

Commodity Export Market Indicators Scoping Analysis
 U.S. Environmental Protection Agency
 Office of Resource Conservation and Recovery
 February 2015

Background

EPA’s contractor explored the feasibility of developing indicators related to export markets for recycled commodities. In 2013, EPA’s contractor developed indicators relating commodity recycling rates with commodity prices, which generated interest in how export markets may influence these indicators. This scoping analysis memorandum presents the results of research regarding data availability, data gaps, data cost, and other work performed for the following two indicators:

- Exploration of the impact of export markets on prices of selected commodities and their price volatility (Table 1).
- Exploration of data regarding supply and demand for the selected commodities and how supply and demand impact price, recycling rates, and disposal (Table 2).

Indicators and Observations

Table 1. Export Market Impact on Price of Commodities

Indicator A Name	Exploration of the impact of export markets on price of selected commodities and their volatility.
Description	This could include export data and pricing data for 1) overall waste and scrap, 2) each commodity separately (e.g. paper, plastics, metals), or 3) specifics within each commodity (e.g., ONP, OCC, steel cans, aluminum cans, PET, HDPE). Comparing export levels over time to price levels over time will explore the relationship between the two variables.
Interest	This information could supplement a previously developed indicator exploring recycling rates of selected commodities and commodity price.
Caveats and Limitations	Data availability is limited for individual commodity export levels and pricing.
Data Location	<p>Commodity Pricing:</p> <ul style="list-style-type: none"> • Recycling Markets: Historical data charts for pricing of recovered plastics (PET, HDPE, LLDPE, comingled), glass, aluminum cans, metal cans, as well as recovered paper (recyclingmarkets.net) • Paper Recycling Online: Paper pricing data (recycle.cc/freepapr.htm) • BLS: Commodity pricing data, commodities listed as “Plastic resins and materials”, “Iron and steel scraps” (with Metals and Metal Products). <p>Export Data:</p> <ul style="list-style-type: none"> • International Trade Administration: NAICS Waste and Scrap code export data, combines all commodities to waste and scrap (tse.export.gov) (see screenshot in appendix) • Paper Recycling Online: Scrap paper export data from Paper Recycling Online (recycle.cc/freepapr.htm)

	<ul style="list-style-type: none"> • USGS: Metal export data from USGS publication (Includes Aluminum, Chromium, Copper, Iron and Steel, Lead, Magnesium, Nickel, Tin, Titanium, Zinc) (http://minerals.usgs.gov/minerals/pubs/commodity/recycle) (see screenshot in appendix) • PIERS: Export data from the Port Import/Export Reporting Services (https://www.piers.com/data) • Trading Economics: NAICS Waste and Scrap code export data, combines all commodities to waste and scrap (http://www.tradingeconomics.com/united-states/exports-of-naics-scrap-waste)
<p>Available Years and Gaps</p>	<p>Commodity Pricing:</p> <ul style="list-style-type: none"> • Recycling Markets <ul style="list-style-type: none"> • Aluminum, steel cans, HDPE, and PET (2005-present) • ONP, OCC (2002-present) • Paper Recycling Online: Paper including: OCC, News, Mechanical, Deinking, Pulp Subs and Mixed back to 1992. • BLS: 2004-2014 monthly <p>Export Levels:</p> <ul style="list-style-type: none"> • International Trade Administration: 1989-2013 quarterly and annual • Paper Recycling Online: Paper including: OCC, News, Mechanical, Deinking, Pulp Subs and Mixed back to 1992. • USGS: 1998-2011 annual • PIERS: historical rolling 12 months, 2006 to present with pro subscription • Trading Economics: 2003-2014 monthly
<p>Data Cost</p>	<p>Commodity Pricing:</p> <ul style="list-style-type: none"> • Recycling Markets: \$395/year • Paper Recycling Online: \$308/year • BLS: Free <p>Export Levels:</p> <ul style="list-style-type: none"> • International Trade Administration: Free • Paper Recycling Online: \$308/year • USGS: Free • PIERS: \$1788-\$2988/year (plus \$299/month Pro option) • Trading Economics: To export data, \$49/1 week trial, \$199/month after
<p>Other Work Performed</p>	<p>US Export/Import and Recycling Information: American Recycling: Exporting Our Way to a Greener Tomorrow</p> <p>This is the most applicable report. It includes some discussion on export levels of recyclable commodities and also discusses how the export levels may impact commodity price for several commodity types.</p> <p>http://www.mswmanagement.com/MSW/Articles/American_Recycling_Exporting_Our_Way_to_a_Greener_16365.aspx</p> <p>Export of MSW in Maryland:</p> <p>This report provides calendar year 2012 data about MSW in Maryland. It includes data for total amount of MSW and recyclable material exported out of the state (primarily to VA and PA) for disposal or recycling. This report does not, however, assess how exporting recyclable commodities may affect commodity price within the state of Maryland.</p> <p>http://www.mde.state.md.us/programs/Land/RecyclingandOperationsprogram/CountyCoordinatorResources/Documents/%2713%20MSWMR.pdf</p>
<p>Overall</p>	<p>Figure 1, below, depicts an indexed line graph of the value of U.S. exports of Scrap and Waste (from</p>

<p>Observations</p>	<p>International Trade Administration data) in \$2013 per ton, which values are then indexed to 1990. This figure also includes the available commodity values for OCC, ONP, HDPE, PET, steel cans, and PET, which are all components of the “scrap and waste” exports. All of the data are indexed to 1990 (i.e., a value of “3” indicates the value is three times (300%) the 1990 value, a value of “0.75” indicates the value is three-quarters (75 percent) of the 1990 value.</p> <p>The commodity pricing data have some of the same peaks in 1995 and 2011 (and same valleys in 2009) as the value of U. S. scrap and waste exports, indicating there may be some correlation between exports and commodity prices. Most commodity-level export data seem to be available at a fee, but it does appear exports of commodities are positively correlated to commodity prices (as one goes up, the other goes up) and could also be correlated to recycling rates. It seems that the foreign demand for recyclable commodities could be a big driver of commodity price. Figure 1 shows how foreign exports tend to increase and decrease in a similar manner to commodity prices. This correlation does not necessarily mean that the increase in exports are driving the price up, but it is very possible an increase in foreign demand could drive the price up, and this could be indicative of the increase in foreign exports.</p>
----------------------------	--

Figure 1. Value of U.S. Exports of Scrap and Waste and Commodity Prices (2013 \$)

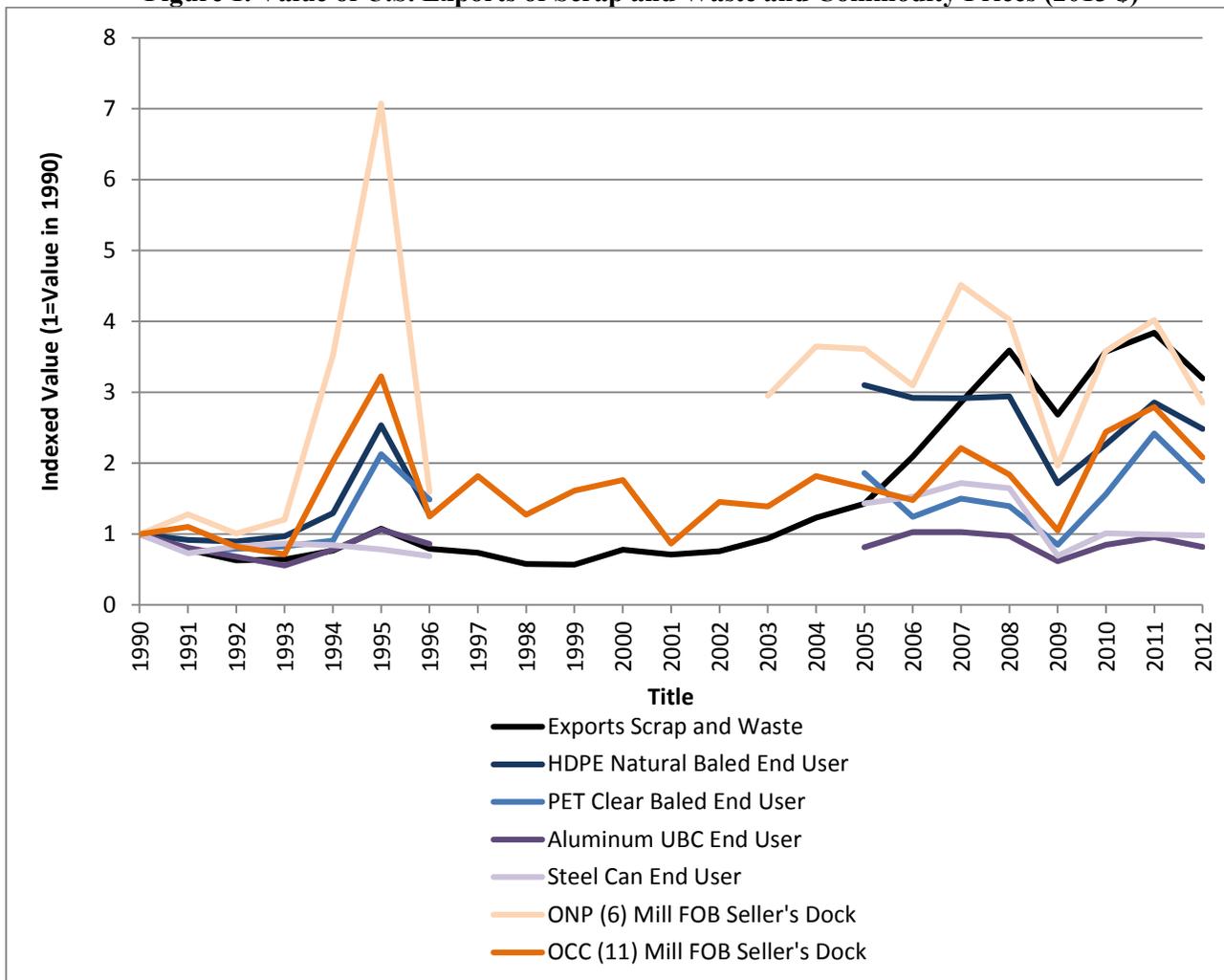


Table 2. Supply and Demand of Commodities and Impact on Price, Recycling Rates, and Disposal

Indicator B Name	Exploration of data regarding supply and demand for the selected commodities and how they impact commodity price, recycling rates, and disposal.
Description	Supply of a recyclable commodity can be equated to the amount recovered. Demand is more complex to measure and is the amount of material desired by end users of the recyclable commodity. Demand could include both U.S.-based and foreign end users of the commodity.
Interest	Supply and demand can impact the commodity price. For example, assuming a competitive market in which supply and demand are elastic (which is expected for this commodity market), decreases in supply and increases in demand increase commodity price. This could also have an impact on recycling rates and disposal as commodity price may be a driver of recycling rates. In short, supply and demand could provide another perspective to understand the changes in commodity price, recycling rates, and disposal.
Caveats and Limitations	While supply is measurable, demand would probably be difficult to quantify in such a way that allows for the development of an indicator.
Data Location	<p>Recycling Amount and Rates (overall and by commodity):</p> <ul style="list-style-type: none"> • MSW Characterization Report <p>Disposal</p> <ul style="list-style-type: none"> • MSW Characterization Report <p>Commodity Pricing:</p> <ul style="list-style-type: none"> • Recycling Markets: Historical data charts for pricing of recovered plastics (PET, HDPE, LLDPE, comingled), glass, aluminum cans, metal cans, as well as recovered paper (recyclingmarkets.net) • Paper Recycling Online: Paper pricing data (recycle.cc/freepapr.htm) • BLS: Commodity pricing data, commodities listed as “Plastic resins and materials”, “Iron and steel scraps” (with Metals and Metal Products), and no reference to paper <p>Export Data:</p> <ul style="list-style-type: none"> • International Trade Administration: NAICS Waste and Scrap code export data, combines all commodities to waste and scrap (tse.export.gov) • Paper Recycling Online: Scrap paper export data from Paper Recycling Online (recycle.cc/freepapr.htm) • USGS: Metal export data from USGS publication (Includes Aluminum, Chromium, Copper, Iron and Steel, Lead, Magnesium, Nickel, Tin, Titanium, Zinc) (http://minerals.usgs.gov/minerals/pubs/commodity/recycle) • PIERS: Export data from the Port Import/Export Reporting Services (https://www.piers.com/data) • Trading Economics: NAICS Waste and Scrap code export data, combines all commodities to waste and scrap (http://www.tradingeconomics.com/united-states/exports-of-naics-scrap-waste)
Available Years and Gaps	<p>Recycling Amount and Rates (overall and by commodity):</p> <ul style="list-style-type: none"> • MSW Characterization Report: 1960-2013 annual <p>Disposal</p> <ul style="list-style-type: none"> • MSW Characterization Report: 1960-2013 annual <p>Commodity Pricing:</p>

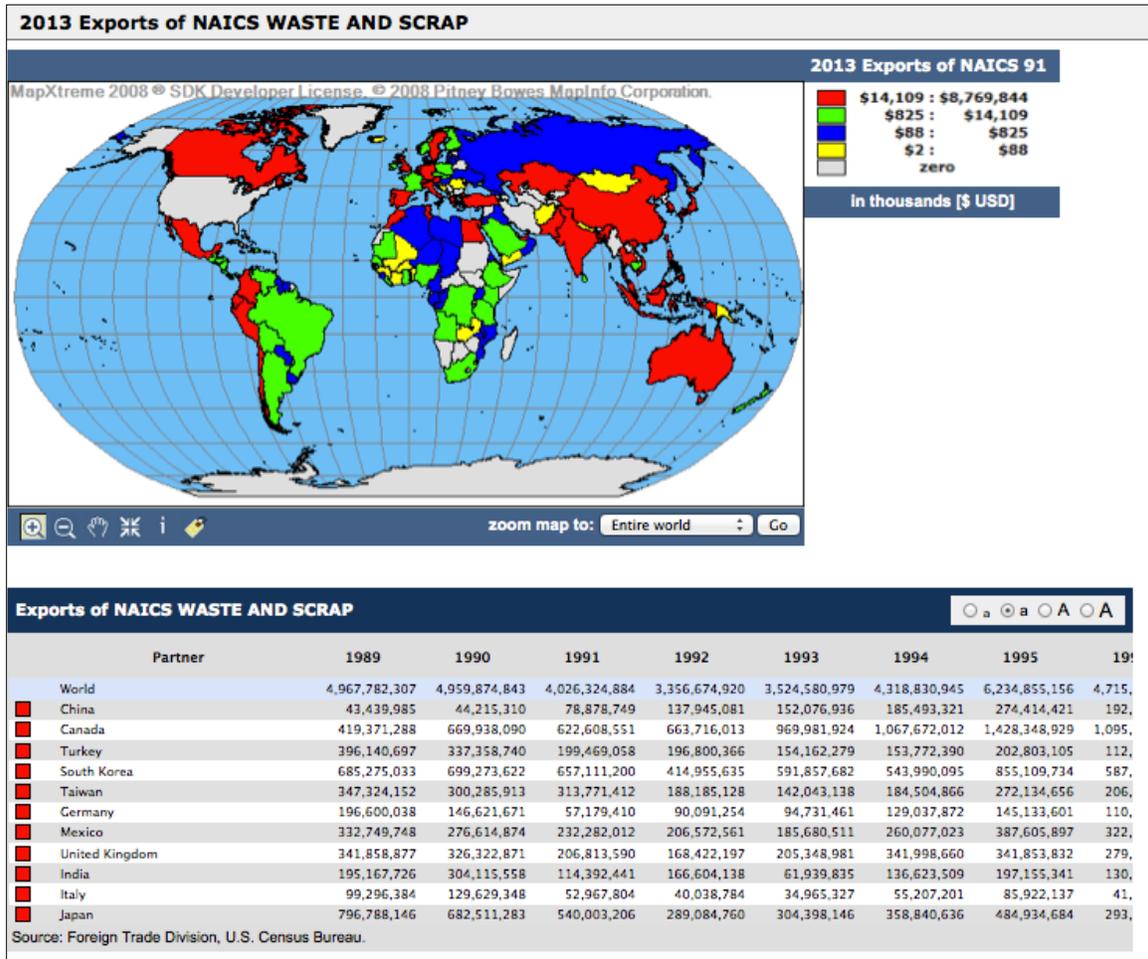
	<ul style="list-style-type: none"> • Recycling Markets <ul style="list-style-type: none"> • Aluminum, steel cans, HDPE, and PET (2005-present) • ONP, OCC (2002-present) • Paper Recycling Online: Paper including: OCC, News, Mechanical, Deinking, Pulp Subs and Mixed back to 1992. • BLS: 2004-2014 monthly <p>Export Levels:</p> <ul style="list-style-type: none"> • International Trade Administration: 1989-2013 quarterly and annual • Paper Recycling Online: Paper including: OCC, News, Mechanical, Deinking, Pulp Subs and Mixed back to 1992. • USGS: 1998-2011 annual • PIERS: historical rolling 12 months, 2006 to present with pro subscription • Trading Economics: 2003-2014 monthly
<p>Data Cost</p>	<p>Recycling Amount and Rates (overall and by commodity):</p> <ul style="list-style-type: none"> • MSW Characterization Report: Free <p>Disposal:</p> <ul style="list-style-type: none"> • MSW Characterization Report: Free <p>Commodity Pricing:</p> <ul style="list-style-type: none"> • Recycling Markets: \$395/year • Paper Recycling Online: \$308/year • BLS: Free <p>Export Levels:</p> <ul style="list-style-type: none"> • International Trade Administration: Free • Paper Recycling Online: \$308/year • USGS: Free • PIERS: \$1788-\$2988/year (plus \$299/month Pro option) • Trading Economics: To export data \$49/1 week trial, \$199/month after
<p>Other Work Performed</p>	<p>Recyclable Materials Supply and Demand Workpaper: Pennsylvania Markets Center Study The report assesses the supply and demand of each recyclable commodity within the state of Pennsylvania. It includes quantitative supply data for each commodity (amount disposed and percent recovered). Demand is discussed more qualitatively and potential end users of the recyclable commodity are listed and included in the discussion. http://www.dep.state.pa.us/dep/deputate/airwaste/wm/recycle/market/docs/Supply_and_Demand_Workpaper.pdf</p> <p>US Export/Import and Recycling Information: American Recycling: Exporting Our Way to a Greener Tomorrow This report includes some discussion on export levels of recyclable commodities and also discusses how the export levels may impact commodity price for several commodity types. http://www.mswmanagement.com/MSW/Articles/American_Recycling_Exporting_Our_Way_to_a_Greener_16365.aspx</p>
<p>Overall Observations</p>	<p>There could be value in developing indicators of export data of commodities to commodity price, recycling rates, and disposal; however, the demand side would be difficult to explore quantitatively because this is not typically measured. This is basically what is outlined in Table 1 above with the addition of developing indicators linking commodity exports to recycling rates and disposal.</p>

EPA's contractor scoped whether there was available data to perform a quantitative analysis of the exploration of the impact of export markets on price of selected commodities and their volatility. Data are available for this analysis, and an initial look at these data show that commodity prices and the size of the export market seem to follow similar patterns in increases and decreases. EPA's contractor also scoped whether supply and demand data for commodities could be considered quantitatively to see how they impact commodity price, recycling rates, and disposal; however, there is insufficient data to quantifiably measure demand for recyclable commodities.

Appendix A: Screenshots of Available Export Data

Figure 1. International Trade Administration Screenshot

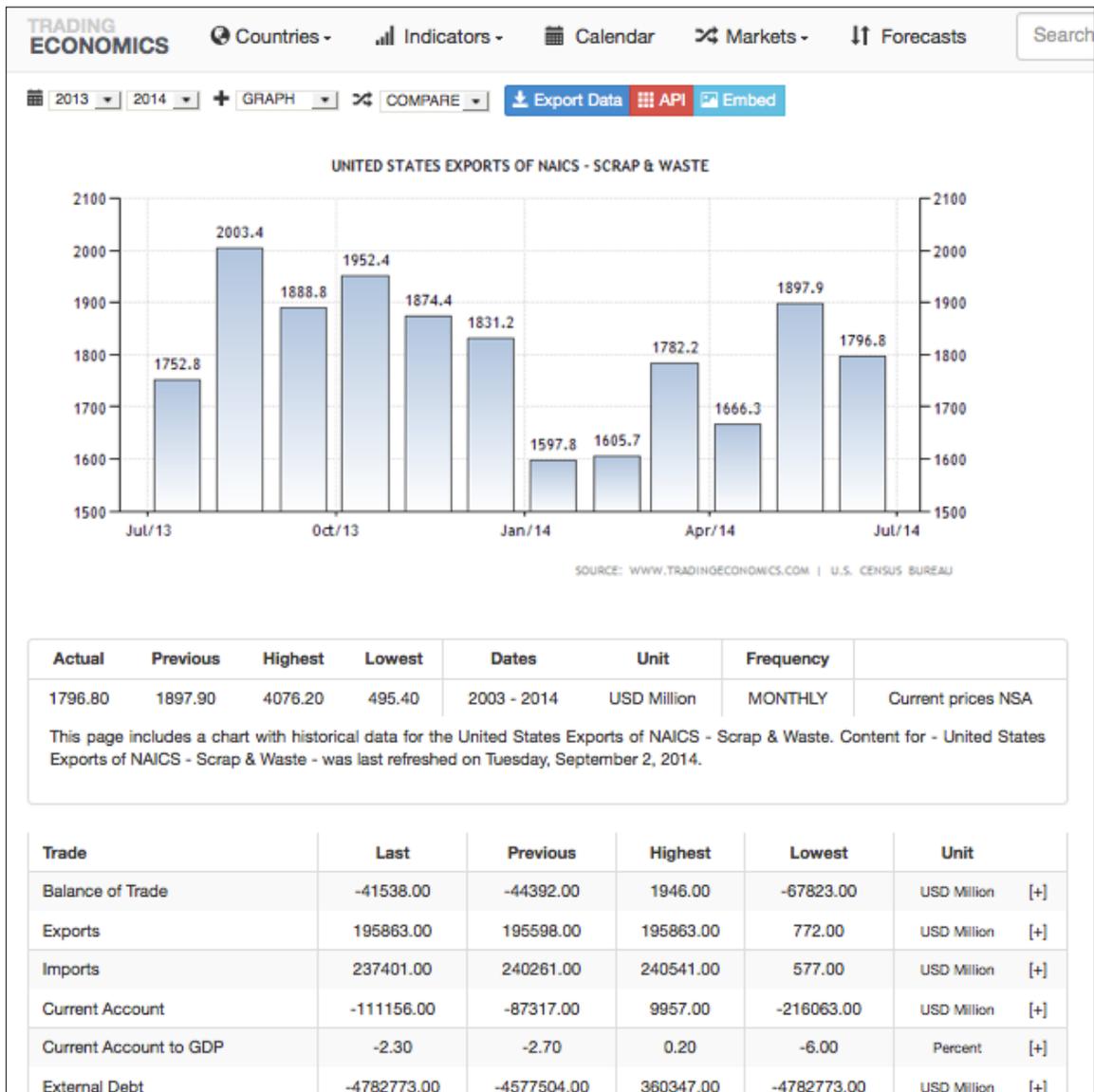
This shows exports from the United States to receiving countries (which is why the US appears as 0).



	A	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	
1	Partner																	
2	World	4485533303	358006329	3618671396	5115240206	4791923196	5187377954	6563709317	8818009126	1.0602E+10	1.6011E+10	2.2482E+10	2.9342E+10	2.1857E+10	2.9572E+10	3.2786E+10	2.7837E+10	2.3804E+10
3	China	194445859	251271888	360272424	739783977	1091346189	1212092627	1944263839	2514460029	3692189081	6048554599	7476091413	7655217157	7176459255	8602885525	1.1555E+10	9525043866	8769843117
4	Canada	1145427589	972011537	959101941	1119488069	930747877	1086772449	1240712112	1611524675	1593544878	2363189360	3041457722	4054102711	2649057227	3107216711	3792500601	2865488336	2050572776
5	Turkey	72932588	52628842	4160668	6438014	2230248	41321370	75980909	140202091	310331306	566271521	913972481	2015149480	910838978	1535879667	2440953106	2513349660	1890235096
6	South Korea	657671793	340172561	442071175	561948441	424328982	454922108	605631645	808104622	719715593	788064418	1375257885	2004337115	1371547284	1595611945	2147183695	1860334937	1561335148
7	Taiwan	238965496	172252941	150519308	188294043	191365869	200568007	214076725	265620296	344502706	573011981	1105436939	1611446088	913091023	1375587699	1899661624	1704186403	1391961086
8	Germany	134820540	126848708	113106393	163949530	137673991	132736976	93188063	162395411	295472190	660472227	928125801	960021939	373974386	688651764	1083647670	955049778	1186237670
9	Mexico	475365823	363505080	327131090	436800145	298627450	447398678	445056479	717835825	893431292	1234764090	816011440	1058061560	620083173	967259598	1001361034	945756728	878690637
10	United Kingdom	272807714	340788435	400206985	693344081	619216349	503189717	494679816	732717403	581940316	592923222	1310005764	1849159420	703909710	1136680794	1396396686	852533035	852439398
11	India	96178611	85824463	93022682	109994702	140203926	138243678	172956925	238597374	398508294	365641292	644967127	666464414	760932452	773814955	1041178807	1039678457	779306310
12	Italy	36690547	58885238	49530748	70623167	77199357	91386772	100330294	135228393	187787360	294490443	348613251	413413298	346276381	677457260	919768162	752278323	648066479
13	Japan	246318464	178080417	181490613	283013511	210070810	160982153	193569938	228448975	259666286	492654008	876148942	1039623004	306282175	550076631	654967156	513784463	572083336
14	Hong Kong	210985205	147089493	105341254	120867078	135618244	153766700	166011544	191145596	240568253	411193641	544548521	798863255	605243992	628718667	550059969	440720181	433412292
15	Belgium	75229407	99010538	83430780	122966616	99301845	70986414	62350370	79714180	75138105	146426572	236155168	277298576	196541125	335810708	392891109	428493126	323866527
16	Egypt	165843	252244	64702	618440	129775	791377	701226	12777401	52830418	99948033	147054057	402188108	91712351	229031834	389461178	151981118	311743233
17	Indonesia	45265899	28232753	42486511	74776642	39034849	47493048	51755766	74598864	99742421	109822243	156816945	276570523	165219148	244017973	170848297	280073419	295821897
18	Malaysia	40362214	21186648	11078242	16865253	42413308	41684126	84184380	87383403	115497333	211270928	378350821	540358468	206365687	372799178	457037628	356809453	224671064
19	Switzerland	2682935	2128883	2580500	11578763	16762361	40757474	70741408	75843931	41865571	141961712	478859989	1731347230	3263911178	5096773543	704781464	969318960	214124666
20	Viet Nam	1160644	1289819	1341018	2765447	5648961	6491390	6784968	12261697	22303671	25363182	90759438	145155919	230350166	281090949	224423365	239634658	208776882
21	Pakistan	2279236	3076428	3080805	3734712	4362170	4111483	5337131	5088074	14950842	22308225	77297297	76327921	104100703	93039465	146888838	196634475	184814412
22	Netherlands	12242679	13587885	9192101	22133487	27692126	17629544	27236765	32923930	36976364	38315120	109171510	101090455	42175461	88024885	176168585	151396682	134428104
23	Peru	3604492	3509500	3994726	6513161	4900140	3062105	12131397	44082762	15374566	19376995	7168171	71274796	47859260	103252749	95939231	85956514	130802247
24	Sweden	38799892	42443217	26116330	20156813	25005992	33546434	31971774	13374385	20976351	43391184	57273980	49219954	33610782	59776048	108969376	123054856	97553678
25	Thailand	43835131	33279165	30479079	59676251	33523909	64389318	124384377	199156583	134045298	169503092	345969662	579219498	163200467	265261651	421481329	182224091	76647221
26	Spain	65684325	59051905	29939327	37349420	14764212	28836418	44783368	35698896	38630625	58686034	222629498	155481260	63572940	92520260	129103039	94148738	58509988
27	Ecuador	2441606	2158098	2054874	4779896	2746523	2072923	14246540	5621351	2901640	2113140	3749992	2929563	15503650	69533703	55224317	52669992	45124729
28	Austria	4331128	535244	1233353	2187746	1063133	499044	1434640	1523509	7413257	16545895	10705241	11232312	11605802	27945293	46208510	47626900	36288036
29	Bangladesh	936930	3165638	6355475	5679788	7812831	7626813	13428440	10681281	16625675	33404921	49281451	49517184	39727239	18605304	27408388	21125022	29178550
30	Morocco	227976	474297	354787	246710	496493	443170	328408	78053	32054	152802	119329	18757976	140700	314979	19849498	10809283	27887946
31	El Salvador	8686620	6632751	4962928	8640313	7349772	13096310	8546326	9847738	14435732	15496124	19804062	24931676	21172126	28715401	33741071	23895677	27758321
32	Chile	3489294	2878014	1863266	3349822	3280885	6004521	5086858	17703083	17234365	17067936	40813896	24271568	28441232	36665877	20801414	20611440	21659331
33	Australia	4494498	3323883	5635721	9114268	4589200	4599215	3639492	4500456	7339880	23395040	36969222	36365053	14199777	51800440	15857548	6759084	20114818
34	Greece	800920	971531	693302	432410	4023661	478540	452167	4727738	53052041	118878344	161826974	64950953	49960591	58650899	42075381	17620829	

DATA_Exports_of_NAICS_WASTE_AND

Figure 3. Trading Economics Screenshot



TRADING ECONOMICS 🌐 Countries - 📊 Indicators - 📅 Calendar 🔄 Markets - ⬆️ Forecasts Search					
External Trade	Last	Reference	Previous	Highest	
Imports of Total Energy-related Petroleum Products	26599392.00 USD THO	Jun/14	27956136.00	52397754.00	[+]
Imports of Crude Petroleum Value	20625563.00 USD THO	Jun/14	20487021.00	42322157.00	[+]
Imports of Consumption of Steel Products	3150759.00 USD THO	Jun/14	3403217.00	4054735.00	[+]
Imports of Consumption of Carbon Steel Produc	2100361.00 USD THO	Jun/14	2357378.00	2864757.00	[+]
Imports of Consumption of Alloy Steel Products	708224.00 USD THO	Jun/14	678677.00	840889.00	[+]
Imports of Consumption of Stainless Steel Pro	342174.00 USD THO	Jun/14	367162.00	617797.00	[+]
Imports of Crude Petroleum Quantity	213931.00 BARREL THO	Jun/14	213143.00	344729.00	[+]
Imports of Goods On A Balance of Payments Basis	199426.00 USD Million	Jun/14	202232.00	207355.00	[+]
Imports of Goods - 3 Months Moving Average	199308.00 USD Million	Jun/14	199668.00	199668.00	[+]
Exports of Goods & Services	194989.00 USD Million	Jun/14	194253.00	194989.00	[+]
Imports of Total Nonpetroleum	167631.30 USD Million	Jun/14	169580.47	169580.47	[+]
Imports of Non Petroleum	167631.00 USD Million	Jun/14	169580.00	169580.00	[+]
Imports of NAICS - Manufacturing	164380.80 USD Million	Jun/14	167593.80	169685.80	[+]
Imports of Manufactured Goods	162643.00 USD Million	Jun/14	165074.00	166215.00	[+]
Exports of Goods On A Balance of Payments Basis	139757.00 USD Million	Jun/14	139318.00	143176.00	[+]
Exports of Goods - 3 Months Moving Average	136219.00 USD Million	Jun/14	135817.00	136219.00	[+]
Imports from APEC	131196.70 USD Million	Jun/14	130005.60	134836.80	[+]
Exports of Total Nonagriculture	122982.72 USD Million	Jun/14	122836.78	122982.72	[+]
Exports of Non Petroleum	122815.00 USD Million	Jun/14	122509.00	122964.00	[+]
Imports from OECD	112077.10 USD Million	Jun/14	113571.30	113597.70	[+]
Exports of NAICS - Manufacturing	102537.10 USD Million	Jun/14	102837.40	105162.00	[+]
Exports of Manufactured Goods	102537.00 USD Million	Jun/14	102837.00	105618.00	[+]
Exports to OECD	87464.30 USD Million	Jun/14	86816.00	88246.80	[+]
Exports to APEC	84367.10 USD Million	Jun/14	84131.30	89294.30	[+]
Imports from Asia	84284.00 USD Million	May/14	84747.60	88660.80	[+]