

Banktoling Pesticides

TOXIC FOR PEOPLE, TOXIC FOR NATURE

Working to take on the finance industry's role in contributing to the destruction of nature.

Aboutus

portfolio.earth is a new initiative born out of rising concerns that our money and the institutions which govern it are ignoring the human-induced sixth mass extinction and actively providing capital to sectors that governments and scientists deem harmful to biodiversity.

portfolio.earth is a collaborative effort, convened by Liz Gallagher. We are a collective of researchers and campaigners across different organisations working with others to take on the finance industry's role in contributing to the destruction of nature.

We aim to bring together diverse voices to amplify the incredible pressure that is mounting upon those who control our money and are bankrolling and subsidising extinction, and to find new ways to tell this story, and double down on the changes we need to see.







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Scientists have sounded the alarm on 'ecological Armageddon"¹

Insects are the biological foundation for all terrestrial life on the planet.² They contribute some USD\$57 billion to the US economy alone every year by supporting wildlife, pollinating crops, and providing free pest control.³ But they have also long been instrumental in medical breakthroughs, with scorpion venom being used to locate tumors, and cockroaches helping scientists resolve antibiotic resistance.⁴ Without them, humanity would be in deep trouble.5

Scientists have long been sounding the alarm on the demise of insect populations around the globe. Grassland butterflies in Europe have seen a 50 percent decline in two decades.⁶ A staggering 75 percent of flying insect biomass in protected areas in Germany have disappeared over 27 years.⁷ Most recent studies have found that over 40 percent of insect species globally are currently threatened with extinction.8 This trend is being termed 'ecological Armageddon',⁹ and one of the key drivers in the deaths of critical species is the use of artificial pesticides.

Meanwhile the use of hazardous pesticides continues to grow

Pesticides are designed to eradicate pests on agricultural land, and they can contain a plethora of compounds intended to kill plants, mammals, insects, fungi and more.10 Despite the evidence that pesticides are partly driving the steep decline in insects,¹¹ global pesticide use nearly doubled between 1990 and 2018 from 2.3 to 4.1 million tonnes.12

64 percent of land used for agriculture is at risk of pollution from pesticides, with 34 percent of that land being deemed a high biodiversity region.13 A wide range of toxic pesticides are still in use and production, despite their being classified as hazardous and red listed.14

People are suffering from the health impacts of pesticides too

By their very nature, pesticides are poisonous.15 With the industrialisation of agriculture came the increased chemical burden on our ecosystems.¹⁶ But it's not just the farmers that manage the land that are exposed to pesticides. They are also used in the playgrounds our children play in, on the pavements that we walk on, and they are applied to treat wood that we may then bring into our homes as furniture.¹⁷ The health impacts can vary from a sore throat and skin irritation to more severe consequences such as Parkinson's Disease and aggressive forms of cancers.18

Legal cases against some of the biggest pesticide manufacturers have been ongoing since 2018; the most common of which being against Roundup producer Monsanto.¹⁹ Monsanto, were ordered to pay a staggering USD\$289 million to a groundskeeper in America after the court determined the company had not done enough to warn against the health impacts of exposure to Roundup's active ingredient, glyphosate.20 Monsanto was bought by another agri-chemical company called Bayer in 2018,²¹ and since then settlements have been agreed to cover 95,000 cases of cancers attributed to the use of glyphosate.22 More recently another set of agri-chemical giants - Corteva Inc and Dow Chemical Co. - were hit with 80 lawsuits for the potential health impacts of a chemical called chlorpyrifos, which may be linked to health impacts in children. 23

The industry is cannibalising itself, giving just a few corporates majority control over the worlds seeds and pesticides

In 2016 there were six large corporations that dominated the agri-chemicals sector - BASF, Bayer, Dow Chemical, DuPont, Monsanto, and Syngenta.²⁴ Since then, Dow Chemical has merged with DuPont, ²⁵ Bayer has bought out Monsanto,²⁶ and state-owned Chinese chemical giant ChemChina has purchased Syngenta.²⁷ In 2019, four firms controlled 60 percent of proprietary seed sales.²⁸ As the concentration of the industry increases, so do concerns that these mergers could lead to a lack of competition, stifling innovation in the agricultural sector and potentially leading to price hikes that could see farmers in even more economic trouble than many of them already are.²⁹

"When does the size of companies and concentration in the market reach the tipping point, so much that a market becomes anti-competitive?" - US Senator Charles Ernest Grassley³⁰

Investors have also been impacted by the risks of investing in pesticides

After buying up Monsanto and the onslaught of facing 13,400 legal claims, Bayer's share price dropped 38 percent, resulting in a shocking vote of no confidence in Bayer's chief, Werner Baumann. With major investors quoted as saying they were "extremely unhappy with the legal and reputational risks and the massive decline in share price."³¹

The world is waking up to the impacts of pesticides

The tide is beginning to turn on the use of pesticides, with both the public and governments awakening to their harmful impacts. In 2013 beekeepers took to the streets in the UK to call for a pesticides ban.³² Two years later, tens of thousands of people marched across 400 cities - from Los Angeles in the US, to Burkina Faso in Africa - against Monsanto and its production of Roundup.³³ Fast forward another three years, and locals had taken to the streets in Bangkok calling for a ban on several pesticides known to harm the environment and people's health.³⁴ Bans of various active ingredients have started to come into effect across the globe, with 175 pesticides now banned in the UK and the EU.³⁵ The tide is beginning to turn on the use of pesticides, with both the public and governments awakening to their harmful impacts. In 2013 beekeepers took to the streets in the UK to call for a pesticides ban.³²





Key findings

There are numerous ways that argi-chemical companies receive funding; from corporate wide loans and share issuances, to equity investments and project specific financing. It makes assessing the financing an incredibly complex task, and at times it's near to impossible to attribute specific funds to a pesticide due to the range of products that each of the companies produces. Within this report we find:

There were well-known finance brands amongst some of the biggest investors in the six pesticide companies assessed, such as HSBC, Credit Suisse, Bank of America and Citigroup.

The majority of the loans given by each of the banks were roughly the same size, meaning no specific bank stood out as a leading investor in the sector.

When it came to underwriting bonds and shares, Blackrock and Vanguard were the most prominent underwriters for 5 of the 6 companies - Dow Inc, DuPont, Coteva, BASF and Bayer.

BASF, Dow Inc and DuPont had significantly similar and concentrated profiles in terms of the financial institutes underwriting their shareholdings.

Demands

Lenders to radically transform disclosure and transparency of their lending for pesticides; and alongside shareholders to hold pesticide companies to account with the aim of ending the production of Highly Hazardous Pesticides.

Companies must commit to ambitious and timebound plans for phasing out the production of Highly Hazardous Pesticides and switching to manufacturing less harmful alternatives such as biopesticides.

Governments should re-write the rules of finance to hold banks liable for the damage caused by their lending to pesticide companies that produce Highly Hazardous Pesticides.

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By their very nature, pesticides are poisonous.

BANKROLLING PESTICIDES

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Nature & biodiversity are in crisis

More than 4 million tonnes of pesticides are applied every year³⁶ and the global biodiversity crisis is closely linked to the contamination of ecosystems with herbicides, insecticides and fungicides. There is a substantial - and growing body of scientific work that associates the use of pesticides with the dramatic loss of terrestrial and aquatic biodiversity loss.37

Decline of insects

The decline of Insect biomass is one of the most concerning impacts of pesticides globally. Research Biodiversity impacts from pesticides are not in Germany for instance, has found a decline of more limited to insects and birds or to agricultural lands than 75 percent of insect biomass in nature protected and their immediate surroundings. The extent to areas and much of this may be linked to the use of which even species that inhabit much more remote pesticides as part of agricultural intensification since ecosystems can be impacted is illustrated in an most of the study sites were surrounded by agriculanalysis by the US Environmental Protection Agency tural fields.³⁸ A review of historical reports found that (EPA). The government organisation found that two widely used insecticides alone are likely to impact 97 the decline of insects is so dramatic that 40 percent of the world's insect species may become extinct in percent of the nearly 1,800 species listed as endanthe next few decades. The use of pesticides is one gered or threatened including mammals, birds, fish, of the major drivers causing this.39 reptiles and plants.43

Declines of birds

Pesticides also lead to a reduction in bird populations. As an example, the overall bird population in the United States decreased by 29 percent since 1970 and grassland birds even decreased by 53 percent.40 Some of this decline is linked to neonicotinoids, a controversial class of insecticides previously associated with high global bee population mortalities.⁴¹ Neonicotinoids can affect birds directly from the consumption of treated crop seeds, and indirectly via the insect populations they feed on. They only need to consume a few seeds to see long-term damage to reproduction and development.42

Impacts on other endangered species

Aquatic biodiversity impacts

Agricultural intensification and the associated increase in the use of pesticides also affects aquatic ecosystems. Pesticides contaminate water through runoff, spray drift, and leaching which can subsequently affect microorganisms, invertebrates, or fish.44 Pesticide exposure can result in long-term sub-lethal effects on fish such as affecting their growth, and reproduction but can also cause spinal deformities and changes in gills, liver, and kidneys as well as lead to neurological disorders and genetic defects.45 Sometimes pesticides are also blamed for acute and immediate fish die-offs.46,47

Soil pollution

Soils are an understudied but important factor when it comes to the biodiversity impacts of pesticides. Soils contain nearly a quarter of the planet's diversity⁴⁸ and more than 40 percent of living organisms in terrestrial ecosystems are associated during their life-cycle directly with soils.⁴⁹ A recent review of around 400 studies investigating the effects of pesticides on non-target invertebrates found that of the 2,800 tested parameters (where a specific pesticide had been tested on a specific organism for a particular feature), more than 70 percent showed negative effects, from pesticide exposure.50 Reducing negative biodiversity impacts on soils is paramount considering that, invertebrates in soils play vital roles in ecosystems including decomposing dead plants and animals so they can nourish new life, cycling nutrients that plants need to grow, regulating pests and diseases and carbon transformation.5



Non-target organisms

One of the most concerning aspects of pesticides is that their application routinely results in indiscriminate effects on biodiversity and is not limited to target organisms. Studies found that when applied by aircraft, as is commonly the case, only an extremely small percentage of the pesticide reaches the intended target species. In one example researchers found that only about 0.003 percent of the 1 kg/ha of insecticide applied was consumed by the caterpillars it was intended to impact.⁵²



Human health concerns

Public interaction with pesticides can happen in multiple ways; from farmers applying them to their land, to children playing in parks that have been treated with them.⁵³The health impacts can vary from a sore throat and skin irritation, to more severe consequences such as Parkinson's Disease and aggressive forms of cancers.⁵⁴ Legal cases against some of the biggest pesticide manufacturers have been ongoing since 2018; the most common of which being against Roundup producer Monsanto.^{55,56} More recently another set of agri-chemical giants - Corteva Inc and Dow Chemical Co. - were hit with 80 lawsuits for the potential health impacts of a chemical called chlorpyrifos, which may be linked to health impacts in children.⁵⁷

Investors and pesticides manufacturers

Lenders and investors in pesticide companies have a responsibility to ensure their investments are not contributing to an exacerbation of the global biodiversity crisis and should make investments contingent on pesticide manufacturers adopting policies that commit them to limit negative biodiversity impacts. Yet, previous research by portfolio. earth has shown that none of the major banks have put meaningful limitations and restrictions in place to ensure that their investments do not support the production of even the most harmful pesticides or other activities that are detrimental to the preservation of global biodiversity.⁵⁸





3.0 Investors in pesticide companies



Methodology

The following tables show the financing of pesticide companies by major banks (loans and underwritings) and equity investors (shareholdings).

It's important to note that many of these companies are engaged in activities that are not only related to pesticides, and since loans and equity investments cannot usually be limited to specific corporate activities, the finances presented in this research are across the entire operations of a company and not solely related to pesticides.

The companies included in this research are BASF, Bayer, Corteva, Syngenta, Dow Inc and DuPont. Together these companies control most of the market.

<u>Note</u>: Corteva was formerly Dow Agrosciences, a subsidiary of Dow Chemical Company. In 2017, the Dow Chemical Company merged into DowDuPont⁵⁹ and in April 2019, Dow Inc. (the parent of Dow Chemical) was separated into a public company via a corporate spin-off.⁶⁰ The Dow AgroSciences business unit was spun off into Corteva Inc on June 3, 2019.⁶¹ Due to these recent changes in ownership, this research also sought to identify financing to the relevant parent companies - Dow Inc and DuPont - for the relevant periods within the scope of the study.

The data for this research was provided by Dutch consultancy Profundo and focuses on the financing of six pesticide producers. It utilized financial databases (Bloomberg, Refinitiv (formerly known as Thomson EIKON), TradeFinanceAnalytics, and IJGlobal), company reports (annual, interim, quarterly) and other company publications, company register filings, as well as media and analyst reports. Corporate loans, credit and underwriting facilities provided to the selected companies were researched for the period January 2015 - June 2021.





Lenders and investors in pesticide companies have a responsibility to ensure their investments are not contributing to an exacerbation of the global biodiversity crisis

Table 2: Loans by largest lenders (Top 20)



Loans & underwriting

Corporate Loans

The tables below show the main lenders and underwriters of the pesticide companies included in the research. It includes figures for project finance loans as well as loans for general corporate purposes. The data separately lists the value for the underwrit-

during bond issuances. Underwriting describes the temporary role of a lender to initially purchase shares or bonds during the issuance phase before they are being sold to shareholders or bondholders.

Details on how this was calculated can be found in the appendix. All figures below are million USD ing of shares during initial public offerings (IPOs) and and cover the period of January 2015 - June 2021.

1.2.1: Overview

Table 1: Loans by pesticide company

Grand Total	156,813	112,981	269,794	100%
Coverta		1,000	1,000	0.37%
Dow Inc	15,000	656	15,656	5.80%
BASF	16,143	24,670	40,813	15.13%
Syngenta	44,179	7,421	51,600	19.13%
DuPont	34,091	26,128	60,219	22.32%
Bayer	47,400	53,105	100,505	37.25%
GROUP	LOANS	UNDERWRITING	GRAND TOTAL	% OF TOTAL

LENDER	LOANS	UNDERWRITING	GRAND TOTAL	% OF TOTAL
Mitsubishi UFJ Financial	9,118	7,356	16,474	6.11%
Bank of America	7,319	7,167	14,486	5.37%
Citigroup	7,448	6,296	13,744	5.09%
JPMorgan Chase	5,010	8,665	13,675	5.07%
Goldman Sachs	6,140	7,534	13,674	5.07%
Credit Suisse	6,628	7,004	13,631	5.05%
HSBC	6,944	5,728	12,673	4.70%
BNP Paribas	6,022	6,152	12,175	4.51%
Barclays	5,328	6,229	11,557	4.28%
Mizuho Financial	5,514	5,618	11,132	4.13%
SMBC Group	6,512	4,597	11,109	4.12%
Deutsche Bank	4,715	5,273	9,988	3.70%
UniCredit	5,978	2,896	8,874	3.29%
Santander	4,890	3,145	8,036	2.98%
ING Group	4,354	3,150	7,504	2.78%
Crédit Agricole	4,873	2,493	7,365	2.73%
Société Générale	4,269	2,986	7,255	2.69%
Commerzbank	3,343	2,825	6,167	2.29%
Other	52,406	17,868	70,275	26.05%
Grand Total	156,813	112,981	269,794	100%



1.2.2: Loans and underwritings by pesticide company

Table 3: Bayer (top 30 investors)

LENDER PARENT	LENDER PARENT COUNTRY	LOANS	UNDERWRITING	GRAND TOTAL	% OF TOTAL
JPMorgan Chase	United States	1,988	4,617	6,605	6.57%
Bank of America	United States	1,988	4,258	6,246	6.21%
Mitsubishi UFJ Financial	Japan	1,938	4,240	6,178	6.15%
Mizuho Financial	Japan	1,876	3,801	5,677	5.65%
Citigroup	United States	2,143	3,356	5,499	5.47%
Goldman Sachs	United States	1,938	3,465	5,404	5.38%
Barclays	United Kingdom	1,938	3,239	5,177	5.15%
BNP Paribas	France	1,669	3,032	4,701	4.68%
HSBC	United Kingdom	1,807	2,819	4,625	4.60%
Credit Suisse	Switzerland	1,669	2,840	4,509	4.49%
UniCredit	Italy	1,807	1,673	3,480	3.46%
Deutsche Bank	Germany	1,669	1,770	3,439	3.42%
Crédit Agricole	France	1,807	1,579	3,386	3.37%
Santander	Spain	1,807	1,461	3,268	3.25%
SMBC Group	Japan	1,669	1,536	3,205	3.19%
Commerzbank	Germany	1,669	1,416	3,085	3.07%
Banco Bilbao Vizcaya Argentaria (BBVA)	Spain	1,669	1,323	2,992	2.98%
Société Générale	France	1,744	1,022	2,766	2.75%
ING Group	Netherlands	1,669	903	2,572	2.56%
Standard Chartered	United Kingdom	1,744	791	2,535	2.52%
Intesa Sanpaolo	Italy	1,669	662	2,331	2.32%
NatWest	United Kingdom	1,669	596	2,265	2.25%
Bank of New York Mellon	United States	1,744	249	1,993	1.98%
Skandinaviska Enskilda Banken	Sweden	1,669	243	1,912	1.90%
BayernLB	Germany	1,669	243	1,912	1.90%
Landesbank Hessen-Thüringen	Germany	1,669	243	1,912	1.90%
Wells Fargo	United States	424	567	991	0.99%
Morgan Stanley	United States	319	593	912	0.91%
Rabobank	Netherlands	206	559	765	0.76%
US Bancorp	United States	75	4	79	0.08%
Other		75	8	83	0.08%
Grand Total		47,400	53,105	100,505	100%

Table 4: DuPont (top 30 investors)

Grand Total		34,091
Other		353
Farm Credit Services Commercial Finance Group	United States	244
Rabobank	Netherlands	231
Crédit Agricole	France	161
United Overseas Bank	Singapore	431
Bank of China	China	448
Westpac	Australia	421
Banco Bilbao Vizcaya Argentaria (BBVA)	Spain	161
Citizens Financial Group	United States	500
Scotiabank	Canada	491
US Bancorp	United States	565
Standard Chartered	United Kingdom	553
ING Group	Netherlands	468
Société Générale	France	534
Santander	Spain	534
Toronto-Dominion Bank	Canada	659
Wells Fargo	United States	511
Northern Trust	United States	1,269
Morgan Stanley	United States	884
BNPParibas	France	840
HSBC	United Kingdom	678
Deutsche Bank	Germany	1,587
Barclays	United Kingdom	1,755
Mitsubishi UFJ Financial	Japan	2,328
Mizuho Financial	Japan	2,328
SMBC Group	Japan	2,328
Citigroup	United States	2,886
Bank of America	United States	2,782
Credit Suisse	Switzerland	2,388
JPMorgan Chase	United States	2,256
Goldman Sachs	United States	2.516
LENDER PARENT	LENDER PARENT COUNTRY	LOANS

UNDERWRITING

GRAND TOTAL

% OF TOTAL

26,128	60
767	1,1
	24
 91	3
220	3
 	4
	4
 51	4
387	5
96	5
 170	6
136	70
348	9
455	9
 393	9
 403	9
305	9
 540	1,0
 	1,2
 451	
 635	1,4
 926	
 732	
 1.219	
 1402	
 1692	
 1,030	4,
 1925	4,
 2,893	5,
 3,064	5,
 2,981	5,

5,497
5,320
5,281
4,884
4,721
4,163
4,020
3,730
2,974
2,319
1,604
1,475
1,335
1,269
1,051
963
936
926
923
901
702
660
597
548
472
448
431
381
323
244
1,120
60,219

9.13%
8.83%
8.77%
8.11%
7.84%
6.91%
6.68%
6.19%
4.94%
3.85%
2.66%
2.45%
2.22%
2.11%
1.75%
1.60%
1.55%
1.54%
1.53%
1.50%
1.17%
1.10%
0.99%
0.91%
0.78%
0.74%
0.72%
0.63%
0.54%
0.41%
1.86%
100%

None of the major banks have put meaningful **Imitations and restriction** in place to ensure that their investments do not sub port the production of even the most harmful pesticides...



Table 5: Syngenta top 30 investors

LENDER PARENT	LENDER PARENT COUNTRY	LOANS	UNDERWRITING	GRAND TOTAL	% OF TOTAL
Mitsubishi UFJ Financial	Japan	4,327	390	4,717	9.14%
UniCredit	Italy	3,653	228	3,880	7.52%
HSBC	United Kingdom	2,633	1,183	3,816	7.39%
CITIC	China	3,159	212	3,371	6.53%
Credit Suisse	Switzerland	2,220	946	3,166	6.14%
BNP Paribas	France	2,284	555	2,839	5.50%
Rabobank	Netherlands	2,766	65	2,831	5.49%
Crédit Agricole	France	2,220	251	2,471	4.79%
Santander	Spain	1,865	455	2,320	4.50%
Groupe BPCE	France	1,377	184	1,561	3.02%
Industrial Bank Company	China	1,219	212	1,431	2.77%
China Construction Bank	China	1,143	249	1,392	2.70%
Commerzbank	Germany	1,298	33	1,331	2.58%
Scotiabank	Canada	1,096	116	1,212	2.35%
Industrial and Commercial Bank of China	China	1,082	65	1,147	2.22%
ING Group	Netherlands	987	65	1,052	2.04%
Agricultural Bank of China	China	1,033		1,033	2.00%
Intesa Sanpaolo	Italy	957	33	989	1.92%
DBS	Singapore	957	33	989	1.92%
Shanghai Pudong Development Bank	China	988		988	1.92%
Bank of America	United States	722	163	884	1.71%
Société Générale	France	761		761	1.47%
First Abu Dhabi Bank	United Arab Emirates	761		761	1.47%
Bank of East Asia	China	649		649	1.26%
Fubon Financial	Taiwan	607		607	1.18%
Citigroup	United States	86	511	597	1.16%
CTBC Financial Holding	Taiwan	500		500	0.97%
Taishin Financial Group	Taiwan	500		500	0.97%
UBS	Switzerland	86	329	414	0.80%
Barclays	United Kingdom	2,246	1,146	3,392	6.58%
Other		1,985	1,146	3,131	6.07%
Grand Total		44,179	7,421	51,600	100%

Table 6: BASF (top 30 investors)

LENDER PARENT	LENDER PARENT COUNTRY	LOANS
Deutsche Bank	Germany	1,064
BNP Paribas	France	920
Barclays	United Kingdom	1,064
ING Group	Netherlands	920
Société Générale	France	920
Goldman Sachs	United States	1,331
SMBC Group	Japan	1,064
Commerzbank	Germany	375
Mitsubishi UFJ Financial	Japan	375
UniCredit	Italy	519
European Investment Bank	Luxembourg	745
BayernLB	Germany	375
Landesbank Baden-Württemberg (LBBW)	Germany	375
Santander	Spain	375
HSBC	United Kingdom	375
JPMorgan Chase	United States	411
Citigroup	United States	375
Banco Bilbao Vizcaya Argentaria (BBVA)	Spain	375
Crédit Agricole	France	375
Bank of America	United States	375
NatWest	United Kingdom	375
Morgan Stanley	United States	179
Credit Suisse	Switzerland	350
Standard Chartered	United Kingdom	179
Landesbank Hessen-Thüringen	Germany	179
DZ Bank	Germany	179
UBS	Switzerland	323
Royal Bank of Canada	Canada	204
Mizuho Financial	Japan	375
Bank of China	China	350
Other		736
Grand Total		16,143

UNDERWRITING

GRAND TOTAL

% OF TOTAL

24,670	40,81
167	903
	350
	375
245	450
167	490
356	535
356	535
356	535
200	550
401	580
434	810
442	817
442	817
442	817
465	841
675	1,086
801	1,177
826	1,201
826	1201
	1,400
711	1/59
1'IAA	1,5/4
1100	1,751
1,101	2,165
962	2,293
1,572	2,492
1,727	2,647
1,771	2,835
1,931	2,850
2,770	3,834

34	9
50	6
35	6
47	6
92	6
93	5.
5	5.
i1	4.
74	3.
4	3.
56	3.
28	3.
01	2
01	2
7	2
36	2.
1	2.
	2.
	2.
	2.
	1.9
)	1.4
)	1.3
5	1.3
5	1.3
5	1.3
)	1.3
)	1.1
;	0.
)	0.
3	2.
813	10

9.39%
6.98%
6.95%
6.49%
6.11%
5.62%
5.30%
4.29%
3.86%
3.71%
3.57%
3.25%
2.94%
2.94%
2.88%
2.66%
2.06%
2.00%
2.00%
2.00%
1.98%
1.42%
1.35%
1.31%
1.31%
1.31%
1.20%
1.10%
0.92%
0.86%
2.21%
100%

Table 7: Dow Inc (top 30 investors)

Grand Total		15,000	656	15,656	100%
Mitsubishi UFJ Financial	Japan	149		149	0.95%
Fifth Third Bancorp	United States	160		160	1.03%
Intesa Sanpaolo	Italy	310		310	1.98%
ING Group	Netherlands	310		310	1.98%
JPMorgan Chase	United States	310		310	1.98%
Itaú Unibanco	Brazil	310		310	1.98%
Société Générale	France	310		310	1.98%
Banco Bilbao Vizcaya Argentaria (BBVA)	Spain	310		310	1.98%
Scotiabank	Canada	310		310	1.98%
Santander	Spain	310		310	1.98%
Royal Bank of Canada	Canada	310		310	1.98%
Riyad Bank	Saudi Arabia	310		310	1.98%
Standard Chartered	United Kingdom	310		310	1.98%
Barclays	United Kingdom	310		310	1.98%
Deutsche Bank	Germany	310		310	1.98%
Bank of New York Mellon	United States	310		310	1.98%
BNP Paribas	France	310		310	1.98%
Goldman Sachs	United States	310		310	1.98%
BayernLB	Germany	310		310	1.98%
Crédit Agricole	France	310		310	1.98%
Bangkok Bank	Thailand	310		310	1.98%
Morgan Stanley	United States	310	4	314	2.00%
Wells Fargo	United States	310	90	400	2.56%
Incapital (US)	United States		481	481	3.07%
Mizuho Financial	Japan	935		935	5.97%
Northern Trust	United States	935		935	5.97%
HSBC	United Kingdom	1,452		1,452	9.27%
SMBC Group	Japan	1,452		1,452	9.27%
Bank of America	United States	1,452	77	1,529	9.76%
Citigroup	United States	1,958	4	1,962	12.53%
	COUNTRY	LUANS	UNDERWRITING	GRAND TOTAL	%OF TOTAL

Table 8: Corteva

LENDER PARENT	LENDER PARENT COUNTRY	LOANS
SMBC Group	Japan	
Mitsubishi UFJ Financial	Japan	
JPMorgan Chase	United States	
Citigroup	United States	
Mizuho Financial	Japan	
Credit Suisse	Switzerland	
Bank of America	United States	
Goldman Sachs	United States	
Grand Total		



UNDERWRITING

GRAND TOTAL

% OF TOTAL

1,000	1,000	100%
125	125	12.50%
125	125	12.50%
125	125	12.50%
125	125	12.50%
125	125	12.50%
125	125	12.50%
125	125	12.50%
125	125	12.50%

BANKROLLING PESTICIDES

Table 10: Investments by largest investors across all pesticide companies (Top 20)

Equity investments

Figures below show the value of equity investments by major investors in the pesticide companies included in this research. All figures below are million USD and cover the period of January 2015 - June 2021.

1.3.1: Overview

Table 9: Investment by pesticide company

GROUP	BONDHOLDING	SHAREHOLDING	GRAND TOTAL	% OF TOTAL
Dow Inc	6,357.2	32,890.1	39,247.3	23.66%
Bayer	14,155.0	22,912.6	37,067.6	22.34%
DuPont	4,625.0	29,523.0	34,148.0	20.58%
Corteva		27,987.6	27,987.6	16.87%
BASF	1,573.6	23,466.6	25,040.2	15.09%
Syngenta	2,420.9		2,420.9	1.46%
Grand Total	29,131.7	136,780.0	165,911.7	100%



INVESTOR PARENT	INVESTOR PARENT COUNTRY	BONDHOLDING	SHAREHOLDING	GRAND TOTAL	% OF TOTAL
BlackRock	United States	1,724.30	19,992.50	21,716.80	13.09%
Vanguard	United States	1,835.10	14,914.50	16,749.60	10.10%
Capital Group	United States	490.6	8,337.30	8,827.90	5.32%
State Street	United States	204.5	7,296.90	7,501.40	4.52%
Fidelity Investments	United States	805.5	2,744.10	3,549.60	2.14%
Deutsche Bank	Germany	329.4	2,865.80	3,195.20	1.93%
Geode Capital Holdings	United States		2,652.30	2,652.30	1.60%
Invesco	United States	176.5	2,447.30	2,623.80	1.58%
Franklin Resources	United States	378.9	1,976.70	2,355.50	1.42%
Sun Life Financial	Canada	112.8	2,147.40	2,260.20	1.36%
Allianz	Germany	1,843.10	202.7	2,045.80	1.23%
BPCE Group	France	58.4	1,918.30	1,976.70	1.19%
T. Rowe Price	United States	71.5	1,901.70	1,973.20	1.19%
Goldman Sachs	United States	518	1,356.70	1,874.70	1.13%
Bank of New York Mellon	United States	34.4	1,784.40	1,818.80	1.10%
Northern Trust	United States	8.3	1,752.30	1,760.60	1.06%
TIAA	United States	455.1	1,302.00	1,757.10	1.06%
Power Financial Corporation	Canada	105.2	1,646.30	1,751.40	1.06%
Government Pen- sion Fund Global	Norway		1,750.50	1,750.50	1.06%
State Farm	United States	877.6	783.8	1,661.40	1.00%
Other		19,102.5	57,006.5	76,109.2	45.87%
Grand Total		29,131.70	136,780.00	165,911.70	100%

1.3.2: Equity Investments by companies

Table 11: BASF (Top 30)

INVESTOR PARENT	INVESTOR PARENT COUNTRY	BONDHOLDING	SHAREHOLDING	GRAND TOTAL	% OF TOTAL
BlackRock	United States	113.1	5,830.00	5,943.10	23.73%
Vanguard	United States	71.4	2,054.90	2,126.30	8.49%
Deutsche Bank	Germany	7	1,320.90	1,327.90	5.30%
DZ Bank	Germany	48.1	1,089.50	1,137.60	4.54%
Flossbach & von Storch	Germany		1,028.00	1,028.00	4.11%
Capital Group	United States	0.9	868.3	869.2	3.47%
Franklin Resources	United States	0.6	859.2	859.8	3.43%
Government Pension Fund Global	Norway		660.7	660.7	2.64%
Société Générale	France	0.2	590.6	590.8	2.36%
Goldman Sachs	United States	18.8	568.5	587.2	2.35%
Deka Group	Germany	1	575	576	2.30%
Crédit Agricole	France	23.9	331.2	355.1	1.42%
Geode Capital Holdings	United States		309.5	309.5	1.24%
State Street	United States	21.1	277.5	298.6	1.19%
Assenagon	Luxembourg		296.6	296.6	1.18%
Invesco	United States	0.2	270.1	270.3	1.08%
T. Rowe Price	United States	0.5	249.2	249.7	1.00%
Baillie Gifford	United Kingdom		246.6	246.6	0.98%
Causeway Capital Holdings	United States		228.2	228.2	0.91%
TIAA	United States	0.1	211.2	211.4	0.84%
Allianz	Germany	74	133.5	207.5	0.83%
UBS	Switzerland	6.6	199.5	206.2	0.82%
Affiliated Managers Group	United States		199.7	199.7	0.80%
Manulife Financial	Canada	160	29.6	189.6	0.76%
Charles Schwab	United States		186.7	186.7	0.75%
JPMorgan Chase	United States	1.5	173.4	174.9	0.70%
Northwestern Mutual	United States	165.6		165.6	0.66%
State Farm	United States	151.6		151.6	0.61%
New York Life Insurance	United States	120.5	23.7	144.2	0.58%
Credit Suisse	Switzerland	7.7	122	129.7	0.52%
Other		579.2	4,532.8	5,111.9	20.41%
Grand Total		1,573.60	23,466.60	25,040.20	100%

Table 12: Bayer (Top 30)

INVESTOR PARENT INVESTOR PARENT COUNTRY		BONDHOLD
BlackRock United States		762
Vanguard	ard United States	
BPCE Group	France	32
Fidelity Investments	United States	659
Deutsche Bank	Germany	198
Dodge & Cox	United States	384
Sun Life Financial	Canada	66
Allianz	Germany	1,017
Société Générale	France	3
Franklin Resources	United States	242
Capital Group	United States	230
Crédit Agricole	France	243
Fidelity International	Bermuda	298
Goldman Sachs	United States	221
T. Rowe Price	United States	59
Lord, Abbett & Co	United States	560
TCW Group	United States	498
Deka Group	Germany	55
TIAA	United States	283
Bank of New York Mellon	United States	8
State Street	United States	90
State Farm	United States	399
DZ Bank	Germany	87
Schroders	United Kingdom	74
Geode Capital Holdings	United States	
Invesco	United States	141
American International Group (AIG)	United States	303
UBS	Switzerland	100
M&G	United Kingdom	252
Wellington Management	United States	289
Other		6,225
Grand Total		14,155

LDING SHAF

SHAREHOLDING

GRAND TOTAL

% OF TOTAL

5,577	(
1,717	2
1,745	1
701	1
1,044	1
 739	1
 1,030	1
 13	1
 720	7
469	7
433	(
376	(
311	6
356	ł
505	ł
	ł
	4
435	4
199	4
448	4
323	4
	;
304	;
303	;
343	;
201	;
 10	:
 212	;
 50	;
 3	2
4,343	1
22,913	;

	_
6,339	
2,095	_
1,777	
1,360	
1,242	
1,123	
1,096	
1,029	
723	_
711	_
663	
620	_
608	
577	
564	_
560	
498	
490	_
482	_
455	
413	
399	
391	_
378	_
343	_
343	
313	-
312	
302	-
292	-
10,569	
37,068	

17.10%
5.65%
4.79%
3.67%
3.35%
3.03%
2.96%
2.78%
1.95%
1.92%
1.79%
1.67%
1.64%
1.56%
1.52%
1.51%
1.34%
1.32%
1.30%
1.23%
1.11%
1.08%
1.05%
1.02%
0.93%
0.92%
0.84%
0.84%
0.81%
0.79%
28.51%
100%

" 64 percent of land used for agriculture is at risk of pollution from pesticides ,,,



Table 13: Corteva (Top 30)

INVESTOR PARENT	INVESTOR PARENT COUNTRY	BONDHOLDING	SHAREHOLDING	GRAND TOTAL	% OF TOTAL
Vanguard	United States		3,748	3,748	13.39%
BlackRock	United States		2,931	2,931	10.47%
State Street	United States		2,022	2,022	7.22%
Aristotle Capital Management	United States		1,350	1,350	4.82%
Independent Franchise Partners	United Kingdom		857	857	3.06%
Invesco	United States		855	855	3.06%
Perpetual	Australia		759	759	2.71%
Fidelity Investments	United States		656	656	2.34%
Geode Capital Holdings	United States		616	616	2.20%
Northern Trust	United States		580	580	2.07%
Starboard Value	United States		580	580	2.07%
Power Financial Corporation	Canada		499	499	1.78%
Capital Group	United States		465	465	1.66%
Bank of America	United States		410	410	1.46%
T. Rowe Price	United States		376	376	1.34%
Bank of New York Mellon	United States		366	366	1.31%
Eminence Capital	United States		349	349	1.25%
Principal Financial Group	United States		343	343	1.23%
Orix Corporation	Japan		332	332	1.18%
State Farm	United States		295	295	1.05%
Ameriprise Financial	United States		267	267	0.95%
Deutsche Bank	Germany		255	255	0.91%
Legal & General	United Kingdom		246	246	0.88%
Van Eck Global	United States		234	234	0.84%
Victory Capital	United States		229	229	0.82%
UBS	Switzerland		222	222	0.79%
Dimensional Fund Advisors	United States		213	213	0.76%
ТІАА	United States		206	206	0.73%
DuPont Capital Management	United States		199	199	0.71%
Sessa Capital IM	United States		196	196	0.70%
Other			7,332	7,332	26.20%
Grand Total			27,988	27,988	100%

Table 14: Dow Inc (Top 30)

INVESTOR PARENT	INVESTOR PARENT COUNTRY	BONDHOLDIN
Capital Group	United States	
- languard	United States	
ackRock	United States	
ate Street	United States	
eode Capital Holdings	United States	
organ Stanley	United States	
lorthern Trust	United States	
IVESCO	United States	
Power Financial Corporation	Canada	
Bank of New York Mellon	United States	
meriprise Financial	United States	
IBS	Switzerland	
Dimensional Fund Advisors	United States	
Government Pension Fund Global	Norway	
zena Investment Management	United States	
AA	United States	
tate Farm	United States	
ank of America	United States	
egal & General	United Kingdom	
Wells Fargo	United States	
American International Group (AIG)	United States	
harles Schwab	United States	
pronto-Dominion Bank	Canada	
aton Vance	United States	
1&T Bank	United States	
Schweizerische Nationalbank	Switzerland	
Goldman Sachs	United States	
Sumitomo Mitsui Trust	Japan	
Royal Bank of Canada	Canada	
mecap Management	United States	
ther		

LDING

SHAREHOLDING

GRAND TOTAL

% OF TOTAL

6,465
4,009
2,890
 2,472
733
631
552
541
482
436
427
416
 403
 402
 347
340
319
 303
 301
 285
 218
 213
 210
 185
 183
 182
 182
 180
 175
 161
8,245
32,890

	_
6,465	
4,009	
2,890	
2,472	
733	
631	
552	_
541	_
482	_
436	
427	_
416	_
403	_
402	_
347	_
340	
319	
303	
301	
285	_
218	
213	
210	
185	
183	
182	
182	
180	
175	
161	
8,245	_
32,890	

_	19.66%
_	12.19%
_	8.79%
_	7.52%
	2.23%
	1.92%
	1.68%
_	1.65%
	1.47%
	1.32%
	1.30%
	1.27%
	1.23%
	1.22%
	1.05%
	1.04%
	0.97%
	0.92%
	0.92%
	0.87%
	0.66%
	0.65%
	0.64%
	0.56%
	0.56%
	0.55%
	0.55%
	0.55%
	0.53%
	0.49%
	25.07%
	100%

Table 15: DuPont (Top 30)

INVESTOR PARENT	INVESTOR PARENT COUNTRY	BONDHOLDING	SHAREHOLDING	GRAND TOTAL	% OF TOTAL
Vanguard	United States	723	3,386	4,109	12.03%
BlackRock	United States	423	2,763	3,187	9.33%
State Street	United States	54	2,203	2,257	6.61%
Fidelity Investments	United States	50	1,264	1,314	3.85%
Sun Life Financial	Canada	14	964	978	2.86%
Bank of America	United States	0	912	912	2.67%
Orix Corporation	Japan	5	893	898	2.63%
Macquarie Group	Australia	47	796	844	2.47%
T. Rowe Price	United States	2	696	698	2.04%
Geode Capital Holdings	United States		650	650	1.90%
Government Pension Fund Global	Norway		624	624	1.83%
Franklin Resources	United States	62	531	593	1.74%
Invesco	United States	11	579	591	1.73%
Power Financial Corporation	Canada	31	530	561	1.64%
Northern Trust	United States	4	498	502	1.47%
TIAA	United States	118	345	463	1.36%
Bank of New York Mellon	United States	13	419	433	1.27%
JPMorgan Chase	United States	41	321	362	1.06%
UBS	Switzerland	22	302	323	0.95%
Goldman Sachs	United States	146	132	277	0.81%
Legal & General	United Kingdom	3	271	274	0.80%
State Farm	United States	103	170	273	0.80%
Eaton Vance	United States	0	255	255	0.75%
Morgan Stanley	United States	4	250	254	0.74%
Charles Schwab	United States	9	212	221	0.65%
Third Point	United States		207	207	0.61%
Deutsche Bank	Germany	59	142	201	0.59%
Wells Fargo	United States	15	178	194	0.57%
Ameriprise Financial	United States	16	171	187	0.55%
Primecap Management	United States		176	176	0.52%
Other		2,650	8,684	11,334	33.19%
Grand Total		4,625	29,523	34,148	100%

Table 16: Syngenta (Top 30)

INVESTOR PARENT	INVESTOR PARENT COUNTRY	BONDHOLDING
Allianz	Germany	589
Prudential Financial (US)	United States	128
UBS	Switzerland	92
Orix Corporation	Japan	86
Legal & General	United Kingdom	67
Credit Suisse	Switzerland	61
Morgan Stanley	United States	55
Zürcher Kantonalbank	Switzerland	55
Fidelity International	Bermuda	55
Lombard Odier	Switzerland	50
Macquarie Group	Australia	49
BlackRock	United States	48
New York Life Insurance	United States	46
State Farm	United States	44
Thrivent Financial	United States	36
Aviva	United Kingdom	35
Prudential (UK)	United Kingdom	33
Intesa Sanpaolo	Italy	32
HSBC	United Kingdom	32
Franklin Resources	United States	31
Allstate	United States	30
Principal Financial Group	United States	29
Ameriprise Financial	United States	26
DZ Bank	Germany	26
DJE Kapital	Germany	26
Dai-Ichi Life	Japan	25
American Financial Group	United States	25
Pictet	Switzerland	22
Unum Group	United States	21
Wells Fargo	United States	20
Other		545
Grand Total		2,421

DLDING SHAREHOLDING GRAND TOTAL

% OF TOTAL

LDING		,
	 589	2
	 128	5
	 92	
	 86	3
	 67	2
	 61	2
	 55	2
	 55	2
	 55	2
	 50	2
	 49	2
	 48	2
	 46	— — 1.
	 44	— — 1.
	 36	1.
	 35	— — 1.
	 33	
	 32	— — 1.
	 32	
	 31	
	 30	1.
	 29	
	 26	<u> </u>
	 26	— — 1.
	 26	— — 1.
	 25	— — 1.
	 25	1.
	 22	
	 21	
	 20	
	 545	2
	2,421	1

24.35%
5.27%
3.81%
3.57%
2.75%
2.51%
2.29%
2.27%
2.26%
2.08%
2.02%
2.00%
1.90%
1.82%
1.49%
1.45%
1.37%
1.34%
1.31%
1.29%
1.24%
1.20%
1.08%
1.07%
1.06%
1.04%
1.03%
0.92%
0.87%
0.83%
22.52%
100%



Call for action

Court cases against pesticide producers due to their hazardous impacts become more commonplace. The evidence is mounting that biodiversity and people alike suffer the consequences of pesticides, from rapid declines in insect populations, to asthmas and cancers in humans. Regardless of momentum from global governments to start implementing bans on the most hazardous pesticides, banks and investors such as Blackrock, Vanguard, Citigroup, Bank of America and HSBC continue to write up loans or underwrite shareholdings of the six biggest producers.

1	Lend trans along to ac Highl
2	Com plans Haza less f
3	Gove to ho lendi Haza

lers to radically transform disclosure and sparency of their lending for pesticides; and gside shareholders to hold pesticide companies count with the aim of ending the production of ly Hazardous Pesticides.

panies must commit to ambitious and timebound s for phasing out the production of Highly ardous Pesticides and switching to manufacturing harmful alternatives such as biopesticides.

ernments should re-write the rules of finance old banks liable for the damage caused by their ing to pesticide companies that produce Highly ardous Pesticides.

Bankrolling Pesticides

5.0 Appendix: Methodology (Profundo)



Types of finance

included in the research. Financial institutions can invest in companies through a number of modalities. Financial institutions can provide credit to a company. This includes providing loans and the underwriting of and the implications for the study.

This section describes the types of finance share and bond issuances. Investments by the means of holding shares and bonds of a company were not covered by this research. This section outlines the different types of financing, how they were researched

5.1.1 Corporate loans

The easiest way to obtain debt is to borrow money. In most cases, money is borrowed from commercial banks. Loans can be either short-term or long-term in nature. Short-term loans (including trade credits, current accounts, leasing agreements, et cetera) have a maturity of less than a year. They are mostly used as working capital for day-to-day operations. Short-term debts are often provided by traded on the stock exchange, this is called a seca single commercial bank, which does not ask for ondary offering of additional shares. substantial guarantees from the company.

year, but generally of three to ten years. Long-term corporate loans are in particular useful to finance expansion plans, which only generate rewards after some period of time. The proceeds of corporate loans can be used for all activities of the company. Often long-term loans are extended by a loan syndicate, which is a group of banks brought together by one or more arranging banks. The loan syndicate will only undersign the loan agreement if the company can provide certain guarantees that interest and repayments on the loan will be fulfilled.

Project finance One specific form of corporate loan is project finance. This is a loan that is earmarked for a specific project.

General corporate purposes / working capital Often a company will receive a loan for general corporate purposes or for working capital. On occasion while the use of proceeds is reported as general corporate purposes, it is in fact earmarked for a certain project. This is difficult to ascertain.

5.1.2 Share issuances

Issuing shares on the stock exchange gives a company the opportunity to increase its equity by attracting many new shareholders or increase the equity from its existing shareholders.

When a company offers its shares on the stock exchange for first time, this is called an Initial Public Offering (IPO). When a company's shares are already

To arrange an IPO or a secondary offering, A long-term loan has a maturity of at least one a company needs the assistance of one or more (investment) banks, which will promote the shares and find shareholders. The role of investment banks in this process therefore is very important.

> The role of the investment bank is temporary. The investment bank purchases the shares initially and then promotes the shares and finds shareholders. When all issued shares that the financial institution has underwritten are sold, they are no longer included in the balance sheet or the portfolio of the financial institution. However, the assistance provided by financial institutions to companies in share issuances is crucial. They provide the company with access to capital markets and provide a guarantee that shares will be bought at a pre-determined minimum price.

5.1.3 Bond issuances

Issuing bonds can best be described as cutting a large loan into small pieces and selling each piece separately. Bonds are issued on a large scale by governments, but also by corporations. Like shares, bonds are traded on the stock exchange. To issue bonds, a company needs the assistance of one or more (investment) banks which underwrite a certain amount of the bonds. Underwriting is in effect buying with the intention of selling to investors. Still, in case the investment bank fails to sell all bonds it has underwritten, it will end up owning the bonds.





Financial institution financing of loans and underwriting services

During the financial data collection process, this research utilized financial databases (Bloomberg, Refinitiv (formerly known as Thomson EIKON), TradeFinanceAnalytics, and IJGlobal), company reports (annual, interim, quarterly) and other company publianalyst reports. Corporate loans, credit and underwriting facilities provided to the selected companies was researched for the period 2015-2021 (June).

Financial databases often record loans and issuance underwriting when these are provided by a syndicate of financial institutions. Company reports and publications, company register filings, and the media will also provide information on loans provided bilaterally, i.e. between one bank and the company in question. The level of detail per deal often varies. Some sources may omit the maturity date or term of the loan, the use of proceeds, or even the exact issue date. Financial databases often do not report on the proportions of a given deal that can be attributed to the participants in deal. In such instances, this research rules of thumb described below.

Individual bank contributions to syndicated loans and underwriting (bond & share issuance underwriting) were recorded to the largest extent possible where these details where included in financial database, or company or media publications.

In many cases, the total value of a loan or issuance is known as are the banks that participate in this loan or issuance. However, often the amount that each individual bank commits to the loan or issuance has to be estimated.

In the first instance, this research attempted to calculate each individual bank's commitment on the basis of the fee they received as a proportion of the denominator is 0.769800358. total fees received by all financial institutions. This proportion (e.g. Bank A received 10% of all fees) was then applied to the known total deal value (e.g. 10% x US\$ 10 million = US\$ 1 million for Bank A).

Where deal fee data was missing or incomplete, this research used the bookratio. The bookratio (see formula below) is used to determine the spread over bookrunners and other managers.

Bookratio:

number of participants - number of bookrunners

number of bookrunners

The table below shows the commitment assigned to bookrunner groups with our estimation method. When the number of total participants in relation to the number of bookrunners increases, the share that is attributed to bookrunners decreases. This precations, company register filings, as well as media and vents very large differences in amounts attributed to bookrunners and other participants.

Commitment to assigned bookrunner groups

BOOK RATIO	LOANS	ISSUANCES
>1/3	75%	75%
>2/3	60%	75%
>1.5	40%	75%
> 3.0	<40%*	<75%*

calculated an estimated contribution based on the * In case of deals with a bookratio of more than 3.0, we use a formula which gradually lowers the commitment assigned to the bookrunners as the bookratio increases. The formula used for this:

1
√bookratio
1 443375673

The number in the denominator is used to let the formula start at 40% in case of a bookratio of 3.0. As the bookratio increases the formula will go down from 40%. In case of issuances the number in the

Endnotes

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info@portfolio.earth

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