Radioactive Waste Management the French case

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- General policy principles and rules in France
- Status of radioactive waste management in France
- Conclusion

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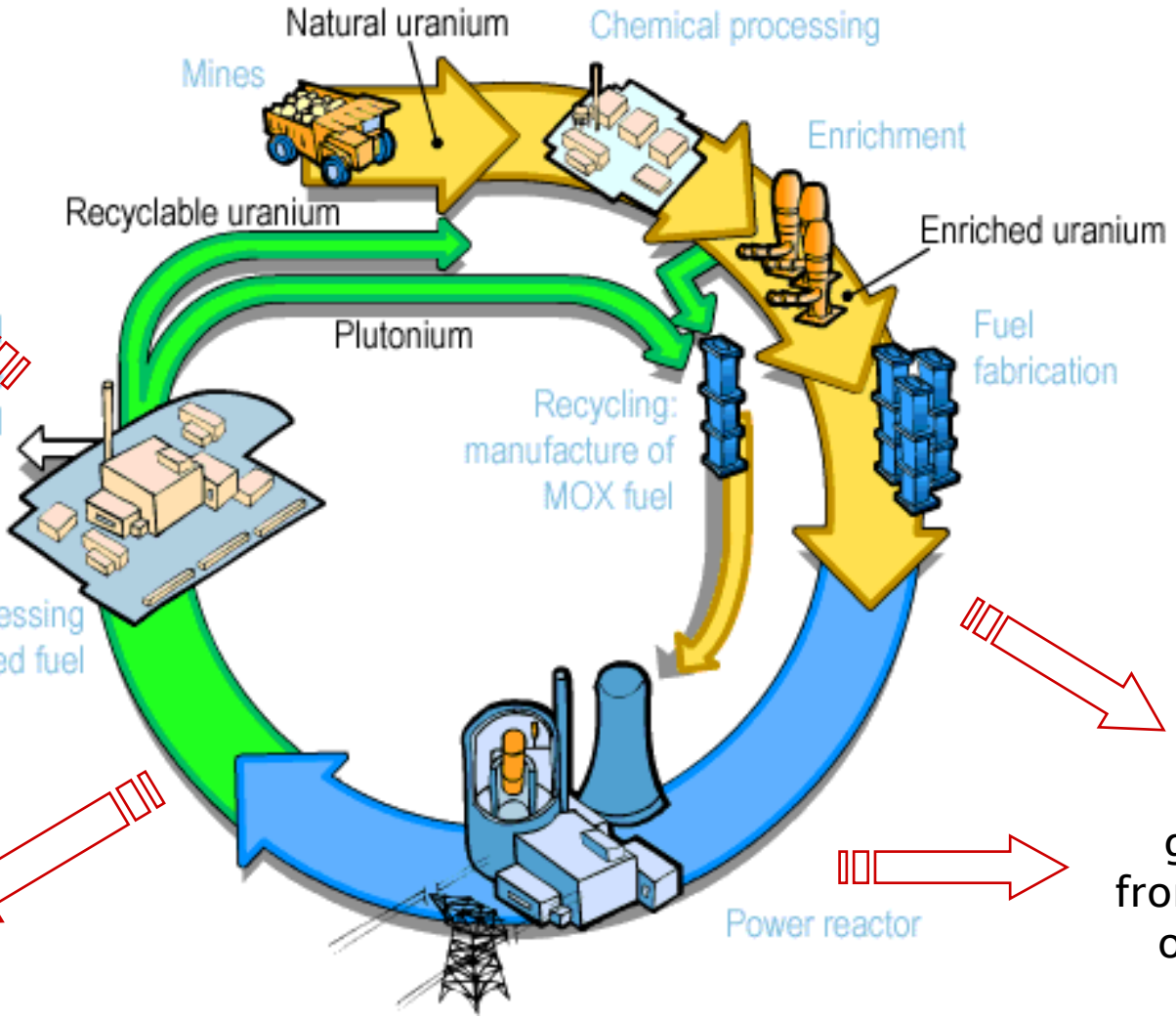
The nuclear fuel cycle

Waste generated from fuel processing



Waste generated from decommissioning facilities

Waste generated from industrial operations

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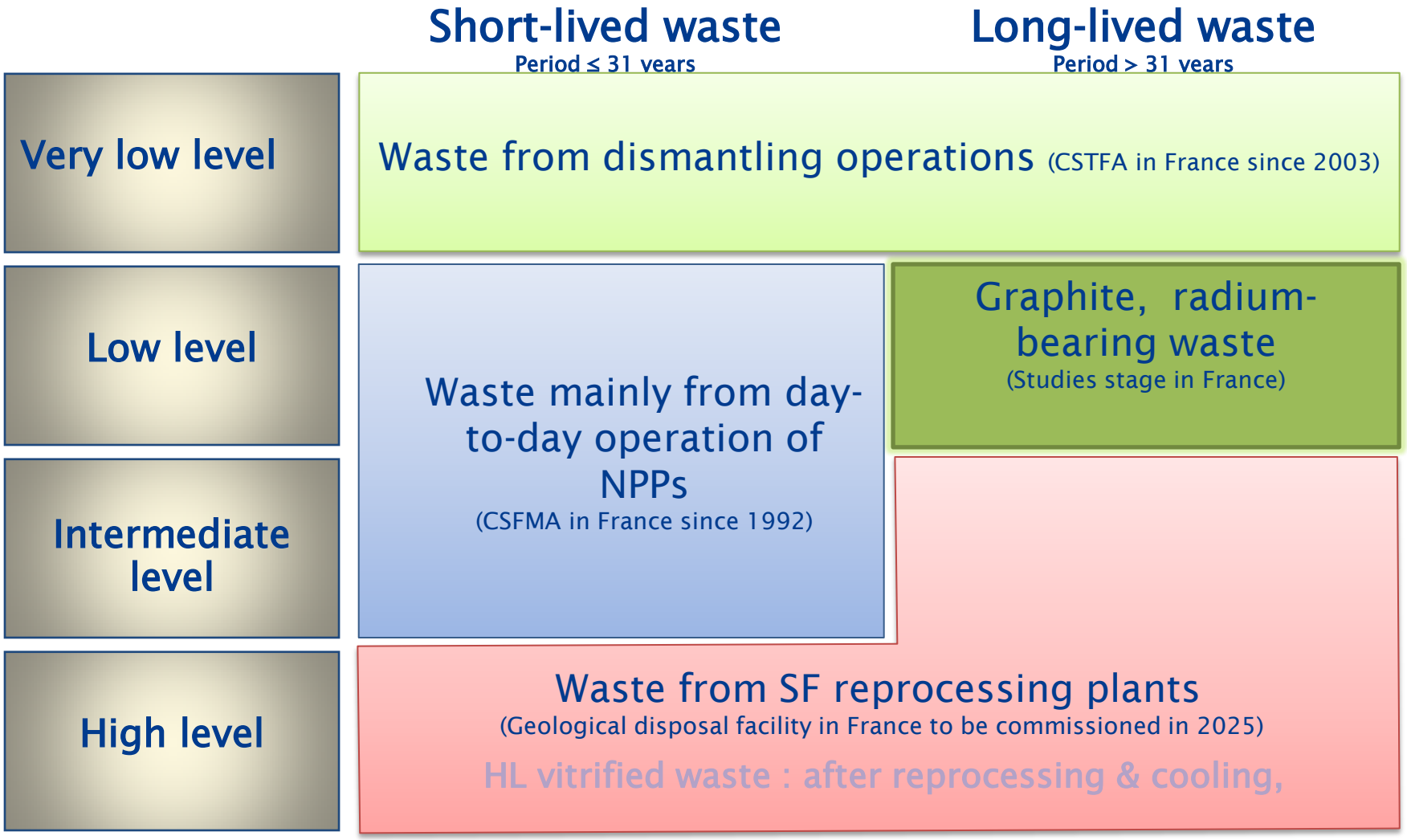
The French classification

General policy principles and rules in France



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A common concern

- Protection of human beings and the environment
- Immediate and long term protection

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Other general policy principles

- **Responsibility principle**
  - *radioactive waste management as part of the fuel cycle: cannot be neglected, cannot be postponed or transferred to next generations*
- **Producer-payer principle**
- **Transparency**

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General rules in France

- Clear inventory: type, form and amount of radioactive waste
- Radioactive waste management plan
- To achieve at least the same level of safety for all radioactive waste
- A dedicated agency in charge of all radioactive waste: ANDRA, status, missions and responsibilities
- Interaction with stakeholders
  - At the national level
  - Local communication and communities involvement

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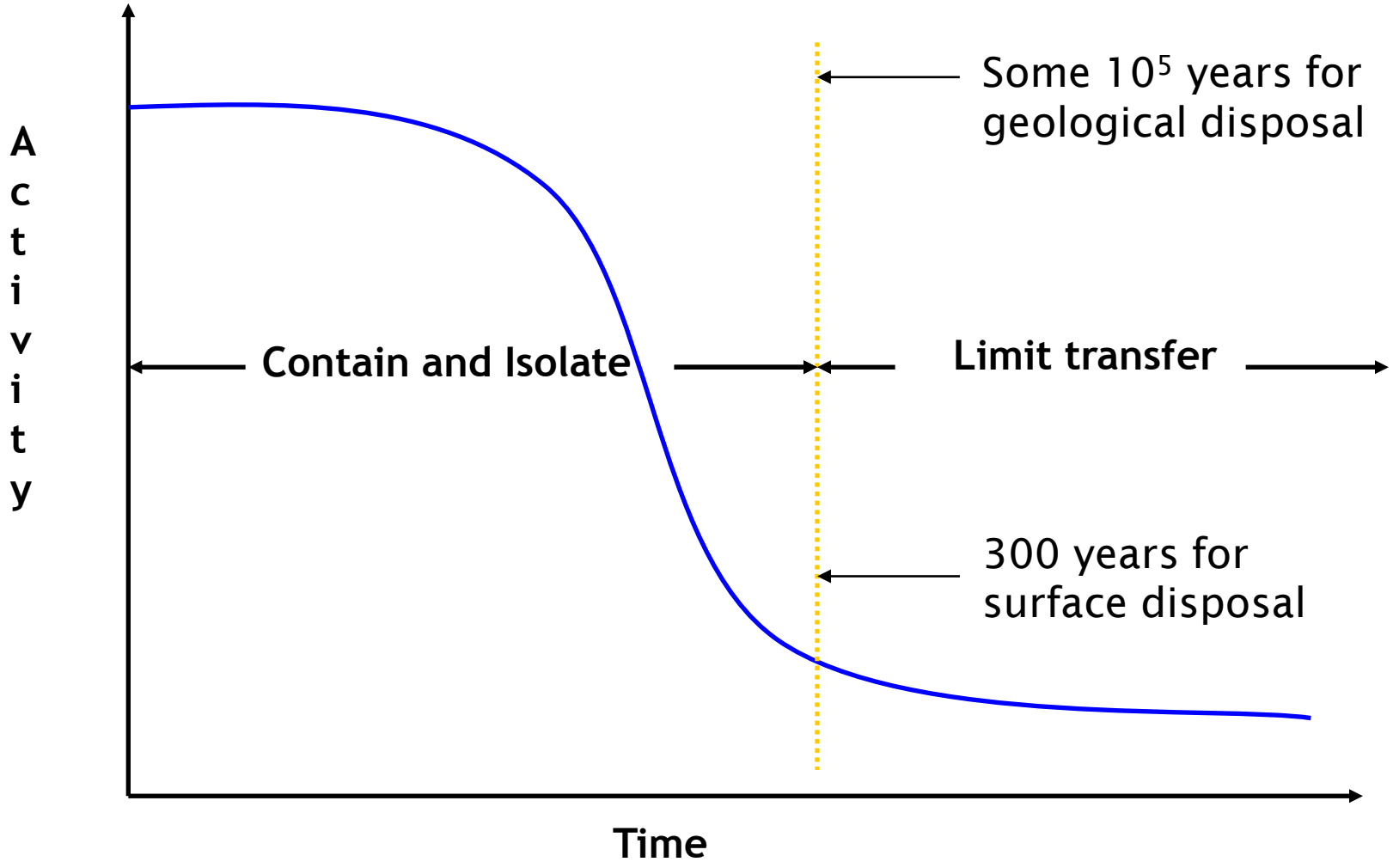
Strategy for management



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National Inventory of Radioactive Materials and Waste 2012

The Essentials

Waste volume (m^3)	Waste at end-2010	Forecast end-2020	Forecast end-2030
HLW	2,700	4,000	5,400
ILW-LL	41,000	45,000	49,000
LLW-LL	87,000	89,000	133,000
LILW-SL	830,000	1,000,000	1,200,000
VLLW	360,000	750,000	1,300,000
Total	**~1,320,000**	**~1,900,000**	**~2,700,000**

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Distribution of the volume

HL	0,2 %
IL-LL	3,1 %
LL-LL	6,6 %
LIL-SL	62,8 %
VLL	27,3 %

Distribution of the level of activity

HL: ~ 2X 10^{20} Bq	96,8 %
IL-LL: ~ 5x 10^{18} Bq	3,2 %
Other: ~ 10^{14} Bq	< 0,01 %

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Centre de stockage de la Manche, LIL-SL waste

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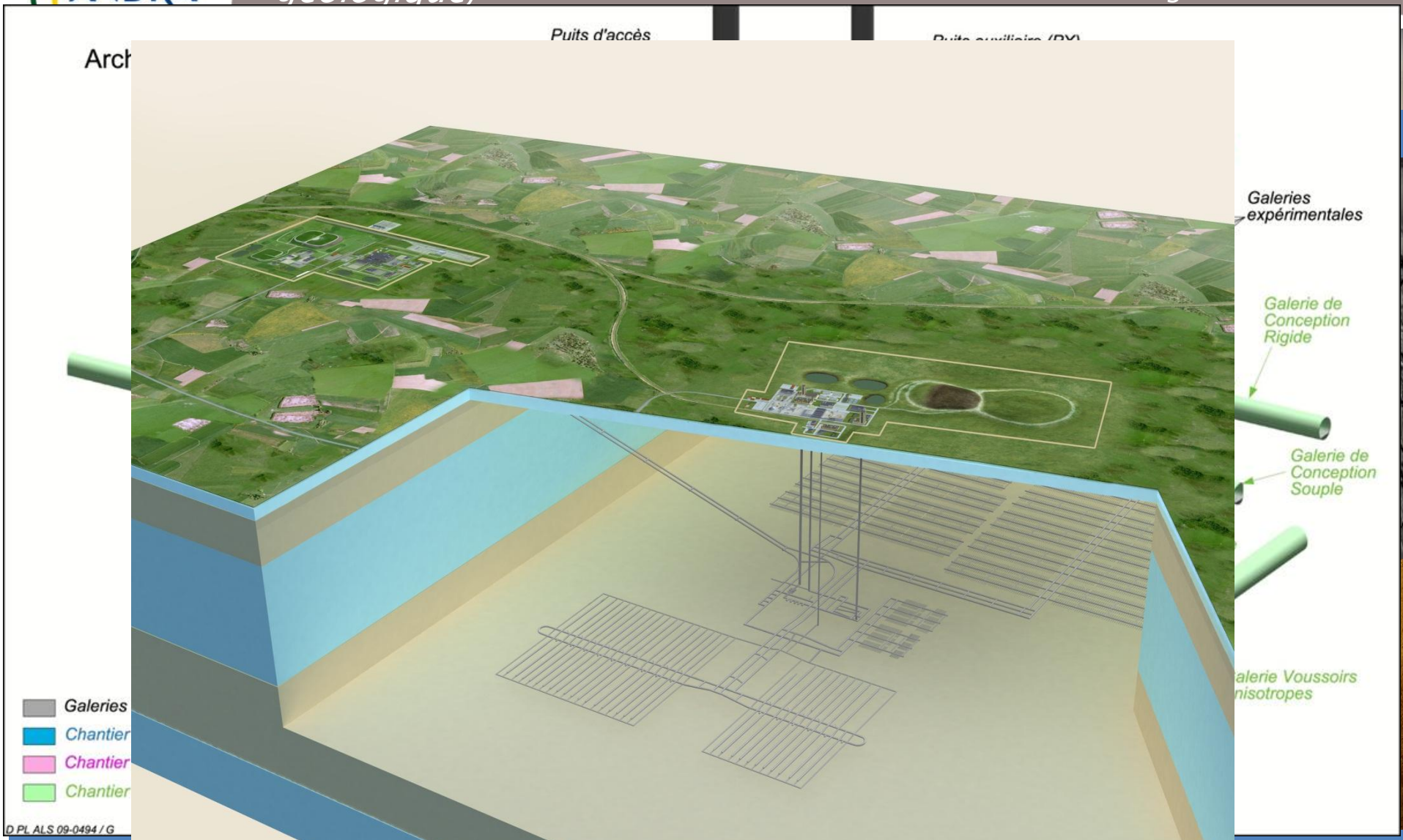
Centre de stockage de l'Aube, LIL-SL waste

Centre de Stockage de l'Aube, VLL waste

The Cigéo Project (*Centre industriel de stockage géologique*)



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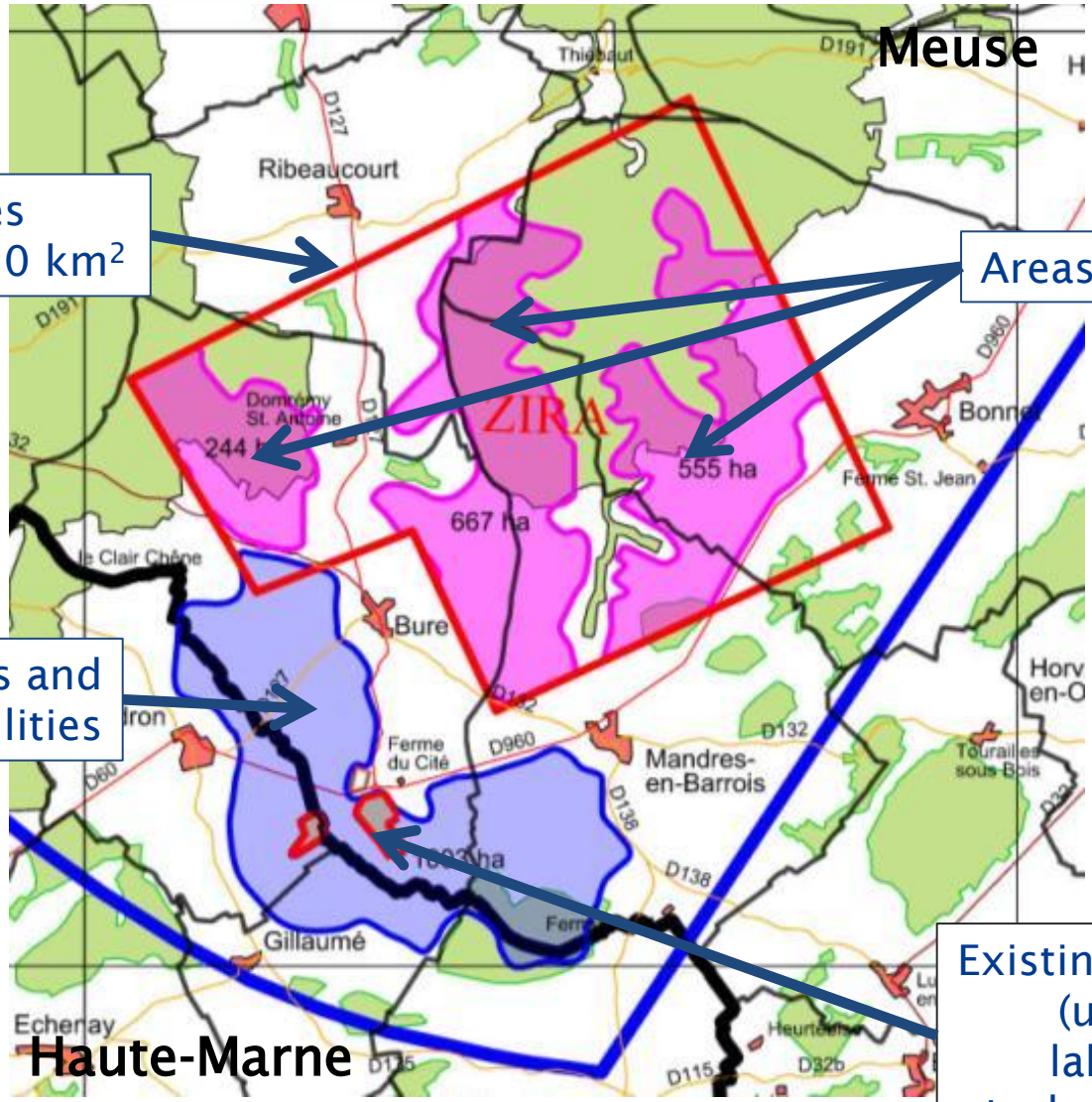
The Cigéo project possible locations

Underground facilities within limited zone 30 km²

Area for ramp access and nuclear surface facilities



Areas for shafts

Existing Andra facilities (underground laboratory and technological centre)

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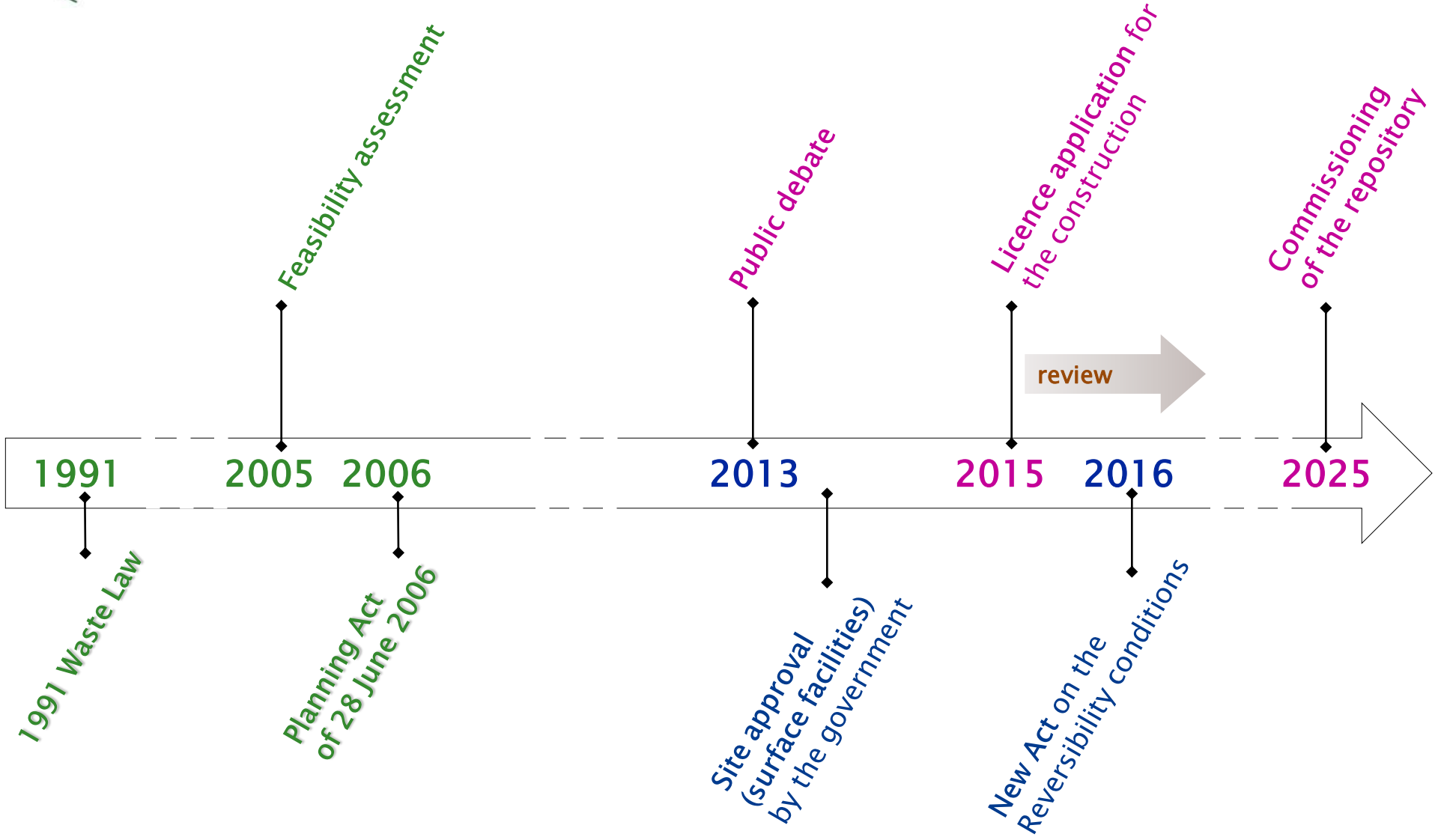
The Planning Act of 28 June 2006

Status of radioactive waste management in France



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Conclusion

Lessons learnt from experience

- Do not neglect radioactive waste management, it's a matter of safety
- Know your radioactive waste and plan their management routes
- A dedicated solution suited for each type of radioactive waste

General recommendation for new-built

- Consider radioactive waste management as early as designing NPPs

Rely on existing experience without re-inventing the wheel

ADS
Andra Disposal Solutions

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