

Science for Environment Policy

Perspectives on shipbreaking: economic, social and environmental impacts at Alang-Sosiya

The Alang-Sosiya shipbreaking yards in India highlight the inequalities and opportunities of global waste management. The yards, which recycle retired ships from more economically developed countries, have dramatically altered the ecosystems and social structures of the local area. A study looking at stakeholder perceptions analyses different positions on the social and environmental impacts of the yards.

The first ship was beached in this region of north-east India in 1983 but, by 2012, Alang-Sosiya accounted for 95% of India's ship recycling — at a time when India, in turn, accounted for nearly half of the world's ship recycling. Nearly 180 Alang-Sosiya ship recycling yards operate out of a 12 km-long coastal strip, with a cumulative processing capacity of approximately 3.5 million tonnes/year¹.

This study, which combines data from interviews, official documents, media coverage, legal analysis and direct observation by the researcher, investigated the 'political ecology' of the area in 2009, focusing on the distribution of benefits and burdens among shipping industry stakeholders.

Semi-structured or in-depth interviews were conducted with 64 respondents (local villagers, farmers, fishers, shipbreaking entrepreneurs, workers, political and administrative authorities, legal experts, academics and activists). Interviewees were selected to represent a broad spectrum of interests and knowledge regarding shipbreaking. Focus groups were also conducted with fishers, farmers and workers. Special focus was given to the *Blue Lady* legal case at the Indian Supreme Court during 2006 and 2007.

The study poses the problem of the Alang-Sosiya ship waste being released into the sea, burnt on site or dumped in surrounding areas where other industries also operate, such as farming fields. Fishing is the main livelihood of an estimated 10 000 people in the area, but fish monitored in the area have been found to contain dangerously high levels of heavy metals and, according to local fishers, the diversity and quantity of catches was diminishing. Local people also reported respiratory and skin problems from burning waste, and that oxen and cattle have died from eating waste. Those living close to the operation yards were affected by noise pollution.

While land and labour costs have increased in the area, villagers reported that the quantity and size of crops have decreased and several wells had been abandoned as the water is no longer seen as fit for consumption. However, new business and employment opportunities have also arisen in trade, transportation and retail after the arrival of the yards.

The paint flakes and chips from ships' hulls have been found to contain several toxic heavy metals: iron, copper, zinc, lead, tin, chromium and cadmium. Plate-cutting workers on the sites are exposed to elevated levels of heavy metal pollutants emerging from the combustion of this paint during the course of open-air plate cutting², and heavy metals can also contaminate a surrounding ecosystem.

The Indian ship-recycling industry has taken some positive steps to reduce work-related fatalities and accidents, such as improvements in the technology used (e.g. cranes instead of manual lifting) and security (e.g. asbestos chambers, although they are not used). However, the industry always uses the beaching technique and significant improvements cannot take place until a dry dock is used.

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1. & 2. Updated data from Deshpande, P. C., Tilwankar, A. K. and Asolekar, S. R. (2012) A novel approach to estimating potential maximum heavy metal exposure to ship recycling yard workers in Alang, India. *Science of the Total Environment* 438 (Nov): 304-11.

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Official data reported 470 fatalities between 1983 and 2013³. Workers on the shipbreaking yards are predominantly seasonal migrants from poorer neighbouring states who reside in vulnerable housing nearby, and are thus exposed to the pollutants in the surrounding environment. They generally work 12 hours per day, six days a week, with a pay of between US\$3 and US\$7 (€2.64–6.15) per day (in 2009). Workers also reported the use of force by the local police to suppress sporadic strikes disputing pay, safety and working conditions.

The second part of the study looks at a case study of an ocean liner, the *Blue Lady* (former *SS France*), at the Indian Supreme Court in 2006–2007, to illustrate the valuation decisions made at each stage of the ship disposal process, and to interrogate the way different stakeholders understood the industry's costs and benefits.

Ships that are to be retired are sometimes sold to brokers and buyers who temporarily acquire ownership of the end-of-life vessels, a system that may allow the original owners to bypass liabilities and regulations.

In the case of the *Blue Lady*, which contained 1250 tons of asbestos, ownership was transferred multiple times en route to the Alang-Sosiya yards. An estimate of €17 million was quoted to decontaminate part of the in-built asbestos in Germany, after which the ship owner decided instead to dispose of the ship. The Malaysian mother company sold it through a Bermuda-based subsidiary to a Liberian company for \$10 (€8.78) (the real price was estimated at \$15 million (€13.17)). Despite the applications of Indian environmental activists, the ship was sold to one Indian shipbreaking company, which sold it to another, and the ship was beached at Alang-Sosiya and allowed to be dismantled.

The case of *Blue Lady* was taken to the Indian Supreme Court due to the health and environmental risks it posed. The position of the shipbreaking industry representatives was that shipbreaking is a 'green' industry as it saves non-renewable resources and does not produce solid waste. It was also represented as an economic opportunity as it employed people, returning good quality steel to the domestic market, and raising government funds in the form of customs duties, income and sales taxes. The main issue was seen as the occupational hazards and not the environmental impacts.

This perspective came into sharp contrast with that of the environmental justice activists, who represented the arrival of the 'toxic' ship as hazardous waste which was non-compliant with international law. The 'polluter pays' principle was invoked in a call for decontamination prior to export, transparent pollution monitoring and proper waste removal.

The Indian authorities took a similar view to the shipbreakers, emphasising the public, economic and environmental benefits of the practice, and stating that hazardous substances are managed safely, and that the ships are not 'hazardous waste'.

In 2007, the head of nearby Sosiya village filed an application on behalf of 12 *sarpanches* (village heads) and 30 000 people who lived within 25 km of the shipbreaking yard. The applicants opposed the dismantling of the ship because of the damage it would do to the recycling workers' and villagers' health and to the local environment on which many people depended (most of the population consists of farmers and fishers). They noted that Indian shipbreakers did not have the technology to dispose of the estimated 1000 tons of asbestos safely, and that the floating oil near the coast was forcing local fishers to fish beyond 5–6 km out to sea.

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3. Obtained from the Gujarat State Industrial Safety and Health Department, Ahmedabad, 15 May 2014. Sahu, G. (2014) Workers of Alang-Sosiya. *Economic & Political Weekly* XLIX (50): 52–59.

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Permission was granted in 2007 by the Supreme Court to dismantle *Blue Lady* in Alang-Sosiya, citing that it would employ 700 workers and bring 41 000 tons of steel to India, relieving the pressure from mining activities. The adverse effects on the ecology and environment were considered to be hardships fairly balanced by a project of public utility; sustainable development was interpreted as a positive economic benefit at the national scale.

The researcher notes that the court did not quantify costs and benefits, nor conduct a multi-criteria evaluation, either of which might have included long-term environmental impacts and the cost of human health and lives. Common across all perspectives, the lack of technology was seen as a barrier to safe industrial practices.

The international regulations for ship recycling, which could have prevented *Blue Lady* from reaching Alang-Sosiya, prompt the question of what EU policymakers should do to ensure that international shipping conventions are upheld.

The forthcoming [European List](#) intends to ensure a safe final destination for European ships. Owners of ships flying the flag of EU Member States will have to ensure that their ship is only recycled in facilities that are on the European List, i.e. the facilities will have to comply with strict requirements, particularly in regard to removing hazardous materials. A first version of the European List will be published before 31 December 2016 and it will be regularly updated by the European Commission. The Commission will also issue guidelines on the requirements for ship recyclers and independent verifiers certifying the yards.

However, the researcher states that the issue of foreign (non-EU) flagged ships still needs to be addressed. In 2007, developed countries controlled about 65.9% of the world's DWT (deadweight tonnage, or how much mass a ship is carrying), developing countries controlled 31.2%, and economies in transition controlled the remaining 2.9%. The five top ship-owning economies together controlled 54.2% of the world fleet.

Fleet ownership, however, does not always reflect ship registration. Foreign-flagged ships accounted in 2008 for 67% of the world total, most of them registered in the so-called states of convenience, such as Panama and Liberia. In 2004–2005, 82.5% of the ships dismantled at Alang-Sosiya used a flag of convenience. Flags of convenience allow under-invoicing and can result in evasion of import tax, and facilitate ship owners' access to the shipbreaking market.

The researcher also mentions several recommendations for improving the global environmental effects of ship recycling, such as requiring ship owners to pay a deposit throughout a ship's life, which would eventually be spent on proper dismantling in a dry dock under safe conditions, rather than beaching. This deposit could then become a requirement for entry at any harbour (for example, in the EU, regardless of their flags), to ensure sustainable practices across national borders.

