



Ferrous slags in France :
**Short overview on figures, main uses
and existing regulatory framework
over last decade**

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What is C.T.P.L. ?



- **Non-profit making Association** type « Loi de 1901 » in French law,

- **Full Members** : Steel production plants

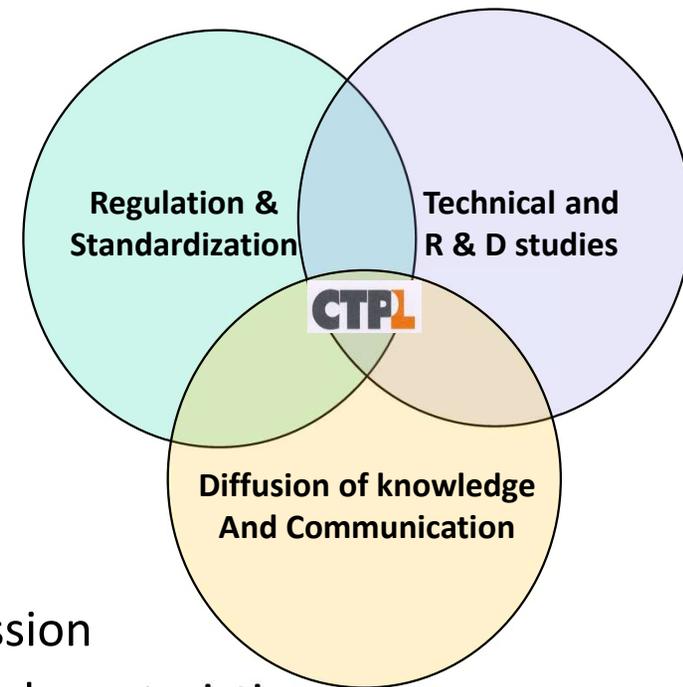
ArcelorMittal (2), Aperam, Saarstahl Ascoval, Aubert&Duval, Erasteel, Industeel, LME, Marcegaglia, NovAsco, RIVA (4), Ugitech, Winoa

- **Associated Members** : companies treating or using slags

AGS, Dillinger, Durruty, Ecocem France, Eurogranulats, Harsco, Recynov, Saarstahl, SLAG, SGA, Solodet, TMS International, Valsid

- **Objectives** :

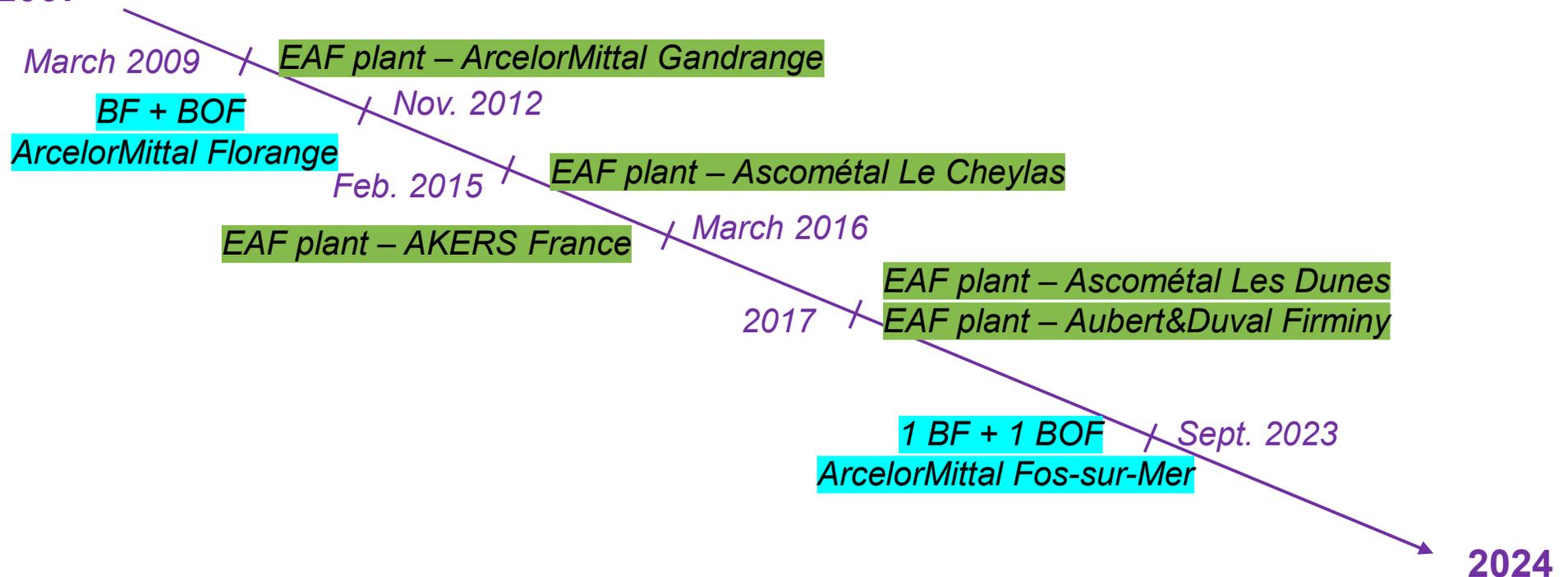
- * To represent Members and slag profession
- * To undertake studies to improve slags characteristics
- * To take all actions (technical, promotional, marketing ...) in order to promote slags and to develop their uses



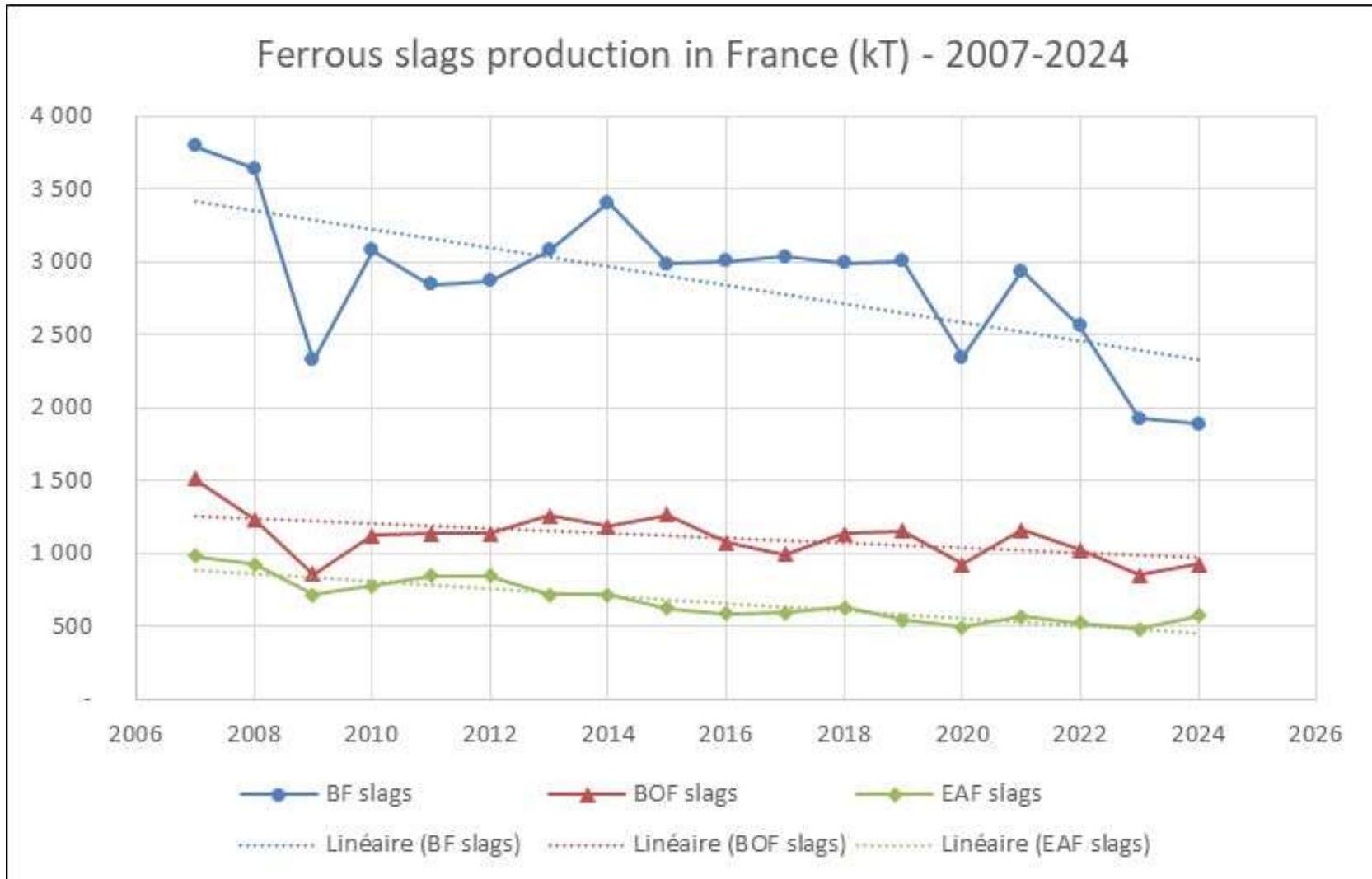
- Evolution of production of ferrous slags in France :

- Cyclical business, Subprime + CoVid crisis, world economic framework (imports) and strong impact in Europe
- High consequences on integrated plants and their markets ... but also numerous closures of EAF steel plants
- From 6 Mt of ferrous slags to ... 3 Mt over past 15 years !!

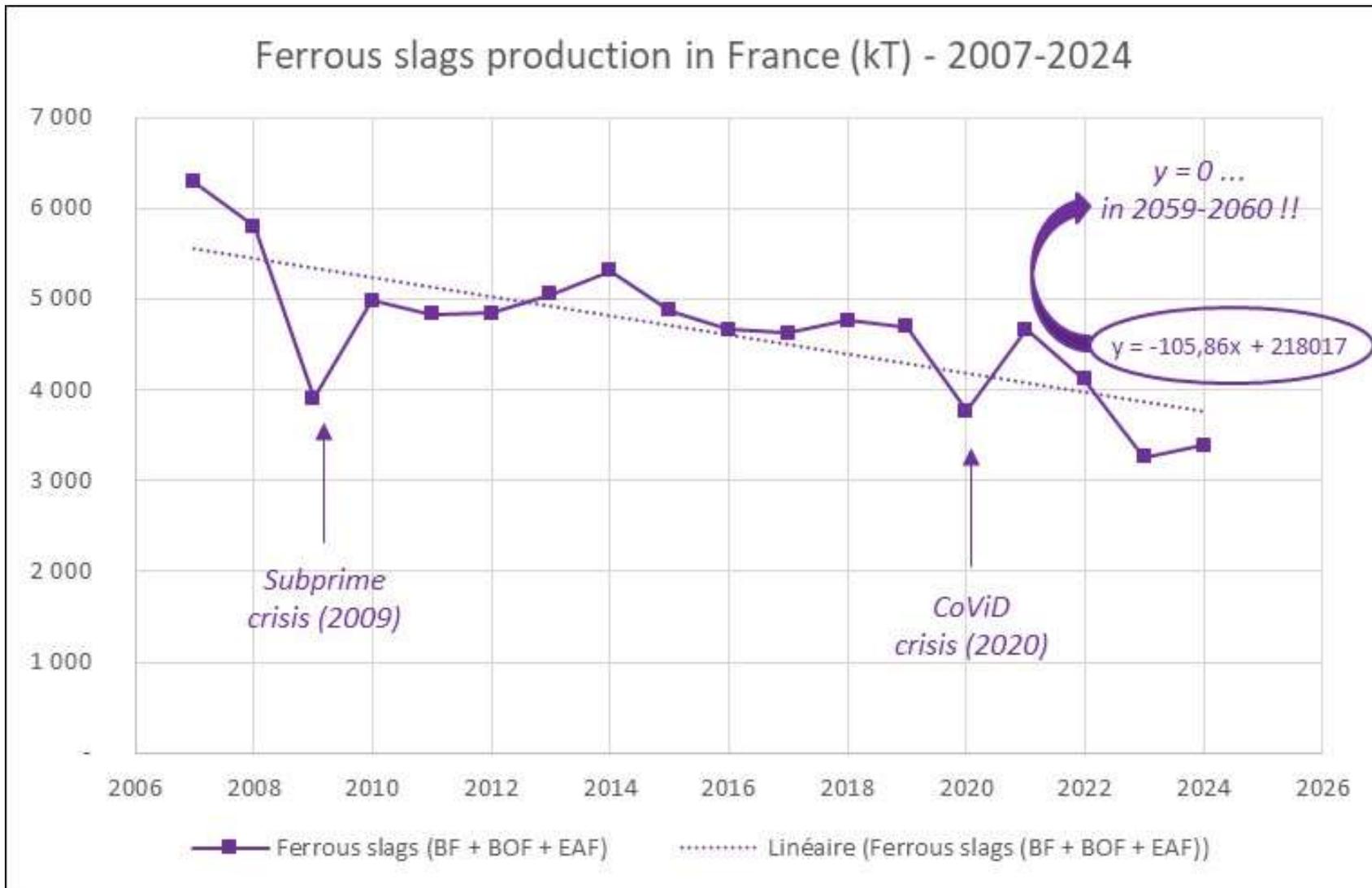
2007



Ferrous slags in France (production)

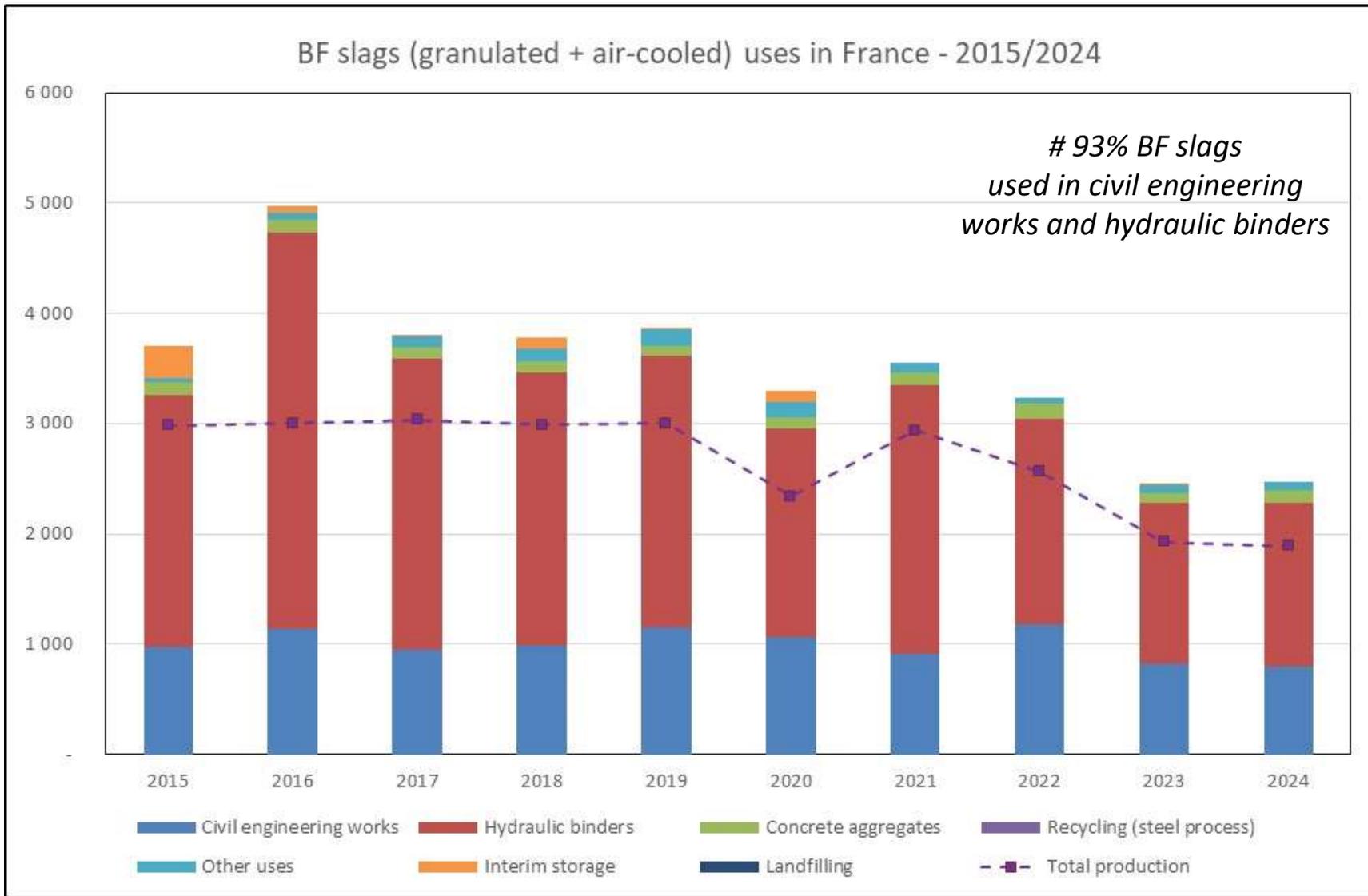


Ferrous slags in France (production)

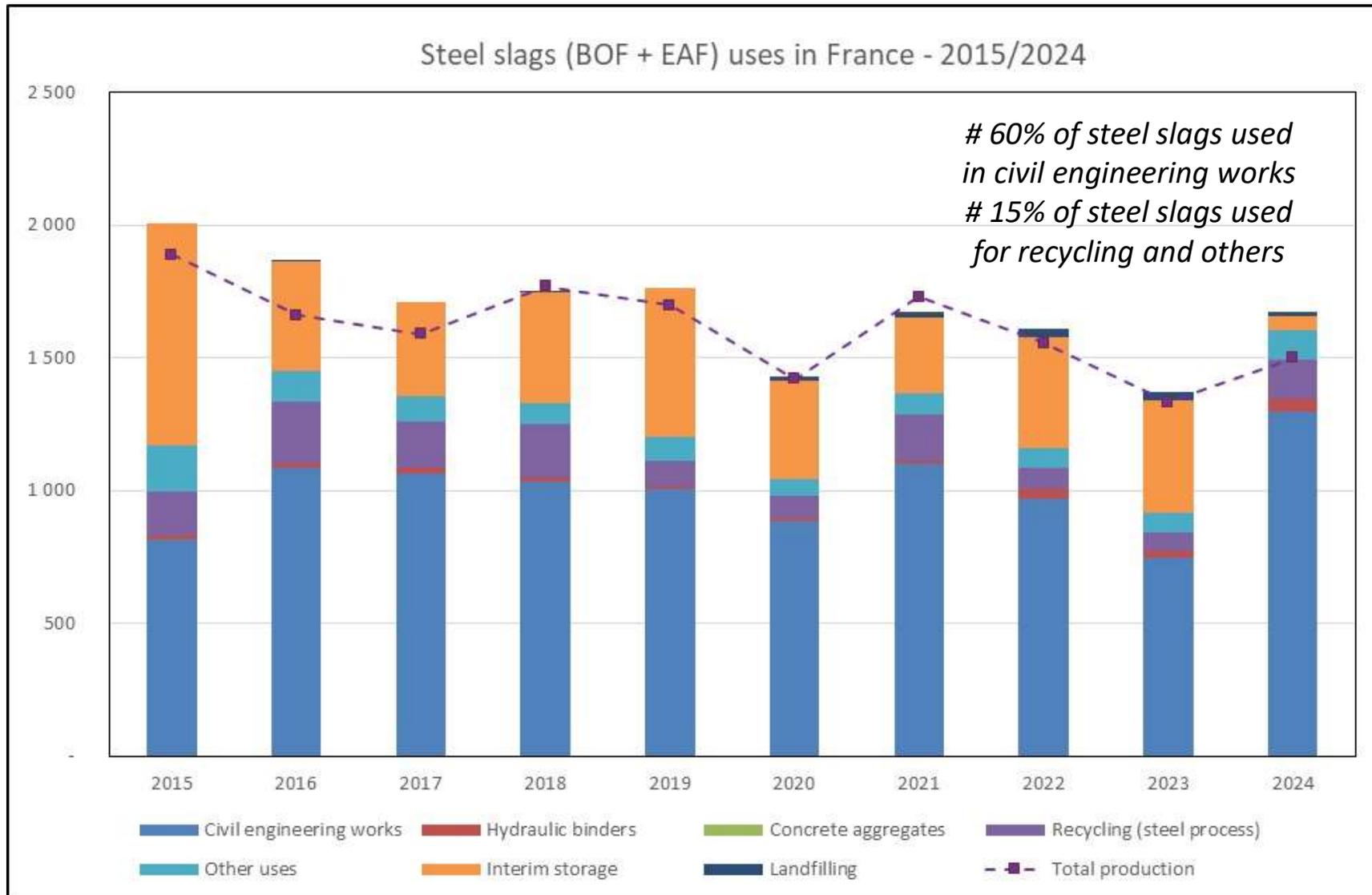


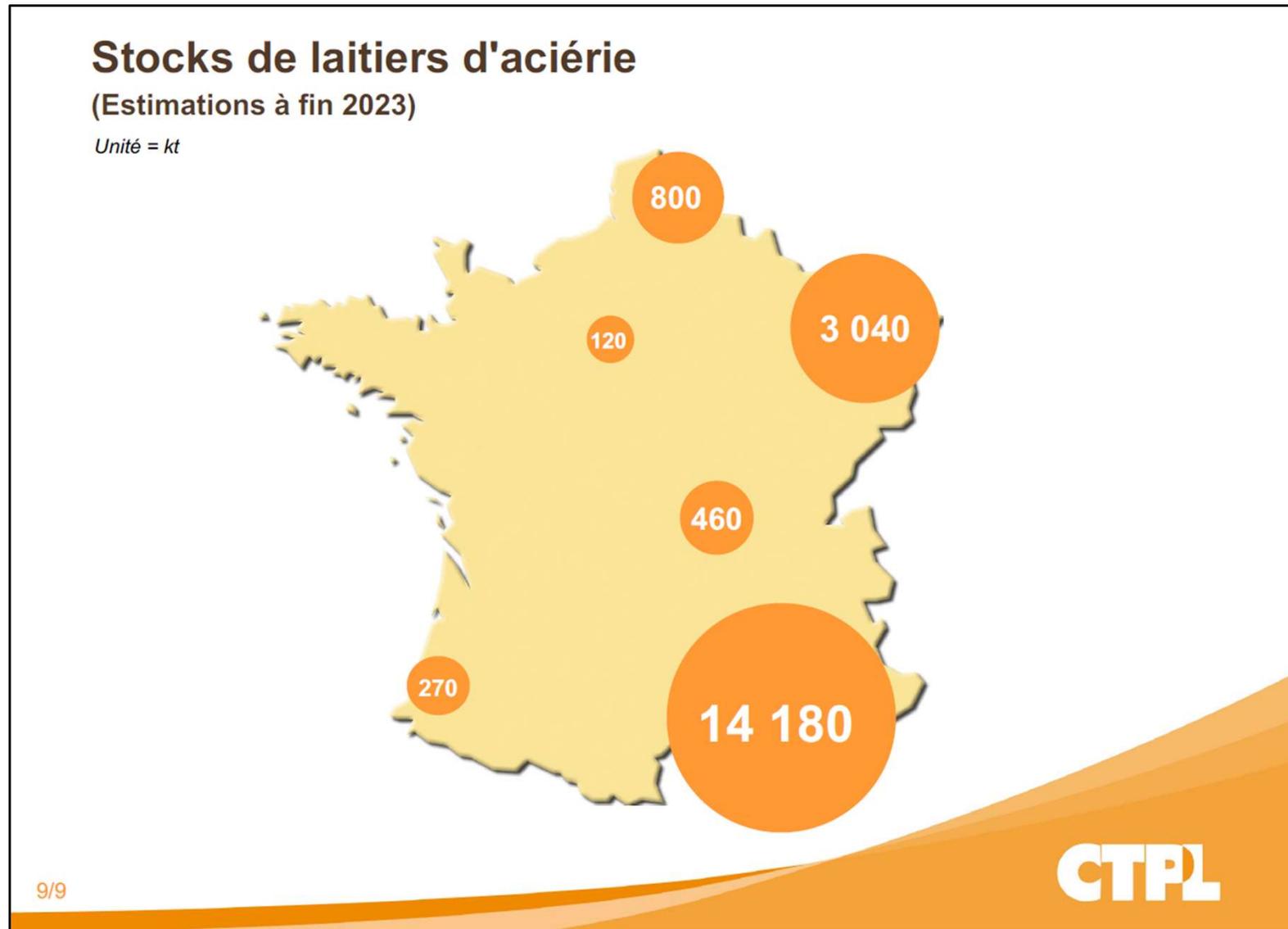
- **High reuse/valorization/recycling ratio :**
 - Reuse > 98% for BF slags, 75% for steel slags over last 10 years
 - Hydraulic binders (cement and concrete), aggregates for road and civil engineering works, fertilizers, rockwool ...
- **Existing historical storage** (East, South ...)
 - Some storage assimilated to “artificial quarries”, in operation
 - ... Sometimes not, expecting better technico-economical conditions
- **Ferrous slags not yet used according to their full potential performances**
 - Earthworks : capping layer, backfilling, embankments
 - BOF and SMS slags for hydraulic binders
 - EAF slags as aggregates for concrete and bituminous mixtures
- **Low volumes in regulated landfills**

Ferrous slags in France (uses)



Ferrous slags in France (uses)





- European harmonized framework

- When not waste, slags have to respect substances European regulations : CLP and REACH
- The only European harmonized regulation for slag uses = EC regulation n°1009/2019 for fertilizers

- Legal status of slags in France

- GBS not waste (product) since 2016 : French administrative decision
- For other types of slags, no harmonization at national or European level
- Sometimes local (former) authorizations

- Technical and environmental performances

- Technical specifications are given through national/European standards or guidelines for different uses of slags
- Environmental recommendations were established for some uses

Use of ferrous slags as hydraulic binders

- Technical specifications

- Cement industry : GBS main component in cement standards
- Hydraulic road binders (HRB) : GBS and BOS main components of normal hardening HRB in EN 13282-2
- Concrete : GGBS as hydraulic additions (EN 15167-1) and ABS as aggregates used according with EN 206

- Environmental issues

- For cement, REACH specification for soluble Cr^{VI} on final product, 2 mg/kg after EN 196-10 procedure
- Current discussions to draft a European document for cement including “informative” limit values in leaching and total content
- Ongoing national “reflections” on environmental and health issues



Use of ferrous slags as granular material in civil engineering works

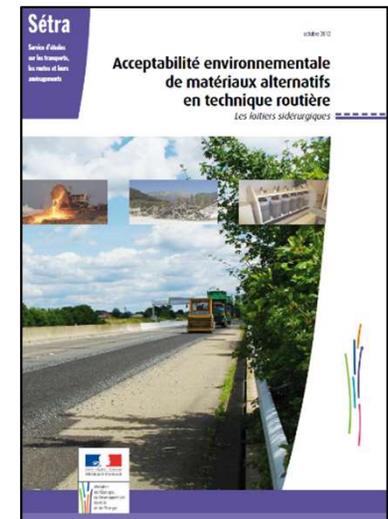


- Technical specifications

- In European standards when used as aggregates : EN12620 concrete, EN13139 mortars, EN13242 unbound and hydraulically bound materials, EN13043 bituminous mixtures, EN13383-1 armourstones or EN13450 railway ballasts
- In national standard NF P 18-545 for aggregates
- in national technical guidelines for earthworks (GTR 2024)

- Environmental issues

- Specific guidelines for environmental assessment (to be revised/updated before end 2026)
- Including ABS, BOS and EAF slag uses
- 3 types of uses +/- sensitive : under impermeable material, under permeable material, non covered
- Compliance testing in leaching for heavy metals (EN12457-4), with lower limit values when sensitive



Use of ferrous slags as fertilizers

- Technical specifications (NV, fineness, CaO, MgO,...)

- In European standard EN 14069 (ABS, BOS and SMS)
- In French standard NF U44-001 (ground BOF)
- In harmonized EC n°1009/2019 regulation (PFC 2 liming materials)

- Environmental issues

- For EU fertilizers, in harmonized EC n°1009/2019 regulation : limit values for PFC 2 (As, Cd, Cr^{VI}, Hg, Ni, Pb + Cu/Zn) + **additional constrains for ferrous slags as CMC11 (Cr, V, Tl)**
- In French standard NF U44-001 (ground BOF) limit values in total content (As, Cd, Cr^{VI}, Cu, Hg, Ni, Pb, Se, Zn)
- Ongoing French regulation drafted to be published in 2025 with additional constrains +/- harmonized with European ones (**will replace existing limitations in standards**)

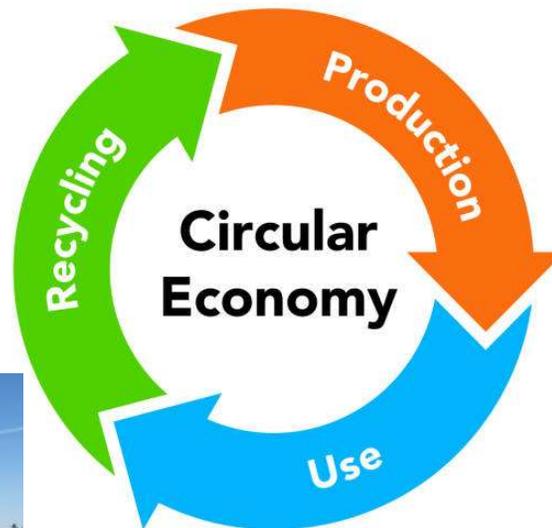


- French steel/slugs production strongly impacted by economical situation over last 15 years → next expected EC decisions to protect European steel industry will be essential for French producers
- Efforts still needed to improve added value of ferrous slags, to be used in the most relevant markets (hydraulic binders, concrete formulation, bituminous mixtures, insulation products ...) according with performances
- Environmental and health issues will have to be considered “seriously” : pragmatically and operationally ... but neither based on precaution principle, nor creating distortion of competition with natural resources
- Circular economy policy (at French and European levels) shall be more incentive for secondary sources materials, giving higher value to ferrous slags and protecting use and exploitation of natural resources

Questions ...



*Thank you for
your attention !*





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