

5.4 Corvettes

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5.4.1 Summary

The used international market for corvettes must be considered balanced from the standpoint that the total number of corvettes that will be available on the used international market will be roughly the same number that may be required by recipient navies.

Currently, 35 navies operate corvettes with up to five new entrants possibly emerging through 2013. However, there are only five navies that will have potential ships for resale to those navies that may emerge as corvette users in the same decade.

The majority of the modern corvettes that will be available for resale will probably originate from China, Denmark, France, Spain, and South Korea and could total up to 46 units as prospective candidates. It must be noted that there are large numbers of aging corvettes still in operation throughout the world, however, as they are very antiquated and do not fulfill the multi-mission requirements that modern navies require, they will not be mentioned in this report. However, the antiquated corvettes may still appear on the market as relatively inexpensive offshore patrol vessels (OPVs).

There is also a possibility that some recipient navies could replace their corvette forces with larger vessels of the frigate size (over 2000 tons), if mission requirements cannot be met by available corvettes.

The following table depicts those nations that must be considered prospective suppliers and prospective recipients for used vessels from 2004 through 2013:

Prospective Suppliers of Used Corvettes (2004-2013)	Prospective Recipients of Used Corvettes (2004-2013)
China	Bangladesh
Denmark	Bulgaria
France	Indonesia
South Korea	Kuwait
Spain	Libya
	Lithuania
	Nigeria
	Philippines
	Turkey
	Uruguay

5.4.2 Navies With Corvette Requirements

There are 35 countries in the world that operate warships that are classified as corvettes. Of importance for the used ship market is that a minority of those vessels were built indigenously by the nations that utilize them.

The corvette is something of an in-between class. It is larger than the fast attack craft (FAC) generally having a displacement between 200 – 700 tons but smaller than the frigate, which starts at 2000 tons. As such it fills a particular niche. The hull type is very similar to the offshore patrol vessel (OPV) intended to be able to stay at sea for a couple of weeks and provide a relatively comfortable ride, but it is outfitted differently, with guns and missiles. Therefore, navies select this ship type because either they require something more than a FAC that can also handle EEZ duties, like the German Navy that has commenced the K-130 corvette program, or as a vessel type less complex and less expensive than a frigate to acquire and operate. Brunei's and Sweden's programs are examples of the latter.



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The used ship market for corvettes is very restricted, as the majority of the world's corvette forces must be considered obsolete and will never be put on the market for transfer. However, if the basic hull is still in good shape it is possible that these ships may receive an extended life by stripping the ship of its missiles and obsolescent equipment and operating it as an OPV. Therefore, when reading the OPV section of this document it may be advisable to consult this section once again for some vessel possibilities.

Interestingly many nations that did build them for their own fleet at one time no longer have a requirement for corvettes. The consequence of these two factors; the lack of existing ships for transfer, and that new ones are generally not being built by the historical suppliers, is that these ships are presently almost exclusively built to order. This vessel type has become an important market for the export-oriented shipbuilder.

For the nation in the process of building up its naval shipbuilding industry expertise the corvette, not being as complex as a frigate, is an excellent stepping-stone in its growth path. Turkey, Poland, the United Arab Emirates are taking this approach and there are indications that the Philippines and Bulgaria will follow. For those countries that have not made the geo-political decision to develop the technology or industrial capacity to indigenously produce naval vessels, or may be embarking on such programs at a very slow pace, they will have to try to satisfy their corvette requirements with vessels from the very limited used international market, accept larger frigates instead of corvettes, or buy new construction vessels.

The navies of the world that currently operate corvettes include:

- Algeria
- Argentina
- Bahrain
- Bangladesh
- Brazil
- Brunei
- China
- Colombia
- Denmark
- Ecuador
- Egypt
- France
- India
- Indonesia
- Iran
- Israel
- Italy
- Libya
- Lithuania
- Malaysia
- Mexico
- Morocco
- Nigeria
- Oman
- Poland
- Portugal
- Romania
- Russia
- Saudi Arabia
- South Korea
- Spain
- Thailand
- United Arab Emirates
- Vietnam

There are a handful of nations that may acquire new corvettes in the next decade (2004-2013). However, funding may become the critical issue on whether these programs come to fruition or these countries have to explore other alternatives, including the used international market. These nations include:

- Bulgaria
- Kuwait – The only country not attempting to develop an indigenous shipbuilding capability.
- Philippines
- Poland
- Turkey
- United Arab Emirates



5.4.3 Prospective Suppliers

Generally speaking, the only nations that will be mentioned in this report as prospective suppliers are those navies that will be decommissioning corvettes from 2004 through 2013 that are less than 30 years of age. There are, however, several classes of corvettes that have been well maintained and exceed the 30-year life cycle and must still be considered candidates in this market.

Generally, the majority of corvettes in service today are well advanced in age and cannot seriously be considered as candidates for transfer although there may be a few nations that will utilize these vessels. The majority of these vessels cannot perform in multi-warfare arenas required today, such as anti-air warfare (AAW) missions with surface-to-air missiles (SAMs), modern anti-surface warfare (ASuW) missions with surface-to-surface missiles (SSMs) or anti-submarine warfare (ASW) missions with modern hunting and killing methods.

The majority of these outdated corvettes will more than likely be decommissioned at the end of their respective service lives. Prospective suppliers that may have available corvettes from 2004 through 2013 include:

- China
- Denmark
- France
- Spain
- South Korea

By reviewing the above list, it is very evident that only a handful of corvettes will be available over the next ten years (2004-2013), and likely far less than the number that will be actually required by navies wishing to operate these types of vessels. As earlier discussed, some traditional recipient nations will either have to continue operating their current force, enter the used frigate market to satisfy the requirement, or attempt to procure new construction corvettes.

It appears that South Korea, as a possible new market entrant could have the most to offer considering it will probably decommission up to 24 Po Hang class corvettes from 2010 through 2020 as it begins taking delivery of new frigates under the FFX Program.

China, Denmark, Spain, and France, together may be able to offer a small handful of around 22 units for further service. China will probably decommission its Jianghu I class corvettes from 2008 through 2014 as it receives the newer Jiangweii III class frigates. Although the Jianghu I class totals 27 units, only the youngest vessels built in the 1980s will likely be offered for resale. Only a few customers would potentially procure these vessels due to their obsolescence in comparison to most corvettes in the world today.

Denmark may offer its three Niels Juel class corvettes from 2008 through 2010 if it commissions its new frigates on time beginning in 2009 under the Large Patrol Vessel Program. Although the Niels Juel class will be around thirty years of age by 2008, this class has been well maintained and is considered modern by corvette standards.

France transferred six of its sixteen D'Estienne d'Orves class corvettes in 2001 to Turkey and therefore must be considered perhaps the most likely source of corvettes should a navy be seeking any immediately. The remaining ten are probably available today under the right conditions, but are expected to begin decommissioning by around 2008 as the French Navy begins taking delivery of its new frigate under the Multi-Purpose Frigate Program. Similar to the Niels Juel class, the French corvettes have also been well maintained throughout their life cycle.

Spain has been reviewing its fleet size and has decided that the four Descubierta class corvettes have served their purpose. This class of corvettes is being decommissioned without replacement and its role taken up by the new destroyers and OPVs.



Russia, also an operator of large numbers of corvettes will probably not make any available on the used international market as severe financial restrictions will probably not allow for the decommissioning of any unit for the foreseeable future. As far as a provider of naval vessels for the foreign market, Russia would preferably sell new construction vessels as a way to generate revenue and help lower the cost of its own naval programs.

Nations that currently operate corvettes that may be candidates for transfer to a recipient nation over the next decade (2004-2013) are listed as follows with the prospective decommissioning date, vessel class, number available and country:

Projected Years of Decommissioning	Class	Number Available	Country
2008-2014	Jianghu I	6	China
2006-2008	Niels Juel	3	Denmark
2009-2016	D'Estienne D'Orves	10	France
2004-2020	Po Hang	24	South Korea
2004-2006	Descubierta	4	Spain

5.4.4 Prospective Recipients

Prospective recipients for used corvettes have been identified based on analysis of each country's ability to construct vessels of this size and complexity, their ability and commitment to finance a program of this complexity, and finally, their current and projected fleet requirements. The analyses follow with potential recipients identified from each assessment.

Lack Ability to Construct

- Bangladesh
- Libya
- Lithuania
- Nigeria
- Uruguay

May Lack Sufficient Funding/Commitment

In addition to the nations listed above, there is a growing number of nations that currently have new corvette programs planned or have had indigenous program in the past. However, there is always the possibility that funding issues could lead to a used ship solution. An example of this is Turkey. Due to the economic down turn during the late 1990s, the Navy was unable to proceed with its indigenous MILGEM program.

Therefore, as an interim measure, six French A69 class corvettes were purchased. Navies that may need to utilize the used international market as an alternative or in conjunction with a new construction program include:

- Bulgaria
- Indonesia
- Kuwait
- Philippines
- Turkey

5.4.5 Situational Assessment of Potential Recipient Navies

As discussed earlier in this report, the number of available units in the 2004 through 2013 timeframe will be very limited due to aging and the general obsolescence of the world's corvette fleets. However, this deficit may not be as large as one might think as the growth of the indigenous shipbuilding industry may well fill many of the needs that were historically filled by used ships. If a recipient nation must utilize the used market due to restricted funding, and can't find a suitable vessel they may elect to fill their requirements with larger frigates that are identified in the Frigate Section.





Bangladesh

The Bangladeshi Navy currently operates a mixture of aging Chinese, British, and South Korean frigates and corvettes. The two most recent deliveries to the Bangladeshi Navy include the Chinese-built Jianghu I class corvette in 1989 and the South Korea Modified Ulsan class frigate in 2001. Both British classes in service include the Leopard (Type 41) and Salisbury (Type 61) classes built in the 1950s.

Due to an extremely limited budget, the Bangladeshi Navy has had a difficult time in funding new construction vessels. However, the sea service has a requirement for at least one new frigate and will eventually need to replace the Leopard and Salisbury classes.

Options to replace the Leopard and Salisbury frigate classes include the South Korean Ulsan class frigate and Indian Nilgiri class frigate as listed in the Frigate Report, or possibly the British Type 42, Chinese Luda II, or Indian Rajput class destroyers as listed in the Cruiser-Destroyer report. A third option could very well be a vessel of the corvette size if one is available.

With the Leopard and Salisbury frigate classes being over 40 years of age, the Navy could attempt to acquire the first unit that comes available. If the Bangladeshi Navy wishes to fill this requirement with a corvette-sized vessel, the most likely candidates could include the Jianghu I class corvette by around 2008, of which the Bangladeshi Navy already operates one unit, and the South Korean Po Hang class. South Korea has recent ties to the Bangladeshi Navy with the deliveries of one new Modified Ulsan class frigate in 2001 and one Sea Dragon class fast attack craft (FAC) in 1998.

Bulgaria

Bulgaria currently maintains one aging Koni class corvette built in the 1970s. Since being invited to join

the North Atlantic Treaty Organization (NATO) in 2002, the Bulgarian Armed Forces has been in a transition stage in order to meet its entrance date in 2004. Part of the transition was the redefinition of the nation's naval role as well as modernizing its equipment for better interoperability with its prospective NATO partners. Naval planners are currently planning for a fleet of at least two new corvettes, with expected commissioning date in 2011 and 2013, although those plans could be delayed due to funding issues.

Although Bulgaria surely has the ability to build corvette-sized vessels indigenously, the integration of complex Western arms will require assistance. Funding will be a primary issue for at least a decade as it moves forward with the transition of all the armed services. Unfortunately for the Bulgarian Navy, it is the lowest priority of all the services, and may wish to move ahead with interim measures in order to acquire a more modern corvette force that is interoperable with its NATO partners.

If the Bulgarian Navy decides to enter the international market due to a delay in its Future Corvette Program, it would acquire vessels of European origin. Currently, the availability of used corvettes will probably be restricted to the Danish Niels Juel class in 2006, the French D'Estienne D'Orves class, or the Spanish Descubierta. As the choices are very limited and the first ship to be acquired will likely play the role of flag ship of the navy, the selection of a frigate is more likely. However, even in the longer run the Navy might have to consider the acquisition of used corvettes to supplement its new ship construction program.

Indonesia

In January of 2004, Indonesia signed a contract with Schelde for the construction of two new corvettes. There may be an option for more ships at a later date but the need exists for a fleet of around ten corvettes, which will most likely not be met by this contract.

Indonesia currently possesses a fleet of primarily used vessels from the international market. Unfortunately for the Indonesian Navy, it continues to be under-funded and relies primarily on the international market to meet its naval requirements. Over the past several years, there has been talk from the Indonesian Navy concerning the expansion of the nation's shipbuilding base and the indigenous construction of submarines, corvettes, fast attack craft (FAC) as well as amphibious and mine warfare vessels. The new contract might be a step in this direction. However, this approach will take

many years to come to fruition and the Navy will likely continue to search the used market to replace its fleet of 16 Kapitan Patimura class corvettes procured from Germany in 1993.

If the sea service decides to replace these vessels from the used international market, the key to any transaction will be condition and cost. The Indonesian Navy has been relegated to an outdated naval force incapable of protecting its own island chain and will probably be amiable to almost any deal from the used market in order to replace its aging fleet. Another point that must be considered by Indonesia is the market itself, which will be restricted due to either embargoes or the breaking of military relationships with some foreign nations in recent years. To some degree, Indonesia has been snubbed over the past decade, whether it is from disagreement with its own internal political situation, or from perceptions that still linger from its involvement in East Timor and Aceh, and still more recently the perception that Indonesia has not been completely forthcoming in the International War on Terrorism. These political conditions will probably continue to plague Indonesia for some years to come, restricting the market in which Indonesia can do business.

South Korea is likely to become the preferred option and will probably make Po Hang class corvettes available. South Korea currently operates 24 of these vessels, and the Indonesian Navy has a requirement for large numbers of surface combatants. As an alternative, the Indonesian Navy could move up in size at procure the Ulsan class frigates, which may be resold beginning in 2007. South Korea is reportedly already discussing the sale of new or used submarines to Indonesia, has signed a contract for the overhaul of an Indonesian submarine, and most recently begun construction on a new amphibious vessel for the Indonesian Navy.

Kuwait

Kuwait has been planning for three new corvettes since 1992 under the Offshore Missile Vessel (OMV) Program. However, funding and political issues continue to delay this program and the commissioning of the first vessel is not yet in sight although the sea service is now considering joining the United Arab Emirates (UAE)s Al Baynunah class corvette program. However, if the Kuwaiti Navy doesn't join the Al Baynunah program and the program continues to slip, Kuwait may decide to move ahead with used vessels in order to attain some capability. There are two likely candidates, the Danish Niels Juel class by around 2006 and the French D'Estienne D'Orves class. It is highly unlikely that the

Kuwaiti Navy would move up in size to a frigate, as its small manpower pool must guide its decision-making.

Libya

Libya, being released from United Nations (UN) sponsored international sanctions in late 2003, will be shortly re-entering the naval market. The Libyan Navy currently operates two ex-Soviet Koni class corvettes built in the 1960s and transferred in 1986 and 1987. Like most Soviet era equipment, both vessels are considered obsolete by most modern naval standards and will need to be replaced.

Currently, Libya is planning for a modern coast guard with new coastal patrol vessel programs starting in the next several years. The new coast guard will conduct joint operations with Italy.

Following the formation of the coast guard, Libya will probably attempt to begin a modernization effort of its naval force. The oldest vessels in the fleet are the Koni class corvettes. Libya with its oil resources does have the funding to pay for new construction vessels. However, depending on how soon it desires to replace the Koni class, the sea service could enter the used international market. Candidates include the Spanish Descubierta class and the French D'Estienne D'Orves.

Lithuania

Lithuania currently maintains two aging Grisha III class corvettes commissioned in 1981 and transferred from Russia in 1992. Since being invited to join the North Atlantic Treaty Organization (NATO) in 2002, the Lithuanian Armed Forces have been in a transition stage in order to meet its entrance date in 2004. Part of the transition is the upgrading of its naval force to modern standards for better interoperability with its new NATO partners. Naval planners are probably considering the acquisition of one or two corvette-sized vessels to replace the two Grisha III corvettes as their contribution to the Baltic Squadron. Lithuania will probably seek a solution in the used ship market. Choices are very limited and probably include the Danish Niels Juel in 2006 or the French D'Estienne D'Orves.



Nigeria

The Nigerian Navy currently operates two Mk 9 Vosper Thornycroft Type class corvettes that it acquired from the United Kingdom in 1980, which are in poor material condition. Funding to the sea service has been extremely poor for the past two decades relegating the Navy to the used international market. The majority of vessels received in the past several years have been aging smaller auxiliary vessels and are being utilized for patrol missions.

If the Nigerian Navy intends to replace its two Mk 9 corvettes, it will probably be around 2010 and it will be very restricted in its options. There is little doubt that it would have to procure a used vessel, and that vessel would more than likely have to be a grant (free of charge). The most logical option would probably be the South Korean Po Hang class corvette or the Chinese Jianghu I class corvette, which it can probably attain at a relatively low cost in comparison to European vessels. Although both of these classes are about the same age as the Mk 9, they are in much better material condition since they have been in service with China and South Korea.

There is also a chance that these two corvettes could be replaced by Offshore Patrol Vessels (OPVs) as the sea service has a higher priority in coastal patrol vice missions associated with heavily armed warships. In this particular case one must consider a grant from the US Coast Guard of a Hamilton class OPV as a strong candidate.

Philippines

The Philippines is currently in the latter stages of planning for a new corvette program. Under the auspices of the Future Corvette Program, the Philippine Navy is expected to receive three new construction corvettes beginning in 2008. It must be noted that the Philippines does not have the ability to indigenously produce naval vessels of the corvette size in the Philippines and is relying on foreign construction. Funding may become an issue as only one of three units is currently funded.

If this program fails to deliver the three new corvettes as planned, it is possible the Philippine Navy could enter the used international market for the acquisition of several corvettes. Although the Philippine Modernization Program stipulates that modernization funding cannot be used for second hand vessels, the Philippine Navy will eventually have to act in order to modernize its fleet assets. Choices are very limited and probably include the Niels Juel class in 2006, the French D'Estienne

D'Orves class, the Spanish Descubierta class, and the South Korean Po Hang class.

It is unlikely that the Philippine Navy would move up in size to a frigate as the current support structure cannot handle vessels this large.

Turkey

While developing its own indigenous shipbuilding capability, Turkey has often gone to the used ship market to meet its requirements. Through the 1980s and 1990s, the Turkish Navy took delivery of new construction Barbaros and Yavuz class frigates built in Germany and Turkey, while at the same time it capitalized on the used international market with the procurement of eight Oliver Hazard Perry class and six Knox class frigates from the US.

Turkey is currently planning for the acquisition of up to eight MILGEM class corvettes. However, the program continues to face delays due to funding shortfalls and changes in the political climate in government and the Ministry of Defense. If the entire eight-unit class of corvettes is not realized, the Turkish Navy could, like it was in 2001, be forced to acquire used corvettes. At that time it purchased six D'Estienne D'Orves class from France and could return to France to request more units.

It must be noted that the expansion of indigenous shipbuilding capabilities is a high priority in Turkey, and industry and the Turkish Navy will accept used vessels only as a last resort.

Uruguay

The Uruguayan Navy tried to acquire a frigate from the UK a few years ago in recognition that it needs to replace its three *Commandant Riviere* class light frigates (2250t) within the next five years. It is now reinitiating its search. As the Navy does not need a well-armed frigate, the search may include corvettes as well. Some of the candidates may include the Spanish Descubiertas, the South Korean *Po Hang* class, and the Danish Niels Juel class. If the Navy can wait awhile they may be able to get an excellent deal on the US *Hamilton/Hero* class cutters (2007-2010).

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