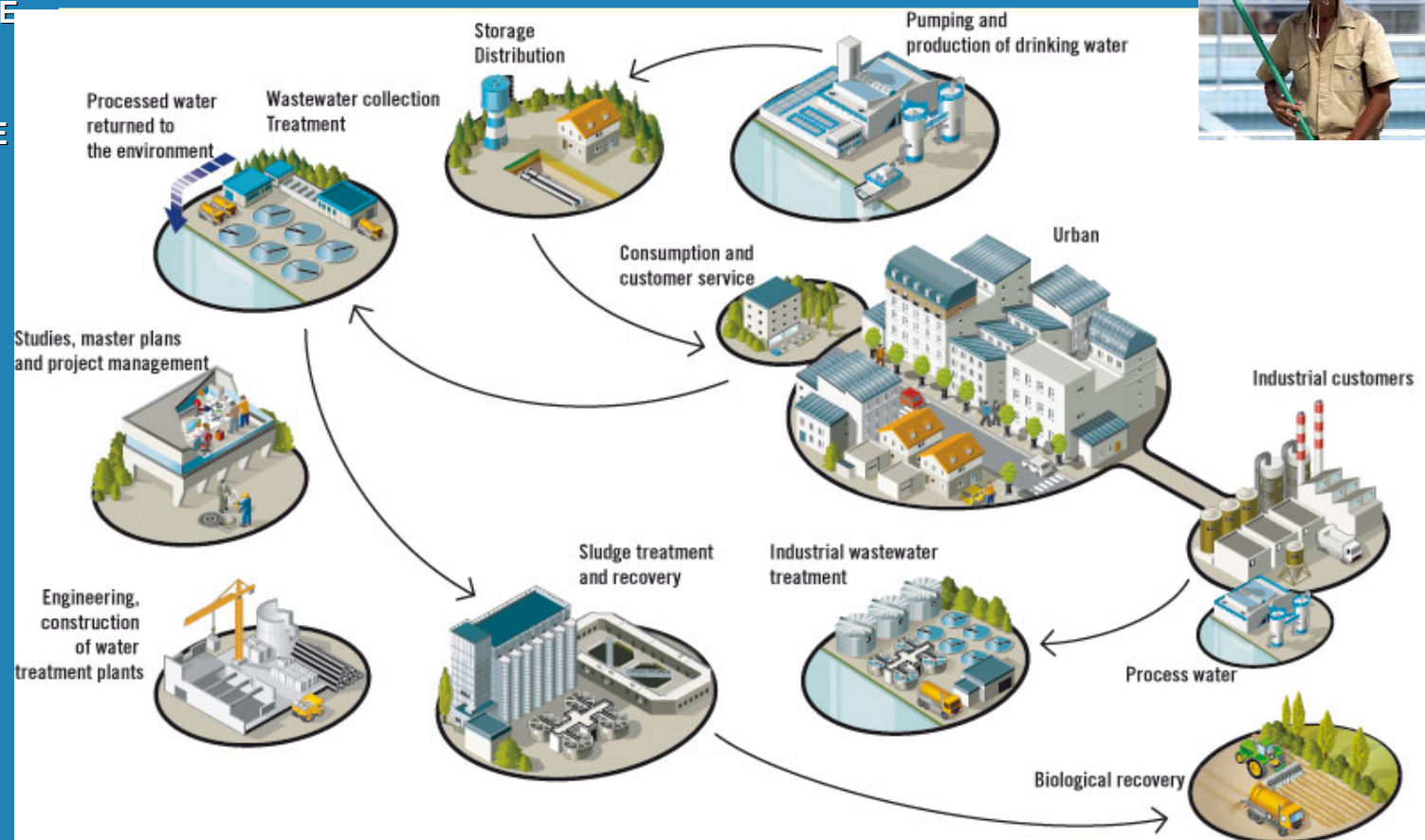
SIGNAL

CRM

CONCLUSIONS



THE WATER CYCLE



INTRODUCTION

HISTORY

The water STRUGGLE

BORA BORA

WATER CHALLENGE

NEW TEAM 1990

1990-93

Water Map #1

1995-2000

DESALINATION

Water Map #2

SEWAGE

SEWAGE ORG.

OPERATIONS

REUSE

Photo WWTP

TARIFF & COSTS

SIGNAL

CRM

CONCLUSIONS

SUEZ ENVIRONMENT

5

EXPERIENCE WITH ALL TYPE OF PPPs

INTRODUCTION

HISTORY

The water STRUGGLE

BORA BORA

WATER CHALLENGE

NEW TEAM 1990

1990-93

Water Map #1

1995-2000

DESALINATION

Water Map #2

SEWAGE

SEWAGE ORG.

OPERATIONS

REUSE

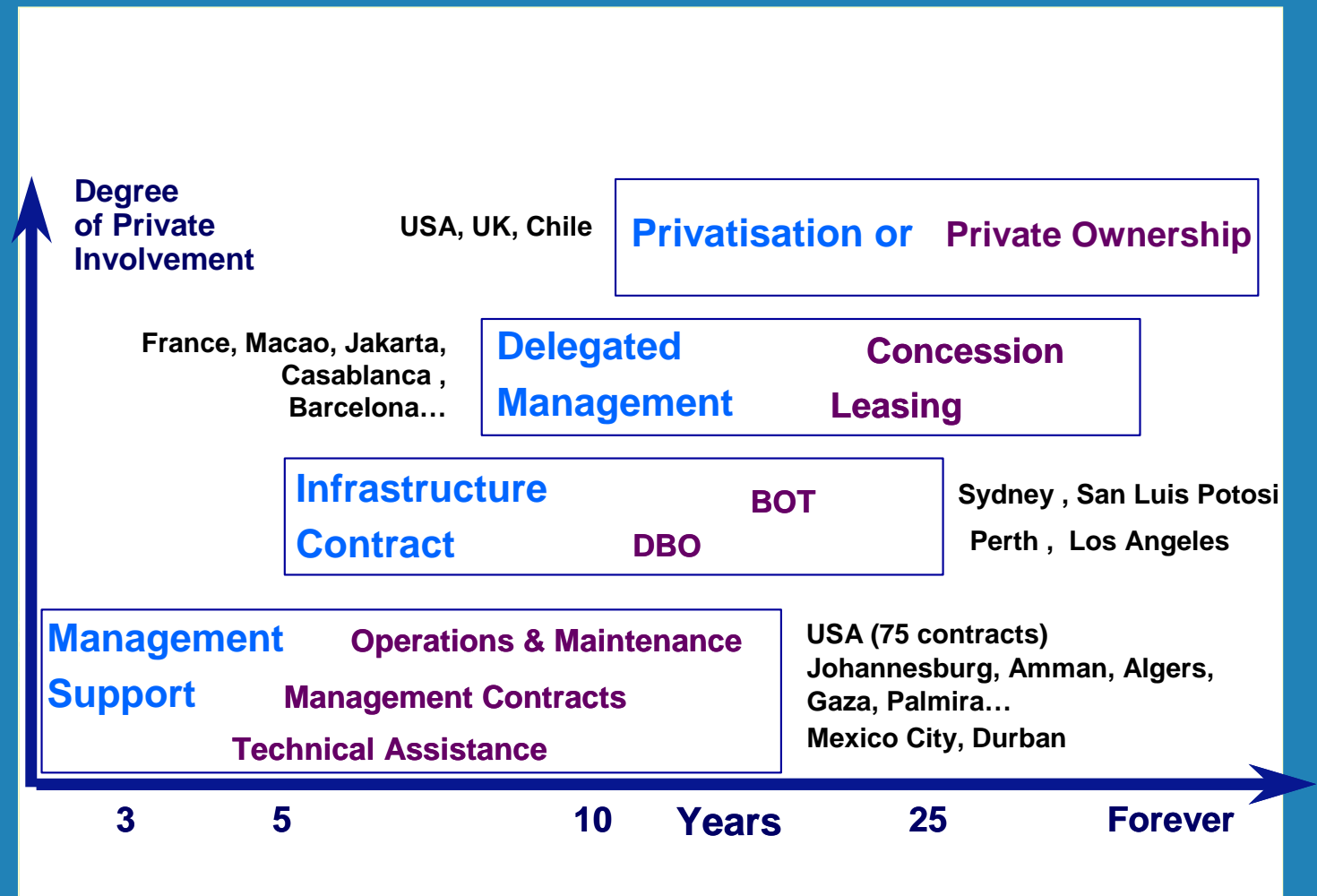
Photo WWTP

TARIFF & COSTS

SIGNAL

CRM

CONCLUSIONS



UTILITIES HISTORY

INTRODUCTION

HISTORY

The water STRUGGLE

BORA BORA

WATER CHALLENGE

NEW TEAM 1990

1990-93

Water Map #1

1995-2000

DESALINATION

Water Map #2

SEWAGE

SEWAGE ORG.

OPERATIONS

REUSE

Photo WWTP

TARIFF & COSTS

SIGNAL

CRM

CONCLUSIONS

● 1976 : ELECTRICITY DISTRIBUTION

✓ **Distribution & Generation**

- only on the traditional touristic area

● 1990 : WATER DISTRIBUTION - 1994

✓ **From a few drops to potable water
for the whole Island**

● 1992 : FIRST SEWAGE NETWORK

THE WATER STRUGGLE ⁷

INTRODUCTION

HISTORY

The water STRUGGLE

BORA BORA

WATER CHALLENGE

NEW TEAM 1990

1990-93

Water Map #1

1995-2000

DESALINATION

Water Map #2

SEWAGE

SEWAGE ORG.

OPERATIONS

REUSE

Photo WWTP

TARIFF & COSTS

SIGNAL

CRM

CONCLUSIONS

● LOCAL POPULATION

✓ **No water sharing with the tourist population**

● REPELLING LEVEL TO TOURISM DEVELOPMENT

✓ **This limit was very low**

✓ **A brake on hotel industry development**

BORA BORA TOURISTIC ISLAND

INTRODUCTION

HISTORY

The water STRUGGLE

BORA BORA

WATER CHALLENGE

NEW TEAM 1990

1990-93

Water Map #1

1995-2000

DESALINATION

Water Map #2

SEWAGE

SEWAGE ORG.

OPERATIONS

REUSE

Photo WWTP

TARIFF & COSTS

SIGNAL

CRM

CONCLUSIONS



● **AN UNIQUE and FRAGILE
ENVIRONMENT TO PROTECT**
With sustainable and efficient solutions

WATER CHALLENGES

INTRODUCTION

HISTORY

The water STRUGGLE

BORA BORA

WATER CHALLENGE

NEW TEAM 1990

1990-93

Water Map #1

1995-2000

DESALINATION

Water Map #2

SEWAGE

SEWAGE ORG.

OPERATIONS

REUSE

Photo WWTP

TARIFF & COSTS

SIGNAL

CRM

CONCLUSIONS

1990: LIMITED RESSOURCES (1200 m³/day)

✓ **Part of Island network, serving a few homes**

✓ **Non potable water**

✓ **Part time service (few hours a day)**

✓ **Tanker water delivering elsewhere**

NEW TOWN COUNCIL 1990

INTRODUCTION

HISTORY

The water STRUGGLE

BORA BORA

WATER CHALLENGE

NEW TEAM 1990

1990-93

Water Map #1

1995-2000

DESALINATION

Water Map #2

SEWAGE

SEWAGE ORG.

OPERATIONS

REUSE

Photo WWTP

TARIFF & COSTS

SIGNAL

CRM

CONCLUSIONS

● **SUEZ** received clear message to consider potable water **SOLUTIONS**

● **STUDIES** had been conducted to estimate the Island water resources (3800 m³ / day)

● **DECISION TO CREATE VAITEHI**
With 2 shareholders, **SUEZ** and the Municipality of **BORA BORA**

1990 -1993 PERIOD

INTRODUCTION

HISTORY

The water STRUGGLE

BORA BORA

WATER CHALLENGE

NEW TEAM 1990

1990-93

Water Map #1

1995-2000

DESALINATION

Water Map #2

SEWAGE

SEWAGE ORG.

OPERATIONS

REUSE

Photo WWTP

TARIFF & COSTS

SIGNAL

CRM

CONCLUSIONS

IN A FEW MONTH

- **WATER QUALITY: Top sanitation requirements - Europeans standards**
- **COVERED AREA: The whole Island was covered in 1993**
- **WATER Pressure & 24 hrs SERVICE: Drilling, Reservoirs, Pumping and Distribution network around the island**

INTRODUCTION

HISTORY

The water STRUGGLE

BORA BORA

WATER CHALLENGE

NEW TEAM 1990

1990-93

Water Map #1

1995-2000

DESALINATION

Water Map #2

SEWAGE

SEWAGE ORG.

OPERATIONS

REUSE

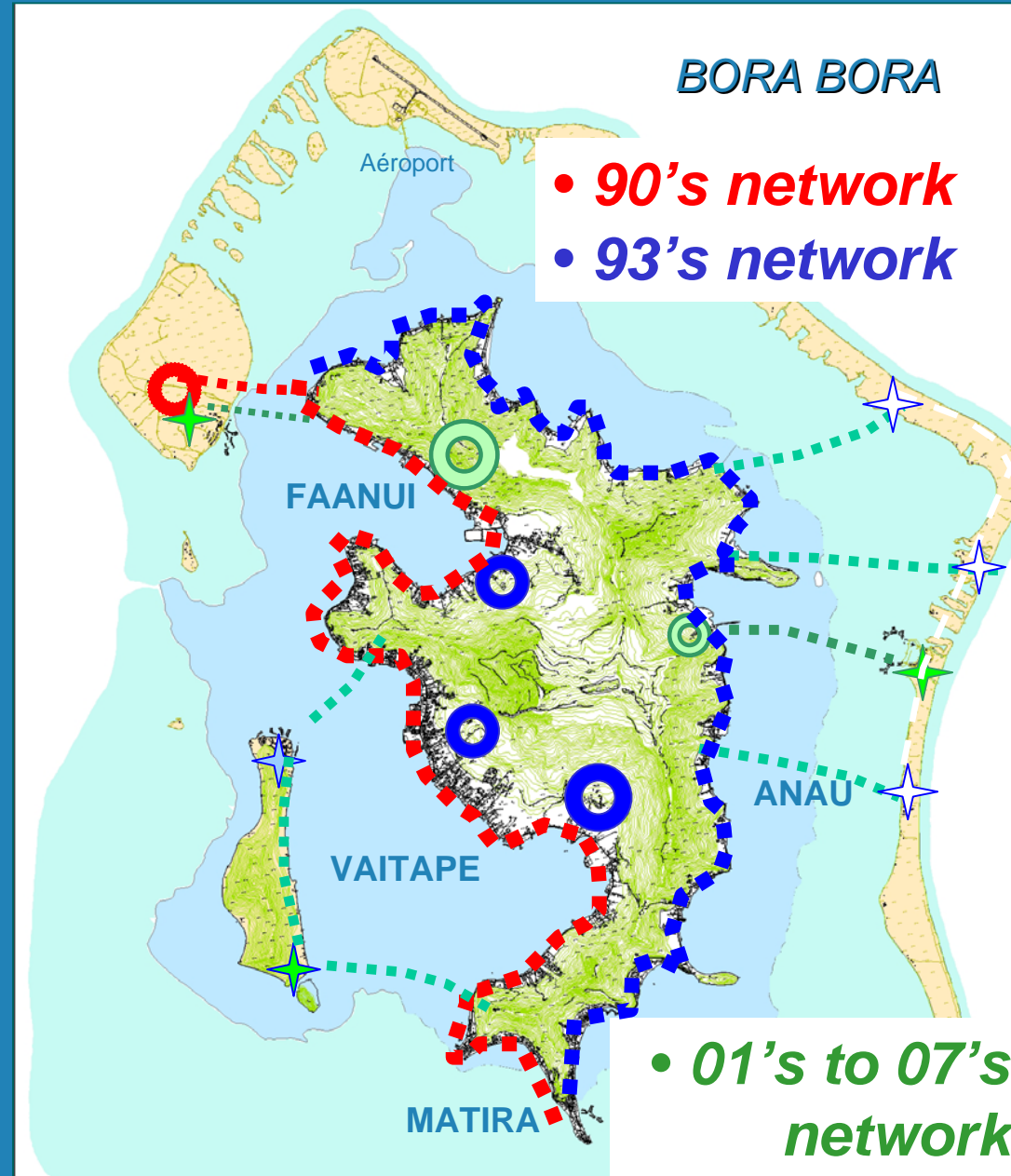
Photo WWTP

TARIFF & COSTS

SIGNAL

CRM

CONCLUSIONS



1995 - 2000 PERIOD

INTRODUCTION

HISTORY

The water STRUGGLE

BORA BORA

WATER CHALLENGE

NEW TEAM 1990

1990-93

Water Map #1

1995-2000

DESALINATION

Water Map #2

SEWAGE

SEWAGE ORG.

OPERATIONS

REUSE

Photo WWTP

TARIFF & COSTS

SIGNAL

CRM

CONCLUSIONS

● **NO PROBLEM !!**

✓ **TOTALY Satisfactory for clients until 1998**

● **BUT THEN ...**

✓ **1999: La NIÑA : Severe Drought**

✓ **2000: Natural capacity fall from 3,600 m³/day to 2,500 m³/day**

DESALINATION

INTRODUCTION

HISTORY

The water STRUGGLE

BORA BORA

WATER CHALLENGE

NEW TEAM 1990

1990-93

Water Map #1

1995-2000

DESALINATION

Water Map #2

SEWAGE

SEWAGE ORG.

OPERATIONS

REUSE

Photo WWTP

TARIFF & COSTS

SIGNAL

CRM

CONCLUSIONS

● WATER DEMAND INCREASE

- ✓ **A new field planning**
- ✓ **The Hotel's projects were located on the « motu » : 4 units of 100 rooms already existing and 3 more to follow in the next 2 years**

● INVERSE OSMOSIS UNITS

- ✓ **3 units of 350 m³ each (in 2000)**
- ✓ **TOTAL PRODUCTION capacity in severe dry periods up to 1,000 + 2,500 = 3,500 m³**
- ✓ **TO ANSWER a growing demand, new desalination units has been built : 2005 (1,000 m³/d) and 2007 (1,000 m³/d)**

INTRODUCTION

HISTORY

The water STRUGGLE

BORA BORA

WATER CHALLENGE

NEW TEAM 1990

1990-93

Water Map #1

1995-2000

DESALINATION

Water Map #2

SEWAGE

SEWAGE ORG.

OPERATIONS

REUSE

Photo WWTP

TARIFF & COSTS

SIGNAL

CRM

CONCLUSIONS



SEWAGE NECESSITY

INTRODUCTION

HISTORY

The water STRUGGLE

BORA BORA

WATER CHALLENGE

NEW TEAM 1990

1990-93

Water Map #1

1995-2000

DESALINATION

Water Map #2

SEWAGE

SEWAGE ORG.

OPERATIONS

REUSE

Photo WWTP

TARIFF & COSTS

SIGNAL

CRM

CONCLUSIONS

THE FACTS

- ✓ Increasing volumes of effluents with no or inefficient processing
- ✓ Visible lagoon pollution (green seaweed)
- ✓ Sanitary risks

THE DECISION

- ✓ To carry out a sewage program, covering step by step the entire Island (as well for domestic and hotel's effluents)

SEWAGE PLANNING

INTRODUCTION

HISTORY

The water STRUGGLE

BORA BORA

WATER CHALLENGE

NEW TEAM 1990

1990-93

Water Map #1

1995-2000

DESALINATION

Water Map #2

SEWAGE

SEWAGE ORG.

OPERATIONS

REUSE

Photo WWTP

TARIFF & COSTS

SIGNAL

CRM

CONCLUSIONS

FIRST STEP

- ✓ **Through a dedicated company own by VAITEHI (1992)**
- ✓ **COSTS: not totally supported by the tariff**
- ✓ **So the City bough back VAITEHI's share**

FINANCING

- ✓ **With the international (EDF), Territorial and French Funding**

STUDIES

- ✓ **Locally by Engineering office (SPEED)**

WATER SEWAGE OPERATION

INTRODUCTION

HISTORY

The water STRUGGLE

BORA BORA

WATER CHALLENGE

NEW TEAM 1990

1990-93

Water Map #1

1995-2000

DESALINATION

Water Map #2

SEWAGE

SEWAGE ORG.

OPERATIONS

REUSE

Photo WWTP

TARIFF & COSTS

SIGNAL

CRM

CONCLUSIONS

TECHNICALY:

● **S.P.E.A. (subsidiary of SUEZ Environment) acts as an operator in contract with the authority of BORA BORA (1998):**

- ✓ **Technical management**
- ✓ **Performance analysis**
- ✓ **Quality requirements**
- ✓ **Customers service**

WATER REUSE

INTRODUCTION

HISTORY

The water STRUGGLE

BORA BORA

WATER CHALLENGE

NEW TEAM 1990

1990-93

Water Map #1

1995-2000

DESALINATION

Water Map #2

SEWAGE

SEWAGE ORG.

OPERATIONS

REUSE

Photo WWTP

TARIFF & COSTS

SIGNAL

CRM

CONCLUSIONS

THE LACK of WATER requires to:

- **Protect the drinking water resource**
- **Use sprinkling recycled water for gardens, car wash, industrial uses...**
- **With a lower price compared to the drinking water rate**
- **=> Focus on Water Reuse to be presented by Valentina Lazarova (SUEZ Environment)**

SEWAGE TREATMENT PLANT

INTRODUCTION

HISTORY

The water STRUGGLE

BORA BORA

WATER CHALLENGE

NEW TEAM 1990

1990-93

Water Map #1

1995-2000

DESALINATION

Water Map #2

SEWAGE

SEWAGE ORG.

OPERATIONS

REUSE

Photo WWTP

TARIFF & COSTS

SIGNAL

CRM

CONCLUSIONS



TARIFF

How the costs are covered ?

**Tariff expected to cover the costs:
expensive for the Hotels and low for the
domestic uses**

- **Thanks to the high level of tourism standard of Bora Bora : 40 % of the consumption versus 60 % of the billing**
- **The average domestic bill for the water and sewage : 3 % of the minimum wages (2 % for water + 1 % for sewage)**

INTRODUCTION

HISTORY

The water STRUGGLE

BORA BORA

WATER CHALLENGE

NEW TEAM 1990

1990-93

Water Map #1

1995-2000

DESALINATION

Water Map #2

SEWAGE

SEWAGE ORG.

OPERATIONS

REUSE

Photo WWTP

TARIFF & COSTS

SIGNAL

CRM

CONCLUSIONS

TARIFF

2 WARNING SIGNALS

INTRODUCTION

HISTORY

The water STRUGGLE

BORA BORA

WATER CHALLENGE

NEW TEAM 1990

1990-93

Water Map #1

1995-2000

DESALINATION

Water Map #2

SEWAGE

SEWAGE ORG.

OPERATIONS

REUSE

Photo WWTP

TARIFF & COSTS

SIGNAL

CRM

CONCLUSIONS

● SOCIAL SIGNAL

- ✓ « The less you use the less you pay »
- ✓ Progressive bracket tariff (ascending block rate) for domestic use

● TECHNICAL SIGNAL

- ✓ The progressive rate is a reminder of the lack of water and the necessity to save the resource

● COMMUNICATION

- ✓ Radio, newspapers, TV

MANAGEMENT OF CUSTOMER RELATIONSHIP

INTRODUCTION

HISTORY

The water STRUGGLE

BORA BORA

WATER CHALLENGE

NEW TEAM 1990

1990-93

Water Map #1

1995-2000

DESALINATION

Water Map #2

SEWAGE

SEWAGE ORG.

OPERATIONS

REUSE

Photo WWTP

TARIFF & COSTS

SIGNAL

CRM

CONCLUSIONS



Only ONE interface for the client

	OWNER	OPERATOR	CUSTOMER Interface
WATER	VAITEHI	SPEA	SPEA
SEWAGE	TOWN		
REUSE	TOWN		

CONCLUSIONS

INTRODUCTION

HISTORY

The water STRUGGLE

BORA BORA

WATER CHALLENGE

NEW TEAM 1990

1990-93

Water Map #1

1995-2000

DESALINATION

Water Map #2

SEWAGE

SEWAGE ORG.

OPERATIONS

REUSE

Photo WWTP

TARIFF & COSTS

SIGNAL

CRM

CONCLUSIONS

The strong effort of the community of Bora Bora for integrated resource management was granted with the label “Blue Flag of Europe”, the innovation trophy for sustainable development

THANK YOU...

INTRODUCTION

HISTORY

The water STRUGGLE

BORA BORA

WATER CHALLENGE

NEW TEAM 1990

1990-93

Water Map #1

1995-2000

DESALINATION

Water Map #2

SEWAGE

SEWAGE ORG.

OPERATIONS

REUSE

Photo WWTP

TARIFF & COSTS

SIGNAL

CRM

CONCLUSIONS



