

Too Big to Feed: The Short Report

**Mega-mergers and the concentration of power in the agri-food sector:
How dominant firms have become too big to feed humanity sustainably**



The **Too Big to Feed Short Report** was developed by ETC Group, in partnership with IPES-Food. It summarizes the full report *Too Big to Feed*, published by IPES-Food in October 2017. The full report includes additional data and a more detailed analysis on the impact of the consolidation of the agri-food sector.

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The full report is available here:

http://www.ipes-food.org/images/Reports/Concentration_FullReport.pdf

About the Authors

ETC Group addresses the socioeconomic and ecological issues surrounding new technologies that impact the world's marginalized people. We investigate ecological erosion, including the erosion of cultures and human rights; the development of new technologies, especially agricultural but also other technologies, including genomics and matter; and we monitor global governance issues including corporate control and concentration of technologies. We operate at global and regional levels, working closely with partner civil society organizations (CSOs) and social movements, especially in Africa, Asia and Latin America. www.etcgroup.org

The International Panel of Experts on Sustainable Food Systems – IPES-Food – is a transdisciplinary initiative that has worked since 2015 to inform policy debates on food systems reform through evidence-based research and direct engagement with policy processes around the world. The Panel brings together different disciplines and types of knowledge, comprising environmental scientists, development economists, lawyers, nutritionists, agronomists and sociologists, as well as experienced practitioners from civil society and social movements. The panel is co-chaired by Olivier De Schutter, former UN Special Rapporteur on the right to food, and Olivia Yambi, nutritionist and former UNICEF representative to Kenya.

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Original illustration by *Artstory*: Garth Laidlaw and Jenna Kessler

Cover adaptation and booklet design by *Imágenes Orgánicas*: Atziri Carranza

Table of Contents

4	Introduction
5	What is concentration and how does it occur?
7	What drives mergers & acquisitions?
8	Sector Summaries: What Does Corporate Concentration Look Like?
9	Seeds and Agrochemicals
12	Fertilizers
14	Livestock Genetics
16	Animal Pharmaceuticals
18	Farm Machinery
20	Agriculture Commodity Traders
22	Food and Beverage Processors
24	Food Retailers
26	Consequences of Concentration
26	Farmer income and autonomy diminishes
28	Corporate sustainability and innovation dwindles
29	Environmental and public health standards decline
30	Corporate control of public policy surges
32	Recommendations
32	Create new governance structures: a UN treaty for transnational oversight of agri-food consolidation
33	Break up the chain: limit excessive power held by multi-national firms
34	Embrace 'wide-tech': support diversified and decentralized innovation
34	Conclusion

Introduction

National governments, intergovernmental organizations and civil society urgently need to assess how concentration in the agri-food sector is impacting farmers, food security, nutrition, and sustainability. While agricultural companies have been consolidating for a long time, concentration has been rapidly increasing since the 1980s. Mergers and acquisitions (M&As) in every part of the industrial food chain reached a new peak in 2015, leading global food and agriculture into a new era of uncertainty.

According to classical economic theory, M&As are a normal stage in any company's growth that allows companies to become more efficient by combining resources. For example, by pooling the capital they need to develop new technologies, companies like Monsanto and DuPont claim that M&As let them better address sustainability, climate change, population growth and changing consumer demand.

However, the sudden increase of mega-mergers in the agri-food sector represents a power shift that impacts farm and food chain workers, consumers, rural communities, and shapes the political economy of food systems. This report investigates these M&As based on a concern for the highly unequal power relations in industrial food systems. In our analysis, the industrial food system allows only a limited number of actors to accumulate wealth, reinforcing their economic and political power and their influence on the agri-food system.

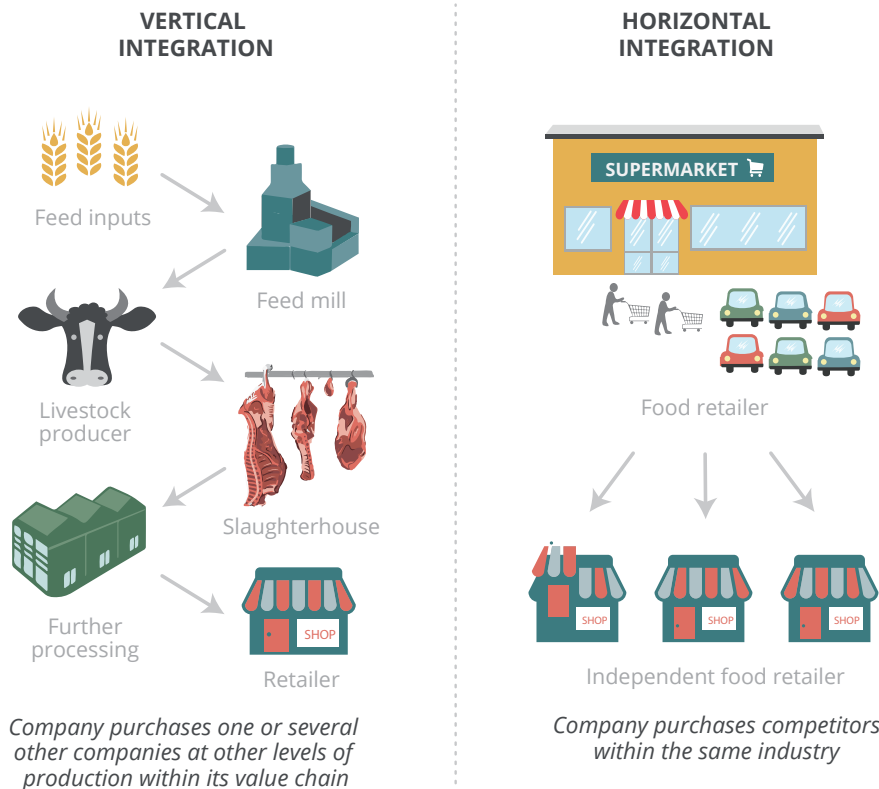
As regulators consider the current increase of M&As in the agri-food sector and those likely to follow, it is crucial to question the logic and benefits of concentration. We must ask why these deals are occurring now, what new forms consolidation is taking, and what the risks and impacts are of further concentration in the food system.

What is concentration and how does it occur?

Concentration refers to the share of market sales held by the largest firms. While the percentage varies, a market is generally deemed an oligopoly and no longer competitive when four firms control more than 40% of the market in one sector.¹ Above the 40% mark, concentration makes it hard for new and smaller companies to enter the market.

While market concentration can occur in many ways, highly-publicized mergers and acquisitions are the most visible, i.e. when companies opt to merge horizontally or vertically, allowing them to control a larger portion of the market (see figure 1).

FIGURE 1 • HORIZONTAL AND VERTICAL INTEGRATION



¹ Clapp, J., 2012. Food. Cambridge: Polity Press; Shepherd, W.G., Shepherd, J.M. 2004. *The Economics of Industrial Organization*. 5th ed. Long Grove, IL: Waveland Press; Howard, P., 2016b. *Concentration and Power in the Food System: Who Controls What We Eat*. New York: Bloomsbury Publishing.

In addition to M&As, there are numerous formal and informal ways concentration can occur. Inter-firm agreements, such as strategic alliances, contracting arrangements and joint ventures are less visible than mergers but just as effective ways to control the market.²

Joint ventures are similar to mergers: they aim to source materials together or share R&D costs. For example, John Deere, the world's leading farm machinery company, has joint ventures with all six of the dominant seed/pesticide companies to expand its precision farming platform. The goal of these alliances is for a few companies to gain control over a wide range of agricultural inputs, which can allow them to play a major role in determining seed varieties, chemical inputs, irrigation techniques and even the type of crop insurance available to farmers.

Companies may also seek to establish explicit or implicit cartels, in which a group of firms engages in price-fixing, market-dividing agreements or other reciprocal arrangements. Within the fertilizer industry, for example, a small number of companies have quietly cooperated on industry prices throughout the past century.³ Similarly, international grain trading companies have maintained de facto cartel arrangements since the 1950s.⁴ However, while fertilizer companies and commodity traders are most commonly named in this context, every sector in the industrial food chain is currently or has recently been structured under oligopolistic conditions.

Oligopolistic markets are less competitive and more likely to allow collusion and coercive behaviour.⁵ Oligopolies maintain their positions by creating barriers to entry for new firms and establishing mutually beneficial pricing arrangements. These arrangements between top firms are more common than outright cartels and are harder to identify because companies are officially in competition and are not acting explicitly for mutual advantage.

² Howard, P., 2016b; King, J. 2001. Concentration and Technology in Agricultural Input Industries. *Agriculture Information Bulletin*, USDA, March 2001.

³ Gnutzmann, H. and Spiewanowski, P., 2014. Did the Fertilizer Cartel Cause the Food Crisis? SSRN 2534753. URL <http://ssrn.com/abstract=2534753>; Taylor, C.R., Moss, D.L., 2013. The Fertilizer Oligopoly: The Case for Global Antitrust Enforcement, American Antitrust Institute.

⁴ Murphy, S., Burch, D., Clapp, J., 2012. Trade Secrets: The world's largest grain traders and global agriculture. *Oxfam Research Reports*. URL <https://www.oxfam.org/sites/www.oxfam.org/files/rr-cereal-secrets-grain-traders-agriculture-30082012-en.pdf>

⁵ Clapp, 2012; Howard, 2016b

What drives mergers & acquisitions?

Across all sectors, M&As are considered the primary way to survive and thrive in highly competitive globalized markets. Corporations tend to justify M&A deals in order to maximize shareholder value, protect and increase market share, expand to new geographical markets, acquire new technologies, services, and intellectual property, as well as to gain control over supply chains.⁶

Recently, market conditions have become more favourable to M&A activity, with record-breaking stock market growth and low interest rates encouraging these deals. Corporate profits have risen accordingly: in the US, for example, company profits are at their highest level as a share of national income since 1929. In comparison, across industrialized economies, labour's share of national income has dropped from 76 to 66% since 1980.⁷

Market conditions have been especially ripe for concentration in the agri-food sector. After the 2007-8 financial crisis, investors rushed to agricultural commodities – land in particular – driving up farmland prices. Rather than buying land as an immediate source for food production, investors purchased property to diversify their portfolios in order to protect themselves against risks taken in other financial markets.⁸

Emerging economies have added a new dimension to consolidation trends. Historically, corporate consolidation in the agri-food sector has been greatest in North America and Europe, where food and agricultural markets are less heavily regulated by national governments. However, by 2020, more than half of global GDP growth is expected to come from countries outside of the global North. As a result, agri-food firms are increasing their focus on emerging markets where rising incomes, population growth and urbanization are causing dramatic increases in demand for consumer goods, animal proteins and processed foods.⁹

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⁶ KPMG, 1999. Mergers and Acquisitions: Global Research Report 1999. URL <http://people.stern.nyu.edu/adamodar/pdfiles/eqnotes/KPMGM&A.pdf>

⁷ McKinsey Global Institute, 2015. Playing to win: The new global competition for corporate profits. URL http://www.mckinsey.com/~media/McKinsey/Business%20Functions/Strategy%20and%20Corporate%20Finance/Our%20Insights/The%20new%20global%20competition%20for%20corporate%20profits/MGI%20Global%20Competition_Executive%20Summary_Sep%202015.ashx

⁸ Fairbairn, F. 2014. 'Like gold with yield': evolving intersections between farmland and finance. *The Journal of Peasant Studies*, 41:5, 777-795, DOI: 10.1080/03066150.2013.873977

⁹ Goedde, L., Horii, M., and Sanghvi, S., 2015. Pursuing the global opportunity in food and agribusiness. McKinsey & Company, July 2015. URL <http://www.mckinsey.com/industries/chemicals/our-insights/pursuing-the-global-opportunity-in-food-and-agribusiness>

Sector Summaries: What Does Corporate Concentration Look Like?

Corporate concentration is occurring throughout the entire industrial food chain: seeds, agrochemicals, fertilizers, livestock genetics, animal pharmaceuticals, and farm machinery. All the inputs that farmers need to grow food, feed, and fuel are experiencing significant concentration within sectors, as well as ever-increasing linkages between sectors. Commodity traders, food and beverage processors and food retailers are going through similar changes.

A 2011 study by the US Department of Agriculture (USDA) examined global market concentration over a 15-year period, from 1994-2009, in the five major agricultural input industries – agrochemicals, seeds, animal pharmaceuticals, animal genetics, and farm machinery.¹⁰ Their research revealed that by 2009, the largest four firms in each sector accounted for more than 50% of global market sales, well beyond the 40% benchmark of an oligopolistic market.

¹⁰ Fuglie, K., Heisey, P., King, J., Pray, C., Day-Rubenstein, K., Schimmelpfennig, D., Wang, S.L., Karmarkar-Deshmukh, R., 2011. Research Investments and Market Structure in the Food Processing, Agricultural Input, and Biofuel Industries Worldwide. *USDA, Economic Research Service*, December 2011.

I.1 Seeds and Agrochemicals

• TOP 10 SEEDS, 2014

(Data source: ETC, 2015)

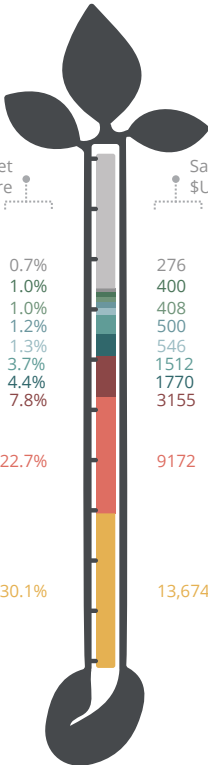
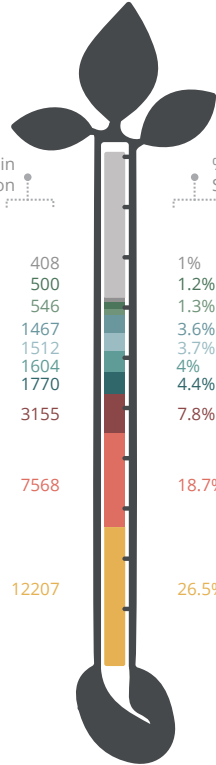
The seed industry sells commercial crop seeds (primarily field crops and vegetable seeds).

PRE MERGERS

Company (Headquarters)	Sales in \$US million	% Market Share
Others		
Rijk Zwaan (Netherlands)	408	1%
Sakata Seed (Japan)	500	1.2%
DLF (formerly DLF-Trifolium) (Denmark)	546	1.3%
Bayer CropScience (Germany)	1467	3.6%
KWS Saat (Germany)	1512	3.7%
Dow (USA)	1604	4%
Vilmorin & Cie (France)	1770	4.4%
Syngenta (Switzerland)	3155	7.8%
DuPont [Pioneer] (USA)	7568	18.7%

POST MERGERS (PRO FORMA)

% Market Share	Sales in \$US million	Company (Headquarters)
Others		
0.7%	276	Florimond Desprez (France)
1.0%	400	Takii & Co (Japan)
1.0%	408	Rijk Zwaan (Netherlands)
1.2%	500	Sakata Seed (Japan)
1.3%	546	DLF (formerly DLF-Trifolium) (Denmark)
3.7%	1512	KWS Saat (Germany)
4.4%	1770	Vilmorin & Cie (France)
7.8%	3155	Syngenta (Switzerland)
22.7%	9172	Dow- DuPont
30.1%	13,674	Monsanto- Bayer CropScience

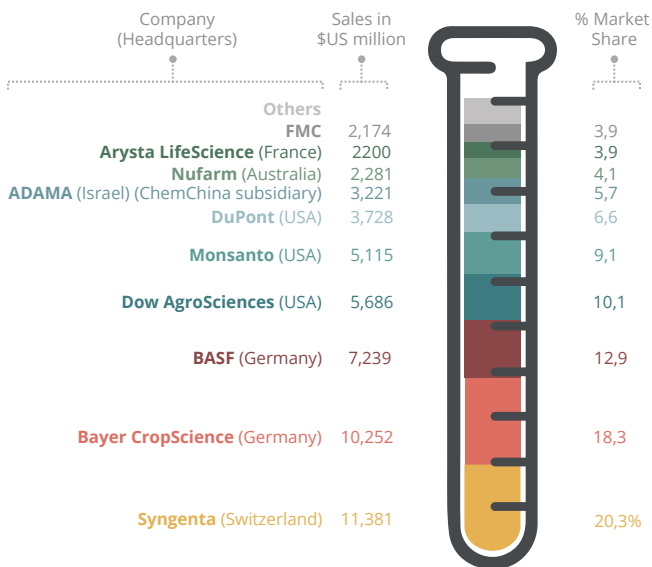


• TOP 10 AGROCHEMICAL COMPANIES, 2014

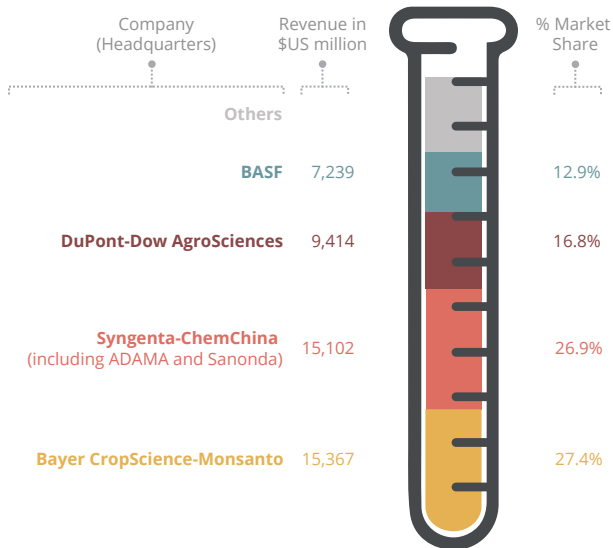
(Data source: ETC, 2015)

The agrochemical sector manufactures and sells crop chemicals or pesticides (including herbicides, insecticides and fungicides) used on agricultural crops.

PRE MERGERS



POST MERGERS (PRO FORMA)



The seed industry is intimately linked to the world's largest agrochemical companies. Six firms currently control 60% of the global seed market and 75% of the global pesticide market. If the 2017 proposed mergers go through, just three companies will control most of this \$100 billion industry.¹¹

The integration of seed and agrochemical companies began nearly a century ago, and by 2009, thousands of once-independent seed companies, along with hundreds of pesticide companies and biotech start-ups, had become the six corporations that continue to own most of today's industry.¹²

Of all sectors, the seed industry has experienced the fastest rate of concentration, causing a paradigm shift away from farmer-led seed saving traditions and community and regional seed breeding practices.

¹¹ ETC Group, 2015. Breaking Bad: Big Ag Mega-Mergers in Play Dow + Dupont in the Pocket? Next: Demonsanto? ETC Communiqué, n°115. December. URL http://www.etcgroup.org/sites/www.etcgroup.org/files/files/etc_breakbad_23dec15.pdf

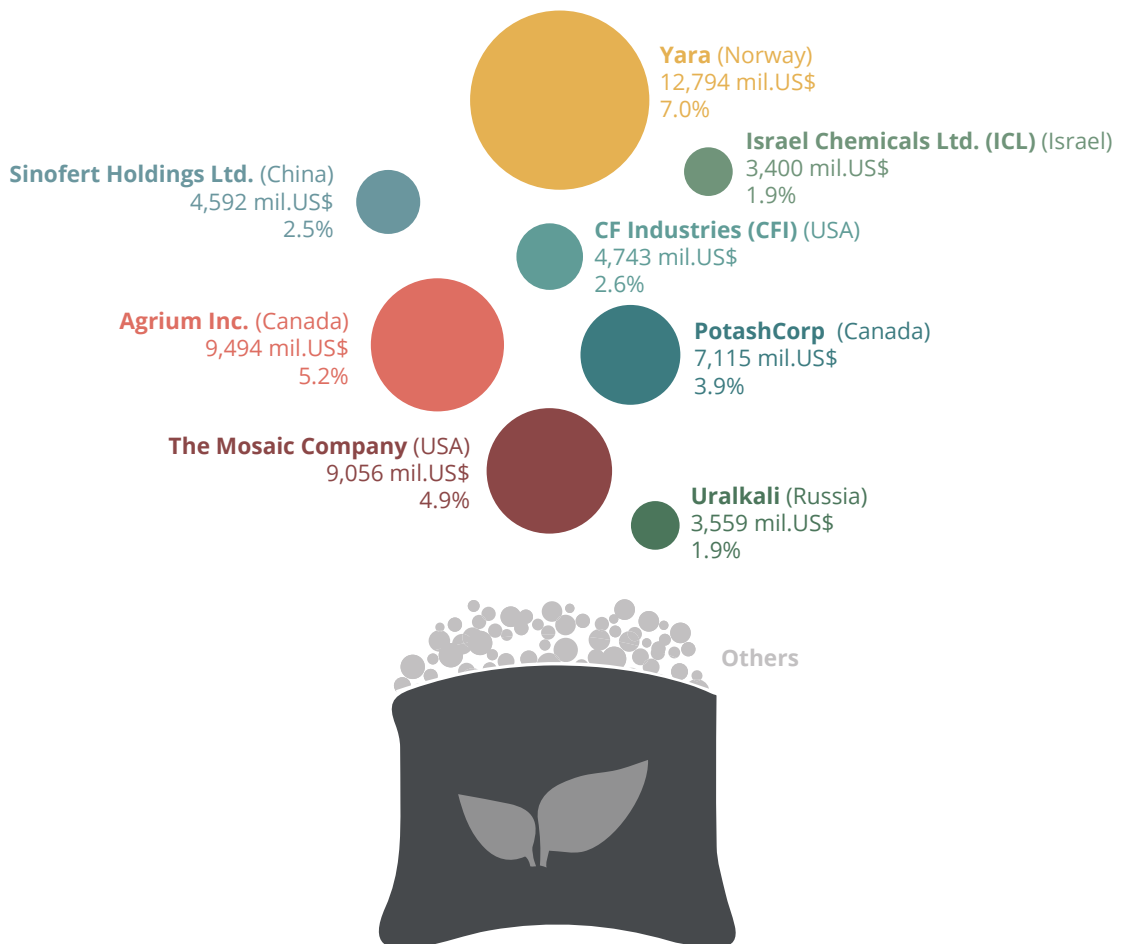
¹² Fuglie et al., 2011, American Antitrust Institute, 2009. Transgenic Seed Platforms: Competition Between a Rock and a Hard Place? *White Paper*, 1 October 23, 2009. URL <http://www.antitrustinstitute.org/content/american-antitrust-institute-says-competition-transgenic-seed-industry-impaired-monsanto>; Wilde, M., 2009. Independent seed companies a dying breed. WCFC Courier, May 31, 2009. URL http://wfcourier.com/business/local/independent-seed-companies-a-dying-breed/article_7cef1ffc-b0bb-56a8-8d83-faf894bf76ad.html

I.2 Fertilizers

• TOP 8 FERTILIZER COMPANIES, 2014

(Data source: ETC, 2015)

The fertilizer industry manufactures and sells inorganic, synthetic fertilizers. The three main agricultural fertilizer nutrients are nitrogen, phosphate and potash (or potassium).



In 2014, the fertilizer industry boasted an annual revenue of \$183 billion, with the top eight companies accounting for 29.9% of the global market share.¹³

Setting it apart from other sectors, the fertilizer industry is driven by the need for raw materials that are often state-controlled, such as minerals and natural gases. As a result, the sector has historically been structured around government-sanctioned export cartels based on the types of raw materials located within their borders. Canada, China, the United States, India, and Russia control over 50% of the world's production of the primary materials used in fertilizers. Within each of these countries, except China, the top four firms control over half of the national fertilizer market.¹⁴

Given the capital-intensive nature of the fertilizer industry, firms have been especially motivated to consolidate in order to benefit from economies of scale. The resulting concentration has allowed for questionable pricing practices. For example, when oil and agricultural commodity prices rose 1.5-1.9 times in 2007-2008, fertilizer companies used this increase to justify – in some cases – tripling their prices.¹⁵

Higher fertilizer prices sparked increased M&A activity. However, the simultaneous production boost in the fertilizer industry led to an oversupply and a sharp drop in fertilizer prices in 2010 and again between 2014 and 2016.¹⁶ In early 2016, fertilizer prices fell below the price of seeds for the first time since 2002,¹⁷ reducing the pursuit of M&As because annual profit margins were lower.

¹³ ETC, 2015.

¹⁴ Hernandez, M. A., and Torero, M., 2013. Market concentration and pricing behavior in the fertilizer industry: a global approach. *Agricultural Economics*, 44.6 (2013): 723-734.

¹⁵ Hernandez & Torero, 2013.

¹⁶ Terazono, Emiko, 2016b. Fertilizer price declines hit M&A among crop nutrient groups. *The Financial Times*, April 6. URL <https://www.ft.com/content/a53de630-fb50-11e5-b3f6-11d5706b613b>

¹⁷ Purdue University Centre for Commercial Agriculture, 2016. *Purdue Agricultural Economics Report*, December 2016.

I.3 Livestock Genetics

- TOP 6 LIVESTOCK BREEDING/GENETICS COMPANIES, 2014

(Data source: ETC, 2015)

The industrial livestock breeding sector focuses on genetic improvements and reproductive technologies for animal agriculture, including aquaculture and seafood.

Company (Headquarters)	Sales in \$US million
Genus, plc (UK)	\$613
Groupe Grimaud (France)	\$300
WH Group (Hong Kong)	\$22,240
Tyson Foods - (Cobb-Vantress Inc.) (US)	\$37,580
Charoen Pokphand Group (Thailand)	\$13,079
EW Group GmbH / Aviagen (Germany)	\$66



Like most other agricultural sectors, the livestock-breeding industry has seen significant concentration since the 1980s. In the case of poultry, pigs, cattle and aquaculture, seven firms dominate the livestock genetics sector and are further concentrated within the markets for most major species. For example, globally, two companies control an estimated 90% of layer poultry genetics, and three leading pig breeders supply nearly all pig stock worldwide.

The increasingly industrial nature of the livestock sector – especially the ‘Concentrated Animal Feeding Operations’ (CAFOs) that are the norm in North America and beyond – is driving the pursuit for economies of scale and vertical integration.¹⁸ Industrially farmed animals require high-protein feeds, veterinary drugs and climate-controlled, bio-secure facilities. Breeding stock comes from a small selection of highly uniform breeds and depends on the availability of specific pharmaceuticals to maximize production and to control the spread of disease. This dependence on a narrow selection of breeding stock has paved the way for greater integration between livestock genetics and animal pharmaceutical providers. Furthermore, food safety and animal slaughtering regulations encourage consolidation as a means to comply more efficiently.

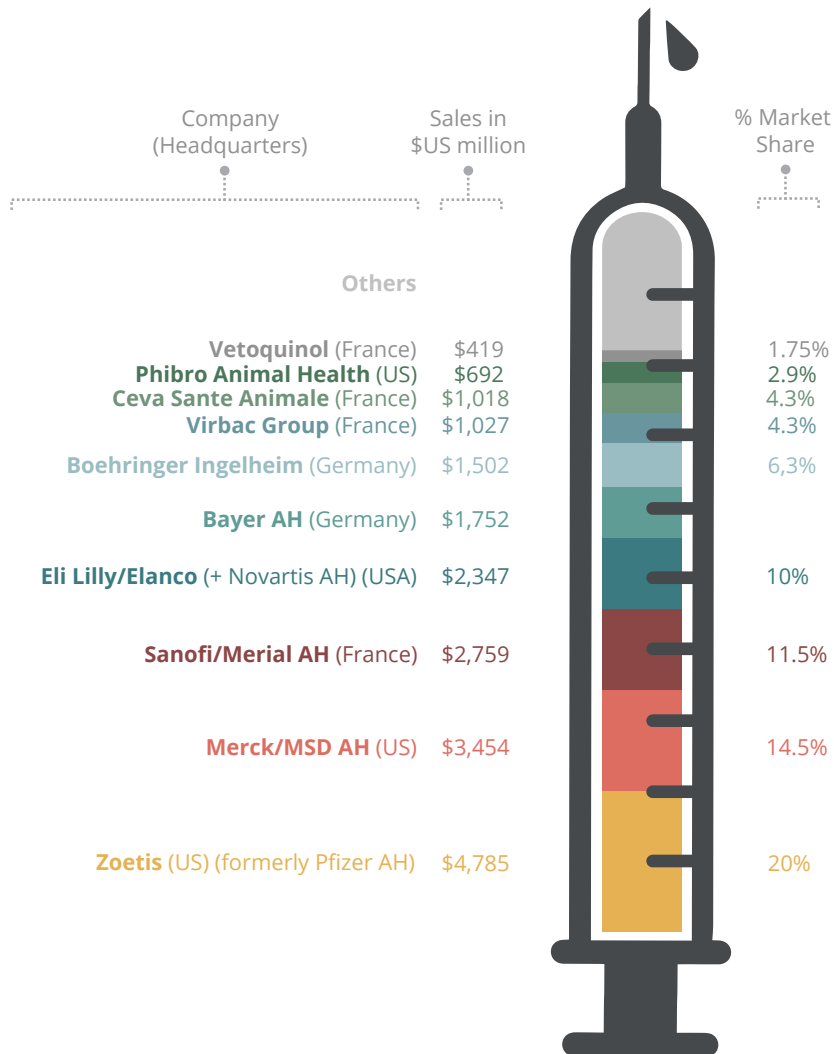
¹⁸ IPES-Food, 2016. From uniformity to diversity: a paradigm shift from industrial agriculture to diversified agroecological systems. International Panel of Experts on Sustainable Food Systems, Brussels; Weis, T., 2013. *The ecological hoofprint: The global burden of industrial livestock*. London: Zed Books Ltd.

I.4 Animal Pharmaceuticals

• TOP 10 ANIMAL PHARMACEUTICAL COMPANIES, 2014

(Data source: ETC, 2015)

The animal pharmaceutical industry sells commercial products for livestock productivity/health and companion animal (pet) health, including medicines and vaccines, diagnostics, medical devices, nutritional supplements, veterinary and other related services. (This sector does not include livestock feed and pet food products.)



M&A activity in the animal pharmaceutical industry has dramatically increased in recent years, and in 2014, eight firms accounted for nearly 80% of industry sales.¹⁹ Consolidation among firms has been extensive enough to spark anti-trust concerns, even requiring companies to sell some assets to pursue other deals.²⁰

The relatively small size of the animal pharmaceutical sector may suggest that these companies have little power to influence food systems. At just under \$24 billion, the sector has the smallest global market of all the agri-food industries, except livestock genetics. However, the relationships that animal pharmaceutical companies have with livestock producers, packers, retailers, and food companies have allowed the industry to influence policies that govern food safety, animal welfare, and antimicrobial resistance.²¹

Like in the seed industry, in addition to M&As, consolidation is also taking the shape of inter-firm agreements between leading global firms. Geographically-targeted M&As are also on the rise, along with other structural arrangements by newer industry players, including Chinese-based firms wishing to gain better access to American and European markets.

¹⁹ Informa UK, 2015. Animal Pharm Top 50: 2015 Edition, 17. URL <https://animalpharm.agribusinessintelligence.informa.com/-/media/agri/animal-pharm/ap-weekly-briefing-pdfs/2016/apweeklybriefing25042016.pdf>

²⁰ PricewaterhouseCoopers, 2015. *Animal Health Strategy Playbook for an Evolving Industry*. August 2015.

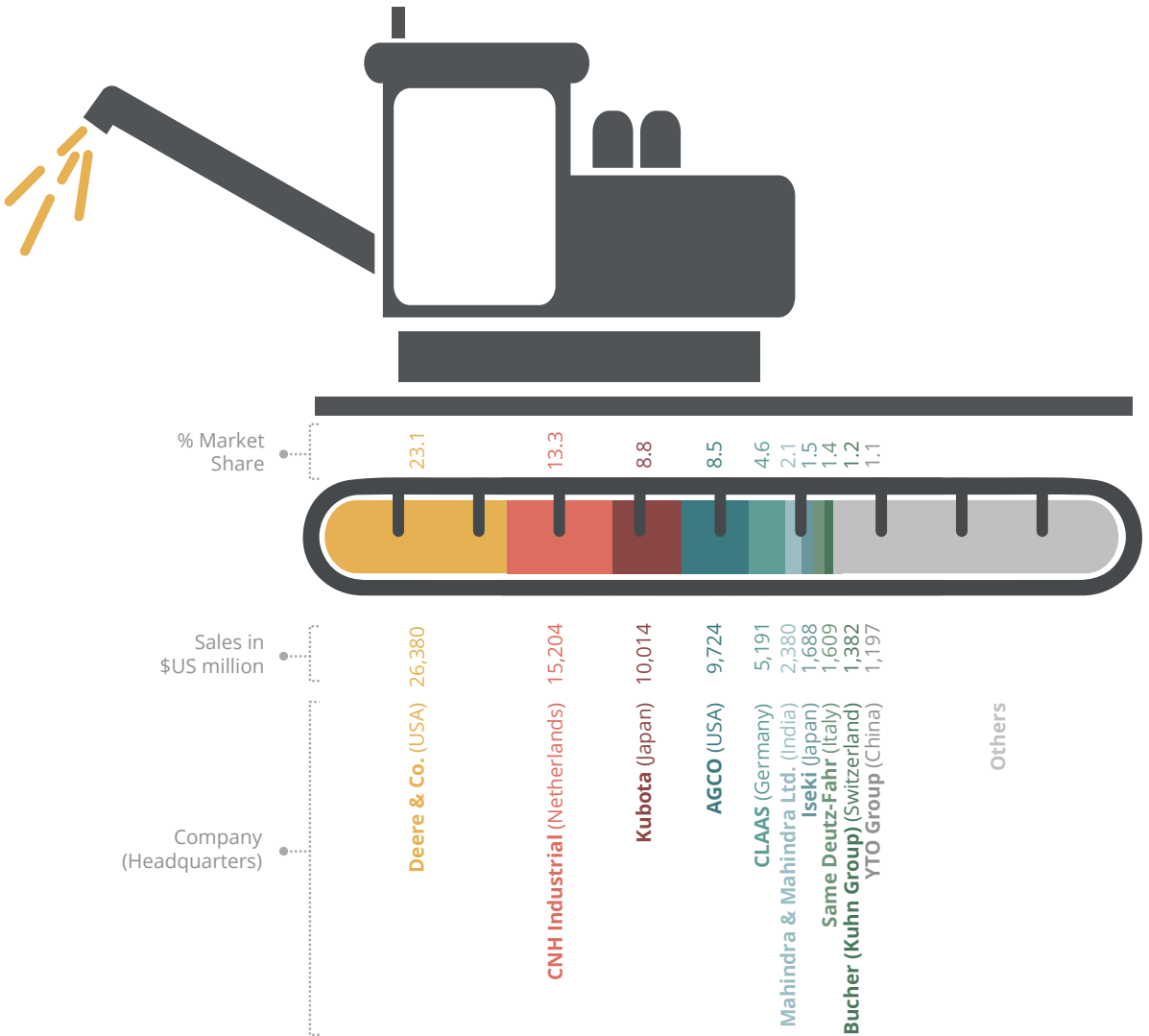
²¹ Buhr, B.L., Holtkamp, D. and Sornsen, S., 2011. Healthy competition in the animal health industry. *Choices*, 26(1). URL <http://www.farmdoc.illinois.edu/policy/choices/2011/201102/201102.pdf>

1.5 Farm Machinery

- TOP 10 FARM MACHINERY COMPANIES, 2014

(Data source: ETC, 2015)

The farm machinery sector manufactures equipment used in the context of agriculture. This includes, for example, tractors, haying and harvesting machinery and equipment used for planting, fertilising, plowing, cultivating, irrigating, spraying, etc.



The global farm machinery market has seen similar trends of concentration and represents an even bigger industry in terms of total sales, estimated at nearly \$114 billion. The three largest farm machinery companies accounted for almost half of global farm machinery sales in 2014.²² That same year, Deere's farm machinery sales – despite being down significantly from just a year earlier – topped \$26 billion, an amount nearly equal to the combined seed sales of the top six seed companies.

Vertical integration between other input industries and the farm machinery sector is well advanced, with Big Data opening the door towards increasingly consolidated offerings to farmers. For example – tractors, combines and sprayers now have digital tools such as remote sensing, aerial imaging and wireless data servers. These tools provide prescriptions for how, where and when farmers should irrigate, fertilize, plant seeds and apply pesticides. Newer agricultural equipment such as driverless tractors and drones also rely heavily on digital input.²³ While seed and pesticide companies have rushed to develop and control data on soil, weather and crop yields, machinery companies have begun to lead a new wave of farm input integration through data-driven technologies.

Further consolidation in this sector may be in the works. To compete with Deere, some analysts suggest that the five other leading machinery companies may seek to merge with one another. Other analysts believe the more likely scenario is for the leading firms to acquire smaller manufacturing companies to drive revenue growth.²⁴ Speculation has also risen around the possibility of Deere seeking to transform its strategic alliances with the top six seed companies into an acquisition.

²² ETC, 2015.

²³ Inagaki, K., 2015. Yamaha aims to unlock US and EU markets with agricultural drone. *Financial Times*, 05 July 2015. URL <https://next.ft.com/content/626684e2-2181-11e5-aa5a-398b2169cf79>.

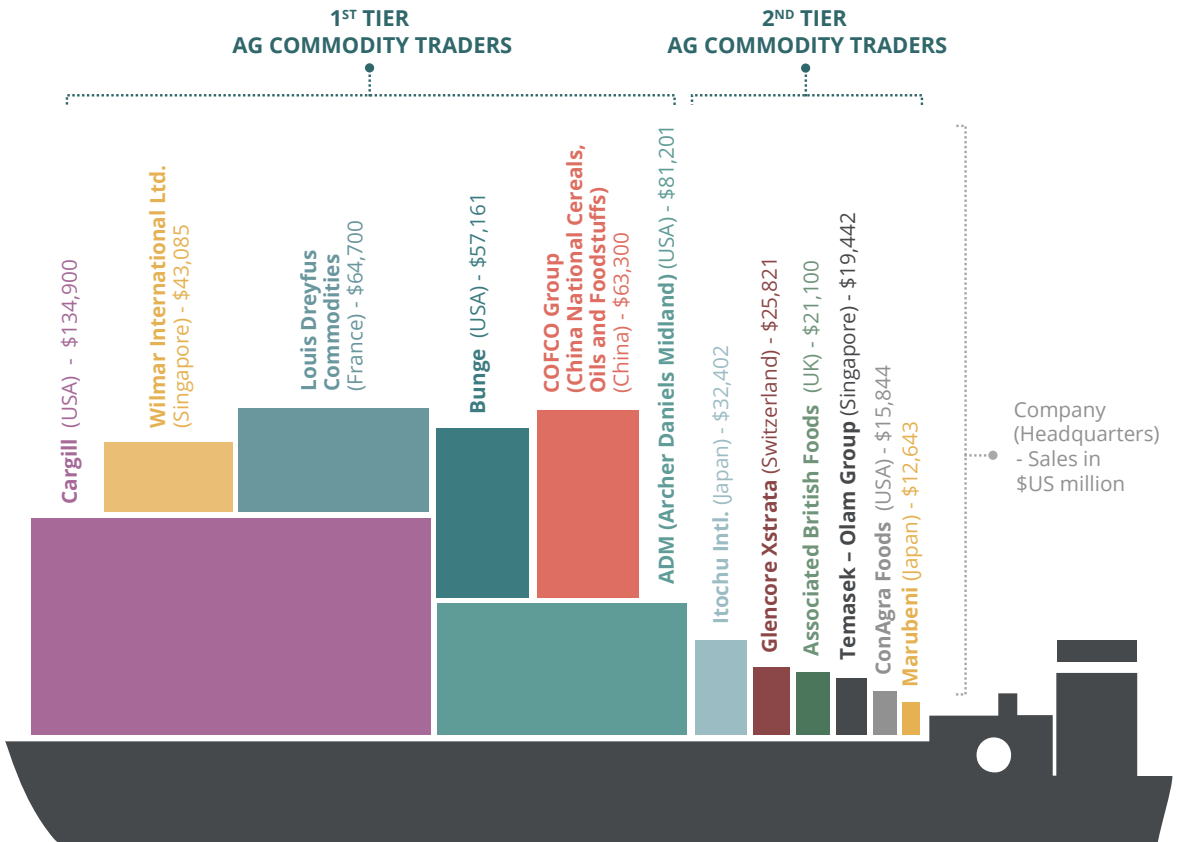
²⁴ Rabobank, 2015. Contraction Today, Consolidation Tomorrow? September 2015. URL https://research.rabobank.com/far/en/sectors/farm-inputs/contraction_today.html.

I.6 Agriculture Commodity Traders

- TOP AGRICULTURAL COMMODITY TRADERS COMPANIES, 2014

(Data source: ETC, 2015)

The world's largest agricultural commodity traders are diversified firms that produce, process, transport, finance and trade food and agricultural commodities (food, feed and biofuels) on a global scale.



In 2016, the six leading agricultural commodity traders, also known as ‘First Tier’ companies, had combined revenues of \$444 billion, far exceeding the combined global market value for seeds, pesticides, farm equipment and fertilizers.

As with many other sectors, the dominant companies are privately held businesses with proprietary data, making comprehensive industry analysis challenging. Nonetheless, the available estimates suggest that commodity trade is one of the most concentrated sectors of the industrial food chain. Historically, four major corporations called the ‘ABCD’: Archer Daniels Midland (ADM), Bunge, Cargill and Louis Dreyfus Commodities, are estimated to account for up to 90% of the global grain trade.²⁵

More recently, new players have come into the market, consolidating their positions with a flurry of M&A activity. Several Asia-based commodity giants have emerged as primary competitors to the ABCD.

The sector is changing in other ways. Traders increasingly depend on Big Data technologies for commodity transactions and market speculation. Climate change and the use of new technologies have caused some of the traders’ traditional speculation methods to be less useful today, while the information owned by companies like Deere or Monsanto have become more relevant.

Today, the old-time grain traders also deal with a much wider variety of food and agricultural commodities than they have historically. The ABCD companies are now often landowners, input suppliers, livestock producers, processors, bulk commodity shippers, investors and more.²⁶ Simultaneously, new players are entering the agricultural commodity arena, including mineral, fuel, and forest product commodity traders and along with the ever more concentrated maritime container shipping industry. The net effect of these changes is that food commodities are combined with base metals and fuels into multi-commodity transactions.²⁷

²⁵ Murphy, S., Burch, D., Clapp, J., 2012. Trade Secrets: The world’s largest grain traders and global agriculture. *Oxfam Research Reports*. URL <https://www.oxfam.org/sites/www.oxfam.org/files/rr-cereal-secrets-grain-traders-agriculture-30082012-en.pdf>

²⁶ Murphy et al., 2012.

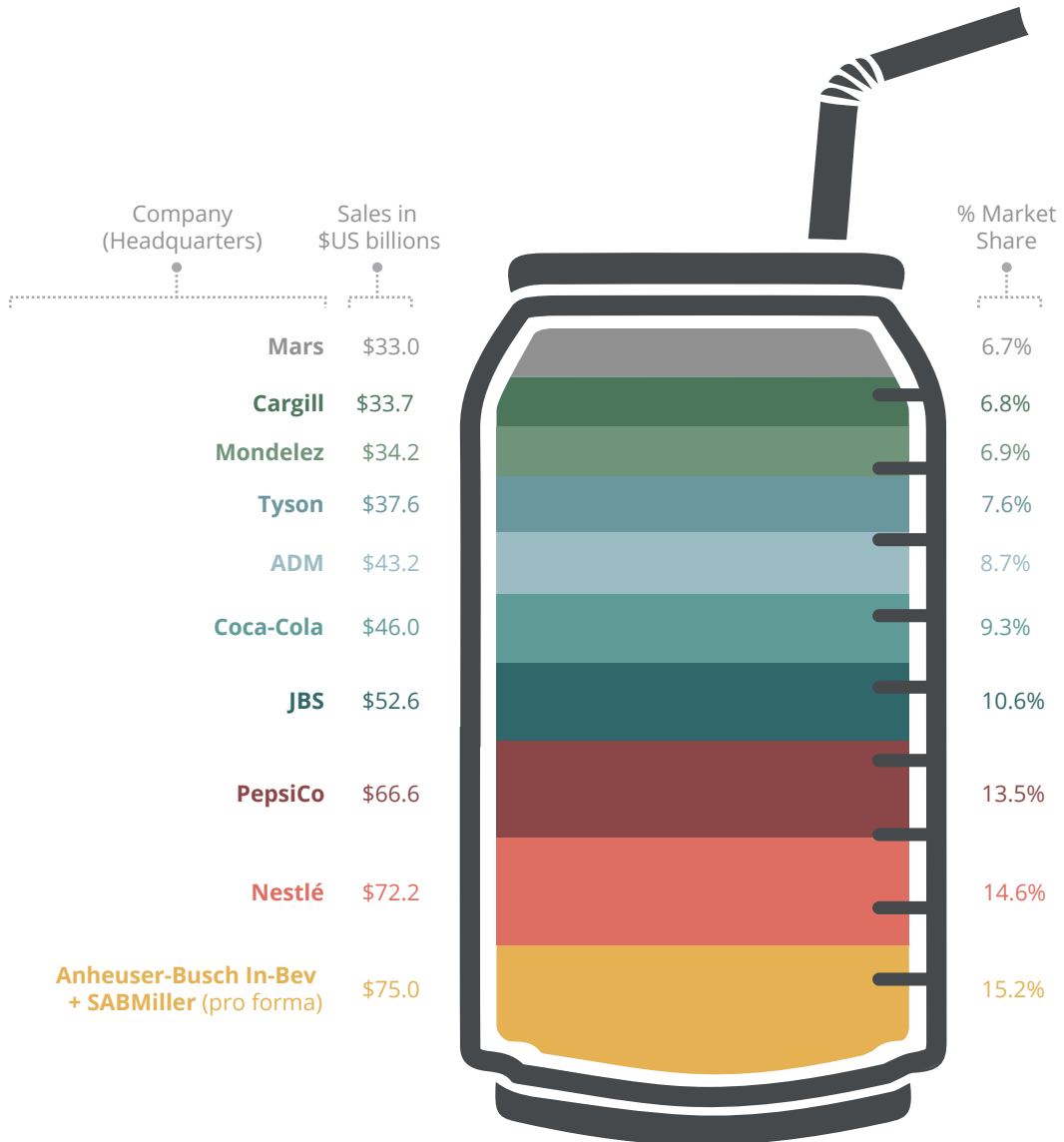
²⁷ Clapp, 2015.

I.7 Food and Beverage Processors

- TOP 10 FOOD & BEVERAGE COMPANIES, 2014

(Data source: ETC, 2015)

The food and beverage industry focuses on the post-harvest processing of raw agricultural commodities into products – both foodstuffs and feedstuffs for human and animal consumption.



The top 10 F&B companies, with combined revenues of \$494 billion in 2014,²⁸ account for nearly 40% of the market share of the world's top 100 food companies, exceeding the combined value of the seed, agrochemical, farm equipment, fertilizer and animal pharmaceutical sectors.

A number of trends have accelerated the pace of consolidation in the F&B processing sector. First, while the largest companies remain profitable, industry growth on the whole has been slow. The sector has responded by moving towards consolidation, including major M&As, driven both by a desire to capture new markets through international expansion as well as to attract private equity firms.

The sector has also been restructured in response to a new generation of consumer preference for unprocessed foods. Most large food processing companies have responded by adding new brands or acquiring brands that are perceived as “healthy,” “natural” and “organic.”²⁹ Over the past three years, for example, General Mills, Hain Celestial and Hershey each acquired various natural food brands.

The meat processing subsector offers a further snapshot of recent consolidation in the industry. Driven by increased protein consumption in emerging economies, demand for global meat production has significantly increased. The Global South is playing a lead role: the top 10 global meat processing firms now include two Brazilian companies and one Chinese industry leader.

Consolidation in the animal processing sector has also changed how livestock production is organized, driving a de facto consolidation and standardisation of production, often forcing farmers to enter highly-restrictive and risky contracts with meat processing firms. In the US, from 1993 to 2010, the share of hogs sold independently dropped from 87% to around 6%.³⁰

²⁸ ETC 2015.

²⁹ Heneghan, C. 2015. Why mergers and acquisitions are increasing. *Food Dive*. URL <http://www.fooddive.com/news/why-mergers-and-acquisitions-are-increasing/403440/>

³⁰ Hayenga, M, Rhodes, V.J., Grimes, G., and Lawrence, J.D., 1996. Vertical Coordination in Hog Production. *GIPSA-RR 96-5*, May 1996; USDA, 2010. Hogs and Pigs. USDA National Agricultural Statistical Service. March 2010.

I.8 Food Retailers

- TOP GROCERY RETAILERS, 2014
Ranked by Grocery Revenues

(Data source: ETC, 2015)

Grocery retailers sell perishable and non-perishable foods to consumers via retail outlets (stores or online). The world's largest grocery retailers sell non-food products (i.e., non-edible grocery) along with food.



In 2012, the value of global retail spending on food was \$4 trillion.³¹ The world's top ten grocery retailers accounted for nearly 30% of total grocery sales that year, while the leading three retail companies – Walmart, Schwarz Group and Kroger – represented 5.6% of global grocery spending.³²

While there appears to be a smaller degree of concentration in the global food retail industry compared to other sectors, markets are highly concentrated on a regional level. For example, in 2011, the largest five retailers in thirteen EU member states had a combined market share of over 60%.³³ Unlike agricultural inputs or raw materials, most people buy groceries close to home, so the concentration of retailers in a region is what matters in terms of food choice.

A growing trend is the rise of online grocery shopping, with three of the world's top eight grocery retailers – Walmart, Tesco, and Costco – now also among the world's top e-retailers.³⁴ Online grocery shopping represents a global average of 3.9% of national grocery sales. While this percentage appears minimal, analysts highlight that a 1% increase in online grocery sales in the US represents \$7 billion.³⁵ A 2015 study from IGD claims that China is the world's biggest market for online groceries – valued at \$41 billion in 2015 and predicted to grow to \$178 billion in 2020.³⁶

Recently, Amazon's use of Big Data to track consumer shopping habits and preferences has investors speculating that the company could become one of the world's top 10 food retailers within a decade. The company already offers cell phone applications and online systems for ordering groceries and will soon expand to restaurant delivery along with its own brand of prepared meals. Amazon is also experimenting with cashier-less and sensor-based supermarkets integrated with its online customer platform, a development likely to impact its recent acquisition of Whole Foods and the grocery industry at large.

³¹ USDA, 2016. Retail Trends. October 12, 2016.

<https://www.ers.usda.gov/topics/food-markets-prices/retailing-wholesaling/retail-trends/>

³² Gensler, L., 2016. The World's Largest Retailers 2016: Wal-Mart dominates but Amazon is Catching Up. *Forbes.com*. URL <http://www.forbes.com/sites/laurengensler/2016/05/27/global-2000-worlds-largest-retailers/#66991c1329a9>

³³ European Commission, 2014. The economic impact of modern retail on choice and innovation in the EU food sector. URL <http://ec.europa.eu/competition/publications/KD0214955ENN.pdf>

³⁴ National Retail Federation, 2017. 2017 Top 50 e-Retailers Chart. URL <https://nrf.com/2017-top-50-e-retailers-chart>.

³⁵ Kantar Worldpanel, 2015. Accelerating the Growth of E-Commerce in FMCG. URL: <https://www.kantarworldpanel.com/global/News/FMCG-online-sales-to-reach-130-billion-by-2025>

³⁶ IDG, 2015. China dominates in global online grocery markets. Article, June 2015. URL: <https://www.igd.com/articles/article-viewer/t/china-dominates-global-online-grocery-markets/i/15891>

Consequences of Concentration

Farmer income and autonomy diminishes

While industry consolidation is celebrated for creating efficiency, this has not meant lower input costs or greater choice for farmers. For example, from 1990-2015, US seed prices rose twice as fast as the price farmers received for their crops,³⁷ and in the EU, farm input costs increased by almost 40% between 2000 and 2010.³⁸ The current flood of mergers is likely to intensify these trends. One estimate suggests that seed prices for corn and soy could increase as much as 6% as a result of the Dow-DuPont and Bayer-Monsanto mergers.³⁹

Industry consolidation means that farmers have limited buyer options for their products. Livestock farmers, for example, are increasingly entering into restrictive production contracts with major meat processors. These contracts generally determine how animals are raised, what type of feed and pharmaceutical products are used, who provides them, and the price farmers will receive. Almost 90% of chicken farmers in the US operate under such contracts – up from less than 10% in the 1950s.⁴⁰

³⁷ Fuglie et al., 2011; Schnitkey, G., Sellars, S., 2016. Growth Rates of Fertilizers, Pesticides, and Seed Costs over time. *Farmdoc daily* (6):130, Department of Agricultural and Consumer Economics, 2016. University of Illinois at Urbana-Champaign, July 12, 2016.

³⁸ European Parliament, 2011. Report of the European Parliament on the farm input supply chain: structure and implications 2011/2114(INI), rapporteur José Bové. URL <http://www.europarl.europa.eu/sides/getDoc.do?type=REPORT&reference=A7-2011-0421&language=EN>

³⁹ Bryant, H., Maisashvili, A., Outlaw, J., and Richardson, J., 2016. Effects of Proposed Mergers and Acquisitions Among Biotechnology Firms on Seed Prices. *Agricultural and Food Policy Center, and Texas A&M University*. URL www.afpc.tamu.edu/pubs/0/675/WP_16-2.pdf

⁴⁰ National Chicken Council (US), 2012. Vertical Integration, What it is - and why it's good for the chicken industry... and you. National Chicken Council Website. URL <http://www.nationalchickencouncil.org/industry-issues/vertical-integration/>

Farmers are also becoming more vulnerable to sudden shifts in sourcing policies.⁴¹ For example, Chile's salmon industry was nearly destroyed in 2015 after Costco drastically reduced imports in response to concerns regarding the over-use of antibiotics by Chilean producers.⁴² Supply changes like these may reflect much-needed attention to sustainability. However, the necessary transition towards sustainable farming practices is unlikely to occur in a global context where farmers lack predictability and decision-making power to such an extent that they may be forced out of farming altogether.

Another impact on farmer autonomy is Big Data's role in the equipment that companies offer. Farmers have been collecting information for 10,000 years for their own use, to share with their communities, and more recently, to give to researchers to analyze. However, many on-farm devices now transfer data wirelessly to corporate servers – often with limited farmer knowledge. These industry practices raise questions about the ethical use of Big Data analytics and ownership, and whose interests Big Data is ultimately serving.

⁴¹ Rotz, S., and Fraser, E., 2015. Resilience and the industrial food system: analyzing the impacts of agricultural industrialization on food system vulnerability. *Journal of Environmental Studies and Sciences* 5.3, 459-473.

⁴² Esposito, A., 2015. Addicted to antibiotics, Chile's salmon flops at Costco, grocers. *Reuters*, July 23, 2015. URL <http://www.reuters.com/article/us-chile-salmon-antibiotics-feature-idUSKCN0PX11G20150723>

Corporate commitment to innovation and sustainability dwindles

Industry leaders claim that the pooled resources of increasingly consolidated agribusiness firms are key to creating a dynamic innovation climate. Indeed, industry research and development spending is significant: in 2013, the combined R&D budgets of the Big Six agrochemical and seed companies, valued at nearly \$7 billion, was six times larger than the total US Department of Agriculture's Research and Information budget.⁴³

However, while R&D spending in the agri-food sector is high, the scope remains narrow. Industry research focuses on crops and technologies with the highest commercial returns.⁴⁴

For example, as much as 40% of private breeding research goes to one crop: maize.⁴⁵ Those crops that are most important to smallholder farmers in the South, and for delivering diverse, nutrient-rich diets, are rarely a focus of industry research and development. As such, while buyouts are often pursued with innovation in mind, this is primarily in terms of consolidating R&D costs – not increasing the quantity or quality of innovation.

Start-ups with a greater focus on innovation are often bought up by larger firms seeking to fill in their own innovation gaps. In the food retail and processing sectors, a common trend is for dominant firms to buy emerging 'healthy' or 'sustainable' brands. These buyouts not only stifle innovation, but also bring in new leadership with different priorities, often causing smaller firms' commitment to sustainability to be compromised.

Developments in the organic sector demonstrate these risks. In 1995, the American organic industry was relatively competitive, with 81 major independent brands on the market. By 2007, all but 15 of these brands had been acquired by multi-national food processors.⁴⁶ As a result of these acquisitions, many brands began using cheaper, less sustainable ingredients in their products.

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⁴³ USDA, 2013. Financial Year 2013: Budget Summary and Annual Performance. URL <https://www.obpa.usda.gov/budsum/FY13budsum.pdf>

⁴⁴ Pi Piesse, J., Thirtle, C., 2010. Agricultural R&D, technology and productivity. *Philosophical Transactions of the Royal Society of London B: Biological Sciences* 365, 3035–3047. doi:10.1098/rstb.2010.0140

⁴⁵ Fujisaka, S., Williams, D., Halewood, M., 2011. The impact of climate change on countries' interdependence on genetic resources for food and agriculture. *FAO, Commission on Genetic Resources for Food and Agriculture, Background Study Paper No. 48, 7*. URL <ftp://ftp.fao.org/docrep/fao/meeting/017/ak532e.pdf>

⁴⁶ Howard, P., 2016a. Organic Industry Structure: Acquisition & Alliances, Top 100 Food Processors in North America. URL <https://msu.edu/%7Ehowardp/organicindustry.html>

Environmental, public health and labour standards decline

The industrial food system is responsible for widespread environmental impacts, such as declining pollinator numbers and increasing greenhouse gas emissions, and industry consolidation is heightening these impacts. Furthermore, consolidation is contributing to significant erosion of genetic diversity.

For example, the genetic breeding stock publicly available has declined by 75% since the 1960s.⁴⁷ In 2012, when rootworms were shown to have become resistant to one of Monsanto's Bt corn varieties, scientists proposed slowing the evolving resistance of corn pests by planting 'refuge' areas of non-GM maize.⁴⁸ However, there was not enough non-GMO maize seed available.

Food-borne diseases also tend to increase in consolidated livestock farming, especially with the rise of CAFOs and are intensified through centralized operations that produce for global value chains, despite attempts to increase biosecurity and traceability.

Industry consolidation may also be reinforcing labour abuse. To name just one example, Nestlé and Kraft, along with other major companies, have admitted to finding child and slave labour conditions within their coffee and cacao supply chains.⁴⁹ In response to growing consumer concern and pressure from civil society groups, Nestlé, Walmart and other companies have developed codes of conduct to protect workers from exploitive labour practices. Companies have made some efforts to inform their suppliers of these ethical codes, however, they continue to place tremendous pressure on their suppliers to produce high volumes for the lowest possible cost. As such, labour abuse is built into the system, even if not publicly condoned by the food and beverage industry.

⁴⁷ FAO, 1993. Harvesting Nature's Diversity – Biodiversity to nurture people. URL <http://www.fao.org/docrep/004/v1430e/V1430E00.htm#TOC>

⁴⁸ The planting of a non-Bt "refuge" is designed to prevent or delay resistance by increasing the probability that any resistant insects would mate with non-resistant insects (from the non-Bt areas); the resulting offspring would not be resistant.

⁴⁹ Clarke, 2015. Child labour on Nestlé farms: chocolate giant's problems continue. *The Guardian*, September 2, 2015. URL <https://www.theguardian.com/global-development-professionals-network/2015/sep/02/child-labour-on-nestle-farms-chocolate-giants-problems-continue>; Hodal, K., 2015. Nestlé admits slave labour risk on Brazil coffee plantations. *The Guardian*, March 2, 2015. URL <https://www.theguardian.com/global-development/2016/mar/02/nestle-admits-slave-labour-risk-on-brazil-coffee-plantations>

Corporate control of public policy surges

Ultimately, consolidation not only enables dominant companies to increase their market share, but also provides them with the ability to set the terms of the debate and defend the status quo.

A November 2016 report by ProPublica revealed that in the US, university-affiliated economists are frequently hired by corporations to convince government regulators that proposed mega-mergers do not threaten competition.⁵⁰ However, their recommendations are presented as independent expertise rather than as lobbying work. The scholars use complex economic forecasting models to predict the effects of mergers, but the reports are not made public, and after a merger is approved, the U.S government no longer has access to the companies' proprietary data, making it difficult to verify these forecasts.

Corporations have long held significant power to influence government policy, far beyond advocating against anti-trust measures. Since 1979, the number of employees in the US government responsible for giving legislators unbiased fact-based evidence has declined by 40%,⁵¹ leaving policy-makers reliant on lobbyists for information.⁵²

Concentration of power allows corporations to have major influence on the global governance of food systems, especially international trade policies and agreements.⁵³

⁵⁰ Eisinger, J and Elliott, J. 2016. These Professors Make More Than a Thousand Bucks an Hour Peddling Mega-Mergers. 16 November 2016. <https://www.propublica.org/article/these-professors-make-more-than-thousand-bucks-hour-peddling-mega-mergers>

⁵¹ The Economist, 2017. American politics: Lobbyists go underground. *An apparent drop in their numbers is an illusion*. The Economist, US online edition, September 1, 2017. URL <https://www.economist.com/news/united-states/21727894-apparent-drop-their-numbers-illusion-lobbyists-go-underground>

⁵² Drutman, L., Teles, S., 2015. Why Congress Relies on Lobbyists Instead of Thinking for Itself. *The Atlantic*, March 10, 2015. URL <https://www.theatlantic.com/politics/archive/2015/03/when-congress-cant-think-for-itself-it-turns-to-lobbyists/387295/>

⁵³ McNeill, D., Barlow, P., Birkbeck, C., Deere, Fukuda-Parr, S.; Grover, A.; Schrecker, T. & Stuckler, D., 2017. Trade and investment agreements: Implications for health protection. *Journal of World Trade*, ISSN 1011-6702. 51(1), 159-182; Murphy et al., 2012.

The investor-state dispute settlement systems (ISDS) written into bilateral investment treaties have allowed companies to sue foreign governments if changes in national policies affect company profits. Investor-state trials most frequently benefit large businesses. To date, 72% of ISDS cases have been filed against developing and emerging economies,⁵⁴ and most of these cases were won by the investors.⁵⁵

In brief, consolidation is shifting the focus of food system governance away from local and national governments and into the hands of a limited number of increasingly dominant multinational firms, allowing public policy to prioritize private profit-driven interests instead of the public good.

⁵⁴ Corporate Europe Observatory, 2016. URL https://corporateeurope.org/sites/default/files/attachments/the_zombie_isds_0.pdf

⁵⁵ Mann, H., 2015. ISDS: Who wins more, investors or states? IISD. URL http://www.iisd.org/itn/wp-content/uploads/2015/06/itn-breaking-news-june-2015-isds-who-wins-more-investors-or-state.pdf?utm_source=lists.iisd.ca&utm_medium=email&utm_campaign=ITN+Breaking+News+Analysis+-+ISDS:+Who+Wins+More,+Investors+or+States?

Recommendations

Create new governance structures: a UN treaty for transnational oversight of agri-food consolidation

Addressing the impact of industry concentration requires a strong and innovative global governance approach to complement national oversight. Given the explosion in global M&A activity, the economic scale of the merged entities, and the many social, environmental and economic consequences described above, the lack of a multilateral agreement to address corporate concentration is a major deficit.

We recommend a collaborative global assessment of the impact of corporate concentration in food systems. Diverse intergovernmental bodies such as the FAO, the Committee on World Food Security, the Convention on Biological Diversity, among others, should work together to monitor and evaluate the impacts of increased concentration at various levels.

Furthermore, we propose the development of a UN treaty on competition that directly addresses the differing needs and concerns of all member states. To this end, the work at the UN Conference on Trade and Development (UNCTAD) in presenting a 'Model Law on Competition Policy' and the 'Set of Multilaterally Agreed Equitable Control of Restrictive Business Practices' should be noted, as they could provide the basis for developing a global treaty to be implemented by national governments.

While some raise concerns over the difficulty of convincing European and North American members to support the creation of such a treaty, the shifting power balance towards the Global South is such that OECD countries would not be able to block a Southern-initiated UN treaty, and would ultimately be forced to comply. It will be a challenge to accommodate competing interests and the process may take several years, however, a carefully constructed international agreement of this type will create more transparent and equitable policies that could be integrated at the domestic level.

Break up the chain: limit excessive power held by multi-national firms

We urge national policy makers, regulators and international agencies such as the UN's Food and Agriculture Organization to strengthen and enforce competition laws in order to break up large companies within the agri-food sector.

Pesticide companies should not be able to own seed companies, nor farm machinery companies control chemicals, seeds, or crop insurance. Similarly, intellectual property restrictions that prohibit farmers from seed saving and exchange should be removed, as well as forbidding company proprietary rights on farm machinery that prevents farmers from accessing data and even repairing their own equipment. Companies should be prohibited from marketing seeds whose viability and/or productivity depends on the application of a companion chemical licensed to or controlled by that company.

In short, the excessive influence of dominant firms made possible by mega-mergers should be balanced by breaking up the largest companies and redistributing power across the agri-food sector.

Embrace ‘wide-tech’: support diversified and decentralized innovation

In contrast to the current high-tech approach that governs knowledge and innovation, we propose a shift towards a ‘wide-tech’ paradigm that would propel agri-food systems towards diversified and decentralized innovation, locally-applicable and open access knowledge. Wide-tech, a term coined by the ETC Group, refers to highly-decentralized smallholder-led innovation practices, such as local farms, processing facilities or fisheries.⁵⁶ Wide-tech embraces the principles of traditional, local or indigenous knowledge systems, many of which have allowed producers to effectively share research and in turn drive innovation.

We urge national governments to invest in and enable the coexistence between high-tech and wide-tech approaches. Under the right conditions, high-tech innovations could complement rather than displace location-specific innovations. Big Data could be extremely beneficial if leveraged by open-source analytical tools, whether to understand the spread of pests, to monitor changes in climatic conditions, or to develop new farming practices.

Conclusion

Agri-food companies have become too big to feed humanity sustainably, too big to operate on equitable terms with other food system actors, and too big to deliver the types of innovation we need. More mega-mergers are underway and without a significant change in course, will continue to consolidate an already oligopolistic agri-food sector. International agencies, civil society organizations, national governments and regulators need urgently to take action to re-create a food system that meets everyone’s needs.

⁵⁶ ETC Group, 2009. Retooling the planet. Report for Swedish Society for Nature Conservation, December 2009. URL http://www.etcgroup.org/sites/www.etcgroup.org/files/publication/pdf_file/Retooling%20the%20Planet%20I.2.pdf



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