

Studsvik

Metal Recycling in the UK A decade of developments

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Introduction

- UK has a mature nuclear industry
- Studsvik active in UK Waste Treatment since 2003
- Our experience highlights the change in adoption of metal recycling in 10 years
- Milestones
- Lessons Learned
- Conclusions

UK Nuclear Industry

26 Magnox reactors

14 Advanced Gas-cooled reactors

1 PWR

Enrichment & Fuel Fabrication sites

Spent Fuel Reprocessing

3 main historical research sites

AWE

Nuclear Submarine fleet

1 LLW Repository

A decade ago...

- Limited focus on decommissioning planning, strategy or funding
- 10,000 m³ LLW disposed per year, “disposal culture”
- Inventory assessed as:
 - 400,000 tonnes LLW metallic waste
 - 400,000 tonnes VLLW metallic waste
- LLW disposal capacity filling up rapidly



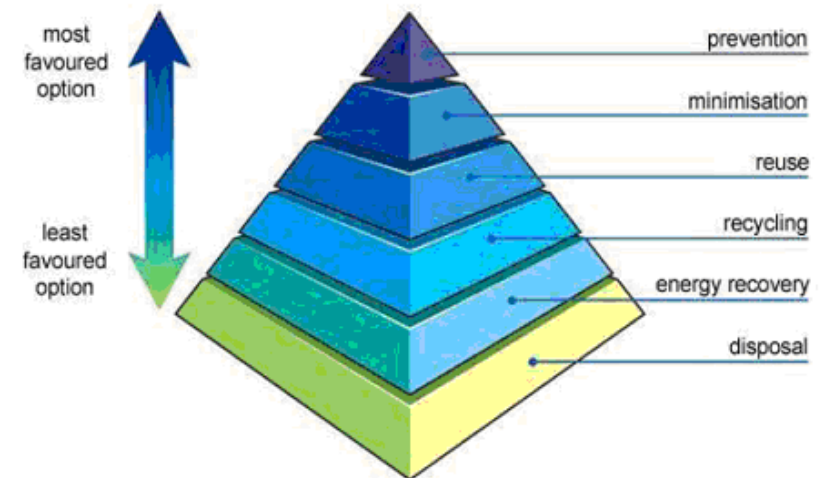
Milestones Timeline



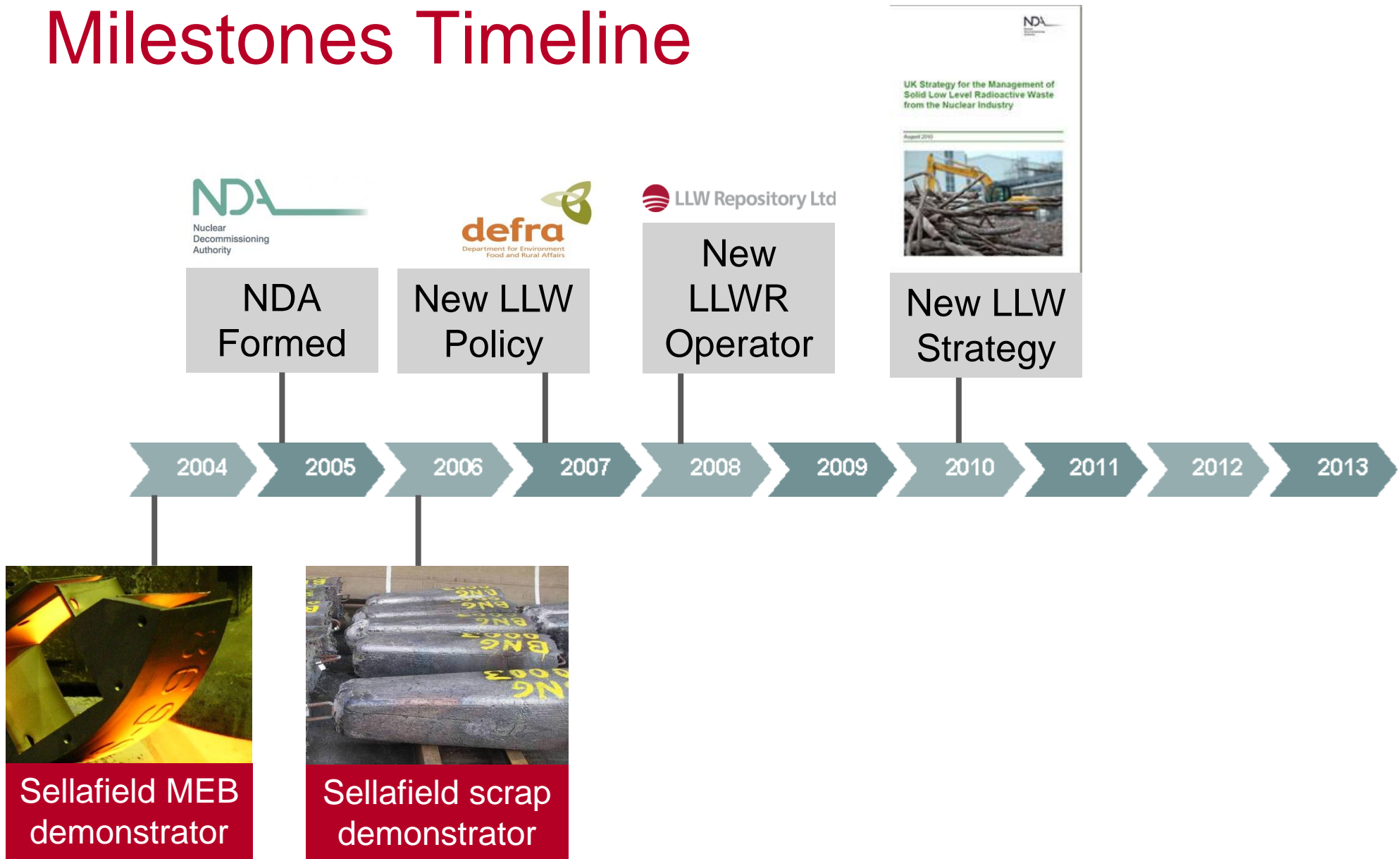
NDA, Regulators & LLW Policy

- Consolidated national view of UK civil decommissioning
- National Liability Estimate for low activity wastes £9bn
- Environment Agency supportive
 - Demonstration projects
- New Government LLW policy:
 - LLW management plans
 - Waste minimisation
 - Early solutions
 - Proximity principle
 - Export of wastes for treatment with repatriation

The Waste Management Hierarchy



Milestones Timeline

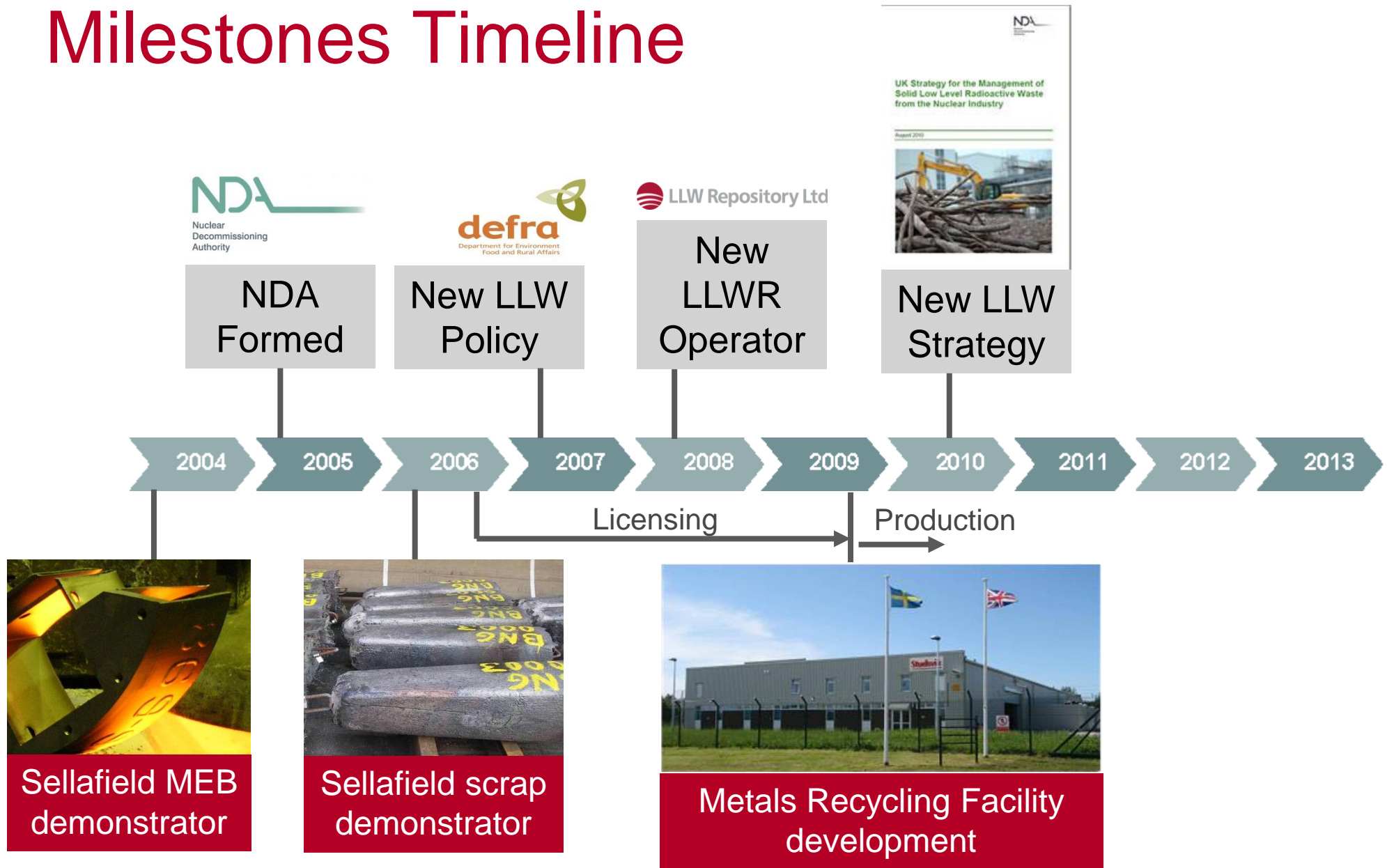


LLWR and National Strategy

- Protecting disposal capacity as a national asset
- Implementation of the Waste Hierarchy
- New service introduction via supply chain
- Joint Planning of Waste Arisings
- Charging the true cost for disposal
 - 300% increase for some customers in this period
- Avoiding the need for a new repository
- Reducing the LLW cost burden



Milestones Timeline



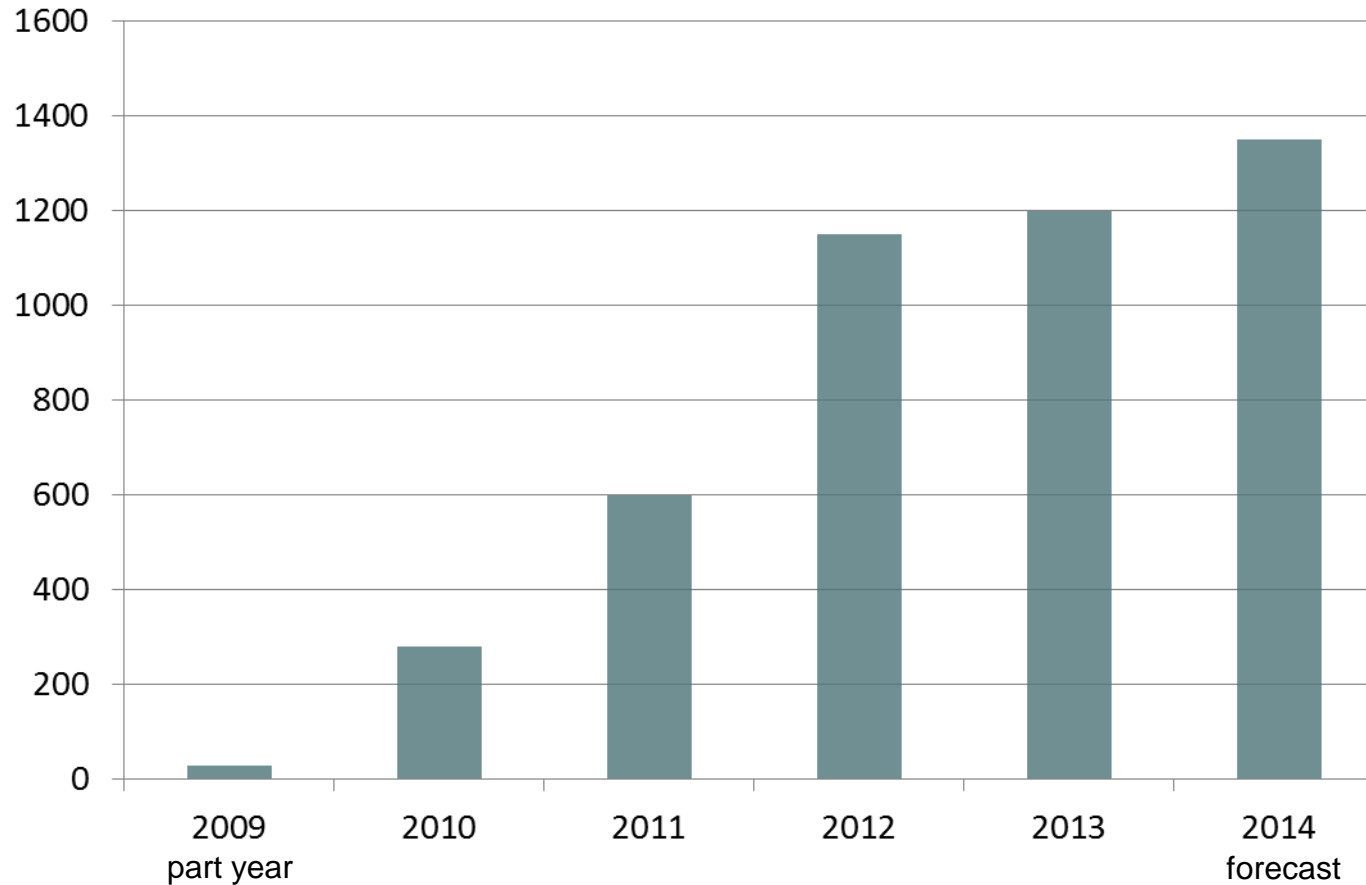
The Studsvik MRF

- UK's first new Nuclear Licensed Site in over 20 years
- Permitted to receive waste from any UK radioactive waste producer
- Technology based on Swedish facilities, but without melting step
- ~50% is directly free released to UK market, 50% melted in Sweden
- Capacity ~2500 t/yr
- Private investment by Studsvik, without underpinning contracts



Metal Recycling Throughput

MRF Throughput (tonnes)



2011:

Increase in NDA funding for recycling

2012 onwards:

NDA Joint Planning & incentivisation of recycling targets

Milestones Timeline

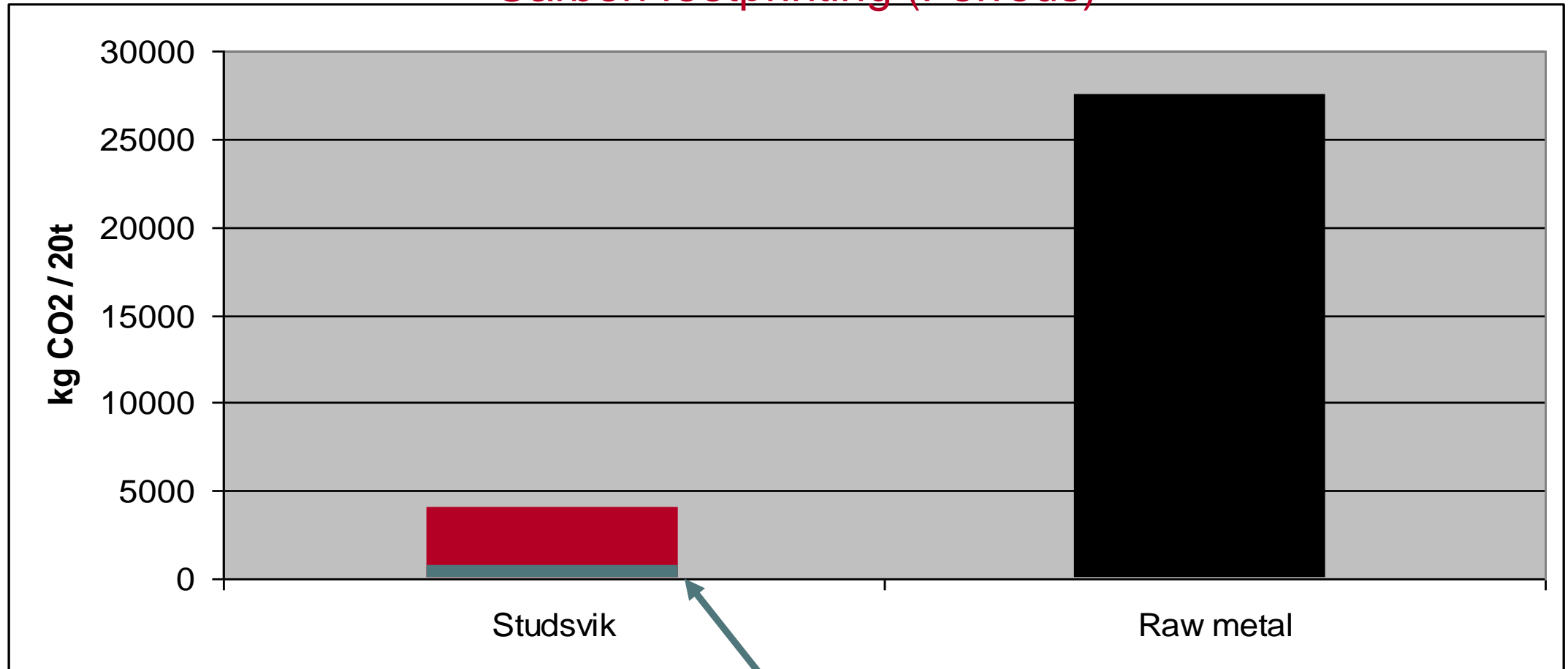


Lessons Learned



The Environmental Case

Carbon footprinting (Ferrous)

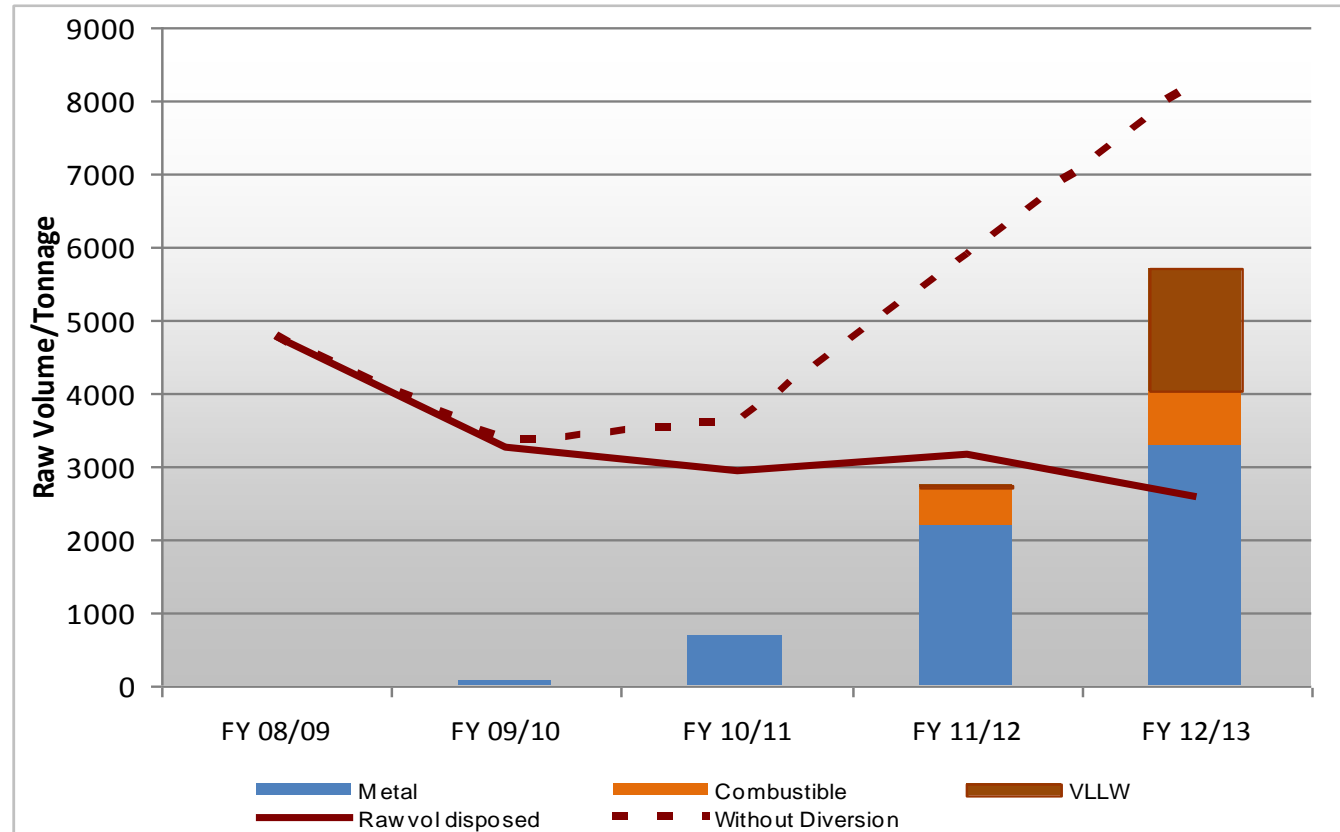


Strategic Best Available Technique

Transport
~ 15% of impact
~ 10% of cost

The Financial Case

- LLWR benefits curve
- 2 years vault space saved already
- Underpins £1Bn business case
- Studsvik MRF has already saved UK taxpayer over £10M to date
- NDA estate recycled over 3000t in FY12/13



The Social Case

- Job creation and socio-economic benefits
- Consultation in permitting phases and open-door sessions for community
- Regulatory engagement & support
- Quality assurance of recycled metals
 - IAEA low hazard to human health from nuclear industry metal recycling compared to risks of orphan sources
- Presumption to Early Solutions



Conclusions



Conclusions

- Policy and Strategy supporting the Waste Hierarchy are essential
- Demonstration projects develop confidence in the techniques
- Disposal prices need to be at least equal to true costs of disposal
- Financial incentivisation of Governmental customers has provided the biggest impact on metal recycling

Looking Forward for the UK

- Improve understanding of European treatment capacity picture
- Fundholder planning on longer time horizons with commitments
- Consider harmonisation with RP-89 protocol for melting

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