

Capacity Development for CDM

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**COGENERATION INSTALLATION at
RANDA Company**

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Randa Company

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- ◆ One of the major pasta producers in Tunisia :
 - Creation : 1987
 - Capital : 6.5 million Dinars (M € 4.6)
 - Turnover : 32 Million Dinars (M € 23)

CAS SPECIFIQUE

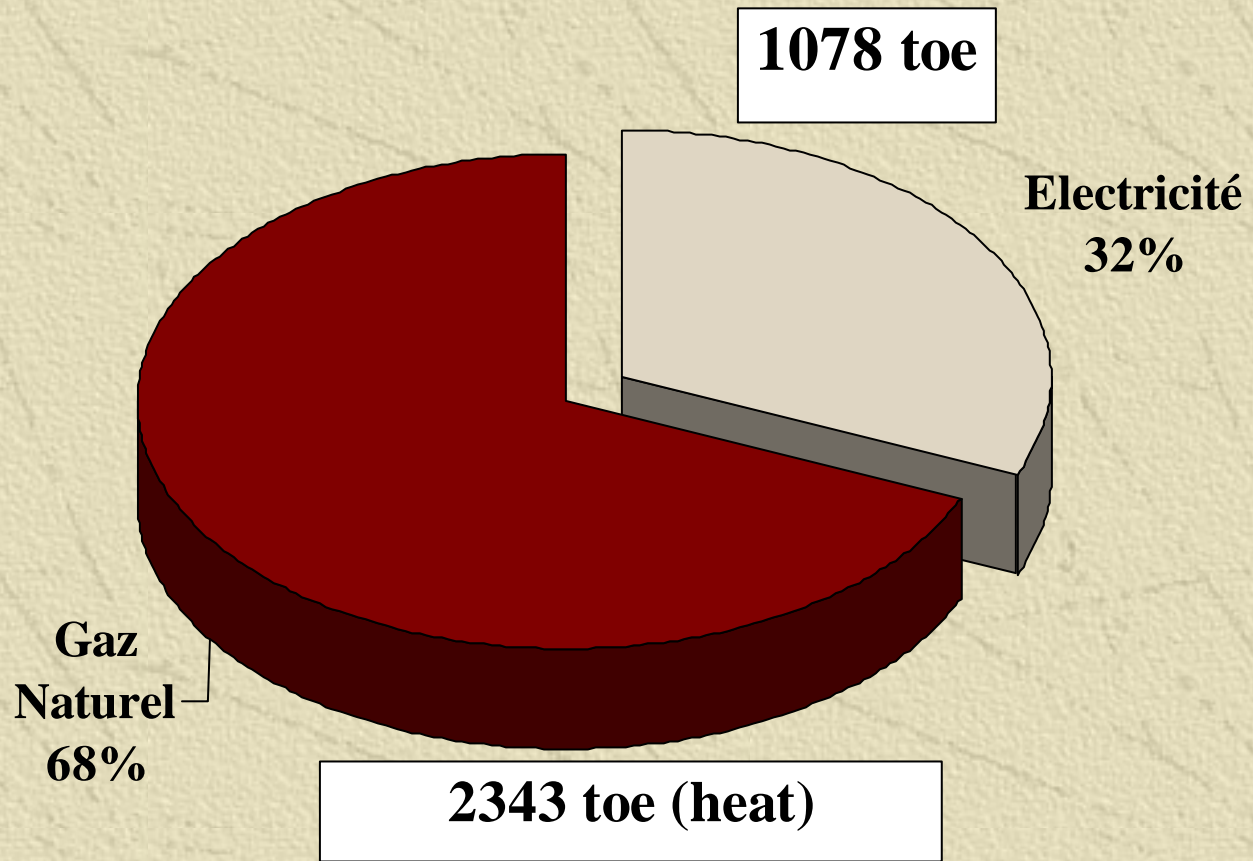
Société Randa

◆ Important Developpement potentialties:

- Turnover growth : 10% per yr
- Ongoing Modernization
- Extension of the production capacity
- → usual pasta : +26% in 2003
- → couscous : +140% in 2004

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Energy consumption (2002)



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Future Options

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- ◎ Option 1 : expand the existing system
 - Two boilers
 - Buying electricity from STEG
 - ◎ Option 2 :
 - Installation of a cogenerator
 - Excess electricity to be sold to the grid

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Future Options

© **Option 1 : 1 : expand the existing system**

© **Lower cost : 400,000 dinars for the extension of the boilers (€ 285,000)**

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Options futures

© Option 2 : Cogeneration:

- ◆ Higher Investment (5 - 6 Millions de dinars soit 3.6 à 4.3 M €) and various expenses:
- ◆ Possible Operational and technical problems at the beginning
- ◆ STEG relations for power purchases
- ◆ Long term economic benefits for the community
- ◆ Long term environmental benefits

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Option cogeneration

© Characteristics :

- ◆ Power : 5 MW
- ◆ Thermal capacity : more than 7000 th/hr

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Option cogeneration

Financial table :

© Investment cost : 5 MD (M € 3.6)

◆ Self Financing 40% (2 MD)

◆ Medium Term loan : 60% (3 MD)

- Interest rate : 6.75%

- Other financial expenses (commission de gestion, etc.)

Cogeneration Project– Economic impacts

Economic comparison of the two options - Annual expenses (1000 Dinars) -

Case RANDA	Without cogeneration	With cogeneration
Electricity expenses	994	0
Natural Gas expenses	520	1 700
Maintenance of the turbines		315
Others		50
Fiancial expenses		104
Revenue from the electricity sold		-1 200
expenses avoide by the other companies of the Group		-115
Total energy expenses	1 514	854
Saved expenses	660	
Pay back period	5,6	ans



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Category 2.D

Generation Project - Baseline

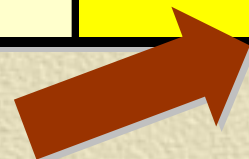
Baseline

En. Consumption
 Electricity 12,5 GWh
 Nat Gas 2 342 toe

Op. Margin	Emissions (tCO ₂)
638 tCO ₂ /GWh	8 002

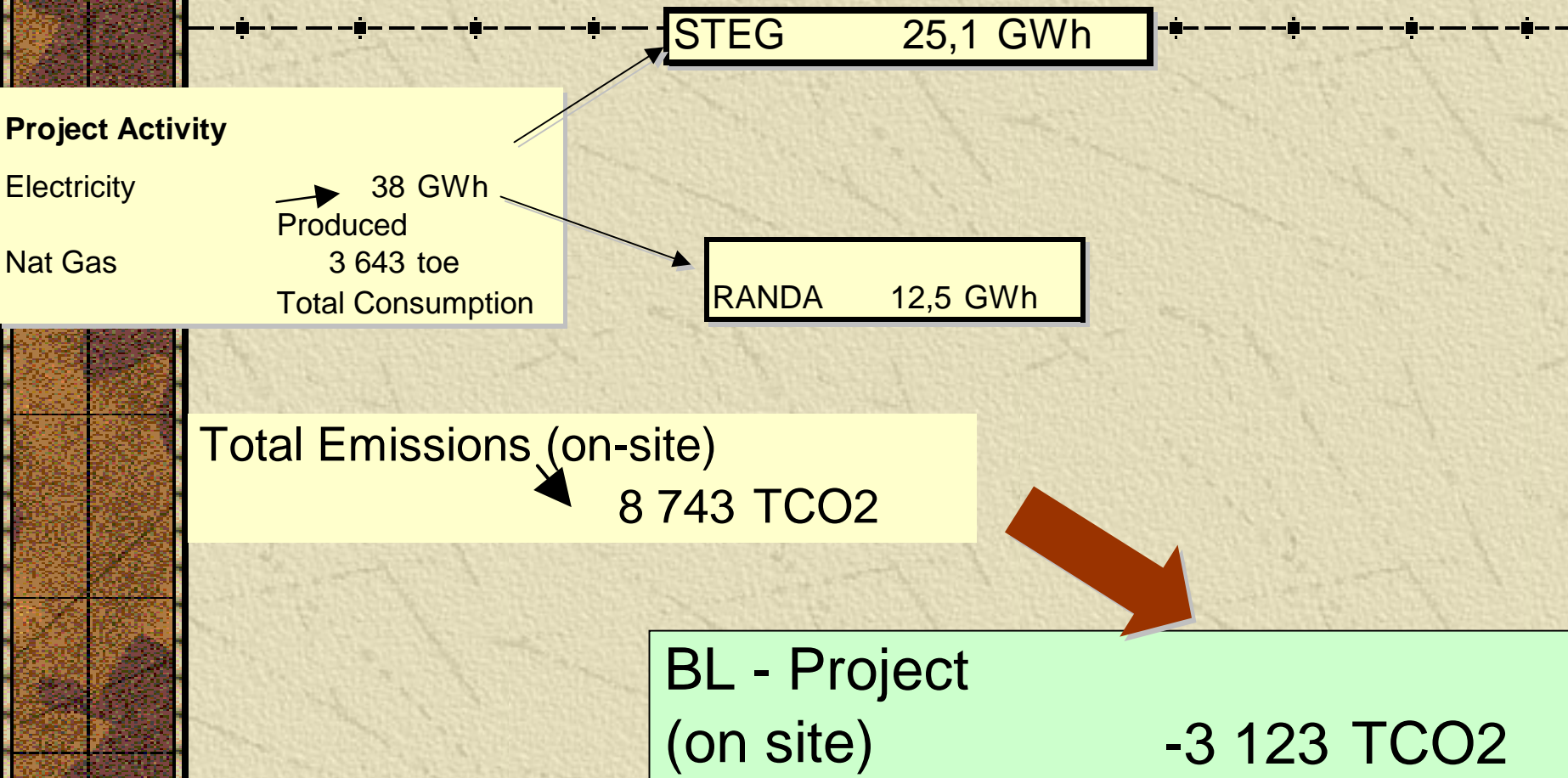
Build Marg	Emissions (tCO ₂)
504 tCO ₂ /GWh	6 318

Combined Marg	Emissions (tCO ₂)
571 tCO ₂ /GWh	7 160
2,4 tCO ₂ /toe	5 621
	12 781



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Cogeneration Project Activity



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Cogeneration Project Activity

Emissions (tCO ₂)	Emissions avoided thanks to the project
21 508	(Off-Site)

Emissions (tCO ₂)	BL - Project
14 349	(Off-Site)

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Cogeneration Project Activity

BL - Project
(on site)

-3 123 TCO₂

+

Emissions
(tCO₂)

14 349

BL - Project
(Off-Site)

=

Emissions
avoided (tCO₂)

11 226

BL - Project for
(On-site and Off-Site)

Cogeneration Case

End of the PRESENTATION

Thanks