



EDF DECOMMISSIONING AND WASTE MANAGEMENT

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16/03/2015



EDF, NUCLEAR WORLD LEADER

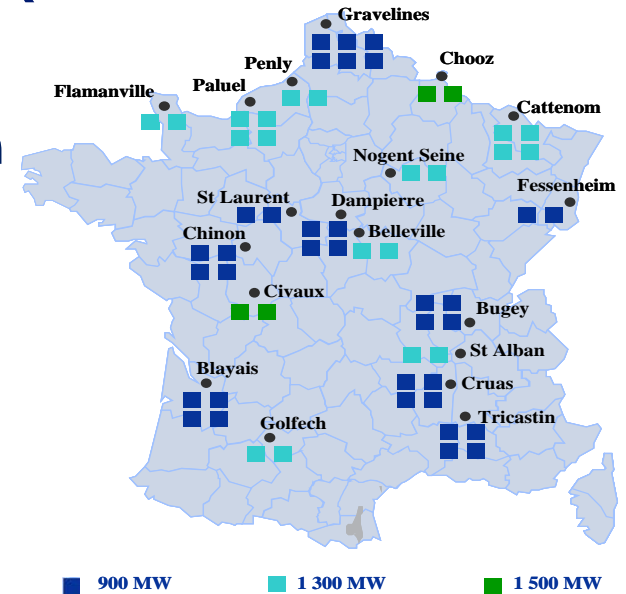
- **472,2 TWh generated in France and UK in 2014**

- France : 58 PWR* on 19 sites
- UK : 14 AGR**, 1 PWR on 8 sites

- **Tomorrow EPRs**

- 3 EPRs under construction :
 - 1 in France : Flamanville 3
 - 2 in China : Taishan 1&2 (EDF 30%)
- Project in the UK :
 - 2 reactors at Hinkley Point C

* Pressurized Water Reactor
 ** Advanced Gas-cooled Reactor
 ***Boiling Water Reactor



PLANTS UNDERGOING DECOMMISSIONING

- Nine plants of first generation are under dismantling under EDF responsibility (6 Graphite Gaz reactors, Superphenix, ...)

1 Pressurized Water Reactor

Chooz A

1 Heavy Water Reactor

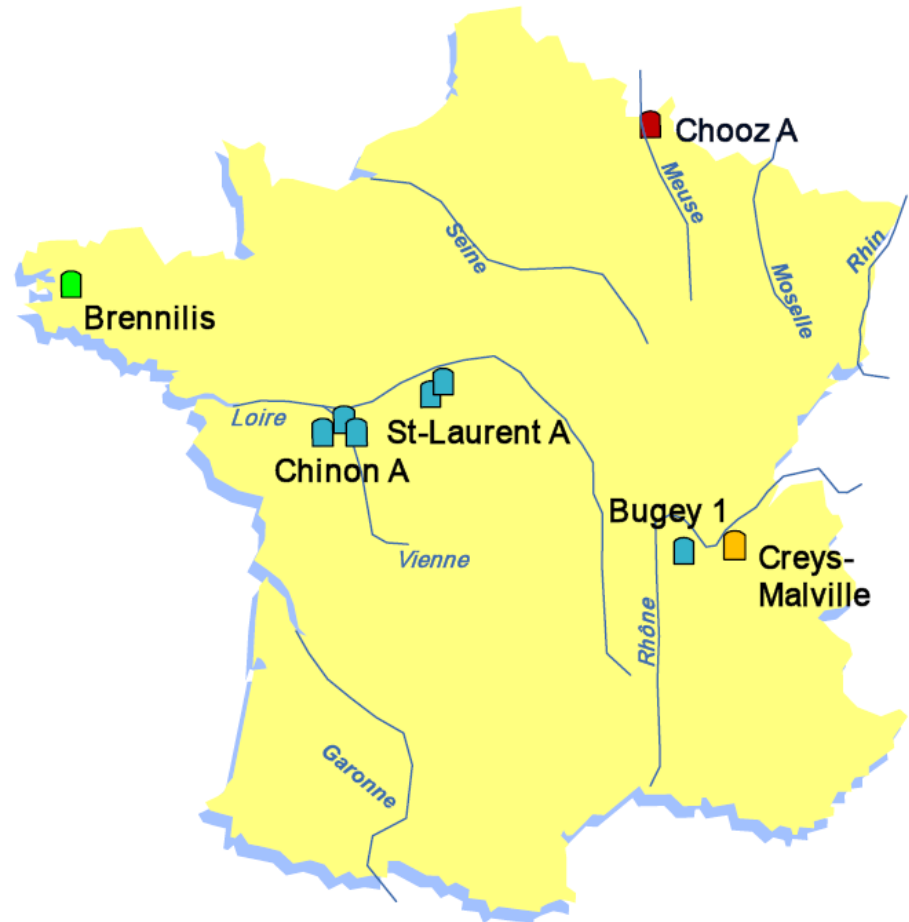
Brennilis

6 Gas Cooled Reactors

Chinon (3), Saint-Laurent (2),
Bugey

1 Fast Neutron Reactor

Creys-Malville



DECOMMISSIONING

- ❑ The principle : for EDF nuclear fleet in France, immediate dismantling after shutdown of the plant
- ❑ EDF acts as an operator during all the decommissioning phases, under the supervision of an independent safety authority , the French Safety Authority
- ❑ There is no transfert of responsibility (or activity) to the State of a dedicated State Owned Agency, no discharge paiement
- ❑ This method engaging the operator responsibility allows a better public acceptance, permits cost optimization and ensures safety during decommissioning

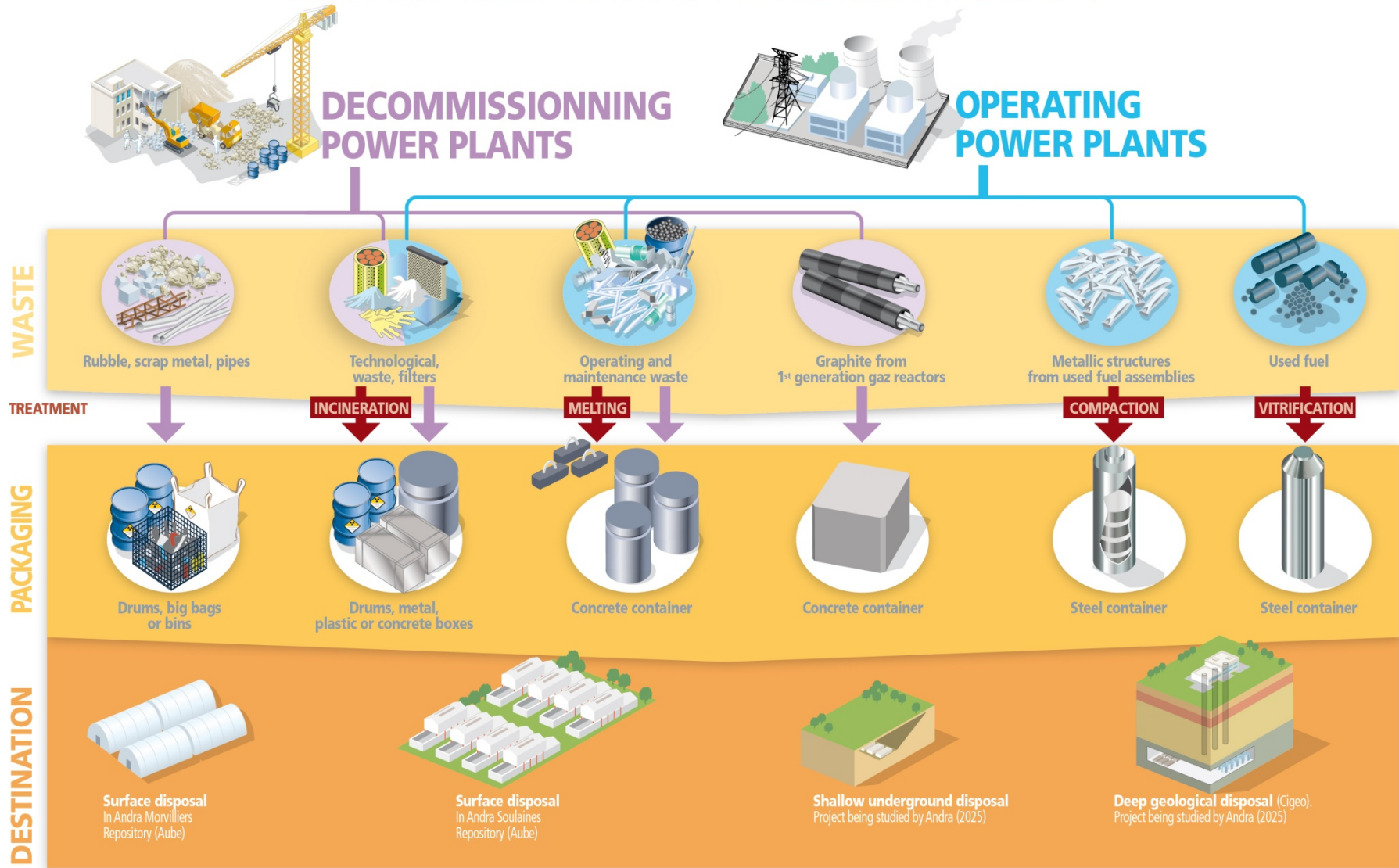
SAFE AND COST EFFECTIVE WASTE MANAGEMENT

- ❑ **A strong French legal framework**
- ❑ **Since the beginning of France's nuclear power program, EDF has developed skills and expertise in radioactive waste management coming from:**
 - plant operation
 - plant dismantling
 - spent fuel reprocessing
- ❑ **EDF has developed an expertise at each stage of the waste management**
 - melting, recycling and incinerating waste coming from plants operation (Socodei's dedicated facility)
 - designing and building waste facilities for interim storage
 - monitoring waste management routes and developing tools for waste inventory
 - cooperating and challenging industry players in transportation and storage facilities design
- ❑ **EDF is fully in charge of dismantling its 9 nuclear plants currently out of service**
- ❑ **EDF is financially responsible for radioactive waste generated**

REGULATORY FRAMEWORK FOR WASTE MANAGEMENT

- ❑ France benefits from a strong framework of laws, regulation and requirements: French 2006 Planning Act- National Plan for the Management of Radioactive Waste and Materials (PNGMDR)
- ❑ The French Nuclear fuel cycle is a «closed » cycle, it means the spent fuel is not considered as waste but is reprocessed (at Areva's plant in la Hague) in order to reduce the volume of RW and to re-use the materials
- ❑ The French law provides that the radioactive waste (RW) generators (EDF, AREVA, CEA) are responsible for the radioactive waste they generate, technically and financially without any time limitation nor possibility of responsibility transfer
- ❑ It also provides that a public agency, ANDRA, is in charge of designing, building and operating disposal facilities

RADIOACTIVE WASTE MANAGEMENT



In partnership with French companies: ENDEL, ONET (OTND), NUZIA, BOUYGUES, IDEALEX, SPIE, DAHER, DERICHEBOURG...

FINANCIAL ASPECTS

- ❑ **The liabilities for decommissioning and long-term waste management (CIGEO project) are based on estimated costs regularly benchmarked and revised; they are supported by EDF**
- ❑ **Dedicated assets allocated only to long-term waste management and decommissioning – French Law 2006- Nome Law 2010 and decrees (100 % of the EDF's dedicated assets are already financed)**
- ❑ **Strict public control over liabilities**
 - Normative and compulsory presentation of liabilities accounting, discount rate cap, detailed report from nuclear operators every three years
 - Administration has power to impose changes
 - Parliament involvement through the National Commission for the Evaluation of the Financing of Nuclear Liabilities (CNEF) monitoring the implementation of the 2006 Planning Act

thank you

