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Energy and commodity price benchmarking and market insights

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illuminating the markets

Global pellet markets and price indexation

Vancouver

Ruth Sharpe

20 November 2013

Content

- Global wood pellet market overview
- Key industrial developments 2013
- Price indexation - towards a commodity status
- What biomass can learn from other markets

About Argus

- Argus is an **independent global price reporting agency**, with over **40 years' experience** covering the **entire energy complex** and its related markets
- Argus offers:
 - Independent price identification
 - Informed market commentary and analysis
 - Fundamentals
 - Market-moving news
 - Bespoke consultancy

Argus: profile of a growing company

- The only independently-owned, global energy price reporting and market intelligence service, founded in 1970
- Headquartered in London, with 20 offices globally
- 80 publications, 350 staff, 8,000+ price assessments a day
- Leading price benchmark provider in crude oil, refined products, LPG, biofuels, natural gas and coal

Governance and controls

- Strong governance
 - Corporate ownership clear and transparent
 - Experienced, stable and well-qualified management
 - Board includes three independent non-exec
 - Conservatively managed: no debt; no external shareholders
- Rigorous and transparent controls framework
 - Global compliance policy, available on website
 - Global compliance officer, reporting directly to CEO
 - Business continuity plan
 - Ethics policy
 - Annual financial audit by Deloitte

Global trade routes



Global capacities - main production regions

Production region	Total installed large-scale ($\geq 100,000$ t/yr) capacity - end 2013 (t/yr)	Total production capacity end 2013 (t/yr)
Canada	2,070,000	3,261,000
USA	6,514,000	10,244,000
Western/Southern Europe/Scandinavia	6,818,000	13,573,000
Eastern Europe/Baltics/Russia	3,777,000	8,630,000
TOTAL	19,179,000	35,708,000

Source: Bioenergy International 2013

Global supply and demand snapshot

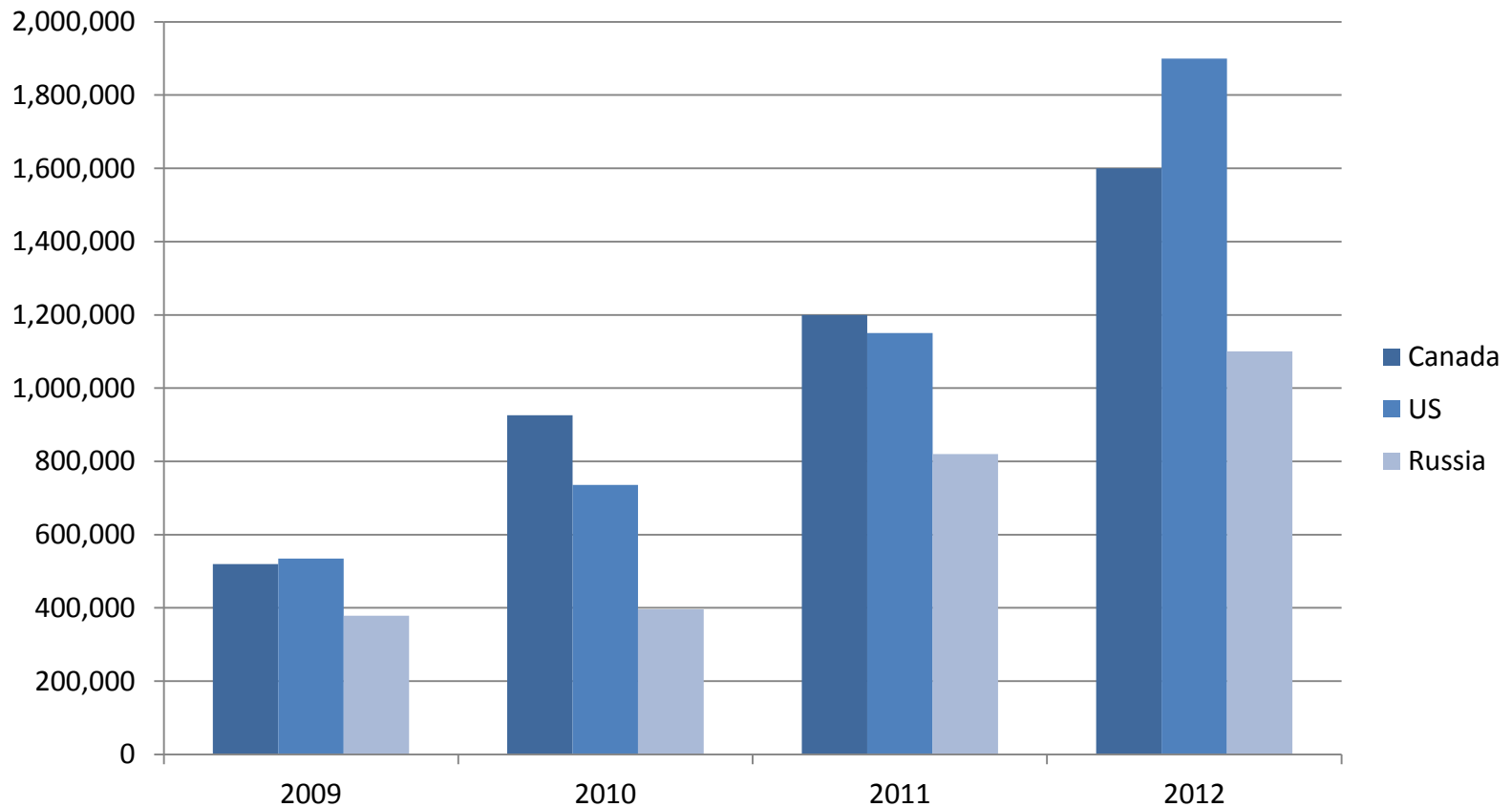
Estimated 760 pellet production plants (over 10,000t) with 42mn tonnes of capacity per year

Output at pellet production plant on average around 65-75pc

EU consuming ~ 19.5mn tonnes - 11.4mn industrial and 8mn residential

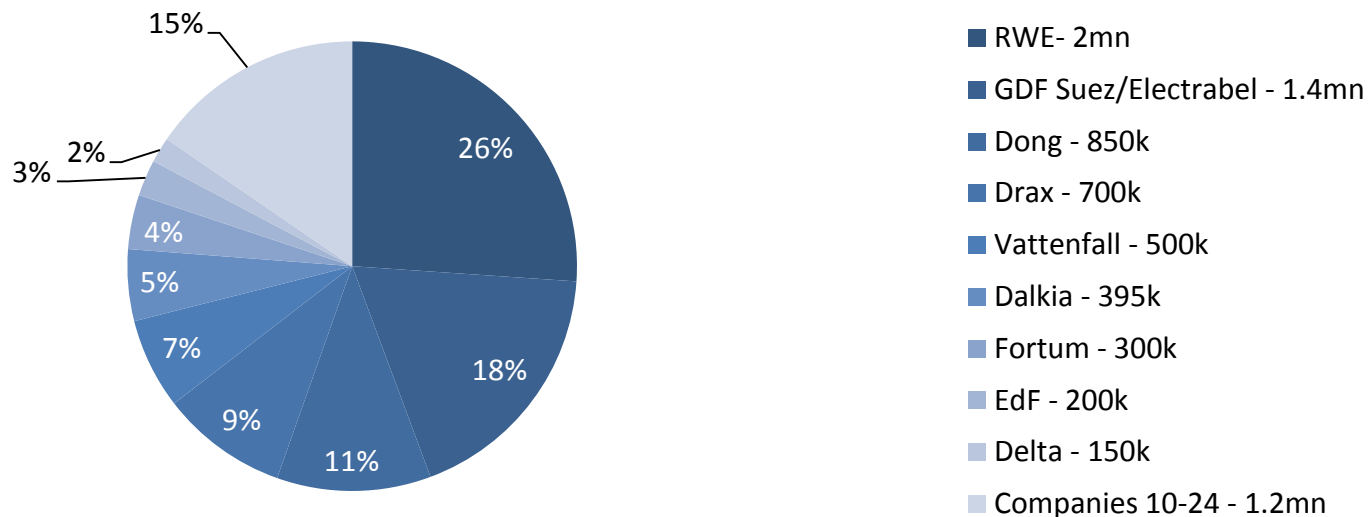
Rest of the world consumes around 5mn tonnes of wood pellets per year

Industrial wood pellet exports to EU (t)



European industrial wood pellet consumption 2012

- In 2012 the largest 9 end users consumed almost 7mn (85pc) of industrial pellets



In 2013

- E.ON becomes one of largest consumers of wood pellets with UK Ironbridge plant fully converted
- Drax to increase consumption to ~ 2mn t/yr with addition of converted unit and removal of co-firing
- RWE reduces consumption dramatically as Tilbury comes off line
- Electrabel to reduce consumption with Nijmegen plant ceasing co-firing

Key industrial market developments 2013

- Jan 2013
 - International Power granted approval to convert Rugeley
- Feb 2013
 - Polish green certificates crash; utilities pull out of co-firing
- Mar 2013
 - Introduction of EU Timber Regulation
 - E.ON's Ironbridge conversion begins generating
 - EFET/IWPB standard biomass contract launched
- Apr 2013
 - Introduction of new UK Roc bands and UK carbon price floor
 - Drax brings on line first 600MW converted unit
 - Enviva brings on line 500,000 t/yr pellet plant in Northampton County, North Carolina
 - German Pellets start production at 580,000 t/yr Texas plant

Key industrial market developments 2013

- June 2013
 - UK decides against biomass freight specific charge
 - UK announces draft CfD strike prices for conversions/CHPs
- July 2013
 - RWE's Tilbury comes off line
 - UK Electricity Market Reform - draft CfD strike prices announced
- August 2013
 - Netherlands announces co-firing policy
 - European Commission draft proposal for sustainability criteria leaked
- November 2013
 - GDF Suez will not continue with plans to convert its 1GW coal-fired plant in Rugeley, UK, to biomass

UK's Electricity Market Reform

- What does this mean for the biomass market?
 - New subsidy system to be phased in from 2014
 - Cross over with RO from 2014-2017 gives generators optionality to accredit with either system
 - Subsidies in form of Contracts for Difference (CfDs)
 - Generators receive top-up payment above electricity market price up to pre-arranged strike price
 - ...or pay back the difference if electricity price exceeds strike price
 - The strike level for biomass conversions is set at £105/MWh (\$160/t), based on 2012 prices, and guaranteed until 2027 for accreditations until 2019.
 - The equivalent price for dedicated biomass CHP is set at £120/MWh, guaranteed for 15 years for accreditations until 2019.

Dedicated biomass projects face tougher regulation

- July - UK's contracts for difference (CFD) renewable subsidy system will exclude support for dedicated power-only biomass and co-firing, which is being phased in from next year and will replace the current renewables obligation from 2017.
- August - The UK's department for energy change (Decc) announced that proposed dedicated power plants will face tougher sustainability criteria than biomass conversions and co-firing units from 1 April next year.

UK conversions from coal to biomass

Company	Plant	Generating capacity	Estimated volumes	Completion	Status
E.ON	Ironbridge, 2 units	900MW	2-3mn t/yr	Jan-13	Ramping up
Drax	Drax, 3 of 6 units	600MW per unit	7-8mn t/yr	Apr-13, 2014, 2017	First unit operational
Eggborough Power	Eggborough Power Station, 4 units	2000MW	7-8mn t/yr	first unit 2015	Formal equity-raising process launched
RWE	Lynemouth, 3 units	330MW	1mn t/yr	No date	Planned

Pricing and indexation in the wood pellet market

Why are benchmarks needed?

- Facilitate risk management
 - Spot price reflects market price
 - Spot price reflects warning signals, cuts market risk
- Benefits
 - Increase price transparency, market liquidity
 - Reduce price volatility
 - Facilitate arbitrage trade
 - Help lock in profits

How price indexation can mitigate risk

- Indexation began in the oil markets in the 1970s
- Now use of price indexation is almost ubiquitous
- Three main kinds of derivative - forwards, futures and swaps
- Swaps exchange a floating price for a fixed price
- Contracts settled financially
- Swaps (and other derivatives) allow users to hedge their physical position, thereby locking in profit margins and smoothing revenue flows

Towards a commodity status...

- Standardisation
 - trading terms/contracts for cif and fob delivery
 - Agreement on product specifications and standards
 - Progress on sustainability
- Liquidity
 - Emergence of liquid trading hubs
 - Market makers - bids and offers readily available
 - Ability to trade spot and forward to hedge, speculate
- Transparency
 - Price visibility for short-term and forward periods
 - Indexation

Argus benchmarking in other markets

- Crude oil
 - Half of North Sea term contracts include Argus pricing
 - Saudi, Kuwait, Iraq use Argus Sour Crude Index (“ASCI”)
- Petroleum products
 - European gasoline and gasoline additives based on Argus
 - European biodiesel market uses Argus
- LPG
 - Main international benchmark in Europe and Asia
- Coal
 - The leading provider of price indexation for physical and derivative markets in Europe, South Africa and Asia
- Natural gas
 - Leading UK and NWE index in gas-to-gas pricing

Argus Biomass Markets



Argus Biomass Markets
Weekly biomass markets news and analysis
Issue 13K-044 Wednesday 30 October 2013

MARKET COMMENTARY

Portuguese spot prices decline
Spot prices for industrial wood pellets exported out of Portugal decreased in the past week on two deals concluded below market value, as producers looked to ease summer stocks.

Prices delivered into Amsterdam-Rotterdam-Antwerp and exported from the Baltics edged higher on lower availability and thin volumes, with trading activity expected to pick up in the coming weeks following this week's industry conference in Miami. Not many offers were heard in the week for volumes out of North America, but with availability thin on the prompt, discussions are heading towards \$170/t, and some expecting prices rise above that level before the end of the year.

The majority of utilities are well covered for the coming heating season, unless a very cold winter is expected. Bid-offer spreads for the second quarter of next year are widening, with much speculation in the market about whether the winter will be cold and draw out well into the second-quarter window, and there is an increasing disparity between what producers expect to receive and what buyers are willing to pay for volumes in this quarter.

Some of the bigger traders in the European market appear to be pushing to trade smaller spot volumes to squeeze more margin out of the current price environment. Participants are seeing a spread emerge between prices for immediate prompt and prices towards the end of the 90-day spot window, with as much as a \$3/t premium at the back

EUROPEAN INDUSTRIAL WOOD PELLETS

Wood pellets - within 90 days (spot)

	Week Index		Month Index		Aug
	Price	x	Oct	Sep	
cif ARA \$/t	167.80	-0.20	166.90	165.65	165.05
fob Baltic €/t	122.60	-0.10	122.90	120.65	117.95
fob Portugal €/t	120.75	-0.90	121.35	120.00	118.75

Wood pellets - within 90 days (spot)

	Price	x
cif ARA \$/MWh	25.54	-0.04
fob Baltic €/MWh	25.96	-0.02
fob Portugal €/MWh	25.57	-0.19

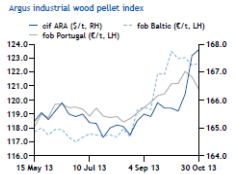
Wood pellets - forward prices

	Bid	Ask	x
cif ARA \$/t			
4Q13	167.40	171.50	-0.72
1Q14	169.00	174.20	-0.40
2Q14	171.09	175.20	-0.25
2Q14	172.07	180.39	-0.38
2Q15	184.10	189.70	-0.04
2Q16	191.06	194.93	-0.14
fob Baltic €/t			
4Q13	121.50	124.75	-0.12
1Q14	121.50	125.29	-0.09
2Q14	122.00	125.08	-0.21
2Q14	123.30	126.00	-0.24
2Q15	125.00	128.00	-0.29
2Q16	128.30	131.50	-0.40
fob Portugal €/t			
4Q13	120.00	123.00	-0.62
1Q14	121.70	124.00	-0.05
2Q14	122.30	124.40	-0.40
2Q14	122.67	126.00	-0.26
2Q15	125.00	128.33	-0.17
2Q16	129.00	131.67	-0.28

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Argus industrial wood pellet index



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- Market survey draws on pool of 20-25 companies
- Independently assessed cif and fob prices for wood pellets and chips
- Index compiled from market survey and spot trades with market commentary
- Argus applies editorial judgment to the survey
- Deals, bids and offers must be considered repeatable

How we assess prices

- Telephone
- Electronic media – instant messenger, email
- Data submitted by middle/back offices
- Rigorous data recording and archiving process:
 - prices and deals kept in electronic databases
 - instant messaging and email logged
 - notebooks kept for minimum of six years

Argus spot index cif ARA

Date	Volumes captured
September 2011-August 2012	725,200
September 2012-August 2013	473,500

- *Deals confirmed by counterparties*
- *Considered repeatable*
- *Delivered within 90 days*
- *Inside our specification*

Role of an index in the biomass market

- Price transparency
- Drive liquidity
- Utilisation in financial and physical exchanges
- Bring new players to the market
- Utilisation in floating contracts

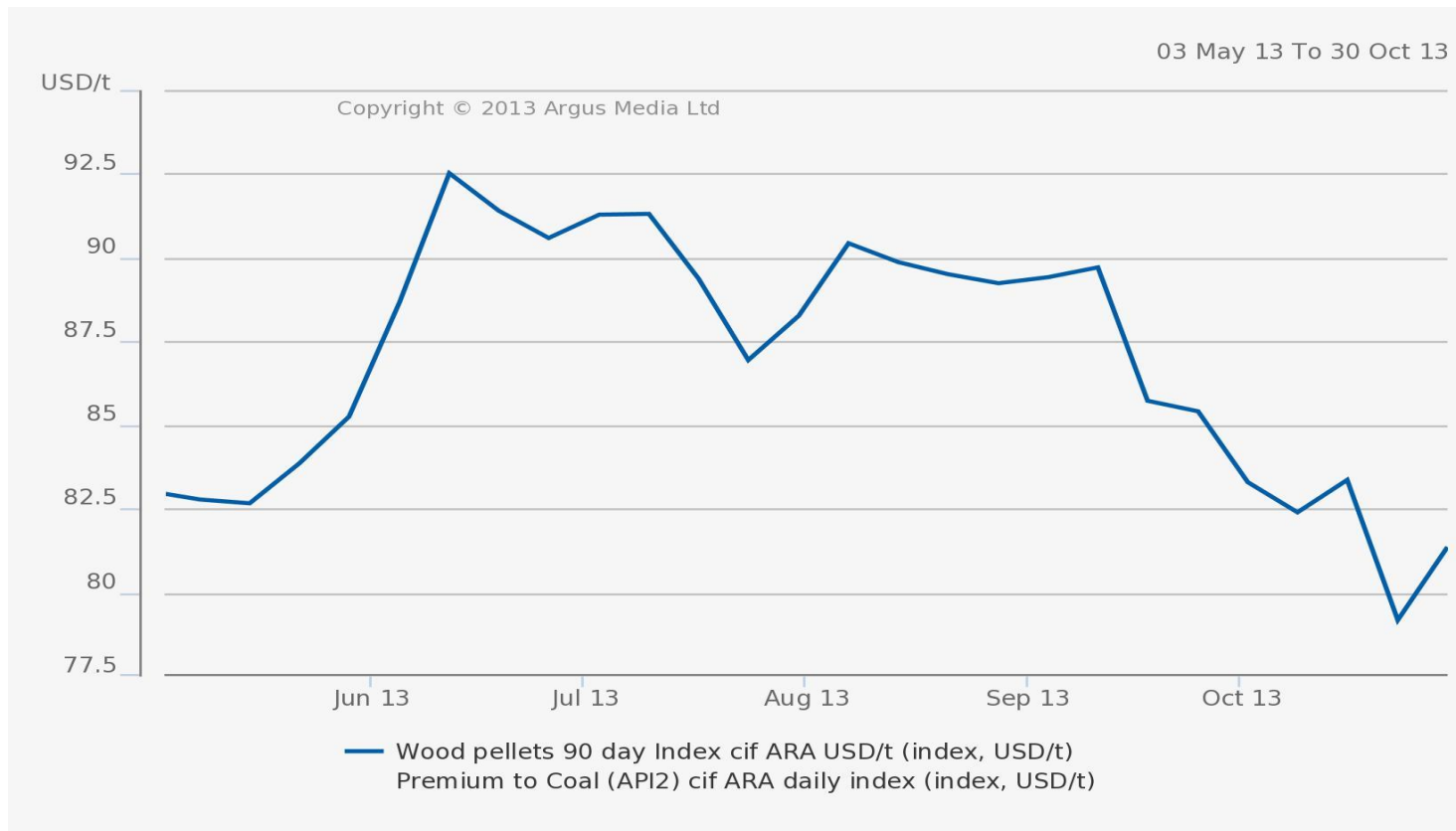
The spot market in 2012/13

- Lack of confidence in spot market following pricing shocks
- Regression towards illiquid, buyers' market
- Oversupply in market - lack of spot trade
- Consumption less than expected
- Increased focus on term deals
- Addition of volumes to fob Baltic/fob Portugal indices
- Increase in off-spec spot deals concluded (residential quality)

Argus cif ARA spot index



Pellet premium to thermal coal prices



Price drivers

- Seasonal factors
- Cost of raw materials
- Freight
- Exchange rates
- Emergence of new supply and plants
- Subsidies and legislation
- Outages and plant maintenance
- Correlation - power-coal-gas-emissions

Towards a commodity status...what is needed?

- Clarity on sustainability and harmonised requirements
- Acceptance and utilisation of standard biomass contract
- Investment and collaboration on infrastructure and logistics
- Increase in spot trade
- Increase in broker/trader activity
- Increased utilisation of recognised index
 - Argus cif ARA spot index increasingly linked to physical term deals, paper contracts, exchange-based swaps

How we can improve our index

- Increase participants that can contribute regularly on a weekly basis
- Refine fall back procedure when no deals are done in the week being assessed
- Refine our methodology to make the calculation of the index more transparent
- We are consulting with the market to gain feedback on how we can facilitate the move towards indexation

Can biomass learn anything from how other markets have evolved with price indexation?

The API coal story

- The API 2 is the global benchmark for delivered thermal coal into Amsterdam-Rotterdam-Antwerp.
- Around 15mn t of coal trades on the API 2 physical index every year.
- A mature swaps market has evolved around API 2 - around 2bn t per year.
- Globalcoal - online trading platform for physical and financial coal, which promotes “the development of a liquid and transparent thermal coal market”.
- Transparency has encouraged more trading activity and the market can react better to pricing shocks

Switch from term to spot pricing?

- Coking coal used to be mostly sold on term
- Market moved from annual term to quarterly term in 2010
- In 2011, part of the market moved to monthly term
- More of the market moved to monthly pricing in 2012
- Encouraged a steady move towards indexation
- Spot trades currently account for up to 15% of total seaborne market

The next stage for biomass...

- Emergence of swaps/financial market
- Argus listed cif ARA swap on CME
- Impact of EU ETS back-loading/carbon tax
- Impact of sustainability criteria
- Arrival of more buyers/producers
- Competition between premium and industrial markets
- Make or break time for large-scale dedicated biomass
- Can coal argue its way into capacity markets?

Any questions?

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