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Country presentation

ALGERIA

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INTRODUCTION

What are legacy sites ????

All of us may agree that legacy sites are sites that are radioactively contaminated and that has not completed remediation, for a variety of reasons…

We can go a bit further and give some examples of legacies, such as:

- Inadequate storage and disposal sites and facilities;
- Sites affected by major accidents;
- Nuclear power technology development centres;
- Nuclear weapons development centres;
- Nuclear weapons testing sites;
- Uranium mining and milling facilities

What is the situation in my country?

Several peaceful applications of nuclear energy such as: the use of radioisotopes in medicine, agriculture, industry and scientific research.

- COMENA: “Commissariat à l’Energie Atomique”
- under the authority of the ministry of energy;
- Four nuclear research Centers;
- Two research reactors.

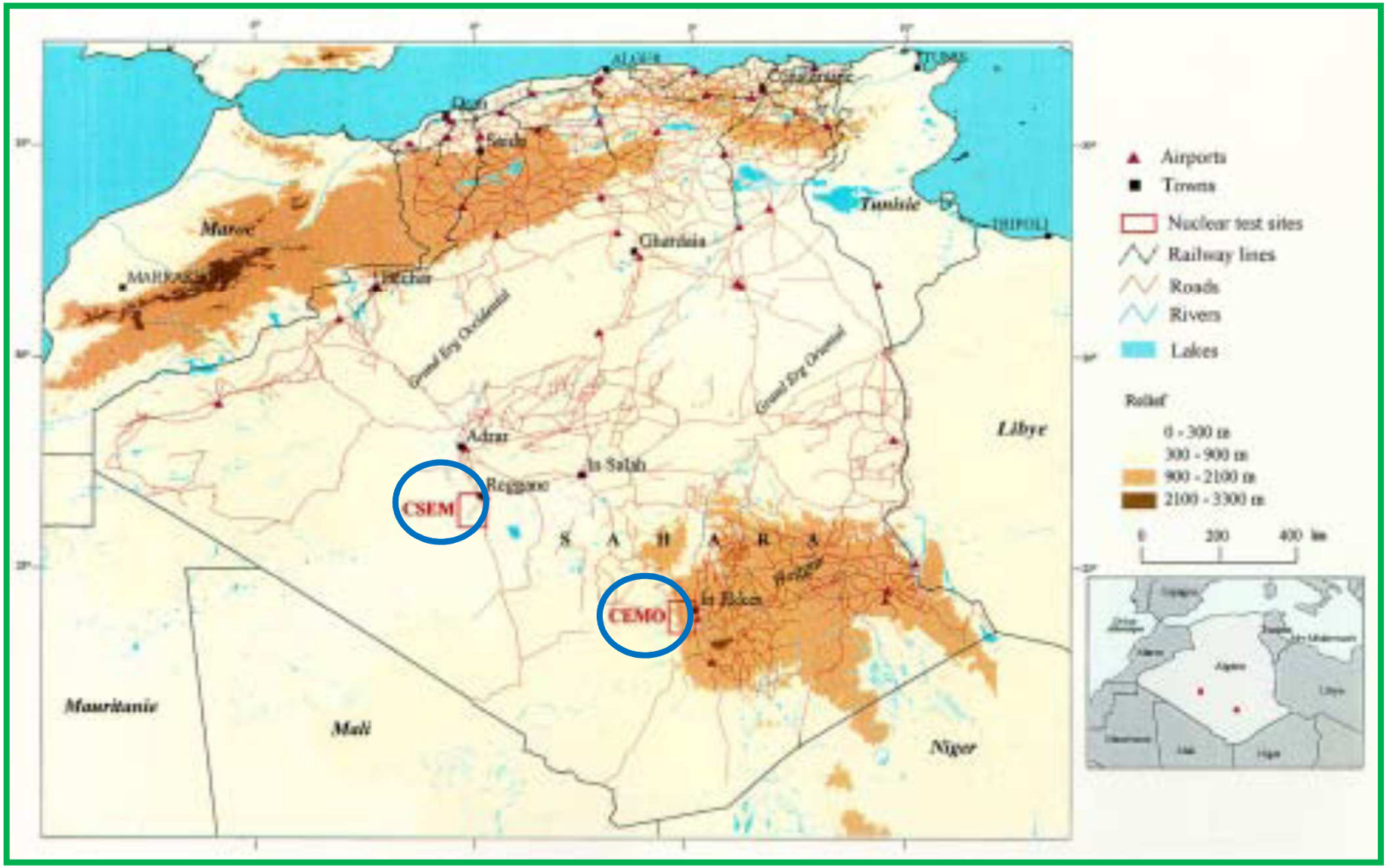
All these activities are not in a position to be considered now as a legacy, or to create in the near future a legacy.

In another hand, the only situation which can be considered, without any doubt, as a legacy site in Algeria, is the one of the former French nuclear test sites.

LEGACY SITES IN ALGERIA

in the early sixties, France conducted the first part of its nuclear weapon testing program at three sites in the Algerian Sahara.

French test site locations in the Sahara: Reggane, In Ekker and Adrar Tikertine



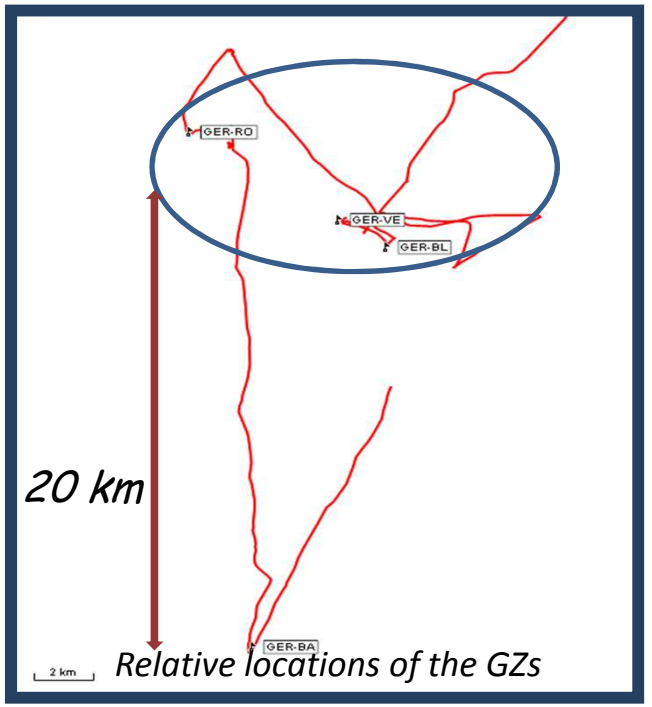
Reggane atmospheric tests

Code Name	Date	Power Estimate	Type	Coordinates
GERBOISE BLEUE	13/02/1960	40 < P < 80 kt	Tower de 100m	N 26°18'42" W 00°03'26"
GERBOISE BLANCHE	01/04/1960	P < 10 kt	ground	N 26°09'58" W 00°06'09"
GERBOISE ROUGE	27/12/1960	P < 10 kt	Tower 100m	N 26°21'13" W 00°07'25"
GERBOISE VERTE	25/04/1961	P < 10 kt	Tower	N 26°19'18" W 00°04'24"

At Reggane, there were also 35 other experiments involving plutonium pellets

Gerboise bleue

Gerboise verte



Relative locations of the GZs

These nuclear experiments resulted in releases of radioactive material to the environment

The current situation is that all the ground zero localities are contaminated.

Gerboise bleue

SPOT satellite picture 17/11/ 2006

The contamination is in the fused sand. In the case of typical samples from Reggane, the activity concentrations is about 1 MBq per kilogram of sand for the Plutonium and up to 0.1 MBq per kilogram of sand for the Cesium-137.

Fused sand at the Gerboise Bleue Ground Zero

The measured doses at GZ locations are between 5 and 1µSv/h.

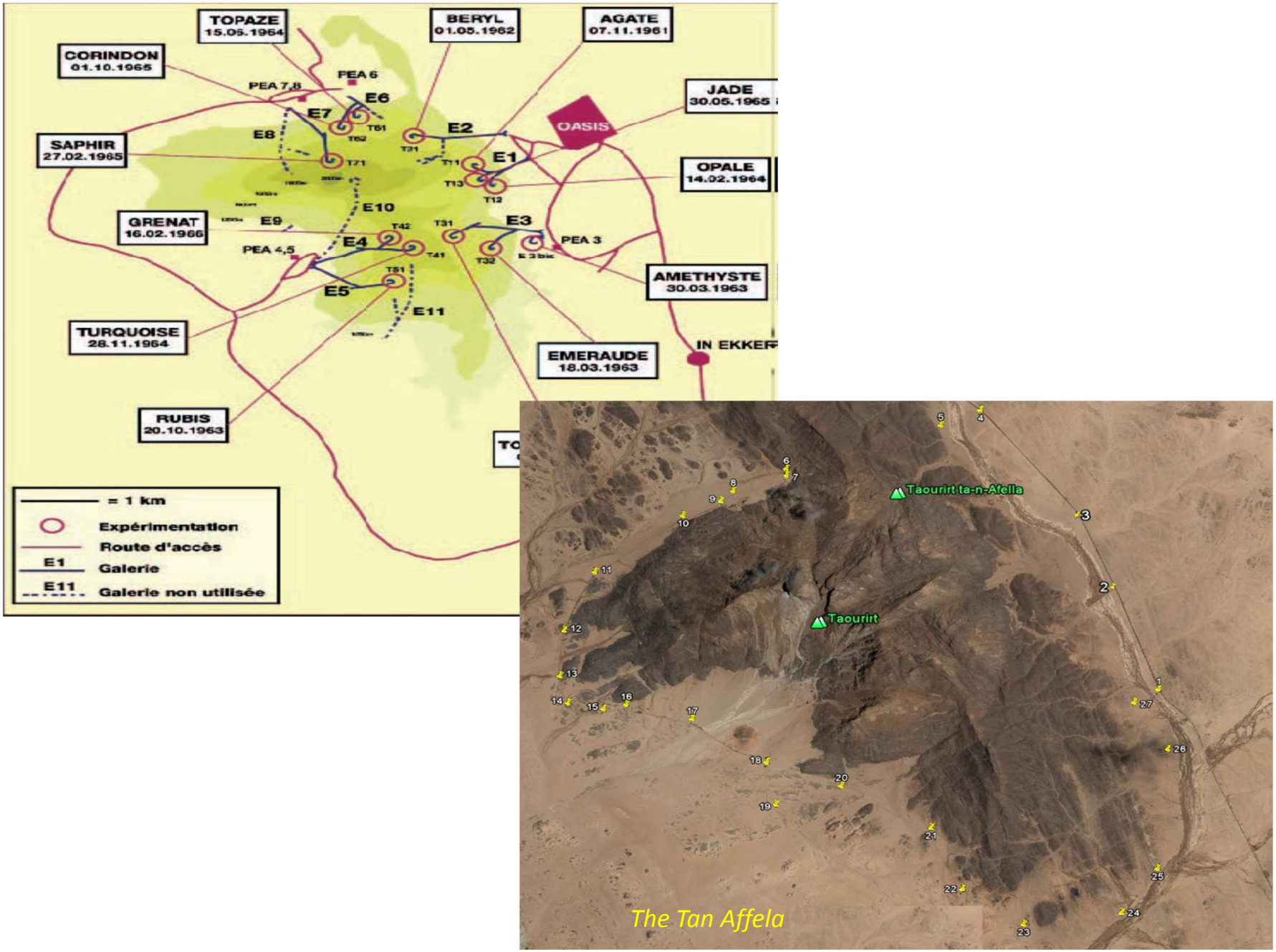
At In Ekker, there were thirteen underground tests in the Tan Affela mountain

the Tan Affela mountain

French Fence restricting the access to the E2 tunnel

Beryl accident

CODE NAME	DATE	POWER ESTIMATE (KT)
AGATE	07/11/1961	P <10
BERYL	01/05/1962	10< P < 40
EMERAUDE	18/03/1963	10< P < 40
AMÉTHYSTE	30/03/1963	P<10
RUBIS	30/10/1963	40 < P < 80
OPALE	14/02/1964	P <10
TOPAZE	15/06/1964	P <10
TURQUOISE	28/11/1964	P <10
SAPHIR	27/02/1965	P > 80
JADE	30/05/1965	P <10
CORINDON	01/10/1965	P <10
TOURMALINE	01/12/1965	10 < P < 40
GRENAT	16/02/1966	10 < P < 40


TOPAZE
15.05.1964
BERYL
01.05.1962
AGATE
07.11.1961
CORINDON
01.10.1965
JADE
30.05.1965
OASIS
SAPHIR
27.02.1965
OPALE
14.02.1964
GRENAT
16.02.1966
AMETHYSTE
30.03.1963
TURQUOISE
28.11.1964
EMERAUDE
18.03.1963
IN EKKER
RUBIS
20.10.1963
PEA 7,8
PEA 6
PEA 4,5
PEA 3
E1
E2
E3
E4
E5
E6
E7
E8
E9
E10
E11
T11
T12
T13
T21
T31
T32
T41
T42
T51
T61
T62
T71
= 1 km
Expérimentation
Route d'accès
Galerie
Galerie non utilisée
Taourirt ta-n-Afella
Taourirt
The Tan Affela

The current situation is that several tunnel entrance are contaminated (E2, E3, E4, E5, ….).

The most significant case is the one of the Beryl test (E2) where the measured dose rates can reach 300 µS/h.

Contamination in front of the E2

Radioactive lava at the E2 tunnel entrance

Adrar Tikertine

Pictures of the GZ Pollen tests
(Plutonium dispersion experiments)

The pollution is not only from a nuclear point of view but also from an ecological point of view since there are until now, tons of concrete structures, different kinds of metallic waste and kilometers of cables

Concrete structure at Reggane

Waste at In ekker

Concrete structure at In ekker

Waste at In ekker

Another important issue is the fact that we know almost every thing on what is on the surface of the test sites but we ignore almost every thing on what is in the underground.

Underground waste found near the In Salah-Tamanrasset water pipe :
measured dose rates : up to 25 µSv/h

Until today, we are facing the problems resulting from these tests

-Sites with radioactive contamination
-Lack of regulatory guidance to address the situation
- lack of relevant standards for the remediation

for some of the sites, we do not know how to proceed in order to clean the contaminated areas.

For the moment, the measures already taken by Algeria consist of :

- Conducting several studies in order to assess the sites radiological conditions;
- Restricting access by the construction of fences and;
- Setting up sites surveillance.

These actions are not enough and heavy to implement.

Our objective is to do all what we can to clean the sites

On 22 September 1995, a resolution of the General Conference of the IAEA called on all States

"to fulfill their responsibilities to ensure that sites where nuclear tests have been conducted are monitored scrupulously and to take appropriate steps to avoid adverse impacts on health, safety and the environment as a consequence of such nuclear testing"

OBJECTIVES OF THE PARTICIPATION TO THE RSLS

1- Regarding the mentioned activities and other activities that may be developed in the near furture, our motivation is to avoid the creation of new legacies.

2- Regarding the test sites, our aim is to learn from the experience of other countries in order to find a solution to the contaminated areas

RSLS Working programme

Preliminary views

1- We believe that it is important to take into account all types of legacies and our activities should be conducted in order to not exclude any type of such sites.

2- We think that it is also important to fix the definition of what can be considered as legacy sites.

Our expectations

1. An exchange of information on test sites remediation

2. Lessons learned from past experience with legacy site remediation

3. Assess the possibility to derive practical application of generic radiation protection guidance to legacy sites

4. Learn from the other participants on strategies employed for the conduct of safety and environmental assessments

The challenge is : to go from this…

To something which looks like this…

Thank you for your attention