



Ricardo
Energy & Environment

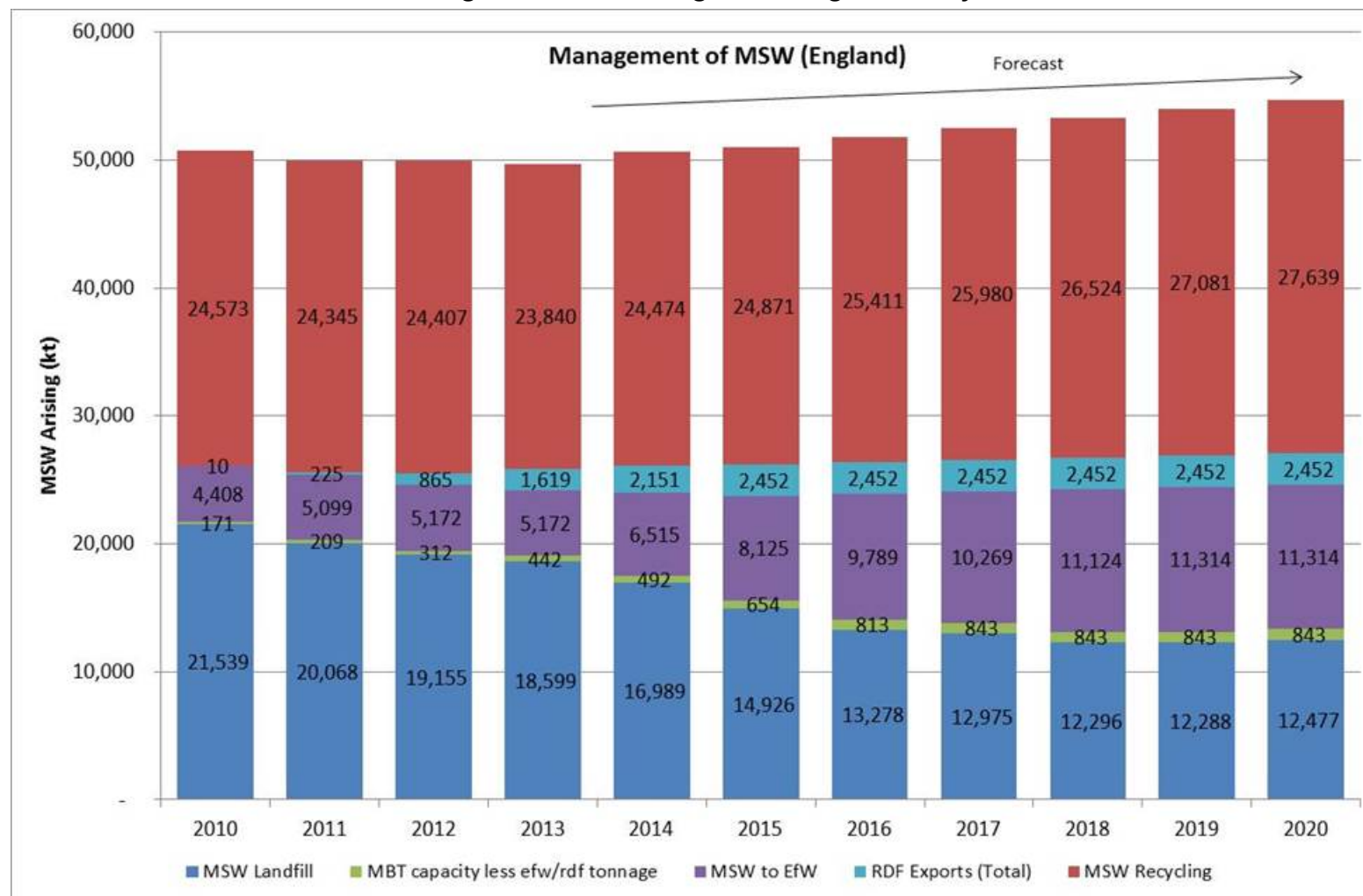
IEA Bioenergy Task 36 UK report, Rome, May 2015

Pat Howes, Assistant Task leader



MSW production in the UK

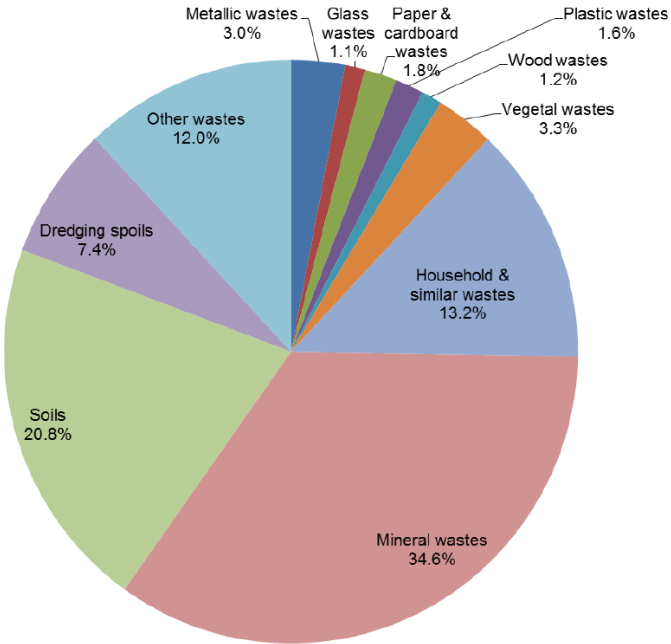
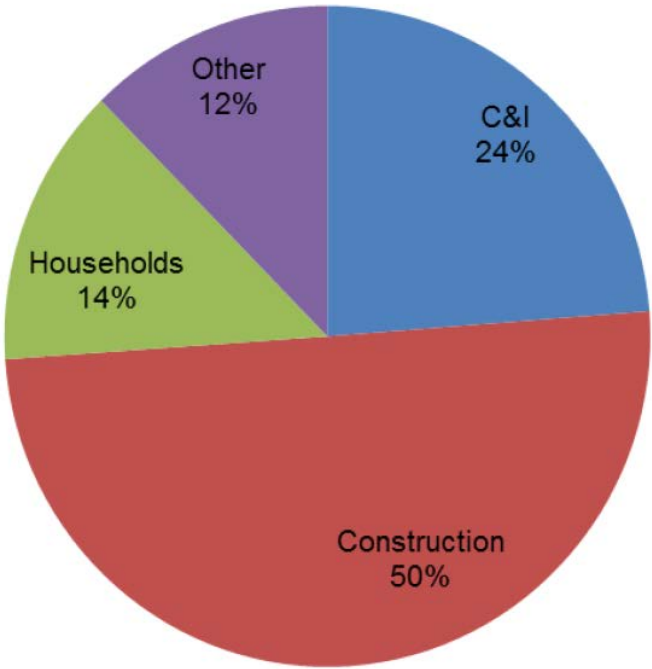
Data from Defra. From 2014 onwards the data is a forecast. The model, and the actual outturn show that waste arisings are increasing following a steady decline from 2008.



thousand tonnes

	C&I	Construction	Households	Other	Total
UK	47,567	100,230	27,506	24,716	200,020
of which hazardous	3,173	1,057	1,306	395	5,931
England	38,976	85,240	22,744	16,291	163,252
of which hazardous	2,546	881	1,080	202	4,708

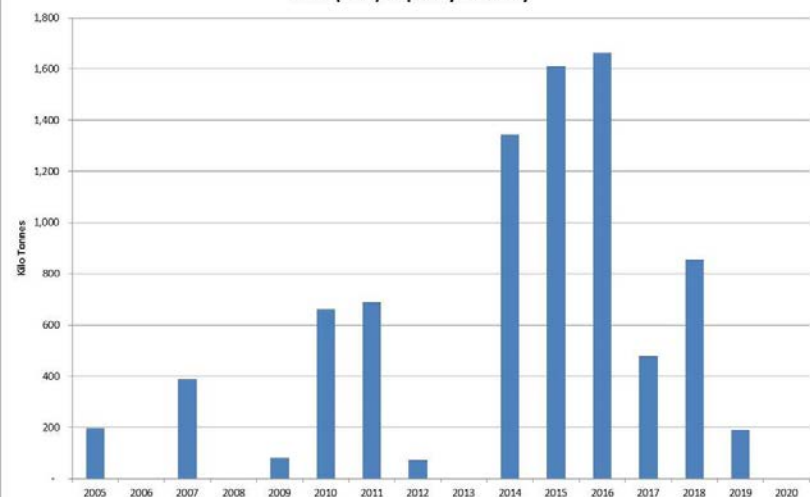
Waste generation split, UK 2012



Source: DEFRA (2015) UK Statistics on Waste

EfW development in UK

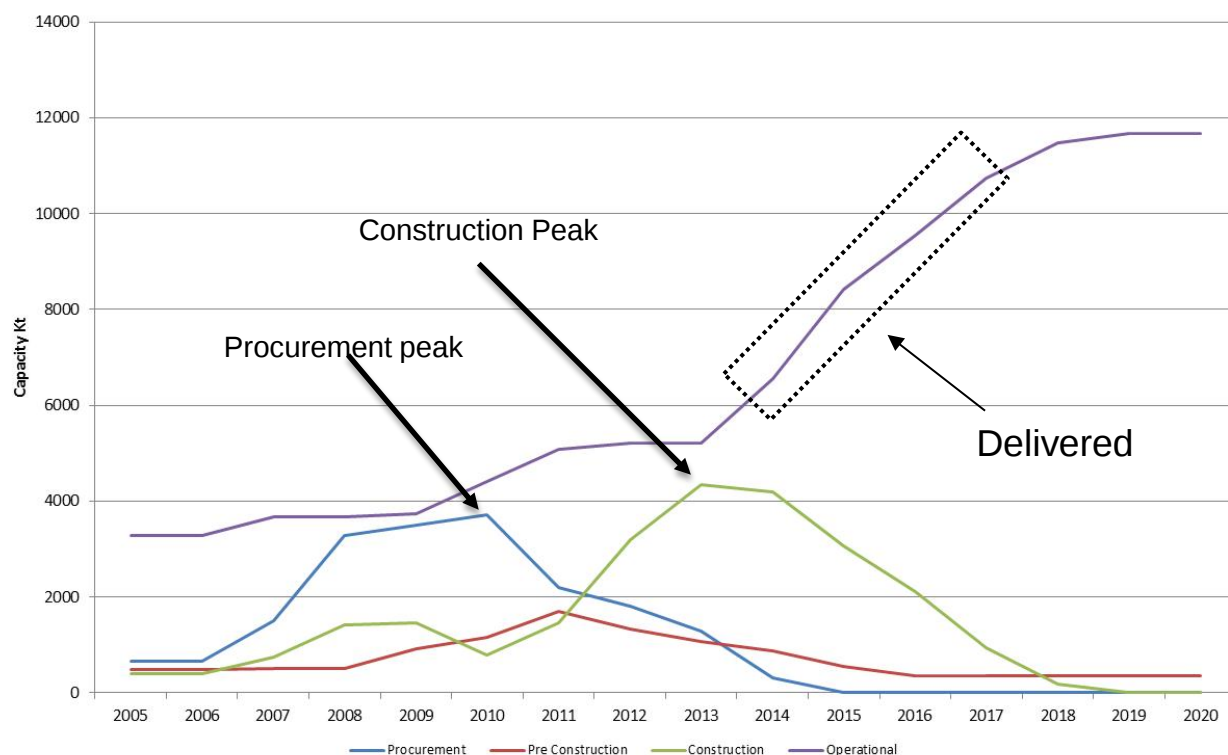
New (EfW) Capacity Delivery



These graphs refer to the PPF development and show plants in construction.

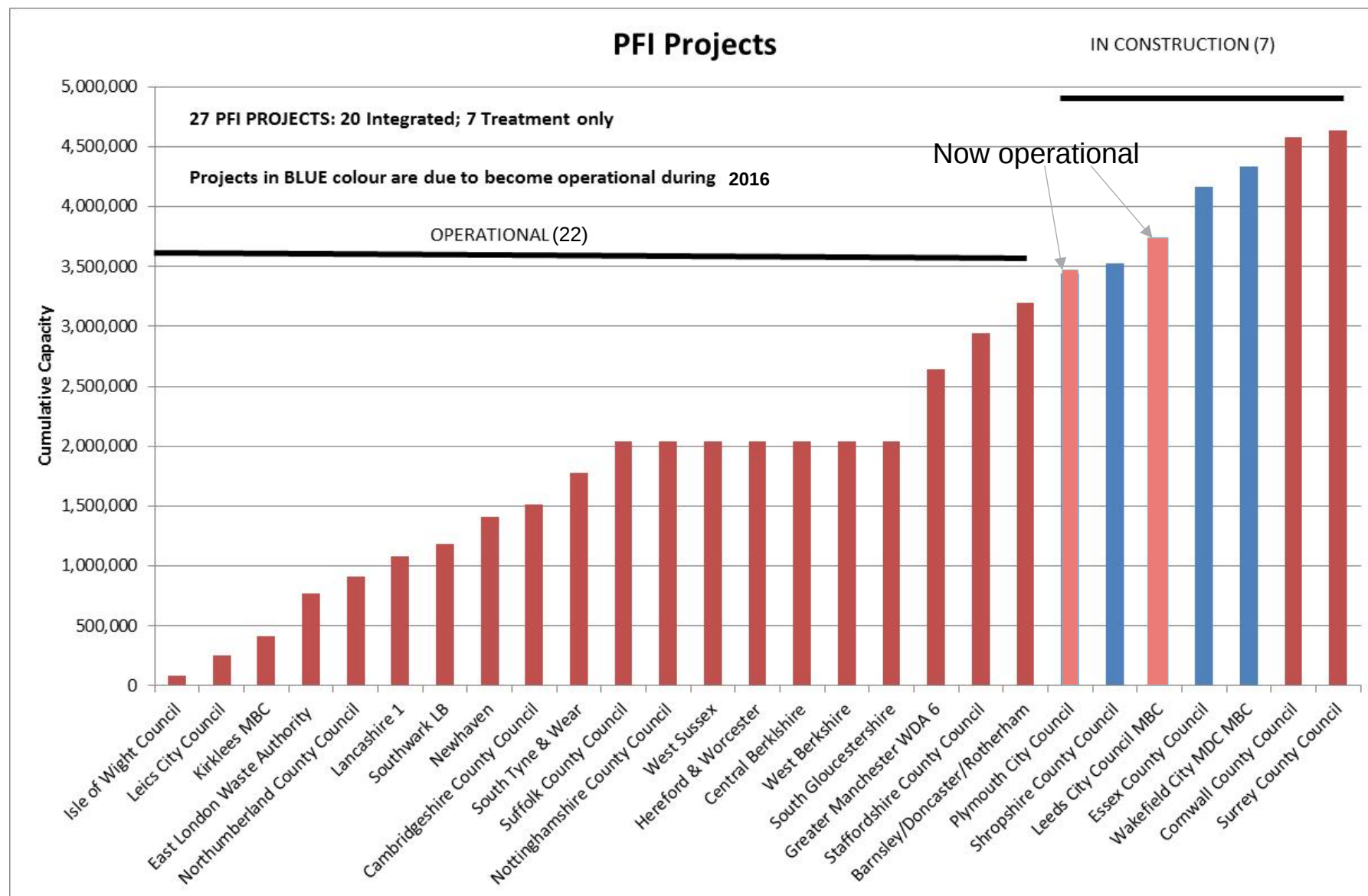
- Peak development is 2016. Thereafter delivery declines as no further plants are entering the construction phase
- ACT plants are The ACT plants that would be included are the Energos facilities at Derby and Milton Keynes and the gasifier for Surrey

Capacity Pipeline (EfW/ACT Projects)

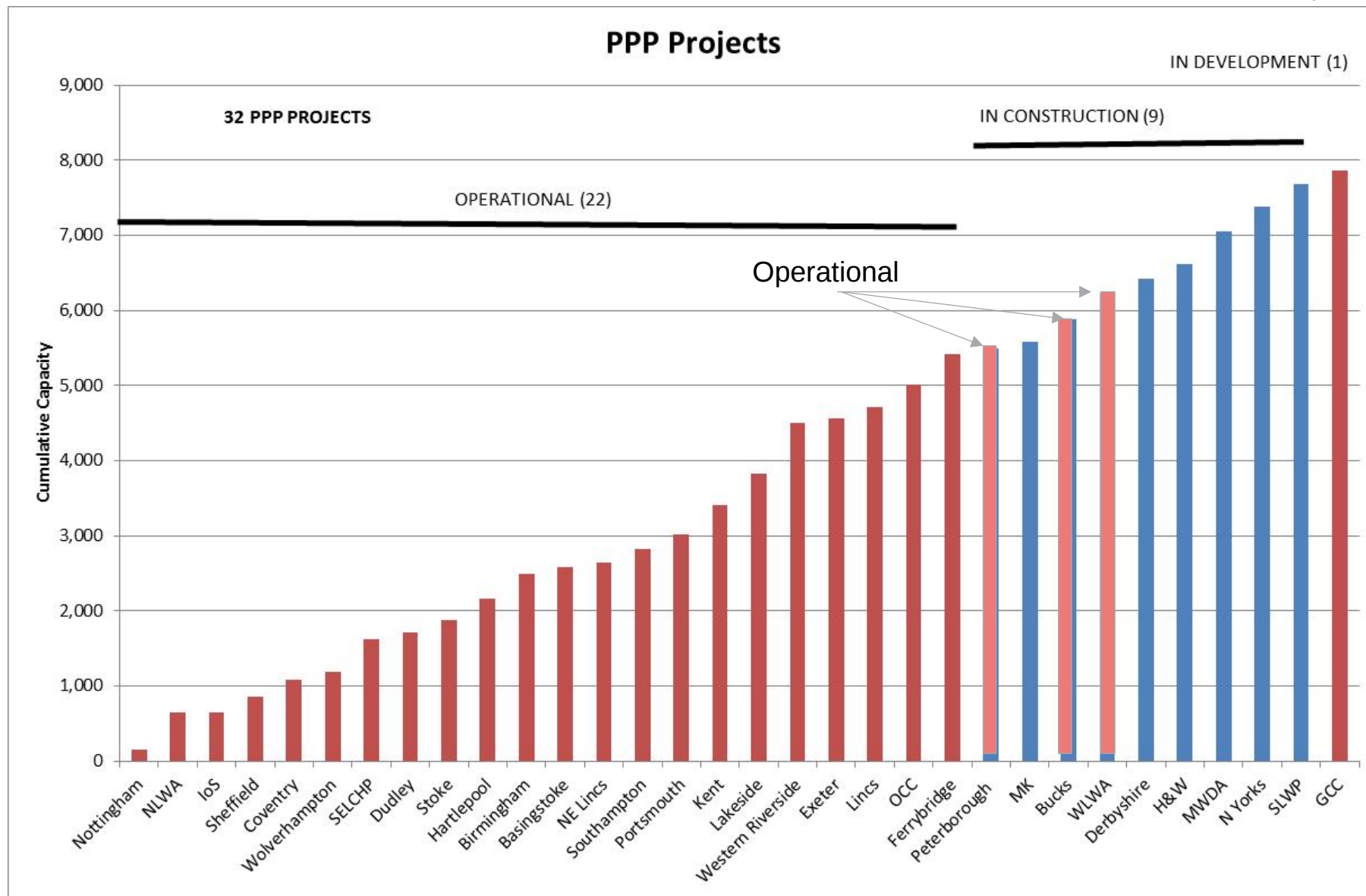


PFI plants

- PFI delivery UK - update of situation since Berlin



PPP project – progress since Berlin



R1 for EfW

23 facilities have applied for or gained R1 accreditation, of which 10 are operating with R1 status (Defra Stats end 2015)

Plants that had successfully applied for R1 accreditation - November 2015

Installation name	Operator	Plant status
New Barnfield Recycling and Energy Recovery Facility	Veolia ES Hertfordshire Ltd	Design
Leeds Recycling and Energy Recovery Facility	Veolia ES Leeds Ltd	Design
Javelin Park Energy recovery Facility	Urbaser Environmental Ltd	Design
Battlefield Energy from Waste Facility	Veolia ES Shropshire Ltd	Design
Willows Power and Recycling Ltd	Willows Power and Recycling Centre	Design
Riverside Resource Recovery Facility (Belverdere)	Riverside Resource Recovery Ltd	Operational
Viridor Waste Management Ltd	Ardley Energy from Waste Facility	Design
Kirklees EFW Ltd	Kirklees Waste Services Ltd	Operational
North East Energy recovery Centre. Lines 1&2	Sita Tees Valley Ltd	Operational
North East Energy recovery Centre. Lines 4 & 5	Sita Tees Valley Ltd	Design
Four Ashes Energy Recovery Facility	Veolia ES Stafford Ltd	Design
MW Environment Devonport Ltd	Devonport Energy from Waste CHP	Design
Newhaven Energy Recovery Facility	Veolia ES South Downs Ltd	Operational
SITA UK Limited	SITA Suffolk Energy from Waste Facility	Design
Veolia ES Sheffield Ltd	Sheffield Energy Recovery Facility	Operational
Veolia ES Birmingham Ltd	Tyselsy Energy from Waste Plant	Operational
Billingham Energy from Waste Plant – Line 3	SITA Tees Valley Limited	Operational
Ferrybridge Multi-fuel Facility	Ferrybridge MFE Limited	Design
South East London Combined Heat and Power (SELCHP) Plant	South East London Combined Heat and Power Ltd	Operational
Integra South West Energy Recovery Facility	Veolia ES Hampshire Limited	Operational
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Bilthorpe Renewable Energy Centre	Peel Environmental	Design
Energy From Waste Facility	Viridor Peterborough Ltd	Design

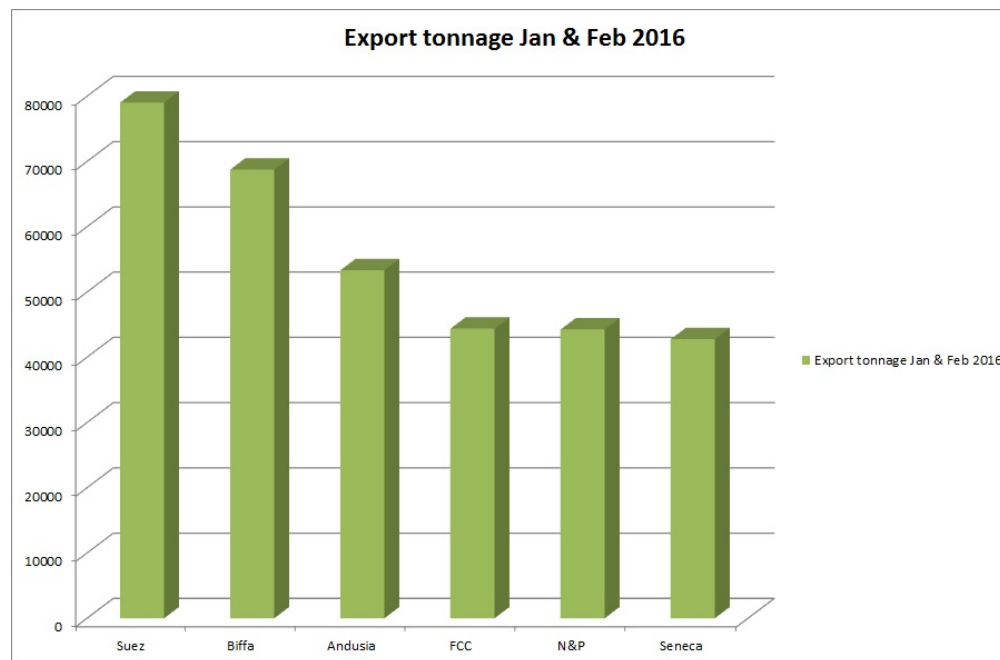
Now
operational



Source: <http://www.letsrecycle.com/news/latest-news/2015-sees-increase-in-efws-awarded-recovery-status/>

- “Refuse derived fuel (RDF) consists of residual waste that is subject to a contract with an end-user for use as a fuel in an energy from waste facility. The contract must include the end-user’s technical specifications relating as a minimum to the calorific value, the moisture content, the form and quantity of the RDF.”
- Defra Nov 20th 2015

Export of RDF



Source:

<http://www.letsrecycle.com/news/latest-news/rdf-exports-see-strong-start-to-2016/>

- More than 600000t to Europe in January and February 2016
- Goes to 10 countries including NL(280,000 tonnes), Germany (120,000) and Sweden (100,000)
- 2015 total figures ~3million t
- 38 companies export waste, including: Suez (79,000 tonnes), Biffa (68,700) and Andusia Recovered Fuels (53,300)
- Guernsey will also export 25000t residual waste to Jonköping, Sweden from 2018

In the news

- Export of IBA:
 - International voluntary deal to allow international trading of incinerator bottom ash
 - Deal between UK, France, NL and Flanders
 - The deal will allow improved recovery from IBA of plastics and ultra-fine non-ferrous metals such as aluminium, lead, zinc, silver and gold
 - Source: <http://www.letsrecycle.com/news/latest-news/uk-and-north-sea-countries-agree-bottom-ash-trade-deal/>

- Teesside
 - Air Products has announced that it has withdrawn from energy from waste and has put its Teesside development up for sale.
 - “Testing and analysis completed during the Company’s fiscal second quarter indicated that additional design and operational challenges would require significant time and cost to rectify” (company announcement on web site)

Developments

CfD

- No change from last time:
 - 49.75 MW Wren Power and Pulp project
 - 45 MW K3 CHP Facility(Merchant plant, 550000t/y).
 - Strike price: £80 per MWh (\$123.60)
- Gasification plants:
 - BHEG Walsall 26MW, strike price £114.39, 200,000t/y C&I RDF
 - Energy Works (Hull) 25MW, strike price £119.89, 152000t/y, operational 2017. Fluidised bed gasifier and steam turbine generator.
 - Enviroparks Hirwaun 11MW, strike price £119.89, 50,000t/y merchant plant
- Delivery for all is 2018/19 except Energy Works. Prices are 2014 prices
- New Earth has sold its Avonmouth plant, which is now run by investors.
- Energos plants still being installed (e.g. Milton Keynes)
- Waste to Energy (WtE) gasification facility in Hoddesdon, Hertfordshire (10MW)

Photos – from web sites



Air Products Teesside – from web site



Peterborough EfW – from web site



Riverside EfW – from web site



Battlefield EfW, Shropshire – from web site



K3 CHP Artist's impression – from web site

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