

Good News/Bad News for Consumers in an Increasingly Energy-Challenged, Shipping-Dependent World

Contributed by Jan Lundberg
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Oil-Dependent Maritime Shipping Is Achilles Heel in Hoped-for Renewable Energy Economy

Here is good news and bad news for getting your cherished consumer goods shipped across the seas. Hadn't thought much about it? Have you thought about the oil-dependent ships' pollution and their readiness to switch to clean renewable energy? Well, they're not ready, and even if they could be, they don't want to be.

Good news: by now you may have heard of the revival of sail transport for what is now a niche market of delivering near-zero-carbon goods.

The next step, after the recent advent of traditional sailing ships pressed into service by North Sea sailors, is modern ships rigged with high-tech Dyna Rig sail power. The EU has supported the latter starting in 2012, and some of the organizers involved are carrying on, confident of offering a game-changer:

The SAIL project came to an end, with a lot of promising results. With the 3.5 million euro grant we could do a lot of preparative work, so we can now tell a lot about performances of the Ecoliner design. All the findings, movies and reports can be found on nrsail.eu.

Scarcity of oil will not be the issue for the time being, due to the current surplus of oil even while carbon divestments are progressing. But investing in non-fossil, wind hybrid transport creates a better value in future. Many multinationals understand this already. Public and governmental tolerance regarding dirty maritime shipping emissions is decreasing.

With this message we are approaching freight owners as we build a consortium that will operate an Ecoliner in the near future.

For more information please contact Robbert van Hasselt 1

Other good news is the pending completion of the 44-meter Avontuur cargo schooner in Germany (see our previous report on SailTransportNetwork.org).

Now for the bad news, which isn't all bad — unless you cherish the retail availability of, say, millions of Chinese plastic basketballs constantly shipped around the world via oil-propelled cargo ships.

Oil-Dependent Maritime Shipping as the Achilles heel for a Renewable Energy Economy

The consumer economy's days are numbered in large part because of the maritime shipping sector's oil dependence. This may sound like a wild claim. But this report and its referenced resources may convince otherwise.

To start with, today's forms of oil are no longer comprised solely of the cheap, easy, high quality stuff that built the present infrastructure for modern society. Yet oil is essential for today's cargo fleet of 90,000 oil-burning ships, and at any oil-price, this sector benefits from huge subsidies to keep the ships running. As for other means of propulsion, this is wanting — except for sails.

If we can stipulate that massively burning oil is not forever, and the world is slowly embracing some alternatives, this starts to open our eyes to what is going on with cargo shipping and what can happen in the near future. Because of the actual oil-supply outlook and the growing need to protect the climate, the continuation of the entire economy based on international and domestic trade's total reliance on oil is in doubt. How can this be so, and not discussed? Oil transport as a basis for the consumer economy is almost invisible, as maritime shipping is beyond the average person's view (unlike trucks). An intractable, invisible problem is guaranteed to catch people unaware and unprepared.

Oil supplies would need to be abundant, secure, and priced reasonably (without reliance on today's huge subsidies) for global economic stability to be sustained well into the future. For clear reasons, this is too tall an order — and this does not even take into account the vast pollution and global warming issues. Just 15 of the largest ships spew as much sulfur and other pollutants as all the world's cars. And the maritime shipping fleet's CO₂ emissions are the equivalent, if it were a nation, of the 6th largest emitter in the world. And no, the UN hasn't reeled in the shipping industry yet.

People who place their hopes in renewable energy to allow a sustainable future, with a semblance of business-as-usual for the consumer economy, are going to be severely disappointed. They have perhaps given thought, with hope, of a couple of sectors of the economy that seem to be "greening." But folks invariably forget cargo vessels and their huge, unspoken role. So when it comes to consumer products continuing to appear on store shelves and through online retailers, forget it: 90% of all goods traded take a ride on oil-powered cargo ships, and there is no fuel substitute on the horizon. So it's a deal breaker for the anticipated renewable-energy powered consumer economy of tomorrow.

Consider also that overall consumer spending makes up two-thirds of the U.S. economy. Without "everyone" being able to buy the long-distance stuff, what happens then? Answer: economic crash. 2 The maritime shipping industry itself is an important part of the global corporate economy. 2.a

The boosters and promoters of renewable energy cling to their panacea for perpetuating today's fossil-fuels based global consumer economy, even though the alternative energies are not scalable or as versatile. These folk leave out or gloss over the massive role of oil's contribution to: (A) transport of goods, and (B) agriculture, which today offers food security for billions of us through petroleum and petrochemicals. The vulnerability of the food sector has been amply explored elsewhere for over ten years, and has been addressed by the locavore movement, permaculture, farmers markets, etc. Yet these programs have not put a dent in the problem of 10 calories of fossil fuels' input utilized on average for every one calorie of food produced — which does not include transportation.

Back to maritime shipping: When we consider that 90% of all products bought & sold travel on oceanic cargo ships, and that the goods and products — iPhones, computers, cars, other machines, household items such as lamps, food, clothing, etc. (the list goes on and on) — have to keep being shipped and sold to consumers with plenty of money to buy them, the limitations of renewable-energy systems that are for mainly electricity production ("all our energy needs," goes the hype) are starkly clear.

So, even if all sectors of the consumer economy are somehow renewable-energy powered, except for ships, what will remain of today's consumer economy without all that cargo brought by the oil powered ships when oil supply dries up? Another geopolitical oil shock could happen tomorrow. I was part of the Lundberg Letter team that predicted the Second Oil Shock, in 1979, and I expect another shock that will be bigger and much harder. Whenever and however oil depletion or supply crisis hits home, or whether due to a global financial meltdown, much less consumer stuff will, at some point in our lifetimes, be sent across oceans, and this severely constrains or kills off the consumer economy as we know it.

What preparation for this is being made? "Economic growth" is no longer the answer, as it has so far depended on cheap, easy-to-extract, high-net-energy-yield oil whose steady demise explains why growth as we know it is history.

Although sailing ships can move goods trans-oceanically, and even if thousands of Ecoliners were to be built soon, the reduced volume we will see for world trade means a strangling bottleneck for the longed-for "clean energy economy" for billions of consumers. The vast majority of people who bother to think about fossil fuels have hopes for a semblance of business-as-usual long into the future thanks to a technological fix, via solar panels and wind turbines as the centerpieces of sustainability. But they forgot about cargo shipping and its total oil-orientation, and the need for slashing carbon and sulfur emissions immediately. This may be mostly attributable to the prevailing idea that cutting way back on energy consumption and changing one's lifestyle is inconvenient and tantamount to "doom and gloom."

One reason that the maritime shipping sector's oil-dependency is a major bottleneck to continuation the consumer economy is the steady decline of conventional crude oil extraction since 2005. Yet the shipping industry has no plans to cope with any constriction of oil supply. This is clear from international meetings that Sail Transport Network attended with the likes of Maersk in 2014 and 2015. The industry's inflated expectation for oil supply is revealed in the analysis by the U.S. Dept. of Energy in the accompanying chart of projections for a large geographical area of critical shipping. (see accompanying graphic)³

The shipping industry and its not-so-tough regulator the International Maritime Organization (IMO) promise "greening" of the industry and reducing carbon dioxide emissions to meet climate goals, and to cut sulfur emissions that currently kill about 60,000 people a year. But the reforms can be summed up as mere design tweaks for greater efficiency. They will have almost no significant impact in the big picture. For such a wealthy, powerful industry — the Maersk Group alone had a profit of USD 925m for 2015, against USD 5.2bn reported in 2014, a drop of 82% —surely some clean-running Ecoliners could be added soon to the industry fleet. ⁴

Yet, when it comes to getting away from oil dependence, the industry is inching only toward liquified natural gas — petroleum—that will only reduce CO2 emissions by just 25% over present oil fuels. People hear of kite sails on cargo ships, but they are not catching on, and offer only a 5% fuel-efficiency improvement.

Admittedly, sail transport for cargo is now just a drop in the bucket — compared to the conventional oil-powered shipping's 10 billion tons annually. But sailing ships will perhaps soon have to somehow step in for small but reliable volumes of cargo between local economies. At least the wind in sails will bring you your coffee, chocolate, and more. The challenge will be for sail power to become the only realistic alternative to today's oil-fired maritime shipping. In so doing, the status of what goods are "essential" will be redefined. Shopping for consumer goods may no longer be the pastime and drug that it has been for wage-slaves in need of a sense of freedom. Shop-'til-you-drop will enter the dustbin of history.

Picture a climate-changed, ravaged ecosystem where a town has lost its ability to completely feed itself from nearby farmland, and imports have dried up. Petroleum no longer is available to grow and distribute food as before. The best arable land was paved over, made toxic by industrial activity, and the population that enjoyed a large carbon footprint has yet to start growing much food locally as the inhabitants of Havana, Cuba did so well after they suddenly lost petroleum-agricultural capacity through Soviet oil and petrochemicals.

Yet, the town rallies to produce food from crops that enjoy the local climate, and there may be a surplus. This can be exchanged with another town's crop surplus, possibly from across the sea via oil-free sailing ships. Doing so across land-distances may be impossible without trucks and trains running on "cheap" (subsidized) oil. Electric engines for trucks and trains that utilize renewable energy were a fine idea, but did not get developed massively in time for petrocollapse and ecological collapse.

In conclusion

Renewable energy is a widely cherished goal, but how much of it is a mere dream? On the local level, much progress has been made, mainly symbolically, in terms of small, visionary projects (home power systems, community urban gardens, ecovillages, permaculture, depaving, pedal power, etc.). This addresses the food sector, water-pumping, and household electricity (although petroleum inputs are part of solar and wind installations). In a related fashion, local economics has gotten a lot of attention in terms of local currencies, cooperatives, eating strictly regional food, and more. Renewable energy has made major strides in major electric power generation in places such as Germany and Denmark for the grid. But most efficiently and sustainably it is for small, local, decentralized use. Since renewable fuels and power hardly provide any liquid fuels or chemicals, renewables have yet to even approach providing for major transport or growing food for millions. 5

The positive anti-fossil fuel developments being cheered on have not addressed the largely invisible basis of the consumer economy: the manufactured products and bulk cargoes shipped over the seas. Again, trucking is a related issue, and it restricts itself to land and can be easily neglected by the populace, almost as much as marine cargo shipping.

Meanwhile, the maritime cargo business can get clobbered regardless of oil availability and unprecedented climate protection. Sales figures of late are worrisome to industry and the stock markets. Maersk, the world's biggest ocean shipping company, admitted that all bets are off: "The company's business, [Maersk CEO Nils] Andersen says, is suffering from a 'massive deterioration.'" (He has seen nothing yet. - ed.) Meanwhile, the Baltic Dry Index measuring demand for commodities shipped over the water hit an historic low early this month. Freight rates have collapsed as growth in China slows. "Dry bulk ship owners will need to idle or demolish their ships to tide over excess capacity that has sent freight rate plunging... The recent slowdown in China has exacerbated overcapacity currently estimated at 30 percent... It's a toxic combination of negative demand growth and excess supply," a shipping analyst told CNBC.

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Although the total oil consumption worldwide by the maritime sector is only around 5% of world oil sales, there is little flexibility in upping the amount of fuel-share for the maritime sector. Other sectors want and need the other 95%. But the bigger reason for inflexibility is that refineries cannot alter by much their mix of petroleum product output, when to function optimally they must maintain a balanced stream of light, medium, and heavy oils, including the smaller slices for plastics and asphalt, for example. Moreover, refineries need to operate at a minimum of around 80% utilization of capacity and can hardly become low-utilization to cater to one sector.

There is no rational outlook for a refinery to mainly produce marine fuels, of which today are about three-quarters heavy,

residual oil, and the rest being lighter distillate or diesel. Although, some sources of heavy crude oil such as Venezuela could supply a specifically favored source of marine bunker residual oil. But refining would first still be necessary. So we cannot look for a shift by the oil industry to “save the day” and make allowance for extra fuel for ships. This means that when oil refining plummets, for any number of reasons, so will maritime trade.

There is no solution for maintaining today’s huge volumes of trade across the oceans. As we say in the sail transport movement, there are three options: (A) use existing sailing ships, whether small sloops, interior-remodeled yachts, or refurbished, old fishing ketches or schooners; (B) convert ships such as motorsailers (a semi-sailboat) and perhaps even freighters, by installing wing sails and keels, and, lastly (C) — the sexy, costlier and more energy-intensive approach — new-builds such as the Ecoliner.

After all, who knows when you might crave the coffee you’re missing that was previously shipped across the seas on a cargo “oil boat.” And, if your community does not want to live on just potatoes and a few other crops, for example, wouldn’t it be great to sail some of those over to another bioregion offering its own surplus of beans and fruit? It is time to get on board and not leave the future to the big shipping corporations and the oil industry — and their friends in government.

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References and further reading:

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2. “Retail sales provide insight into overall consumer spending, which makes up two-thirds of the U.S. economy...”
 Recession Fears: Retail Sales Could Give Weary Investors Hope Amid Sea Of Economic Worries, by Owen Davis, International Business Times, Feb. 11, 2016. [This is not itself the same as crash or collapse, but points to it. For more on petrocollapse and crash, see Culture Change writings. Other writers on the subject are Albert Bates and Dmitry Orlov. This mainstream-news report on collapse, from The Guardian (UK) Limits to Growth was right. New research shows we’re nearing collapse, is from 2 September 2014 but is current.]

2.a. The annual economic contribution of the liner shipping industry in 2007 was:

- Direct gross output or GDP Contribution -- US\$ 183.3 Billion
- Direct capital expenditure -- US\$ 29.4 Billion
- Direct jobs -- 4.2 million

- Compensation to those employees US\$ 27.2 Billion

- Full annual economic impact, including indirect and induced effects: US\$ 436.6 Billion, with 13.5 million jobs

Source: worldshipping.org

3.

Marine Fuel Choice for Ocean- Going Vessels within Emissions Control Areas June 2015 — U.S. Department of Energy (chart above), and

Review of Maritime Transport 2014, United Nations Conference on Trade and Development (chart below)

4. How can 15 ships spew as much sulfur and other pollutants as all the world's cars? Most diesel cars emit on average 0.3 to 0.5 per cent sulphur, whereas marine fuels were until recently capped at 4.5 per cent and will only be reduced to 0.5 per cent in 2020 through IMO regulation under the International Convention for the Prevention of Pollution from Ships. - STN ed.

"Big polluters: one massive container ship equals 50 million cars"

Paul Evans, April 23, 2009, Gizmag:

"the world's 90,000 ships chew through an astonishing 7.29 million barrels of it each day, — 2661 annually..." "The world's 90,000 vessels burn approx 370 million tons of fuel per year".

The UN's COP21 Climate meeting in Paris was attended by Sail Transport Network which published these reports on (A) the failure of the UN and IMO thus far to deal with shipping emissions and (B) on the opportunity of clean sail transport: Shipping Emissions Must Be Tackled at COP21 with Advances such as Sail Power, by Charlene Caprio, and COP21 Follow-up for Sail Transport and Its Fight against Shipping Emissions and for Resilience, by Jan Lundberg.

5. Questionable Renewable Energy Dreams: Where Do We Go from Here? by Jan Lundberg, Nov. 24, 2014

6. Energy efficiency and fuel saving have not been pursued by the shipping industry out of concern over the climate, nor with respect to any oil-supply precautions. Rather, it is "an effort to deal with low freight rate levels and to leverage some earnings... Maersk Line reported strong profits of \$1.5 billion in 2013, in contrast to generally poor figures posted by most carriers. Maersk claimed that the result derived from significant efficiency improvement per unit through network optimization, vessel retrofitting and the deployment of new, more fuel-efficient vessels, such as the new generation Triple-E 18,270 TEU ships, in addition to cost-cutting resulting from reduced fuel consumption and CO2 emissions. Maersk managed to save \$764 million in 2013 after cutting fuel consumption by 12.1 per cent. Maersk achieved these reductions despite having increased its fleet capacity by 0.2 per cent."

Maersk's CEO Anderson: It's Worse Than 2008: CEO Of World's Largest Shipping Company Delivers Dire Assessment Of Global Economy, Feb. 10, 2016

"The Baltic Dry Index on 10 February reached a historic low of 290. It is believed to be an economic leading indicator, because it measures the cost of shipping the raw materials (iron ore, steel, cement, coal, grains etc.), which are essential for many industries in a manufacturing process. When the demand for the commodities moved by the dry bulk carriers is rising, the BDI will rise too. Due to this fact, this indicator provides a clear view into the global demand for commodities and raw materials, which can be a good forecast in which direction, the global economy will go. Baltic Dry Index changes are mainly caused by the demand [side], because the supply of ships is approximately constant (the building of a new ship is a very long and expensive process)." - valuelwalk.com.

Perfect storm to keep shipping under water in Dry Bulk Market, International Shipping News. 24/02/2016.

"To get supply and demand in order, dry bulk vessel owners will need to park over 20 percent of their capacity," Rahul Kapoor of Drewry Financial Research Services told CNBC.

Transportation, consisting of road, aviation, internal waterways, rail and international marine bunkers, accounted for 55% of total oil consumption in 2008 — OPEC.org 2011 World Oil Outlook (chart shown above)

Sail freight projects

Sailing ships back in vogue as a green alternative to conventional shipping, by Susie Measure, The Independent (UK), 6 February 2016. Subheading: "More goods are being shipped under canvas as consumers object to pollution from container vessels"

Mediterranean initiative for reviving sailing of cargo: SAIL MED

The Avontuur's progress can be seen at sailtransportnetwork.org and timbercoast.com

The Tres Hombres and its sister ship Nordlys can be tracked at their parent company's website Fair Transport.

Background on the historic depletion of conventional oil (peak oil):

Peak oil is the overall maximum of successful exploitation of oil, whether of a field, region, nation, or global, almost always in reference to conventional oil extraction that happened in 2005 for the world.

Any large discoveries since recent decades have not changed the overall historic trend. Discoveries (as distinct from extraction) peaked globally decades ago. There is frequent hype that some oil new discovery is a game changer, but those pieces of news never look at historical trends.

Fossil fuels investment's appears to have been maxed out, indeed being divested. The debt incurred for any recent fossil projects is a big problem when oil prices are so nominally low. "[L]ess than £1bn was expected to be spent on new projects this year, compared to a typical £8bn per year in the last five years, oil is becoming an investment of the past." (— Flame Public Relations, London, UK, for Watly, a firm in Spain and Italy working on clean water, electricity and connectivity.)

Conventional oil production peaked in 2005, and since then the more difficult and far less desirable, low-net-energy-yield heavy oils have been relied upon via big subsidies. This poses a supply problem for petroleum up ahead, while masking the true cost of oil because of huge subsidies (war over oil is the biggest one with environmental damage incalculable). Also, any expansion of wars or some critical geopolitical in the Persian Gulf can suddenly squeeze oil supplies with serious, immediate global effects. Sailboats, of course, will have no fuel supply problem.

As the Hirsch Report for the U.S. Dept. of Energy showed in 2005, preparing for peak oil when it has hit is too late for avoiding severe economic repercussions. And maritime shipping is totally dependent on fossil fuels, because the tiny sail transport sector has barely fledged. The inroads made by “renewables” have been almost solely for electricity, and there has been next to no dent made in maritime shipping’s present propulsion source.

- Jan Lundberg, independent oil industry analyst and founder, Sail Transport Network