

# INDUSTRIAL CAPABILITIES OF NORTH AMERICA

*A REPORT ON 'GREEN' SHIP RECYCLING CAPACITY IN THE  
UNITED STATES, CANADA AND MEXICO*

PREPARED BY BASEL ACTION NETWORK  
NOVEMBER 2012



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The Basel Action Network (BAN) is the world's only organization focused on confronting the global environmental injustice and economic inefficiency of toxic trade (toxic wastes, products and technologies) and its devastating impacts. Working at the nexus of human rights and environment, we confront the issues of environmental justice at a macro level, preventing disproportionate and unsustainable dumping of the world's toxic waste and pollution on our global villages' poorest residents. At the same time we actively promote the sustainable and just solutions to our consumption and waste crises – banning waste trade, while promoting green, toxic free and democratic design of consumer products. Learn more by visiting [www.ban.org](http://www.ban.org).

This report was developed in direct response to legislation proposed by the European Commission in March 2012 regarding new ship recycling policies and procedures, and to address one major insufficiency of that legislation – acknowledging existing “green” ship recycling capabilities of North America.

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## I. EXECUTIVE SUMMARY

The European Commission proposed new legislation to the European Parliament in March 2012, concerning the environmentally sound and safe recycling of end-of-life ships, with particular focus on large commercial sea-going vessels that operate under a European Union (EU) flag state. The proposed legislation seeks to remove end-of-life ships from the European Waste Shipment Regulation,<sup>1</sup> which is the EU's implementing legislation of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, and the Basel Ban Amendment, which prohibits the export of hazardous waste from EU Member States to non-OECD countries.

The Waste Shipment Regulation rightly characterizes end-of-life vessels as hazardous waste, as these vessels are known to contain large volumes of hazardous materials. In keeping with the Waste Shipment Regulation and the adopted Ban Amendment, these end-of-life ships must be recycled in OECD countries. However, it is widely recognized that EU Member States have not effectively enforced the Waste Shipment Regulation to end-of-life vessels, as reported by the Commission in 2009 – more than 90% of EU-flagged ships were dismantled in non-OECD countries, with a majority going to the shipbreaking beaches in South Asia.<sup>2</sup>

Realizing that EU Member States have failed to adequately enforce the existing regulation, the Commission has sought to circumvent this regulation altogether, rather than to assist Member States in improving enforcement mechanisms. The Commission's primary justification for developing new legislation to oust end-of-life ships from the Waste Shipment Regulation is due to insufficient ship recycling capacity in OECD countries that is legally accessible to ships flying a flag of a member state to the European Union.

This report does not attempt to address all insufficiencies of the Commission's proposed legislation, but solely focuses on the primary justification for the abandonment of the Waste Shipment Regulation – that is the Commission's claim that there is insufficient ship recycling capacity in OECD countries. In proper context, if there exists sufficient capacity in OECD countries to handle EU-flagged end-of-life inventory, then there is no sound basis for abandoning the existing Waste Shipment Regulation, but rather ever more reason to improve existing regulations to assist Member States in directing end-of-life ships to environmentally sound and safe OECD facilities.

While the Commission assessed and reported capacity limitations in OECD countries in Europe and Turkey in their 2012 Impact Assessment,<sup>3</sup> they failed to assess, report or even consider available capacity in North America. In a 2007 Report however, the Commission acknowledged, "... *the*

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<sup>1</sup> Regulation (EC) No 1013/2006 of the European Parliament and of the Council of 14 June 2006 on shipments of waste.

<sup>2</sup> Proposal for a Regulation of the European Parliament and the Council on Ship Recycling, 23 March 2012

<sup>3</sup> COMMISSION STAFF WORKING DOCUMENT IMPACT ASSESSMENT Accompanying the document Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on ship recycling, March 2012

*majority of active green recycling capacity is located in the USA.*"<sup>4</sup> However, this OECD capacity was incorrectly identified by the Commission as closed to the international market; the same incorrect assumption was made by the Commission for capacity in Canada and Mexico.

This report investigates current and foreseeable environmentally sound and safe ship recycling capacity in North America. This capacity is considered "green and safe" by the Commission's standards<sup>5</sup> and resides in OECD Member States, thereby supporting EU implementation of the Basel Ban Amendment via the Waste Shipment Regulation to end-of-life ships.

## SUMMARY FINDINGS

The EU-flagged fleet is anticipated to demand "green" ship recycling capacity of 1.64 million light displacement tons (LDT)<sup>6</sup> per year (assuming no net loss of end-of-life vessels due to reflagging) during the years 2012-2030.<sup>7</sup> European and Turkish ship recycling markets can accommodate EU-flagged tonnage of approximately 1.007 million LDT throughput per year, leaving an estimated 633,000 LDT that must seek environmentally sound and safe ship recycling facilities in OECD countries outside of Europe under current regulations.

This report concludes that the North American market has the current capacity to dismantle 803,000 LDT per year, with an estimated 389,000 LDT of underutilized capacity today. This current underutilized capacity is sufficient to accommodate 61% of the current annual excess EU-flagged tonnage that requires the use of "green" OECD yards.

Further, these North American yards forecasted their 24-month capacity build potential if a sufficient and steady supply of ships were delivered. By using dormant capacity and with very little additional infrastructure expansion, the North American industry could grow their capacity to 1.45 million LDT per year by 2015,<sup>8</sup> with 1.15 million LDT capacity available for EU-flagged inventory. This available "green" capacity can accommodate 182% of the identified 633,000 LDT of excess EU-flagged tonnage requiring "green" OECD ship recycling facilities.

This capacity is shared by 13 facilities that are equipped to handle large commercial sea-going vessels. The facilities are spread across the North American continental coastlines to provide

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<sup>4</sup> COWI/DHI for the European Commission, DG Environment, Study on "Ship dismantling and pre-cleaning of ships", Final report of June 2007, published on the Commission website at: <http://ec.europa.eu/environment/waste/ships//index.htm>

<sup>5</sup> Feasibility of a list of "green and Safe" ship dismantling facilities and of a list of ships likely to go for dismantling". January 2010, [http://ec.europa.eu/environment/waste/ships/pdf/bio\\_ship%20dismantling.pdf](http://ec.europa.eu/environment/waste/ships/pdf/bio_ship%20dismantling.pdf)

<sup>6</sup> Light Displacement Tons (LDT) is the weight most commonly used in the ship dismantling industry and represents the material weight of a vessel in long tons without cargo, ballast, crew, fuel, etc. (1 long ton = 2,240 pounds)

<sup>7</sup> COWI/DHI for the European Commission, DG Environment, Study on "Ship dismantling and pre-cleaning of ships", Final report of June 2007, published on the Commission website at: <http://ec.europa.eu/environment/waste/ships//index.htm>

<sup>8</sup> Capacity expansion to year 2015 was the critical marker as the "baseline option" defined in the IMPACT ASSESSMENT (see footnote 3) suggested maintaining the Waste Shipment Regulation unchanged in the short term (2015), medium (2020) or the long term (2025).

convenient dismantling access points for EU-flagged merchant ship owners that make end-of-life decisions while vessels are en route to North American ports or while ships are in near proximity to North America. The facilities are strategically located in the far north of the upper and lower Great Lakes (accessible from the North Atlantic), North Atlantic at Nova Scotia, Mid-Atlantic at Maryland, Gulf Coast at Texas, Louisiana and Veracruz, South Pacific at Lazaro Cardenas and Mid-Pacific near San Francisco.

This report concludes that the Commission did not only mischaracterize the full potential of OECD ship recycling capacity that is legally accessible to EU-flagged ships, but it failed wholeheartedly to even consider North American capabilities.

The North American capacity described in this report is considered "green" by the Commission's standards and resides in OECD Member States, thereby supporting EU implementation of the Basel Ban Amendment via the Waste Shipment Regulation. The North American market can and should be part of the solution to address the immediate concerns with EU-flagged end-of-life tonnage.

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## II. EUROPEAN INVENTORY

The European Commission estimates that during the period 2012-2030, EU-flagged end-of-life ships requiring dismantling each year will amount to 1.64 million LDT, assuming no net loss of end-of-life vessels due to reflagging.<sup>9</sup> European ship recyclers (accounting for facilities in Belgium [60,000 LDT], The Netherlands [30,000 LDT], Denmark [25-30,000 LDT] and the UK [150,000 LDT]) have the annual capacity to dismantle 270,000 LDT,<sup>10</sup> approximately 16% of the annual EU supply. Under current regulations, the remaining 1.37 million LDT must seek environmentally sound and safe facilities in OECD countries outside of Europe.

Nearby Turkey has an annual ship recycling capacity of 900,000 LDT,<sup>11</sup> very much inconsistent with the European Commission's capacity assessment of Turkey "*conservatively estimated at 0,05 million LDT.*"<sup>12</sup> In 2011, Turkey processed a record 653,000 LDT throughput,<sup>13</sup> with a significant percent of this tonnage coming from Europe.

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<sup>9</sup> COWI/DHI for the European Commission, DG Environment, Study on "Ship dismantling and pre-cleaning of ships", Final report of June 2007, published on the Commission website at: <http://ec.europa.eu/environment/waste/ships//index.htm>

<sup>10</sup> See the list on page 175 of the BIO intelligence service study for DG Environment: "Feasibility of a list of "green and Safe" ship dismantling facilities and of a list of ships likely to go for dismantling". The facility located in Italy does not have a waste management license and has therefore not been retained in the calculation of the EU recycling capacity.

<sup>11</sup> <http://www.oecd.org/sti/industryandglobalisation/48343598.pdf>

<sup>12</sup> COMMISSION STAFF WORKING DOCUMENT IMPACT ASSESSMENT Accompanying the document Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on ship recycling, March 2012, pg. 14

<sup>13</sup> <http://www.steelorbis.com/steel-news/latest-news/turkish-ship-breaking-industry-achieves-2011-target-651529.htm>

In fact, EU-flagged ships are the primary inventory for the 21 active facilities in Turkey.<sup>14</sup> Estimating that approximately 75% of 2011 throughput was EU-flagged, Turkey can be expected to have a capacity for EU-flagged vessels in future years at 737,000 LDT (number represents the underutilized capacity in 2011 [247,000 LDT] plus the estimated capacity that was used by EU-flagged vessels in 2011 [490,000 LDT]), further reducing the EU capacity need to 633,000 LDT (1.64 million LDT – 270,000 LDT – 737,000 LDT = 633,000 LDT).

The European Commission has insisted that the combined ship recycling capacity in EU Member States and OECD Member States outside of Europe is wholly insufficient to meet the annual demand for all EU-flagged end-of-life vessels. In the proceeding sections of this report, we will explore the ship recycling capacity of OECD Member States in North America to confirm whether in fact the North American market can accommodate the EU capacity need of 633,000 LDT per year.

This report does not account for ship recycling capacity expansion in the EU, which has vast growth potential. The readily available existing infrastructure in the EU, and that which is considered dormant capacity, is estimated at 1 million LDT.<sup>15</sup> However, this capacity was dismissed by the European Commission as not economically viable, and therefore was not a consideration of the Commission when they proposed the new ship recycling regulation in March 2012. Further consideration of dormant EU ship recycling capacity is necessary and should be the subject of additional consideration; however it is not the subject of this report.

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## III. UNITED STATES

### INDUSTRY BACKGROUND

The ship recycling industry in the United States dates back to the 1950's, when an abundant supply of U.S. military vessels following WWII formed the National Defense Reserve Fleet (NDRF). The U.S. Maritime Administration (MARAD) managed 2,277 NDRF vessels at that time.<sup>16</sup> This abundant supply of end-of-life vessels spawned the development of a strong U.S. ship recycling industry and a successful public-private disposal partnership that lasted throughout the 1960's and 1970's. By 1974, 30 U.S. recycling companies were fulfilling ship disposal contracts at U.S. yards,<sup>17</sup> and with the capacity to recycle all government end-of-life vessels.

With the Cold War military buildup throughout the 1980's, ship disposal declined significantly in the U.S. as reserve fleets were maintained at maximum capacity. During this same period, ship

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<sup>14</sup> <http://www.oecd.org/turkey/48641944.pdf>

<sup>15</sup> COWI/DHI for the European Commission, DG Environment, Study on "Ship dismantling and pre-cleaning of ships", Final report of June 2007, published on the Commission website at: <http://ec.europa.eu/environment/waste/ships//index.htm>

<sup>16</sup> [http://www.marad.dot.gov/ships\\_shipping\\_landing\\_page/national\\_security/ship\\_operations/national\\_defense\\_reserve\\_fleet/national\\_defense\\_reserve\\_fleet.htm](http://www.marad.dot.gov/ships_shipping_landing_page/national_security/ship_operations/national_defense_reserve_fleet/national_defense_reserve_fleet.htm)

<sup>17</sup> Maritime Administration, Report on the Program for Scrapping Obsolete Vessels, Report MA-2000-067, March 10, 2000

recycling operations shifted overseas to South Asia due to lacking enforceable environmental and occupational health and safety regulations and where cheap labor could be exploited by commercial ship owners and governments alike. As a result, the U.S. ship recycling industry nearly collapsed entirely.

In 1994, new life was given to the U.S. ship recycling industry when government owned ship exports were curtailed following the discovery of polychlorinated biphenyls (PCBs) in various shipboard components and the appropriate enforcement of the U.S. Toxic Substances Control Act, which prohibits the export of regulated concentrations of PCBs (greater than 50 parts per million). The government turned back to the domestic recycling industry out of necessity, and supported the development of a "green" industry.

In 1998, a moratorium on overseas scrapping of government vessels was fully enforced by the Clinton Administration, a clear endorsement of the domestic capabilities; this endorsement was further secured in 2009, when the U.S. Congress passed legislation to ensure government vessels are recycled in the U.S. as long as there is sufficient domestic capacity.

## EXPERTISE

The U.S. ship recycling industry is widely considered the most technologically advanced center for environmentally sound and safe ship recycling practices. These best practices have been carefully developed over the past 60 years and have been heavily influenced by the industry's primary client, the U.S. Federal Government.

The U.S. industry has relied heavily on a steady supply of end-of-life ships from the U.S. Maritime Administration and the U.S. Navy. Many of these ships are WWII vintage, and are arguably some the most hazardous class of vessels to enter the disposal market. With strong regulatory oversight, both environmental and occupational safety, these facilities have been required to meet the highest standards of operation in the global ship recycling industry.

Recycling International, an independent worldwide publication, said in 2006, *"Visits to shipbreaking yards around the world confirm that nobody upholds environmental and safety measures as stringently as the Americans."* The publication went on to say, *"...the USA has become the world's leading 'green' recycler of marine ships..."*

The U.S. ship recycling industry has focused primarily on the domestic inventory, but the current MARAD and Navy inventory will likely be disposed of by year end 2015. This opens up significant capacity for foreign flagged ships seeking environmentally sound and safe recycling in an OECD country with advanced technological capabilities and an experienced and well-trained work force.

It is also worth noting that the expertise of these facility operators has continued to draw the interest of large multinational corporations who often invest in these largely profitable facilities. In fact, four of the eight U.S. facilities have been purchased in recent years and now operate as subsidiaries of larger diversified corporations, adding significant financial stability to the industry.

Amongst the largest managing corporations of U.S. recycling facilities are Indian based conglomerate Adani Global and UK based multinational European Metal Recycling.

## DOMESTIC INVENTORY

The domestic end-of-life inventory of large sea-going vessels derives almost exclusively from the U.S. Maritime Administration (MARAD) and the U.S. Navy. MARAD anticipates the annual dismantling of 18 vessels in future years, while the Navy is expected to dismantle no more than 4 vessels annually, consistent with the annual average over the past five years. With a total of 22 government vessels being supplied to the eight U.S. ship recyclers annually, an estimated 154,000 LDT will be processed.

This government inventory is rapidly disappearing with only 39 vessels in the MARAD National Defense Reserve Fleet (NDRF) designated for disposal, and 31 vessels slated for disposal in the Navy reserve fleet. With a total of 70 government vessels remaining and an approximate 490,000 LDT, this inventory will be fully depleted in approximately 3-years, and with the industry operating significantly below capacity. The 3-year timeline could also be further reduced if a number of vessels are directed to other disposal programs, such as Navy Sinking Exercises (SINKEX), which accounted for the disposal of 4 ships and a combined 41,500 LDT in 2012.<sup>18</sup> The Navy anticipates SINKEX events to account for 0 to 2 ship disposals per year.<sup>19</sup>

As described above, the backlog of government vessels that have supported the U.S. Industry since 1950 will be eliminated by year end 2015. While it is expected that a number of vessels will be deactivated and designated for disposal in future years, MARAD expects only 3 to 5 retention ships will be designated for disposal annually in the foreseeable future,<sup>20</sup> while the Navy anticipates an average of 2 ships being designated for disposal each year through 2017.<sup>21</sup> This combined inventory can be expected to provide approximately 42,000 LDT per year on average.

There are currently 191 privately owned merchant ships operating under the U.S. flag (over 10,000 DWT), representing 9 million deadweight tons, or 2% of the total global tonnage in operation.<sup>22</sup> The number of U.S. privately owned merchant ships requiring dismantling each year, and that which will remain in the U.S. for dismantling is unclear as many private owned merchant ships are exported to the shipbreaking beaches in South Asia, despite available capacity at U.S. facilities. While a number of shipping companies have committed to using U.S. recyclers in recent years, this inventory is not consistent across years and still remains the exception.

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<sup>18</sup> Navy ships disposed of at sea via Sinking Exercise (SINKEX) in 2012: Coronado (10,878 LDT), Niagara Falls (9,133 LDT), Concord (9,574 LDT) and Kilauea (11,915 LDT). Total 41,500 LDT.

<sup>19</sup> Navy Annual Report to Congress on the Long-Range Plan for Construction of Vessels for FY2013 <http://www.militarytimes.com/static/projects/pages/navy-shipbuilding-report-032812>

<sup>20</sup> Report to Congress on the Progress of the Vessel Disposal Program, MARAD, March 2011

<sup>21</sup> Annual Report to Congress on the Long-Range Plan for Construction of Vessels for FY2013 <http://www.militarytimes.com/static/projects/pages/navy-shipbuilding-report-032812>

<sup>22</sup> American Maritime Congress. <http://www.americanmaritime.org/merchant/>

In keeping with conservative capacity estimates, we assume U.S. commercial vessels will fill U.S. recycling capacity at 2012 volumes in future years, estimated at 189,000 LDT. However, it must be noted that this estimated volume will likely reduce significantly year over year as most U.S. built vessels reaching end-of-life by 2015, will likely not contain regulated concentrations of PCBs, and therefore will no longer be restricted under U.S. regulations from being exported to foreign ship recycling facilities. See Legal Accessibility section below for further discussion.

## CURRENT CAPACITY

Today there are eight U.S. ship recycling facilities that have the industrial capability to dismantle large sea-going vessels in an environmentally sound and safe manner. It is widely known that these facilities have significantly underutilized capacity.

There are also a number of small scrap operators in U.S. coastal states that currently dismantle small craft (e.g. tugs, fishing boats, patrol boats, etc); these operators are not included in this capacity assessment as this report focuses solely on economically viable capacity for large sea-going vessels. Further, the European Commission has already acknowledged sufficient capacity at the European level for smaller ships and those owned by European governments, so these vessel classes are not within the scope of needed OECD capacity.

In 2011, over 1000 ships were scrapped worldwide, exceeding 8 million tons of recycled metals.<sup>23</sup> While the global market tonnage grew by 27% from the year previous,<sup>24</sup> the U.S. market remained stagnant.

While the U.S. industry has an annual throughput of 343,000 LDT (combined average 2010 and 2011), the actual capacity was estimated at 592,000 LDT (combined average 2010 and 2011), leaving 254,000 LDT of underutilized capacity. See TABLE 3.1 below for annual volume and capacity for each U.S. facility.

**TABLE 3.1 U.S. SHIP RECYCLING ANNUAL THROUGHPUT AND CAPACITY**

Facility	Location	Annual Volume	Annual Capacity	Underutilized
Allied Defense Recycling	Pacific Coast	11,000	32,000	21,000
Allstar Metals	Gulf Coast	60,000	100,000	40,000
BayBridge Texas	Gulf Coast	0	40,000	40,000
BB Metals	Atlantic Coast	45,000	75,000	35,000

<sup>23</sup> <http://www.robindesbois.org/english/shipbreaking/shipbreaking26.pdf>

<sup>24</sup> <http://www.robindesbois.org/english/shipbreaking/shipbreaking26.pdf>

ESCO Marine	Gulf Coast	96,000	120,000	24,000
International Shipbreaking*	Gulf Coast	80,000	120,000	40,000
Marine Metals	Gulf Coast	15,000	25,000	10,000
Southern Recycling*	Gulf Coast	36,000	80,000	44,000
<b>TOTAL</b>		<b>343,000</b>	<b>592,000</b>	<b>254,000</b>

*Numbers represented in light displacement ton (LDT).*

*Numbers represent average 2010 and 2011 volume/capacity/underutilized capacity as reported by the facility to Basel Action Network, October 2012.*

*\* Facility did not provide volume/capacity data; estimates are based on perceived volume/capacity given public knowledge of contracts secured in 2010 and 2011.*

The eight facilities are strategically located on all three coastlines of the continental U.S., Atlantic Coast at Maryland, Gulf Coast at Texas and Louisiana and the Pacific coast near San Francisco. The facilities on the Pacific and Atlantic coasts conduct ship dismantling operations in graving drydocks, while the facilities in the Gulf Coast conduct dismantling operations alongside in slipways.

## CAPACITY FORECAST 2015

The facilities in California and Maryland both operate in graving drydocks, and as a result their capacity for drydock expansion is restricted. That being said, the California facility does have the opportunity to expand into another dock in the Bay to offer additional capacity if in fact a steady supply of ships is foreseeable. The Maryland facility is the largest privately owned drydock in the U.S. and can accommodate as many as 6 ships in the drydock at one time (depending on size). While drydock expansion is not feasible, the facility does have a number of slipways that can accommodate significant capacity expansion if a steady supply of ships is available.

The facilities operating in Brownsville, Texas are much different from a capacity building perspective when compared to both the Pacific and Atlantic operators, as the Texas facilities are strategically located along the Brownsville ship channel leading to the inland deep water sea Port of Brownsville. This man made channel extends 17 miles to connect the Port of Brownsville to the Gulf of Mexico at Brazos Santiago Pass.

The Port and the land along the ship channel is owned by the Brownsville Navigation District, a political subdivision of the State of Texas. Plots are leased along the ship channel to industrial operators including those plots operated by ship recyclers. In fact, the ship recycling industry covers more land and shoreline along the channel than any other activity. The local government has signaled a favorable view toward responsible expansion of the recycling slips along the existing ship channel.

U.S. recyclers suggest that current domestic recycling capacity could be quickly expanded to meet global demand, if there is consistency of vessel supply.

The eight U.S. facility operators were asked what their maximum capacity could be within a 24-month period if a steady supply of ships were available. The total capacity was estimated to grow to 1.14 million LDT per year. With the domestic government owned inventory expected to provide approximately 42,000 LDT per year after 2015 and into the foreseeable future, and the domestic commercial fleet expected to provide approximately 189,000 LDT, according to 2012 estimates, the available U.S. capacity to foreign flagged fleets by year end 2015 is estimated at 913,000 LDT per year.

**TABLE 3.2 U.S. SHIP RECYCLING CAPACITY BUILD TO 2015**

Facility	Location	Annual Capacity 2012	Annual Capacity 2015
Allied Defense Recycling	Pacific Coast	32,000	64,000
Allstar Metals	Gulf Coast	100,000	200,000
BayBridge Texas	Gulf Coast	40,000	40,000
BB Metals	Atlantic Coast	75,000	150,000
ESCO Marine	Gulf Coast	120,000	240,000
International Shipbreaking*	Gulf Coast	120,000	240,000
Marine Metals	Gulf Coast	25,000	50,000
Southern Recycling*	Gulf Coast	80,000	160,000
<b>TOTAL</b>	-	<b>592,000</b>	<b>1,144,000</b>

*Numbers represented in light displacement ton (LDT) as reported by the facility to Basel Action Network, October 2012.*

*\* Facility did not provide volume/capacity data; estimates are based on perceived volume/capacity given public knowledge of contracts secured in 2010 and 2011.*

## FACILITY LIMITATIONS

The eight facilities are all capable of handling all types of vessels without restriction; and as can be observed from TABLE 3.3, the U.S. facilities are capable of accommodating nearly all sizes of vessels from Handysize (174 m), Handymax (200 m), Aframax (245 m), Capesize (270 m), Panamax (294 m), New Panamax (366 m), Suezmax (285 m) to Very Large Crude Carriers

(VLCC) (330 m). Only one facility however is currently able to accommodate the largest class of vessel operating on today's waterways, the Ultra Large Crude Carriers (ULCC) (410 m). Additional limitations are observed at the California drydock facility that can only accommodate up to Aframax (200 m) sized vessels, however it must be noted that according to 2011 global dismantling records, 74% of the global tonnage scrapped on the year were smaller than 656 feet (200 m). Among the vessels scrapped globally in 2011, 38% measured less than 492 feet (150 m), 36% measured between 492 feet (150 m) and 652 feet (199 m), and 26% measured over 656 feet (200 m).<sup>25</sup>

**Table 3.3 U.S. SHIP RECYCLING FACILITY VESSEL SIZE CAPABILITIES**

Facility	Type/Quantity	Length	Draft	Beam
Allied Defense Recycling	Graving/Drydock	720'	30'	96'
Allstar Metals	Slipway	1100'	35'	180'
BayBridge Texas	Slipway	850'	22'	350'
BB Metals	Graving/Drydock	1350'	-	159'
ESCO Marine	Slipway	1200'	-	130'
International Shipbreaking	Slipway	1000'	-	-
Marine Metals	Slipway	1000'	18'	82'
Southern Recycling	Slipway	-	-	-

*Numbers represented in linear feet; 1 meter = 3.28084 linear feet.*

## LEGAL ACCESSIBILITY

The European Commission has incorrectly characterized U.S. ship recycling capacity as not legally accessible to EU-flagged vessels seeking OECD facilities in compliance with the current Waste Shipment Regulation.

The single legal barrier to the import into the U.S. of end-of-life vessels is the U.S. Toxic Substances Control Act (TSCA). Current rules under TSCA ban the manufacture of polychlorinated biphenyls (PCBs), which by definition, includes a ban on the import of PCBs in regulated concentrations (great than 50 parts per million). TSCA effectively prohibits the import into the U.S. of foreign flagged vessels that contain regulated concentrations of PCBs. For vessels that do not

<sup>25</sup> <http://www.robindesbois.org/english/shipbreaking/shipbreaking26.pdf>

contain PCBs, either because they were built absent of PCBs, or because the vessels were pre-cleaned and remediated prior to import into the U.S., there is no legal barrier to accessing U.S. recycling facilities.

The EPA Administrator has authority under TSCA section 6 (e)(3)(B) to grant petitions to import regulated concentrations of PCBs, including those found in end-of-life vessels; however, this rulemaking process must be taken on a case by case basis. While this is not ideal given the expedient schedules in which ship owners unload ships and brokers solicit bids and award contracts, it is a viable alternative to using non-OECD facilities.

Further, it must be noted that if there is political will there are opportunities for the U.S. EPA to promulgate new rules that can effectively eliminate this sole barrier to accessing the U.S. ship recycling industry. In fact, in 1996, the EPA promulgated a rule that allowed the import of PCBs into the U.S. for disposal, stating *“Based on the persistence of PCBs in the global environment and EPA’s finding that any exposure to human beings or the environment may be significant, EPA believes that the safe disposal of PCBs in approved U.S. facilities poses less risk of injury to health or the environment in the U.S. than the continued presence of PCBs in other countries, since proper disposal in this country provides protection against possible hazards from improper disposal elsewhere.”*<sup>26</sup>

This rule would have extended to foreign flagged end-of-life vessels. However, the rule was overturned in 1998 by courts following a lawsuit filed by an environmental organization. There have been ongoing discussions in the U.S. on how best to address this issue related to ships, with the U.S. EPA signaling their support for such regulatory amendments.

While the U.S. has not yet conducted any level of analysis on foreign built vessels and the likelihood that PCBs exist in regulated concentrations in a specific vintage of vessel, the U.S. has identified 1985 as the threshold year after which it is unlikely that PCBs remained in supply streams for use in vessel construction or repair in the U.S. As such, any vessel built in the U.S. prior to 1985, is assumed to contain PCB products unless sampling and laboratory testing proves otherwise. Those vessels built after 1985, are assumed to not contain PCB materials.

It is important to recall that only ships containing PCBs fall under the TSCA ban on imports. In 2011, the average age of ships reaching the dismantling facilities globally was 30 years.<sup>27</sup> This makes 1981 the average year of construction, very near the phasing out of PCB use in shipbuilding, according to U.S. assessments. By 2015, if the average age of vessels reaching end-of-life remains steady at 30 years, nearly all vessels constructed with PCBs will have been phased out, opening the U.S. ship recycling industry to nearly all remaining foreign flagged end-of-life vessels.

While 1985 is considered the threshold year for U.S. built vessels, additional research is necessary to identify the threshold years in foreign built vessels comprising the EU-flagged fleet.

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<sup>26</sup> [61 FR 11099](#)

<sup>27</sup> <http://www.robindesbois.org/english/shipbreaking/shipbreaking26.pdf>

## IV. CANADA

### INDUSTRY BACKGROUND

The Canadian ship recycling industry dates back more than 50 years. It is an industry that was developed on the Great Lakes out of necessity to dismantle ships that were built on the Lakes themselves. For many decades, ships were either too large to navigate the locks to the Atlantic Ocean (prior to the expansion of the locks) or were simply too small such that transport to foreign ship recycling facilities was cost prohibitive.

While the industry now focuses predominantly on government vessels and smaller vessels in the Great Lakes network, many large ocean-going vessels can now navigate through the locks to the open sea to access yards in South Asia where cheap labor is exploited, and where enforceable environmental and occupational health and safety regulations are lacking.

### EXPERTISE

International Marine Salvage in Port Colborne, Ontario is the primary ship recycler in Canada. According to a 2007 report by the European Commission, the company has recycled in excess of 150,000 tons of steel from dismantling ships since 1985.<sup>28</sup> Their primary ship inventory comes from the Canadian Government and merchant vessels operating within the Great Lakes network. In addition to ship recycling, they also process other scrap sources and have recycled in excess of one million tons of metal wastes and byproducts to date.<sup>29</sup>

### DOMESTIC INVENTORY

The primary ship inventory comes from the Canadian Government, merchant vessels operating within the Great Lakes network and smaller vessels that are simply too small to justify the ocean tow costs to foreign yards. The Canadian facilities fill an important niche, similar to the niche filled by European operators. However, unlike the European market, very few commercial ships operate under the Canadian Flag and therefore very few ships are accessible to Canadian ship recycling yards.

The Royal Canadian Navy does not have an abundant inventory of obsolete vessels awaiting dismantling, so domestic inventory is not expected to grow or even sustain the current throughput of existing facilities. These facilities have diversified their business model and have turned to other scrap markets in order to stay in business while awaiting infrequent ship deliveries.

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<sup>28</sup> Ship Dismantling and Pre-cleaning of Ships , June 2007

<sup>29</sup> <http://www.internationalmarinesalvage.com/>

## CURRENT CAPACITY

The Canadian ship recycling industry is small when compared to global market competitors at only 25,000 LDT annual throughput. However, the annual capacity of the three facilities with current ship recycling capabilities is estimated at 115,000 LDT. The 90,000 LDT of underutilized capacity is considered environmentally sound and safe and in compliance with EU's "green" requirements.

**TABLE 4.1 CANADIAN SHIP RECYCLING ANNUAL THROUGHPUT AND CAPACITY**

Facility	Location	Annual Volume	Annual Capacity	Underutilized
Marine Recycling Corporation	Port Colborne, Ontario	25,000	50,000	25,000
Marine Recycling Corporation/ Laurentian Energy Corp	Nova Scotia	0	50,000	50,000
Purvis Marine Limited	Sault Ste. Marie, Ontario	0	15,000	15,000
<b>TOTAL</b>	-	<b>25,000</b>	<b>115,000</b>	<b>90,000</b>

*Numbers represented in light displacement ton (LDT).*

*Numbers represent average 2010 and 2011 volume/capacity/underutilized capacity as reported by the facility to Basel Action Network, October 2012.*

## CAPACITY FORECAST 2015

The Canadian capacity is not expected to grow beyond the existing total capacity of 115,000 LDT per year by year end 2015, with 90,000 LDT of underutilized capacity.

## FACILITY LIMITATIONS

The European Commission noted in 2007<sup>30</sup> that there is a size limitation to the import of ocean going vessels to the Canadian ship recycling facilities on the Great Lakes, as vessels must pass the locks of the Welland Canal.

Canadian operators have clarified this size limitation for safe passage through the locks as 740 feet in length, 26 ½ foot draft, and 78 foot beam. According to records for 2011 total global

<sup>30</sup> Ship Dismantling and Pre-cleaning of Ships , June 2007

scrap tonnage, 74% of all vessels scrapped globally could be accommodated safe passage through the locks.<sup>31</sup>

The facility at Port Colborne on Lake Erie can accommodate nearly any size of vessel capable of navigating the locks, while the facility at Sault Ste. Marie being further restricted by the size of its drydock at 385 feet. On the contrary, the facility on the Atlantic Coast at Nova Scotia is capable of accommodating larger vessels up to 850 feet with 20 foot draft, and 130 foot beam.

**Table 4.2 CANADIAN SHIP RECYCLING FACILITY VESSEL SIZE CAPABILITIES**

Facility	Type/Quantity	Length	Draft	Beam
Marine Recycling Corporation	Slipway	720'	26' 6"	78'
Marine Recycling Corporation / Laurentian Energy Corp	Slipway	850'	20'	130'
Purvis Marine Limited	Floating Drydock	385'	-	60'

*Numbers represented in linear feet; 1 meter = 3.28084 linear feet.*

## LEGAL ACCESSIBILITY

Canada is party to the Basel Convention, but has not ratified the Basel Ban Amendment. Canada is an OECD Member State, and can accept waste from other Basel Party States with prior informed consent procedures adhering to the Basel Convention and rules described in Canada's implementing legislation: *Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations* (2005) adopted under section 191 of the *Canadian Environmental Protection Act, 1999* (CEPA 1999).

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## V. MEXICO

### INDUSTRY BACKGROUND

Mexico was home to a number of ship recycling facilities in the 1980's, when U.S. government owned ships were permitted export for dismantling. However, these facilities quickly found

<sup>31</sup> <http://www.robindesbois.org/english/shipbreaking/shipbreaking26.pdf>

Among the vessels scrapped in 2011, 385 (38%) measure less than 150m , 367 (36%) between 150 and 199m , and 268 (26%) over 200m.

themselves unable to compete with prices offered in South Asia and the Mexican industry quietly closed down.

Only in recent years has the industry been revived with the development of a new facility on the Pacific Coast and the Gulf Coast that have the capability of dismantling large sea-going vessels. These two facilities are strategically located on either side of the Panama Canal, to offer dismantling services in the Gulf and on the Pacific without having to transit the Panama Canal.

## EXPERTISE

The two Mexican facilities included in this report are owned and managed by the leading environmental services company in Mexico known as Promotora Ambiental (PASA). Their business operations are diversified in waste management services, oil industry services, water and biotechnology and recycling. They employ over 5,000 people in Mexico and are the only environmental services company traded on the Mexican stock market (IBMV). Their successful diversified business model adds financial stability to their ship recycling arm.

While these Mexican facilities are relatively new to the market, industry leaders in the U.S. have played an instrumental role in helping to develop environmental and occupational health and safety procedures and protocols at these facilities.

## DOMESTIC INVENTORY

Domestic inventory is not well-understood at this time. For the sake of making a conservative estimate, we assume domestic inventory is sufficient to maintain the current annual volume observed at both facilities of 51,000 LDT.

## CURRENT CAPACITY

Mexican facilities are currently operating at approximately 53% of their annual capacity, leaving approximately 45,000 LDT of underutilized capacity.

**TABLE 5.1 MEXICAN SHIP RECYCLING ANNUAL THROUGHPUT AND CAPACITY**

Facility	Location	Annual Volume	Annual Capacity	Underutilized
Ecomar	Lazaro Cardenas	27,000	48,000	21,000
Ecomar	Veracruz	24,000	48,000	24,000
<b>TOTAL</b>	-	<b>51,000</b>	<b>96,000</b>	<b>45,000</b>

*Numbers represented in light displacement ton (LDT).*

*Numbers represent average 2010 and 2011 volume/capacity/underutilized capacity as reported by the facility to Basel Action Network, October 2012.*

## CAPACITY FORECAST 2015

The facility at Lazaro Cardenas on the Pacific coast currently has a facility expansion plan, which includes the addition of a larger second slip that will nearly triple the facility's capacity, assuming a consistent supply of ships was available to the yard. In sum, the Mexican operators forecast the annual capacity by year end 2015 at 192,000 LDT, making the foreseeable available capacity approximately 141,000 LDT.

**TABLE 5.2 MEXICAN SHIP RECYCLING CAPACITY BUILD TO 2015**

Facility	Location	Annual Capacity 2012	Annual Capacity 2015
Ecomar	Lazaro Cardenas	48,000	144,000
Ecomar	Veracruz	48,000	48,000
<b>TOTAL</b>	-	<b>96,000</b>	<b>192,000</b>

*Numbers represented in light displacement ton (LDT) as reported by the facility to Basel Action Network, October 2012.*

## FACILITY LIMITATIONS

According to records for 2011 total global scrap tonnage, 74% of all vessels scrapped globally could be accommodated at both facilities in Mexico.<sup>32</sup> Further, the facility on the Pacific Coast at Larzaro Cardenas has the capacity to expand its slip and add a second slip measuring 820 feet long with 164 foot beam. Both facilities do not have limitations on type of vessels.

**Table 5.3 MEXICAN SHIP RECYCLING FACILITY VESSEL SIZE CAPABILITIES**

Facility	Type/Quantity	Length	Draft	Beam
Ecomar	Slipway	656' (can expand to 820')	-	115' (can expand to 164')

<sup>32</sup> <http://www.robinderbois.org/english/shipbreaking/shipbreaking26.pdf>

Among the vessels scrapped in 2011, 385 (38%) measure less than 150m , 367 (36%) between 150 and 199m , and 268 (26%) over 200m.

Ecomar	Graving/ Drydock	656'	-	115'
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*Numbers represented in linear feet; 1 meter = 3.28084 linear feet*

## LEGAL ACCESSIBILITY

Mexico is party to the Basel Convention and has implemented the Basel Ban Amendment into domestic legislation. Mexico is also an OECD member state; however, Mexico possesses very limited capacity to process and dispose of PCBs and other persistent organic pollutants (POPs) and therefore bans the import of POPs into Mexico for disposal under Article 85 of General Law of Prevention and Integral Management of Wastes (LGPGIR).

There is not a clear precedent in Mexico with regards to the import of end-of-life vessels that may contain PCBs, when in fact the PCBs are not being imported for disposal, but are rather contained during ship dismantling processes for export in accordance with LGPGIR and the Basel Ban Amendment.

BAN has observed a number of U.S. state government ships and Canadian state government ships likely containing remnants of PCBs imported to Mexico for dismantling in Ensenada, Mexico. The Mexican Government has not enforced the ban on PCB imports in these instances, assuming these PCBs are contained and appropriately disposed of in OECD countries via export mechanisms adhering to the Basel Ban. This facility in Ensenada is not included in this capacity report as its operations have not yet been assessed for adhering to “green” ship recycling principles.

PCB import restrictions are critical components to understand the viability of Mexican ship recycling yards being legally accessible to EU-flagged vessels that may contain PCBs; however for those vessels absent of PCB components, they can be imported to Mexican facilities without restrictions, in the same manner as discussed in Section III. regarding U.S. imports, and with prior informed consent procedures adhering to the Basel Convention.

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## VI. NORTH AMERICAN CAPACITY

The North American ship recycling market, comprised of the U.S., Canada and Mexico, represent the largest “green” ship recycling capacity worldwide. The environmentally sound and safe industry has been continually improved over the past 60 years, and with careful oversight by environmental and occupational health and safety government agencies. The North American countries have not only displayed the capacity for national self-sufficiency, but also the capacity to assist other OECD member states in managing their end-of-life fleets in accordance with the highest principles of environmental and labor protection.

TABLE 6.1 shows the capacity of the North American ship recycling market that can be accessed by EU-flagged end-of-life ships in accordance with the existing Waste Shipment Regulation.

**TABLE 6.1 NORTH AMERICAN SHIP RECYCLING CAPACITY**

Country	Annual Capacity 2012	Underutilized 2012	Annual Capacity 2015	Underutilized 2015
USA	592,000	254,000	1,144,000	913,000
Canada	115,000	90,000	115,000	90,000
Mexico	96,000	45,000	192,000	151,000
<b>TOTAL</b>	<b>803,000</b>	<b>389,000</b>	<b>1,451,000</b>	<b>1,154,000</b>

*Numbers represented in light displacement ton (LDT)*

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## VII. CONCLUSION

This report investigated current and foreseeable environmentally sound and safe ship recycling capacity in North America to better assess the feasibility of the European Union's implementation of the existing Waste Shipment regulation to end-of-life ships. Insufficient OECD capacity was the primary justification the European Commission embraced in order to abandon the applicability of the Waste Shipment Regulation to end-of-life ships, and so OECD capacity was the subject of this report.

This report concludes that the Commission did not only mischaracterize the full potential of OECD ship recycling capacity that is legally accessible to EU-flagged ships, but it failed wholeheartedly to even consider North American capabilities.

The EU-flagged fleet is anticipated to demand "green" ship recycling capacity of 1.64 million LDT<sup>33</sup> per year from 2012-2030.<sup>34</sup> European and Turkish ship recycling markets can accommodate approximately 1.007 million LDT throughput per year, leaving an estimated 633,000 LDT that must seek environmentally sound and safe ship recycling facilities in OECD countries outside of Europe under current regulations.

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<sup>33</sup> Light Displacement Tons (LDT) is the weight most commonly used in the ship dismantling industry and represents the material weight of a vessel in long tons without cargo, ballast, crew, fuel, etc. (1 long ton = 2,240 pounds)

<sup>34</sup> COWI/DHI for the European Commission, DG Environment, Study on "Ship dismantling and pre-cleaning of ships", Final report of June 2007, published on the Commission website at: <http://ec.europa.eu/environment/waste/ships//index.htm>

This report concludes that the North American market, with current underutilized capacity at 389,000 LDT per year, is sufficient to accommodate 61% of excess EU-flagged tonnage that requires the use of "green" OECD yards today.

Further, the capacity expansion potential in North America using existing dormant capacity and with minimal infrastructure investments is estimated at 1.45 million LDT by year end 2015, with 1.15 million LDT open to foreign flagged inventory. However, it must be noted that this capacity is reliant on a steady supply of end-of-life ships and relies on the EU to not only uphold the existing Waste Shipment Regulation and the Basel Ban Amendment, but to also work with EU Member States to improve enforcement mechanisms to ensure European end-of-life ships are destined for OECD facilities that operate with environmentally sound and safe protocols.

The question of legally accessible capacity in the United States and Mexico is real in year 2012, with accessibility being limited when EU-flagged vessels contain regulated concentrations of PCBs (greater than 50 parts per million). However, given the trend in which end-of-life vessels dismantled globally reach an average 30 years, and assuming this trend continues, it is expected that most PCB laden inventory will have been dismantled by 2015, as PCBs were phased out of use in ship building and ship repair in most countries by the mid-1980's.

The North American capacity described in this report is considered "green" by the Commission's standards and resides in OECD Member States, thereby supporting EU implementation of the Basel Ban Amendment via the Waste Shipment Regulation. The North American market can and should be part of the long-term solution to address the global ship recycling crisis.