

ANNEX II

DISMANTLING COUNTRIES, HEADING FOR INCREASING CONCENTRATION

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Annex II

The dismantling countries

I. Increasing geographical concentration

I.1. An activity becoming extinct in industrialised countries

A quarter of a century ago, ship dismantling was chiefly a side activity of ship building and hence the major dismantling countries were South Korea, Japan, Italy and Spain. Today economic rationale and the international division of labour have made this activity obsolete in industrialised countries, all the more so since the intensive ship-building activity since freight prices soared in 2003 has made any free space precious to the extent that there is no longer a single dry dock available in Asia.

South Korea prohibited dismantling *de facto* by an act of law in 1990 which reinforced environmental protection requirements.

Japan has maintained a residual capacity for its sole military needs owing to the constitutional interdiction to export weapon systems, even for destruction, and the state of the steel market has sometimes led to some vessels having to wait several years for their dismantlement since the State was reluctant to have to increase its *ad hoc* subsidies.

Regarding Spain, it would appear that around a dozen small shipyards which handle ships and pleasure craft are still in existence. However only the Navantia yard is interested in taking on large size vessels, and it recently made offers to the Spanish navy but is still awaiting a reply.

At all events, and even if the European Commission considers that there exists a potential for demolition in this country, this all remains somewhat virtual as evidenced by Madrid's refusals to allow the dismantling of the Clemenceau or more recently of the Dutch vessel *OTAPAN* (ex-abandoned Mexican ship).

The case of the other OECD countries is considered in a specific annex, with the exception of Turkey whose technical level in this precise area lends itself more to the consideration of its situation alongside the examination of Asian countries. *A contrario*, the United States of America have maintained true dismantling capabilities dedicated to their government ships, and their dismantling sites buy these ships at low prices when they are simple to break (3 ships in 2006, 1 bought at \$11 per tonne and 2 others at \$60), or apply for subsidies from MARAD (contract in January 2007 for 5 small ships from the reserve fleet for the global sum of \$4 million). The merchant fleet is sent to Southern Asia.

Overall, except in the above-mentioned cases of some government ships, fishing boats or pleasure craft that are handled locally in European ports, it is to be considered that market forces have decided: Southern Asia represented 90.3% of dismantling in 2006, whereas China only accounted for 3.6% and Turkey 0.5%, i.e. 94.4% for these five countries. Some Asian countries which have unused port facilities such as Vietnam (former soviet naval base at Cam Rahn Bay) and the Philippines (former American naval base at Subic Bay), would like to enter into this market but remain marginal at the present time.

I.2. The five main dismantling actors:

The very small dismantling countries are not indicated in the table below owing to their very minute share in the world market, but the line headed « undetermined » is of interest since it corresponds to ships generally sent to Southern Asia, but it is not known to which of the three countries concerned.

COUNTRY	2006			2005		
	<i>Tonnage (dwt)</i>	<i>Market share</i>	<i>Number of vessels</i>	<i>Tonnage (dwt)</i>	<i>Market share</i>	<i>Number of vessels</i>
BANGLADESH	4 997 688	68.14%	167	3 607 749	63.7%	70
INDIA	1 349 415	18.40%	89	998 945	17.6%	69
PAKISTAN	273 230	3.73%	16	78 393	1.3%	6
CHINA	263 594	3.59%	8	356 797	6.3%	13
TURKEY	40 635	0.55%	7	57 933	1.02%	7
UNDETERMINED	351 849	4.8%	23	457 570	8.1%	20
TOTAL	7 335 446	100%	310	5 665 584	100%	185

Source: MIDN (French inter-ministerial committee on ship dismantling)

Firstly it would appear of interest to compare historical data on competition between the Southern Asian countries in order to understand why, within one same geographical region, Pakistan has fallen behind the two others and how Bangladesh has replaced India as the leading dismantling country.

<i>In dwt</i>	1994	2000	2005	2006
India	6.5 Mt	8.2 Mt	1 Mt	1.3 Mt
Bangladesh	3.1 Mt	4.2 Mt	3.6 Mt	5 Mt
Pakistan	3.7 Mt	3.4 Mt	0.08 Mt	0.3 Mt

One decade ago India handled twice as much volume as Bangladesh and accounted for 47% of world dismantling. At the present time India only represents one quarter of the volume handled by Bangladesh. This regression by Pakistan proves to be even more impressive since it fell from its second ranking world position to the benefit of Bangladesh as early as 1995 (3.1 Mt against 3.9 Mt), then lost its third place to China between 1999 and 2005 before re-conquering this position by a narrow margin in 2006.

The increasing gap between India and Bangladesh finds an explanation in the purchase price per ship lightweight tonne (weight of metal only) as is indicated by the monthly average of prices in dollars per lightweight tonne, given in the following table below:

Month	Oil Tankers		Bulk carriers	
	Bangladesh	India	Bangladesh	India
January	361	370	363	350
February	385	360	301	360
March	360	385	333	358
April	394	374	360	360
May	389	380	371	341
June	376	439	348	340
July	377	380	294	278
August	402	590	365	360
September	427	n.d.	402	273
October	469	n.d.	n.d.	n.d.
November	463	559	458	382
December	457	815	418	435

The figures in this table speak for themselves, since they indicate that Bangladesh regularly increases its purchase prices and India has trouble following since it combines purchases at prices not much below those of its rival, purchases of vessels in poor condition and almost abandoned which have to be taken in charge at distant ports (for example a ship fire damaged in Cuba and difficult to tow was bought at the low price of \$139/t), and purchases of ships that are more complex to dismantle (therefore a source of fewer long length metal sheets that are easy to access, but having more equipment to be recovered). *A contrario*, some breakers' yards in Alang do not hesitate to pay a high price for ships containing a large mass of metals with more recovery value than steel: a chemical tanker with 700 tonnes of stainless steel was bought at \$815/t, another with 624 t of the same metal was valued at \$880/t, and the presence of copper also increases buying prices. These prices are justified in that stainless steel is worth at least 10 times the price of ordinary steel (\$2000 compared with \$200). They explain why, in some months, the Indian mean buying price is higher than the Bangladeshi price.

It is to be noted that at end 2006 a bulk carrier was bought by Bangladesh within a price range of \$460-490/t, the range for India being \$415-440, for Pakistan \$375 and for China \$240. Oil tankers are practically all bought by Bangladesh, at between \$475 and \$495/t, a small number by Pakistan at around \$370/t, but aside from one case at \$439 and another at \$425/t, India has bought practically no oil tankers since the price has moved beyond the \$360-370/t range.

From these comparisons, it can be seen that India is rather more following a market niche policy, giving priority to equipment and non-ferrous metals over standard scrap. The situation is more difficult for

China, Pakistan and Turkey, trapped between world scrap prices at around \$200 par tonne and the very small profits made out of equipment for recycling.

II. Three countries on the decline: China, Pakistan and Turkey

II.1. China's case: priority given to ship building and a scrap purchase price that is too low:

China drew advantage from the market withdrawal by South Korea, Japan and Taiwan to move up to first place in 1993 becoming the world's leading dismantler. However this breakthrough failed to hold owing to the few number of shipyards interested in this sector (from 90 to 60), due to the dynamic growth of the shipbuilding activity. These shipyards, distributed all over China's coasts but chiefly close to Shanghai and in the Xinhui region, form a supply of scrap for electric furnace steelworks that is non-negligible in the context of economic overheating and massive imports of iron ore from Brazil.

The dismantling activity was extensively handicapped by the State's decision to limit scrap prices to \$200 per tonne of scrap delivered to the steelworks, a price that is far too low when the scarcity of raw materials from ship scrap has led to rising prices for ship sales. Those yards which purchased ships in the range of \$140 to \$150 per lightweight tonne between 1995 and 2002, came to face prices of \$224 in 2003, \$333 in 2004 and \$314 in 2005. In 2006, when the scrap price of \$200/t was applied, they were only able to buy ships on an *ad hoc* basis when the Bangladeshi and Indian breakers' yards were unable to take on any more work: \$228 for an oil tanker, \$240 for a container carrier and \$290 for a bulk carrier. This lack of purchase power can be explained by the fact that the Chinese shipyards draw little profit from recycled equipment unlike the Southern Asian countries, and are therefore highly dependent on scrap selling prices.

This shortage of raw materials had consequences on production: the Chinese share in world production was still 22% in 2000, but is now only 3.6% ; in 2005 it dismantled 13 ships i.e. 356,797t, and only 7 ships in 2006 i.e. 263,594t

The strong point of Chinese breaking yards is that they follow the procedure of Western yards and do not use the technique of beaching vessels. Also some yards are gradually drawing close to international standards, in particular with respect to the handling of asbestos, PCBs and heavy metals.

Unable to combat competition by Bangladesh, and to avoid being evicted from the sector, China is endeavouring to position itself up-market by specialising some of its ship breaking yards which have signed long-term dismantling contracts « under international standards » with Maersk, Shell and BP. It is therefore following an open policy in the current negotiations for the IMO Convention.

II.2. Pakistan:

This country emerged as a pioneer in the 70s by being the first to set up a dismantling industry in Asia that was separate from shipbuilding. There was a relevant economic justification insofar as Pakistan, like Bangladesh but unlike India or China, has no local iron ore resources and has to import from Europe all the scrap it needs to supply the electric steel-making sector.

The Gadani site is located in the Baluchistan region, 70 kilometres west of Karachi and covers several kilometres of beaches grouping together 25 companies each employing teams of 100 to 200 workers per ship to be dismantled (generally from 500 to 50 000 tonnes).

Working conditions are dangerous and difficult. Little effort has been made to mechanise operations and legislation is in the preparatory phase. Most operations are conducted using blowtorches and manual cutters. Health conditions are precarious.

Migrant workers employed at Gadani only have work on days when there is a ship to be dismantled. Their wages and harsh piecework make the labour force in Gadani the cheapest in Asia. This gives a competitive edge which does not prompt the owners of breakers' yards to increase mechanisation.

Marine environmental conditions also appear to be critical in an ecosystem that is already weakened.

The event which almost caused the end of the ship breaking activity in Gadani was the decision to levy 45% customs duties on imported vessels. Within a context when the shortage of ships was pushing prices upwards, Gadani lost its competitiveness. In 1999 this site still represented 15% of the dismantling market, whereas in 2005 it only demolished 6 ships (78 393 dwt), i.e. 1.3% of the market. Faced with a rapid decline, industrialists and local authorities lobbied to have the taxes reduced. The expected recovery was almost immediate: in 2006 Pakistan was able to buy 16 ships (273 230 dwt) and to overtake China by moving back to third-ranking world position with 3.73% of the market. This recovery may be temporary however as, since October 2006, Gadani has only managed to buy only one small ship owing to price levels reaching the \$500/t mark during the last quarter.

Pakistan's doubling of production between 2005 and 2006 was related to the short-term economic situation, and should prices continue to remain at over \$450/t scrap production in Gadani will be in a precarious position owing to head-on competition by scrap imported from Europe. This situation does not motivate any modernisation of the site.

II.3. Turkey: its closeness to Europe is an asset

This country is the world's leading scrap importer with 12 million tonnes per year, of which 2.8 Mt from the EU (31% of European exports), which it imports to supply its steelworks whose steel production totals 22 Mt, i.e. just slightly more than France.

Scrap of maritime origin only represents 1.25% of this steel production; it is transported by trucks from the 30 scrap yards at the sole Turkish site in Aliaga to five neighbouring steelworks of 6 Mt steel capacity located only a few kilometres away.

The Aliaga site, lying on the rocky coast of the Aegean sea, 60 km from Izmir, was set up in the early 70s and at its peak in 1999 it dismantled 650 000 tonnes of steel with a workforce of 2000. The increase in prices of ships to be dismantled suffocated the Aliaga breaking yards who can only pay around \$200 per lightweight tonne i.e. an intolerable differential of \$200/250 with Southern Asia. This price limit is due to the fact that the steelmaking industry buys scrap at only \$200-\$250/t. The crisis which the Turkish dismantling sites have been facing since 2003 is tending to heighten with a 35% drop in production between 2005 and 2006.

The 40 635 or so deadweight tonnes currently dismantled per year in Aliaga, by only 400 workers, henceforth only represent a very marginal share on the Turkish steelmaking scene. The Government in Ankara has just taken the decision however to ensure the continuity of the site by extending the time period of land concession leases, encouraging the scrapyards to group together to use an asbestos treatment unit and encouraging those with good performance levels to apply for ISO 9001, ISO 14001 and OHSAS 18001 certification. Also, some yards have started to hollow out the rocky coast to lay concrete lined slipways so that they can treat ships above ground level, thereby reducing the pollution discharged into the sea.

As part of this strategy to achieve gradual improvement, Turkey plays an active role within the IMO and it has offered to dismantle two ships free of charge in accordance with future standards under the supervision of experts from the IMO, ILO, and BC. For this purpose it will be holding a meeting of the countries and organisations concerned in Aliaga in October 2007.

Turkey's main advantage is its inclusion within the perimeter of the OECD allowing it to receive ships with no prior pollutant removal from some EU countries, provided its installations comply with standards. Turkey has committed itself to achieving this compliance within one to two years so that it can benefit from government-owned vessels unable to be sent to Southern Asia due to the presence of hazardous substances on board.

The Aliaga dismantling yards which were supplied with German equipment in 2004 for the contract to dismantle the frigate Rommel, are therefore endeavouring to re-position themselves at the higher end of the market so that, over the shorter term, their standard-compliant facilities will be the most competitive within the OECD.

III. A dismantling duopoly: Bangladesh and India

Contemporary dismantling history has two very distinct phases. The 1994-2003 decade was characteristic in the limited number of players, practically all the industrialised countries having withdrawn from the market (EU 0.2%, United States 0.1%); India held a predominant position with 44.5% of production, followed by Bangladesh (19.8%), China (15.2%), Pakistan (8.3%) and some other producers in the throes of becoming marginal such as Turkey (1.4%), Vietnam (0.9%) and Mexico (0.2%).

Freight rates, steel prices and prices of vessels to be dismantled soared in 2003, leading to an increased concentration of the countries producing ship scrap over the period 2004-2006. At the end of this period the total share of Pakistan, China and Turkey combined only represented 7% of a market crushed under the power of the Bangladesh-India duopoly (86%) which fixed purchase prices and took over most of the vessels to be dismantled (256 out of 313).

III.1. Bangladesh, the predominant player:

On and after 1972, 32 dismantling sites set up over 8 square km in Sitakundu, close to Chittagong, on the Gulf of Bengal. They have fundamental importance for the economy of this « LDC », which has no iron ore deposits. The ship dismantling circuit, according to the local authorities, is a source of living either directly or indirectly for 3 million people. It provides 70% of raw materials to the country's steelworks and foundries, contributing to the production of over 2 million tonnes of steel.

The shortage of vessels to be dismantled has prompted Bangladesh, since 2003, to conduct systematic outbidding over competitors with a mean purchase price at the end of this period of \$470/t for an oil tanker, and \$425/t for a bulk carrier. As a result, its world market share has moved up from 19% in 2000 to 68.14% in 2006.

At the present time, around twenty active sites in Sitakundu employ 40.000 workers, most of whom are paid at the local minimum rate of a few dozen Euros per month. Most of the profits are made from recycling maritime equipment and from metal sales to wire drawing plants and foundries in Chittagong and Dacca.

Working conditions appear to differ little from those in Pakistan. Bangladesh refused to handle the *BLUE LADY* (ex-"Norway" ex-"France"), but continues to receive other polluted ships.

The Sitakundu dismantling sites are currently specialising in large-size oil tankers and cargo carriers from which they can extract long plates of steel that can be directly treated in local workshops.

It would be difficult for the country to lose a comparative advantage for the low-cost manufacture of long products (concrete reinforcement rods in particular) made from metal sheet from dismantled ships.

Consequently, it literally asphyxiated its chief competitors by contributing towards a continuous increase in ship selling prices in 2006. In March it bought an oil tanker at \$380/t, in December it paid \$487/t. This increase by over \$100/t, in 9 months has marginalized its competitors, only India attempting to follow the outbidding at a more measured pace.

Bangladesh, having no local resources and little foreign currency to import iron ore or scrap, will do everything possible to maintain its current comparative advantage. Its negotiation strategy at the IMO needs to be specified but could give priority to conditions for upgrading its dismantling sites.

III.2. India, struggling to follow the overbidding, nevertheless manages to resist

A few years ago, pictures of television documentaries gave Indian scrap yards an image based on the situation of the worst dismantling sites, however the situation is changing.

The main sites in Alang, in North-West India, in the rich agricultural state of Gujarat, are backed by their own foundries and wire drawing plants, and therefore have the benefit of quick direct access to raw materials. With no go-betweens and with energy savings through re-rolling processes, good profits can be made. But Alang's specificity lies with its hundreds of micro-businesses distributed over the 10 kilometres of roadway alongside the scrap yards. Each company repairs and renovates a specific type of equipment recovered from ships: engines, air-conditioning units, refrigerators, mirrors, armchairs, deck-chairs, tableware, compasses, fans. In a country in which industrial production is still limited compared with the size of the population, numerous purchasers are willing to travel hundreds of kilometres (some even come from New Delhi) to find the equipment they are looking for. Whereas in Chittagong the shops set up along the roadside are somewhat basic, in Alang the variety of objects, perfectly set out, points more to an organized market.

These two complementary sides of recycling carried out in Alang meets an economic need owing to the decreased volume of ship scrap available. Small steelwork units machine reinforcement rods for the building industry that is constantly expanding subsequent to the economic growth, and they continue to make a profit. It is true that the volume of this production is marginal in a country which has become the world's eighth steel producer with 35 Mt, 43 Mt expected over the shorter term and 110 Mt programmed for 2020, but it has the advantage of being complementary and is a major labour provider.

The site in Alang is in the form of a beach in an arc of a circle about ten kilometres in length and bordered by a road link. The regional maritime authorities let land lots 60 metres wide either side of the roadway (the beach being used for dismantling and the land area for treatment of equipment to be recycled, storage of metals and accommodation for the workers). Some owners have been able to rent 3 or 4 land lots when they became vacant but there has not been any re-parcelling to make them continuous which would have facilitated work operations however, and would have encouraged the purchase of better performing machinery.

The maritime authorities are also in charge of developing the area and in recent years have invested in an occupational training and work safety centre (700 trainees per year), a 750-seat amphitheatre, an AIDS prevention centre, a field hospital, two ambulance and emergency centres (the hospital in Bhavnagar is 60 kilometres away i.e. two hours by road congested with carts and buffalos), a fire station, general water supplies...

Since tightening of legislation by the Supreme Court in 2003, particular emphasis has been laid on minimum safety standards on work sites, with checks being carried out to verify that workers wear hard hats, protective gloves and shoes. In January 2006, the French embassy found that very few workers were

provided with this equipment, but in September 2006 the committee set up to examine ship dismantling conditions (*Mission interministerielle sur le démantèlement des navires – MIDN*) was able to verify that this equipment was worn by a large majority of workers.

The fight against pollution, and the safety of workers, is tending to become one of the priority tasks of the maritime authorities which have set aside an area of 70 000 square metres for the treatment of chemical or hazardous waste:

- An asbestos and glasswool treatment unit (chiefly by solidification), with a capacity of 50 000 tonnes, already in operation;
- A treatment station for PCBs, heavy metals and hazardous chemical waste, with a capacity of 30 000 tonnes, a welcome replacement to the current shuttle of trucks carrying this waste to the factory and Luthra analysis laboratory in Surat, 200 kilometres distant from Alang;
- A landfill centre for solid industrial waste, having a capacity of 25 000 tonnes.

According to the provincial authorities the objective is to encourage the private sector to invest under co-financing programmes (State share of 25%) in the construction of a pier 6 metres wide for mooring the ships and siphoning cargo holds and liquid residues.

The Alang site began its operations on a large scale in 1982 and reached its peak period between 1999 and 2003, employing 200 000 workers for dismantling and the same number for follow-on activities providing 10% (3 Mt) of the country's steel production. Between 1982 and end 2005, 4,240 vessels representing 30.4 Mt of steel were recycled. Since the crisis in 2003 the number of scrap yards has fallen by two thirds, dropping from 173 to 50 following after 78 bankruptcies and 45 temporary administrative closures for non-heed of environmental legislation. There are presently 40 000 workers producing 1.5 Mt of steel which now only accounts for 4.34% of India's steel production.

The scrap yards which have remained can be divided into two categories.

The first includes those whose owners have no wish to invest and will endeavour to survive with « small-time jobs » side-stepping regulatory obligations and handling local craft or vessels from countries paying little attention to international legislation (Russian trawlers...).

The second includes those sites which have chosen greater horizons by investing in modernisation (cranes, cutting machines), individual protective equipment and worker training, minimum heed of the environment and ISO 14001 and OHSAS 18001 certification. Their owners confirm their willingness to go further, by upgrading their sites to international standards provided that in exchange the international community (IMO and EU) guarantees a supply of ships to be dismantled. In particular, they express their desire to treat vessels containing structural hazardous substances in accordance with international standards, and will apply to the IMO or a classification body designated by the IMO for a quality label in this respect. This increased expense, which they estimate to be in the region of \$100/t, would be offset either by a rebate on ship sale prices or by a long-term commitment to send ships in priority to countries who pay heed to the environment.

These intentions and this scenario must evidently be confirmed.

As for legislation governing the dismantling sites, this is undergoing a rapid change. Almost non-existent in 1982, it was introduced in 2003 by the Supreme Court but lacked the equivalent of enforcement orders. The Clemenceau case prompted the Court to re-examine the issue in January 2006, to dissolve the application committee which had not been satisfactory and to appoint a new committee of experts in charge of drawing up enforcement rules. The expert committee submitted a 200 page report, inspired by existing Indian legislation, international conventions signed by India, ILO recommendations and work in

progress at the IMO on the draft convention. The new rules are soon to be promulgated by the Supreme Court.

Not all the dismantling yards will be able to develop at the same pace, but the Indian authorities have made it clear that they are anxious to apply the new legislation. In exchange some owners will no doubt plead for lowering of the 25 % taxation rate that is substantially higher than in Bangladesh and, *a fortiori*, higher than in Pakistan.

Alang is an interesting example of a dismantling centre in which dangerous worksites exist side by side with worksites drawing close to conformity with international rules. The latter worksites appear to place their stakes on setting up partnerships with western countries providing for their upgrading to international standards.

