

● Global Shipbuilding Facilities Status & Outlook

Down 36.7% From 63 Mil. CGT in '12 to 39.9 Mil. CGT in '21

Global shipbuilding facility capacity is projected to decline to 39.9 million CGT in 2021, down 36.7% from the 63 million CGT registered in 2012. Despite the substantial plunge in global capacity, the three Northeast Asian shipbuilding giants' dominance of the global shipbuilding arena is expected to continue.

According to Clarkson's forecast in March this year, the combined shipbuilding capacity of China, Korea and Japan will reach 34.1 million CGT in 2021, 85.5% of the global total of 39.9 million CGT.

In particular, Korea's share of the total global capacity is expected to soar from 27% in 2012 to 33% in 2021. Over the same period, China's share is projected to dwindle from 41% to 34%, while Japan's share is forecasted to rise from 17% to 19.3%.

World Shipbuilding Capacity Forecast

(Unit: Million CGT)

| Year \ Country | Korea | China | Japan | Europe | Others | World |
|----------------|-------|-------|-------|--------|--------|-------|
| 2012 | 16.9 | 25.8 | 10.7 | 4.3 | 5.2 | 62.9 |
| 2013 | 16 | 22.6 | 9.1 | 3.4 | 4.9 | 56.1 |
| 2014 | 14.8 | 19.4 | 8.9 | 3.3 | 4.7 | 51.1 |
| 2015 | 14.8 | 16.6 | 8.4 | 3.2 | 4.2 | 47.2 |
| 2016 | 15.2 | 15.7 | 8.4 | 3.2 | 3.7 | 46.2 |
| 2017 | 13.1 | 15.3 | 8.4 | 3.1 | 3.3 | 32.2 |
| 2018 | 11 | 14 | 8 | 3.1 | 3 | 39.1 |
| 2019 | 10.8 | 12.7 | 7.2 | 3 | 3 | 36.7 |
| 2020 | 11 | 13 | 7.3 | 3.4 | 3.1 | 37.8 |
| 2021 | 11.3 | 13.3 | 7.5 | 4 | 3.1 | 39.2 |
| 2022 | 12.4 | 14 | 8 | 4.4 | 3.4 | 42.2 |

Source: Clarkson 2017.3



● Maximum Capacity of Major Global Shipyards

5 Korean Shipyards Among Global Top 10

Among the global top 10 shipyards in terms of production capacity are five Korean companies - Hyundai H.I. (No. 1), Daewoo (No. 2), Samsung (No. 3), Hyundai Mipo (No. 4), Hyundai Samho (No. 5). The remaining five spots in the global top 10 were taken three Chinese shipyards -- Dalian Shipbuilding (No. 6), Shanghai Waigaoqiao (No. 7), Jiangsu New YZJ (No. 8) and Japan's Nagasaki (No. 9) and Oshima Shipbuilding (No. 10). Moreover, Korea's Hanjin Heavy Industries & Construction-invested shipyard, HHIC-Phil. Inc. joined the ranks of global-scale shipyards, registering a capacity of 628,000 CGT as of the end of 2014.

| Shipyards | Country | 2015 Capacity (1,000 CGT) | 2016 Construction | | |
|------------------------|-------------|---------------------------|-------------------|-----------|-----------|
| | | | Ships | 1,000 DWT | 1,000 CGT |
| Daewoo (DSME) | Korea | 3,061 | 40 | 7,130 | 2,113 |
| Hyundai HI (Ulsan) | Korea | 3,796 | 44 | 4,700 | 1,962 |
| Samsung HI | Korea | 2,972 | 24 | 2,728 | 1,454 |
| Shanghai Waigaoqiao | China | 856 | 20 | 4,386 | 712 |
| Jiangsu New YZJ | China | 700 | 30 | 2,219 | 620 |
| Imabari SB Saijo | Japan | 417 | 7 | 986 | 184 |
| Meyer Werft | Germany | 372 | 2 | 27 | 300 |
| Hyundai Samho HI | Korea | 1,894 | 43 | 5,925 | 1,894 |
| Hyundai Mipo | Korea | 1,904 | 66 | 2,422 | 1,441 |
| Dalian Shipbuilding | China | 1,131 | 14 | 3,003 | 533 |
| Hudong Zhonghua | China | 646 | 13 | 1,008 | 505 |
| MHI Nagasaki | Japan | 673 | 8 | 400 | 465 |
| Oshima Shipbuilding | Japan | 662 | 39 | 2,409 | 662 |
| HHIC-Phil. (Subic SY) | Philippines | 625 | 7 | 559 | 251 |
| Imabari SB Hiroshima | Japan | 451 | 10 | 1,813 | 311 |
| Fincantieri Monfalcone | Italy | 241 | 1 | 11 | 133 |
| STX France | France | 254 | 1 | 20 | 190 |
| Meyer Turku | Finland | 109 | 1 | 8 | 109 |
| Imabari SB Marugame | Japan | 587 | 20 | 1,585 | 387 |
| Jinhal Heavy Ind | China | 555 | 4 | 621 | 159 |
| Imabari SB (Imabari) | Japan | 259 | 14 | 557 | 190 |
| JMU Kure Shipyard | Japan | 323 | 8 | 858 | 323 |

Source: Shipbuilding Yearbook 2017, KOSHIPA

● Number of Korean Shipyards, etc.

Korea.. Home of World-Top-Class Shipbuilders

As of the end of 2015, there were 47 shipyards operating in Korea, while the 10 members of the Korea Offshore & Shipbuilding Association (KOSHIPA) accounted for around 95% of production.

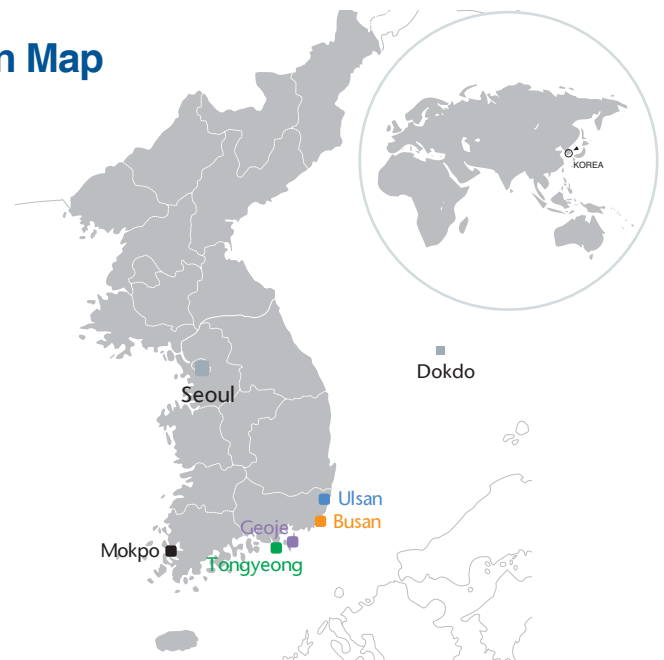
Korean Shipbuilders

| Category \ Year | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|----------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Medium & Large Scale | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 10 | 9 | 8 |
| Small Scale | 52 | 53 | 57 | 49 | 47 | 46 | 44 | 43 | 40 | 38 | 38 | 41 |
| Total | 61 | 62 | 66 | 58 | 56 | 55 | 53 | 52 | 49 | 48 | 47 | 49 |

Source: KOSHIPA

● KOSHIPA Member Shipyard Location Map

- Ulsan Hyundai Heavy Industries
- Geoje Samsung Heavy Industries
- Geoje Daewoo Shipbuilding & Marine Engineering
- Mokpo Hyundai Samho Heavy Industries
- Ulsan Hyundai Mipo Dockyard
- Busan Hanjin Heavy Industries & Construction
- Busan Dae Sun Shipbuilding & Engineering
- Tongyeong Sundong Shipbuilding & Marine Engineering



● Status of Basic Facilities

| Category \ Company | Basic Facilities | |
|--------------------------|--|----------------------|
| | Dock & Operating Fleet | Berth Length (meter) |
| Hyundai Heavy Industries | B.D.: 11 Units | 7,407 |
| Daewoo Shipbuilding | B.D.: 2 Units, F.D.: 5 Units, B.B.: 1 Unit | 7,134 |
| Samsung Heavy Industries | B.D.: 3 Units, F.D.: 4 Units | 7,900 |
| Hyundai Samho Heavy Ind. | B.D.: 2 Units, F.D.: 1 Unit, B.B.: 1 Unit | 2,833 |
| Hanjin Heavy (Yeongdo) | B.D.: 3 Units, B.B.: 2 Units | 1,883 |
| Hyundai Mipo Dockyard | B.D.: 4 Units | 2,260 |
| Dae Sun Shipbuilding | B.D.: 1 Unit, F.D.: 1 Unit, B.B.: 2 Units | 673 |
| Sungdong Shipbuilding | F.D.: 2 Units, B.B.: 6 Units | 1,433 |

Source: KOSHIPA

Infrastructure & Facilities

● Korean Company-by-Company Facility Status

| Company | Facility Name | L | B | D | Remarks |
|--|--------------------|-------|------|--------|-----------------------|
| Hyundai Heavy Industries Co., Ltd. | B.D No.1-1 | 390 | 80 | 12.7 | |
| | B.D No.1-2 | 165 | 47 | 12.7 | |
| | B.D No.2 | 500 | 80 | 12.7 | |
| | B.D No.3 | 672 | 92 | 13.4 | |
| | B.D No.4 | 382 | 65 | 12.7 | |
| | B.D No.5 | 382 | 65 | 12.5 | |
| | B.D No.6 | 260 | 43 | 12 | |
| | B.D No.7 | 170 | 25 | 11 | |
| | B.DNo.8 | 460 | 70 | 12.7 | |
| | B.DNo.9 | 460 | 70 | 12.7 | |
| | B.D | 490 | 115 | 13.5 | Offshore |
| B.D | 700 | 115 | 18 | Gunsan | |
| Daewoo Shipbuilding & Marine Engineering Co., Ltd. | B.D No.1 | 529 | 131 | 14.5 | |
| | B.D No.2 | 539 | 81 | 14.5 | |
| | F.D No.1 | 298 | 51.5 | 20.3 | |
| | F.D No.2 | 238 | 38.8 | 26.9 | |
| | F.D No.3 | 362 | 62 | 21 | |
| | F.D No.4 | 438 | 70 | 23.5 | |
| | F.D No.5 | 432 | 71.6 | 25.3 | |
| Samsung Heavy Industries Co., Ltd. | B.D No.1 | 283 | 46 | 11 | |
| | B.D No.2 | 390 | 65 | 11 | |
| | B.D No.3 | 640 | 97.5 | 12.5 | |
| | F.D No.1 | 269.7 | 52 | 20.4 | |
| | F.D No.2 | 400 | 55 | 21.5 | |
| | F.D No.3 | 400 | 70 | 23.5 | |
| | F.D No.4 | 420 | 70 | 23.5 | |
| Hyundai Samho Heavy Industries Co., Ltd. | B.D No.1 | 504 | 100 | 13 | |
| | B.D No.2 | 594 | 104 | 13 | |
| | B.B | 492 | 65 | | |
| | F.D | 336 | 70 | 24 | For Launching & Berth |
| Hanjin Heavy Industries & Construction Co., Ltd. | B.D No.2 | 232.5 | 35 | 9 | Yeongdo |
| | B.D No.3 | 301.8 | 50 | 11.5 | |
| | B.D No.4 | 301.8 | 50 | 11.5 | |
| | No.1 Mounting Site | 150 | 24 | | |
| | No.2 Mounting Site | 100 | 36 | | |
| Hyundai Mipo Dockyard Co., Ltd. | B.D No.1 | 380 | 65 | 12.5 | |
| | B.D No.2 | 380 | 65 | 12.5 | |
| | B.D No.3 | 380 | 65 | 12.5 | |
| | B.D No.4 | 295 | 76 | 12.5 | |
| Dae Sun Shipbuilding & Engineering Co., Ltd. | B.D | 109 | 19 | 7.7 | |
| | F.D | 190.9 | 34.4 | 15.2 | |
| | B.B No.2 | 122 | 25 | | |
| | B.B No.3 | 173 | 40 | | |
| Sungdong Shipbuilding & Marine Engineering Co., Ltd. | B.B No.1 | 316 | 40 | | |
| | B.B No.2 | 316 | 50 | | |
| | B.B No.4 | 637 | 45 | | |
| | B.B No.5~7 | 516 | 48 | | |
| | F.D No.1 | 230 | 48 | 18.7 | |
| | F.D No.2 | 320 | 55 | 19 | |

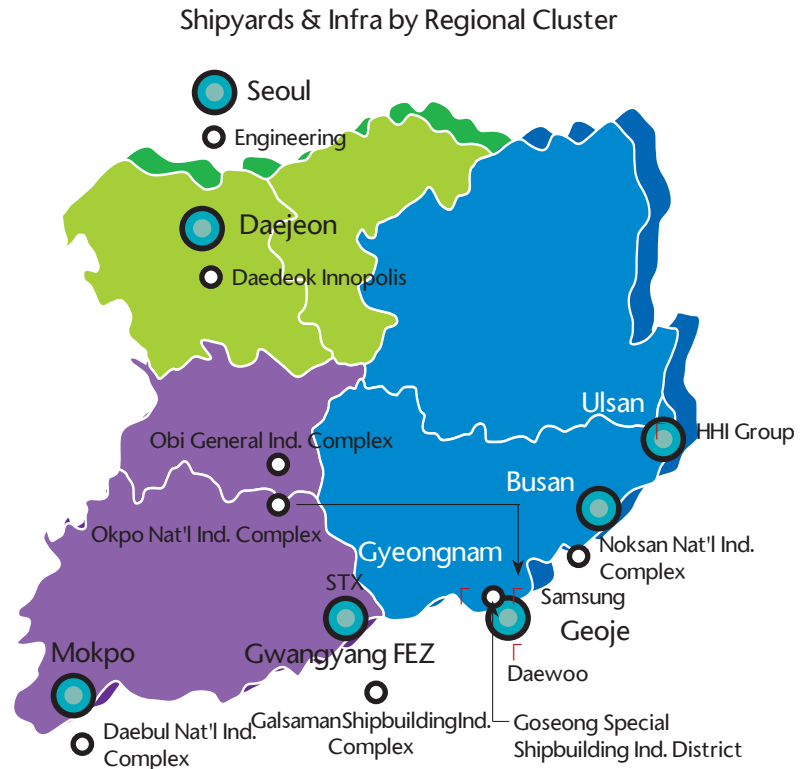
* B.D.: Building Dock, R.D: Repair Dock, F.D.: Floating Dock, B.B.: Building Berth

● Clusters With Research/Tech Development Facilities

Strong Value Chain for Higher Efficiency, Productivity & Competitiveness

A stable supply of parts & materials linking steel plate, engines, auxiliary parts & components has been achieved within shipbuilding clusters that have been formed along the coast of the Korean Peninsula. Moreover, the next-door-neighbor location of relevant colleges, parts, materials, and equipment enterprises has the advantage of facilitating efficient cooperation among shipyards, equipment suppliers, research & development, etc.

The value of clusters as leverage to enhance the competitiveness of Korea's shipbuilding & offshore industry has increased with the establishment of essential research and testing facilities.



| | |
|--------|---|
| Busan | <ul style="list-style-type: none"> - The world's largest deep offshore engineering basin, measuring 100 meters long, 50 meters wide and 15 meters in depth with a 50-meter deep pit, is a rectangular tank featuring automated depth control and an environmental conditions simulator facility. - The world's first multiphase flow (mixed gases, liquids and solids) equipment design R&D center. This facility provides technical development support as well as safety/reliability evaluations of multi-phase flow conditions in equipment used during drilling (pipes, pumps, valves, etc.). |
| Ulsan | <ul style="list-style-type: none"> - The world's second drilling test bed was constructed at an abandoned well in the East Sea near Ulsan - The Korea Shipbuilding and Marine Equipment Research Institute at Geoje provides multifunction composite towers and testing installations to improve the safety, durability, quality and reliability of related marine equipment. |
| Geoje | <ul style="list-style-type: none"> - The Korea Shipbuilding & Marine Equipment Research Institute at Geoje features multifunctional composite towers as well as testing installations to improve the safety, durability, quality and reliability of marine equipment. |
| Hadong | <ul style="list-style-type: none"> - The Hadong area will be home to the Offshore Plant Explosion/Fire Testing Center, which will be a key testing facility for equipment and procedures capable of responding to explosions, fires and structural failures that may occur on offshore plant platforms. |
| Mokpo | <ul style="list-style-type: none"> - The Marine Cable Test Research Center. This facility supports the production of highly functional and reliable marine cables (umbilical, laser, flow line) with a comprehensive testing and evaluation facility for a range of deep seabed marine cables. |

● Related Organizations & Institutes

Associations

| No. | Name | Address | Contact Point | Website |
|-----|---|--|--|----------------------|
| 1 | Korea Offshore & Shipbuilding Association | 18th, 308, Gangnam-daero, Gangnam-gu, Seoul, Korea | Tel: 82-2-2112-8181 Fax: 82-2-2112-8182 | www.koshipa.or.kr |
| 2 | Korea Marine Equipment Association | 8F, 33, Gukhoe-daero 76-gil, Yeongdeungpo-gu, Seoul, Korea | Tel: 82-2-783-6952/4 Fax: 82-2-785-7647 | www.komea.kr |
| 3 | Korea Shipbuilding Industry Cooperative | 103, Hyoryeong-ro(st), Seocho-gu, Seoul, Korea | Tel: 82-2-587-3121 Fax: 82-2-588-3671 | www.kosic.or.kr |
| 4 | Korea Port Logistics Association | Seo-Kwang Building 7 Floor, 118, Bo-Moon Dong Street 7., Seong-Pook Gu, Seoul, Korea | Tel: 82-2-924-2113 Fax: 82-2-924-8226 | www.kopla.or.kr |
| 5 | Korea Shipowners' Association | 17, Kukhoedaero 68-gil, Yeongdeungpo-gu, Seoul, Korea | Tel: 82-2-739-15517 Fax: 82-2-739-1558 | www.shipowners.or.kr |

Research Institutes / Certification Bodies

| No. | Name | Address | Contact Point | Website |
|-----|---|---|---|------------------|
| 6 | Korean Register of Shipping | 36, Myeonji Ocean City 9-ro, Gangseo, Busan, Korea | Tel: 82-1566-1682 Fax: 82-70-8799-8799 / 82-070-8799-8999 | www.krs.co.kr |
| 7 | Korea Institute of Ocean Science & Technology | 787 Haean-ro(st), Sangok-gu, Ansan-si, Gyeonggi-do, Korea | Tel: 82-31-400-6000 Fax: 82-31-408-5820 | www.kiost.ac |
| 8 | Korea Marine Equipment Research Institute | 435, Haeyang-Ro (Dongsam-dong), Yeongdo-gu, Busan, Korea | Tel: 82-51-400-5000 Fax: 82-51-400-5091 | www.komeri.re.kr |
| 9 | Korea Maritime Institute | KBS Media Bldg, 45, Maebongsan-ro, Mapo-gu, Seoul, Korea | Tel: 82-2- 2105-2700 Fax: 82-2- 2105-2800 | www.kmi.re.kr |
| 10 | Korea Research Institute of Ships and Ocean Engineering | 32, Yuseong-daero 1312 beon-gil, Yuseong-gu, Daejeon, Korea | Tel: 82-42-866-3114 | www.kriso.re.kr |

Shipping

| No. | Name | Address | Contact Point | Website |
|-----|---|--|--|----------------------|
| 11 | Korea Shipowner's Association | 17, Kukhoedaero 68-gil, Yeongdeungpo-gu, Seoul, Korea | Tel: 82-2-739-1551 Fax: 82-2-739-1558 | www.shipowners.or.kr |
| 12 | Research Institute of Medium&small Shipbuilding | 38-6, Noksan Industrial Complex 232-ro, Gangseo-gu, Busan, Korea | Tel: 82-51-974-5500 Fax: 82-51-974-5555 | www.rims.re.kr |

Ports & Logistics

| No. | Name | Address | Contact Point | Website |
|-----|--------------------------------|--|--|-----------------|
| 13 | Busan Port Authority | 46, Chungjang-daero 9 beon-gil, Jung-gu, Busan 48936 Korea | Tel: 82-51-999-3000 Fax: 82-51-988-8878 | www.busanpa.com |
| 14 | Incheon Port Authority | 1,2,5 Floor, 366, Seohae-daero, Jung-gu, Incheon, Korea | Tel: 82-32-890-8000 Fax: 82-32-886-7968 | www.icpa.or.kr |
| 15 | Ulsan Port Authority | 271 Jangsaengpograe-ro, Nam-gu, Ulsan, Korea | Tel: 82-52-228-5300 Fax: 82-52-228-5329 | www.upa.or.kr |
| 16 | Yeosu Gwangyang Port Authority | (57771) World-Marine Center, 465 Hangmandaero, Gwangyang si, Jeollanam-do, Korea | Tel: 82-61-797-4300 Fax: 82-61-797-4502 | www.ygpa.or.kr |

Finance

| No. | Name | Address | Contact Point | Website |
|-----|-----------------------------------|---|---|---------------------|
| 17 | Korea Trade Insurance Corporation | 14, Jong-ro, Jongno-gu, Seoul, 03187, Korea | Tel: 82-2-1588-3884 | www.ksure.or.kr |
| 18 | The Export-Import Bank of Korea | 38 Eunhaeng-ro, Yeongdeungpo-gu, Seoul, Korea 07242 | Tel: 82-2-3779-6114 Fax: 82-2-784-1030 | www.koreaexim.go.kr |

Region & Cluster

| No. | Name | Address | Contact Point | Website |
|-----|-------------------------|--|--|-------------------|
| 19 | Busan Metropolitan City | 1001, Jungang-daero, Yeonje-gu, Busan, 47545, Korea | Tel: 82-51-120 | www.busan.go.kr |
| 20 | Geoje City | (53257) Geoje-si Gyeryong-ro 125 (Gohyeon-dong), Korea | Tel: 82-55-639-3000 | www.geoje.go.kr |
| 21 | Ulsan Metropolitan City | 201, Jungang-ro, Nam-gu, Ulsan, 44675, Korea | Tel: 82-52-120 | www.ulsan.go.kr |
| 22 | Mokpo City | Yangeulro 203, Mokpo-si, Jeollanam-do (58613), Korea | Tel: 82-61-272-2171 Fax: 82-61-270-3598 | www.mokpo.go.kr |
| 23 | Goseong Gun | 130, Seongnae-ro, Goseong-eup, Gyeongsangnam-do, Korea | Tel: 82-55-670-2633 | www.goseong.go.kr |