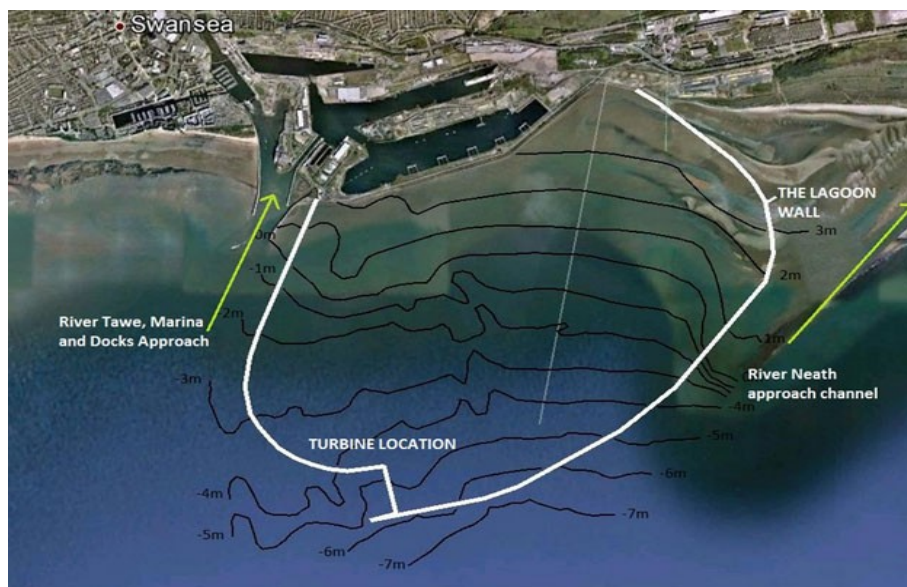


Here are some more articles and replies. In order to simplify, our comments are written in Times New Roman and in block while the letters are in Arial.

The Tidal Lagoon, Swansea Bay



What we have here is a proposed tidal-energy development for the bay of Swansea. The problem with any energy source is that companies all have an all too proven track-record of untrustworthiness. From nuclear to hydro, from hydro to wind, the damage they have done to the environment is second only if not equal to intensive farming. That said however we do need to find reliable clean green-energy and it is projects like these that may possibly provide it.



The Proposed Lagoon Wall

Please see film on the link below. In order to cut through the chat set the bar at the bottom of the screen to 1.10

<http://tidallagoonswanseabay.com/film.aspx>

Having looked at the plans for this project I can say that it does not obstruct the rivers on either side and so there are no actual problems of interfering with migratory fish. I personally found the futuristic theme-park approach more than a little vulgar but this is only a minor consideration when comparing that to the potential blade-speed problem. We're talking about twenty six, six meter diameter machines, and the killing possibilities these might unleash are no small issue. This particular development is set within an artificial lagoon but other projects operating within the sea or estuaries themselves are likely to become even more hazardous.

And then there's the question of all that rock. It obviously has to be quarried somewhere and it could be argued probably rightly so that it could be better used to build housing in the region from where it came. As much as I like and want to support green-energy, issues like this do need to be thought through and ironed out. Grids might help but these would quickly become blocked with seaweed, if not dead the fish, and so bringing down the blade-speed by gear ratio really would be the only way to resolve any problems.

Please see the link below and as always any comments will be appreciated.

<http://infrastructure.planningportal.gov.uk/wp-%20Recreational%20and%20Commercial%20Fisheries.pdf>

Anyway, we don't want nuclear, we don't want wind-farms and we don't want fracking. We need to find green-energy and so let's go through some of letters we've received from both them and the government department who's considering the proposal, together with any other bits of information I've managed to find.

From: comment@tidallagoonpower.com
To: cates1980@hotmail.co.uk
Subject: RE: 'Swansea Tidal Lagoon.'
Date: Wed, 3 Dec 2014 11:04:35 +0000

Dear Mr Piller,

Thank you for your interest in our proposal. Chapter 9 of our Environmental Statement (which can be found here) hopefully answers some of your concerns regarding fish. The rest of our application can be found on the Planning Inspectorate's website should this be of interest to you.

Many Thanks,

Joe Frampton, Consultation Assistant, Tidal Lagoon Swansea Bay plc

From: nigel.webb@tidallagoonpower.com
To: cates1980@hotmail.co.uk
Subject: RE: concerns about migratory fish
Date: Fri, 5 Dec 2014 14:59:24 +0000

Dear Mr Piller,

I have spoken to our Environmental team and their response is as follows

There are no works planned to the river Neath or the Neath estuary (as defined under the Water Framework Directive - this the boundary across the river mouth at HW). There is an existing training wall which was built in the Victorian era which runs from the "land" out to around mean low water springs. The lagoon wall will abut the lower section of the north west side of the training wall and will then continue offshore. The position of the wall adjacent to, but not interfering with, the Neath training wall was at the request of Neath Port Authority. As such the lagoon wall will not block or hinder flows to and from the river Neath and as such will not affect the passage of migratory fish.

Modelling of migratory fish to the Neath was undertaken for the ES and the worst case results were 0.002% Neath salmon. This was for fixed speed turbines which have a greater impact (variable speed turbines will be used). Fish model animations have been uploaded to the TLSB website and those starting with a "Ne" are for the river Neath.

<http://www.tidallagoonswanseabay.com/environmental-statement-other.aspx>

Nigel Webb Bsc MRICS

Head of Property

From: alex.herbert@tidallagoonpower.com
To: cates1980@hotmail.co.uk
Sent: Tue, 9 Dec 2014 13:32:54 +0000
Subject: RE: 'Swansea Lagoon Tidal Project.'

Dear Mr Piller,

In answer to the query below, **we are proposing to source rock from a currently-disused coastal quarry in Cornwall.** This is the most local source available and allows us to deliver rock by sea (rather than by road) and minimise our carbon footprint. It also means us creating new jobs in a deprived area of Cornwall. With regards whether the rock is better used for housing in Cornwall – the quarry is not viable for such use or I guess it would still be operating accordingly, but it has been disused for some years now. The lagoon creates the demand for the required volume of work that makes the site viable.

With regards tidal stream sources of energy, I refer you to my previous answer. Further, I would advise that tidal currents tend to be fastest in areas where flow of water is constricted – e.g. Anglesey and Orkney, rather than in the mouth of the Severn. Additionally, I would advise that UK Government policy (National Policy Statement EN-1) is for multiple, diverse sources of energy – so we need both tidal stream and tidal range projects. As indicated previously, tidal range projects will produce significantly more power than tidal stream (Tidal Lagoon Swansea Bay = 320MW, compared to Anglesey's Skerries project = 10MW, and future lagoons could be up to 4GW if the Swansea project is proven).

Kind regards, Alex

.....
Tidal Power [Issues\[edit\]](#)

Environmental concerns[\[edit\]](#)

Tidal power can have effects on marine life. **The turbines can accidentally kill swimming sea life with the rotating blades.** Some fish may no longer utilize the area if threatened with a constant rotating or noise-making object. Marine life is a huge factor when placing tidal power energy generators in the water and precautions are made to ensure that as many marine animals as possible will not be affected by it. The Tethys database provides access to scientific literature and general information on the potential environmental effects of tidal energy.[\[34\]](#)

Tidal turbines[\[edit\]](#)

The main environmental concern with tidal energy is associated with blade strike and entanglement of marine organisms as high speed water increases the risk of organisms being pushed near or through these devices. As with all offshore renewable energies, there is also a concern about how the creation of EMF and acoustic outputs may affect marine organisms. **It should be noted that because these devices are in the water, the acoustic output can be greater than those created with offshore wind energy.**

Depending on the frequency and amplitude of sound generated by the tidal energy devices, this acoustic output can have varying effects on marine mammals (particularly those who echolocate to communicate and navigate in the marine environment such as dolphins and whales). Tidal energy removal can also cause environmental concerns such as degrading far-field water quality and disrupting sediment processes. Depending on the size of the project, these effects can range from small traces of sediment build up near the tidal device to severely affecting near-shore ecosystems and processes.^[35]

Tidal barrage^[edit]

Installing a barrage may change the shoreline within the bay or estuary, affecting a large ecosystem that depends on tidal flats. Inhibiting the flow of water in and out of the bay, there may also be less flushing of the bay or estuary, causing additional turbidity (suspended solids) and less saltwater, which may result in the death of fish that act as a vital food source to birds and mammals. Migrating fish may also be unable to access breeding streams, and may attempt to pass through the turbines. The same acoustic concerns apply to tidal barrages. Decreasing shipping accessibility can become a socio-economic issue, though locks can be added to allow slow passage. However, the barrage may improve the local economy by increasing land access as a bridge. Calmer waters may also allow better recreation in the bay or estuary.^[35]

Tidal lagoon^[edit]

Environmentally, the main concerns are blade strike on fish attempting to enter the lagoon, acoustic output from turbines, and changes in sedimentation processes. However, all these effects are localized and do not affect the entire estuary or bay.^[35]

Corrosion^[edit]

Salt water causes corrosion in metal parts. It can be difficult to maintain tidal stream generators due to their size and depth in the water. The use of corrosion-resistant materials such as stainless steels, high-nickel alloys, copper-nickel alloys, nickel-copper alloys and titanium can greatly reduce, or eliminate, corrosion damage.

Mechanical fluids, such as lubricants, can leak out, which may be harmful to the marine life nearby. Proper maintenance can minimize the amount of harmful chemicals that may enter the environment.

Fouling^[edit]

The biological events that happen when placing any structure in an area of high tidal currents and high biological productivity in the ocean will ensure that the structure becomes an ideal substrate for the growth of marine organisms. In the references of the Tidal Current Project at Race Rocks in British Columbia this is documented. Also see this page and Several structural materials and coatings were tested by the Lester Pearson College divers to assist Clean Current in reducing fouling on the turbine and other underwater infrastructure.

http://en.wikipedia.org/wiki/Tidal_power

Source Wikipedia

From: alex.herbert@tidallagoonpower.com
To: cates1980@hotmail.co.uk
Sent: Tue, 9 Dec 2014 13:40:53 +0000
Subject: RE: 'Tidal Energy.'

Mr Piller,

As mentioned previously, we have a very sophisticated energy model that optimises power output for lagoons of all shapes and sizes, in any location, with any combination of turbines and sluices (of any size and capacity). This model is run in parallel with various models assessing environmental impact – e.g. coastal processes and water quality. We are confident that the current proposal for TLSB achieves the optimum balance of power generation against environmental impact. Swansea Bay is also the right scale for a first-of-kind project, as well as having the right seabed conditions, and creating fantastic job creation/regeneration/recreation opportunities by its location in front of a disused area of Swansea Docks.

We are looking at other sites in the Severn Estuary (which has the second highest tidal range in the world, but is unsuitable for tidal stream projects) and elsewhere for second and subsequent lagoons. The UK's "energy challenge" is sufficient that there is an urgent need for multiple power projects (preferably using renewable sources, of course). We hope to deliver 5 or 6 lagoons in UK waters in the next 10 years.

With regards the speed of our blades and their impact on fish, I refer you to my previous answers.

Kind regards, Alex

From: alex.herbert@tidallagoonpower.com
To: cates1980@hotmail.co.uk
Sent: Wed, 10 Dec 2014 10:49:57 +0000
Subject: RE: 'Swansea Lagoon Tidal Project.'

The application covers either fixed speed or variable speed turbines (because we were still modeling which were the best at the time of application back in Feb 2014). We now know we will use the variable **speed turbines** which operate at 30-**67rpm**, with an average of 50rpm. These produce more energy and have lower environmental impact than the fixed speed turbines (further detail is in various of the links I've sent previously – e.g. the fish and marine mammals chapters of the ES).

Kind regards, Alex

From: alex.herbert@tidallagoonpower.com
To: cates1980@hotmail.co.uk
Sent: Tue, 9 Dec 2014 13:52:44 +0000
Subject: RE: 'Swansea Lagoon Tidal Project.'

Mr Piller,

With regards blade-speed and fish impact, I refer you to my previous answers and links to documents. Our impact on fish is modeled to be within the range of natural variation. With regards impact on seals (and other marine mammals), I refer you to Chapter 10 of our Environmental Statement (and page 27 of the Non-Technical Summary for a less-technical read).

http://tidallagoon.opendebate.co.uk/files/TidalLagoon/DCO_Application/6.2_10.PDF

I hope you will agree that these issues have already been “thought through and ironed out”! We cannot put trash-screens (grids) over the turbines for the reasons you give, and because they dramatically reduce the power output – however there are many other mitigation measures we are proposing to reduce our impact on marine mammals, including special piling methods, acoustic deterrents and the like. More information is available in the Adaptive Environmental Management Plan (download it and search for “seals”).

Kind regards, Alex

And so! On opening the above link we come across this little gem and this is supposed to allay our fears. Please read below.

10.2 Legislation, planning policy and guidance

10.2.0.1. All cetaceans (whales and dolphins) are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (and amendments), under which it is an offense to take, injure or kill these species. Disturbance in their place of rest, shelter or protection is also prohibited. All species of cetacean are protected under the EU Habitats Directive 1992 at Annex IV and under the Bern Convention. Harbour porpoise and bottlenose dolphin are also protected under Annex II of the Habitats Directive 1992. In addition, harbour porpoise are also listed as an OSPAR threatened species listed in Appendix II of the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals) 1982.

All species of cetacean being protected under the EU Habitats Directive 1992 at Annex IV and under the Bern Convention. Most birds and bats are similarly protected under the same or other legislation but this has hardly protected them from wind-blade strikes. The only solution would be to keep the blade-speeds down and then problems would never arise. Relying on the best legislation in the world is never going to help if they're as limply enforced as the bird protection laws have been.

http://infrastructure.planningportal.gov.uk/wp-content/ipc/uploads/projects/EN010049/2.%20Post-Submission/Representations/Comments/Other%20Comments/25-11-2014%20-%20Deadline%20VI/TLSB_3_AEMP%20%2825%20November%202014%29%20-%20track.pdf

And much the same applies to this link. It's just a load of stuff they have to agree to abide by so as they can get go-aheads for planning concessions.

From: alex.herbert@tidallagoonpower.com
To: cates1980@hotmail.co.uk
Sent: Tue, 9 Dec 2014 14:50:10 +0000
Subject: RE: 'Swansea Lagoon Tidal Project.'

Thanks. The previous links cover all such matters. Finally, reducing blade speed is not the “only solution” as you will see...

All the best, Alex

From: alex.herbert@tidallagoonpower.com
To: cates1980@hotmail.co.uk
Sent: Tue, 9 Dec 2014 15:03:15 +0000
Subject: RE: 'Swansea Lagoon Tidal Project.'

I didn't mean that your suggestion wouldn't work, only that it is not the only solution. There are others too – e.g. acoustic deterrents which will stop the marine mammals coming close enough in the first place. Gearing and blade-speed is all accounted for in the energy model I mentioned.

Alex

From: SwanseaTidal@infrastructure.gsi.gov.uk
To: cates1980@hotmail.co.uk;
Subject: RE: 'Swansea Lagoon Tidal Project.'
Date: Tue, 9 Dec 2014 15:23:48 +0000

Dear Mr Piller,

Thank you for your email. The case team have spoken with the Examining Authority to seek confirmation as to whether they wish to exercise their discretion in accepting your representation into the examination. **They have decided not to accept your submission for the following reasons;**

The representation is from an individual who has not previously registered an interest with the examination (ie. not an interested party), and;

The representation has been received at a late stage in the examination process where, if it was accepted and published, interested parties would not have an opportunity to comment on its content;

This should not impede communication between you and the applicant but this will not form part of the examination.

Kind regards,

Katherine.

Katherine Chapman, Case Manager, Major Applications & Plans

The Planning Inspectorate, Temple Quay House, Temple Quay, Bristol, BS1 6PN

Direct line: 0303 444 5078

Mobile: 07527751100

Helpline: 0303 444 5000

Email: katherine.chapman@pins.gsi.gov.uk

Web: www.planningportal.gov.uk/planninginspectorate (Planning Inspectorate casework and appeals)

Web: www.planningportal.gov.uk/infrastructure (Planning Inspectorate's National Infrastructure Planning portal)

Twitter: @PINSgov

Didn't want too many awkward questions being forwarded would be my guess.

Concluding:

What really worries me is the fish-soup syndrome that would result. One fish gets chopped, then this draws in other fish which also get chopped and you quickly end up with a horror scene. Smells and tastes take on a whole new meaning in the oceans where they literally draw in fish from miles around. It's a bit like pouring a bucketful of blood and guts into the sea for attracting sharks only this would be a self-perpetuating mess. You can imagine Seals, Porpoises and Dolphins becoming a further extension of the same problem, sticking their heads into the blades and coming out with the most horrendous injuries if not dead.

Most wind-turbines, and I have timed them, rotate at around 20rpms. Given these have 40-50 metre blade-lengths this translates into a tip-speed of well over one hundred miles per hour. Thus, by combining this relatively low rpm with these sizes of blade-lengths is what makes them so lethal. With a max. 67rpm with a 3 metre blade, which is what we're dealing with here, any safety advantages from a shorter blade-length quickly becomes eroded with the faster rpm speeds they'll be using.

I conducted an experiment, albeit a bit of an unscientific one, I swung a three metre pole around on a three second rotation. That gave me some idea of how fast a blade-tip would be at 20rpms, and I can tell you it delivered quite a hefty clonk, certainly enough to give some poor porpoise or seal a bad knock to the head. Ideally we need an rpm no higher than 16, and even this is assuming the blades are going to be no greater length than three metres. The viscosity of water is about 800 times greater than that of air and so I shouldn't be impossible to achieve a workable solution.

If the industry were to gear them down to these more acceptable blade-speed-levels, the turbine-speed would be maintained, the blade-tip-speed wouldn't be a problem and we'd be looking at something that was very workable for all parties. We ourselves still support tidal-energy, just not the way things are currently run. We have metaphorically left the boardroom so to speak with our case notes in tatters. As a parting gesture I sent all parties our paper Zero-Carbons the options suggesting they might like to read and digest the final page.

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<http://www.telegraph.co.uk/news/uknews/road-and-rail-transport/11269872/Joanna-Lumleys-garden-bridge-over-Londons-Thames-given-go-ahead.html>

<http://www.itv.com/news/london/2014-12-02/planners-set-to-give-joanna-lumleys-garden-bridge-the-go-ahead/>

Another load airy-fairy of trap being dumped on London.

.....
From: defenders@mail.defenders.org
To: cates1980@hotmail.co.uk
Sent: Mon, 8 Dec 2014 09:27:15 -0600
Subject: Important update on Idaho's killing contest

Dear Robert,

Here's the latest on the proposed wolf and predator killing contest in Idaho:

Despite the Bureau of Land Management (BLM) rightly withdrawing its permission for a "hunters' rights" organization to hold a commercial predator killing contest on 3 million acres of public lands, the sponsors of the derby are still determined to move forward – so they're planning to hold it on national forest and private lands.

It's now up to the U.S. Forest Service (USFS) to step in and not allow this to happen on their lands. Tell Secretary of Agriculture Tom Vilsack to follow BLM's lead and close our national forests to Idaho's appalling wolf and predator killfest.

We need to make it clear once and for all that the federal government should not be in the business of approving 19th century predator killing tactics. BLM has made that decision and the U.S. Forest Service should do so as well.

Secretary Vilsack needs to step up and deny the use of national forest lands for a commercial killfest! Tell Secretary Vilsack that killing wolves and other predators for commercial gain on national forest lands is just plain wrong.

Contests like these have no place in the 21st century. The federal government shouldn't be encouraging or endorsing this outdated thinking which ignores the valuable role that predators play in maintaining healthy ecosystems. And it certainly shouldn't be allowing killing competitions on national forest lands.

The USFS needs to do its job and ensure that national forest lands are protected for the enjoyment of all Americans. BLM stepped up for predator conservation, and now it's time for the Forest Service to step up as well.

Please take action TODAY, and help us stop this event from taking place on national forest lands!

Sincerely, Jamie Rappaport Clark, President, Defenders of Wildlife

Please write to:

usfslei@fs.fed.us;

.....

Anyone who has been with us for the haul will know that we sometime get involved with human or social issues from time to time. One such case we've recently become aware of is that of the Job Centre Plus, Ammanford, Carmarthenshire.

It seems certain staff members were so unpleasant and obstructive that one of their clients was forced to give up claiming. They'd claimed they'd not received letters and had stopped all payments for ex-number of months but still expected this client to go in and deal with all of the necessary paper-work and procedures.

The clients parents, with who he/she was living, not only had no extra money coming in for the upkeep but were also had council-tax demands coming in as a direct result of Ammanford's underhandedness.

We've had dealings before with the Department of Work and Pension which these come under and certainly reminds us of a misplaced phone-call we challenged in an earlier report.

Please write to.

contact-us@jobcentreplus.gsi.gov.uk;

.....

From: messenger@truthout.org
To: cates1980@hotmail.co.uk
Date: Sun, 30 Nov 2014 15:49:34 -0500
Subject: Soy: Industry's Miracle Bean in Brazil

Soy: Industry's Miracle Bean in Brazil

Sunday, 30 November 2014 00:00

By Santiago Navarro F., Renata Bessi and Translated by Miriam Taylor, Truthout | Report



Photo: United Soybean Board

Soy was initially introduced to Brazil as part of a US military aid package. Today, its industrial cultivation results in a number of negative consequences, including deforestation and the expulsion of small-scale farmers from their land.

George Washington Carver, a 19th century African-American scientist, made inroads into industrial uses for agricultural crops, including research on the production of biodiesel from soybeans. The legume arrived in Germany in the 1930s and Hitler used it as a substitute for petroleum. In Brazil, it was introduced during the military dictatorship (1964-1985) as part of a military aid package from the United States. Today, Brazil is the second-largest producer of soy on a global scale, after the United States. This production is concentrated in the hands of a half-dozen corporations, including Monsanto, ADM, Cargill, Bunge and Louis Dreyfus.

Along the BR-163 highway a lush, green landscape unfolds. It is, however, entirely homogenous; there is no diversity beyond soy plants. On the highway, cargo trucks clump together, demonstrating the productive potential of this region. Cuiaba, the capital of Mato Grosso, with just 480 inhabitants, is the epicenter of soy production in this country. Over 5 billion hectares of soy have been planted in Brazil, and this image of abundant production is sold to potential investors in the soy market.

Local politicians are often big soy producers. One case is that of Blairo Borges Maggi, governor of Mato Grosso in 2005, businessman and Brazilian politician. At that time he was known as the "King of Soy," and in 2005, Greenpeace gave him the "Golden Chainsaw" award, due to the monstrous deforestation that his companies were responsible for, to make way for soy production in the Amazon.



Blairo and Arnold Schwarzenegger. The Governor of Mato Grosso met with the Governor of California last year, during a Conference on climate change

<http://blairomaggi.com.br/biografia/>

Please send a message using the form below:

<http://blairomaggi.com.br/fale-com-senador/>

Arnold Schwarzenegger. We all know what his solutions might be for helping the environment. Termination doesn't even come close.

"This ancient seed . . . is presented as a clean energy alternative, but it actually destroys biodiversity."

However, Mato Grasso is just the tip of the iceberg. Brazil is the fifth-largest country in the world, and soy is being cultivated across all its regions. "This legume is the principal raw material exported from Brazil. Soy is cultivated in all regions of this country. The states with the highest production are Mato Grosso and Paraná, which together produce a little more than half of the country's soy," Sebastião Pinheiro, a researcher and agronomist with the University do Rio Grande do Sul, told Truthout.

The rate of production, incentivized by the Brazilian government, is not surprising. Soy is being used strategically by the food, energy, health and biochemical industries. Through the process of refining soy oil, lecithin, an emulsifier, is obtained, which is often used in the production of processed food products such as hot dogs, mayonnaise, ice cream, chocolate bars, cereal and frozen food. It is also present in products that slow cell damage - and therefore lessen the signs of aging - to such a degree that it is considered a natural alternative to hormone replacement therapy.

Soy is also indirectly present on the plates of people worldwide. According to the Association of Soy and Corn Producers of Mato Grosso, in Brazil, 80 percent of soy flour is used as a base for processed animal feed. Vegetable protein is thus transformed into animal protein, and thus soy is present in the production of meat, eggs and milk.

"What is coming in 10 years is a sort of green industrial revolution, where plants will be turned into factories."

According to the Ministry of Agriculture, Brazil's national industry produces approximately 30.7 million tons of soy, of which 5.8 million tons go to the production of edible oil and 23.5 million tons go to make protein flour.

According to Pinheiro, it is not that soy itself is problematic, but that the processes of production for soy and its derivatives require huge extensions of arable land, millions of liters of water and the use of pesticides. "This ancient seed will revolutionize the processes of production dependent on petroleum, and capital will shift to those chains of production. It is presented as a clean energy alternative, but it actually destroys biodiversity."

"Green Plastic" Gustavo Grobo, from the Argentinian group Grobocopatel, known as the "King of Soy" in that country, mentioned in April 2014 that "what is coming in 10 years is a sort of green industrial revolution, where plants will be turned into factories."

Biodiesel and glycerin are obtained from ground soy, together with 10 percent alcohol (methanol). Glycerin is currently beginning to reshape production processes that are dependent on petroleum. Brazil has been one of the countries at the forefront of the production of biofuels, principally from sugar cane and soy. By producing biofuels using

soybeans, glycerol is obtained. It is the most recent novelty in Brazil - used principally as a substitute for propane - a resin obtained up until now from petroleum derivatives and used to make polypropylene, forming what's called "green plastic." Polypropylene is used in the production of packaging for food, textiles, laboratory equipment, automobile parts and many other products.

"Soy has become embedded in the petrochemical tree, from food to auto parts." Pinheiro argues that soy is changing the production processes that are dependent on petroleum. "Soy is the principal export product of Brazil and is strategic because it is being substituted for petroleum in the technological matrix. This petrochemical has been surpassed thanks to biotechnology," the agronomist told Truthout.

Modern biotechnology uses living systems and organisms in the development or production of useful products, combining the fields of biology, chemistry and engineering. It is applied most commonly in the production of pharmaceuticals, in agriculture, and in the production of industrial inputs. It includes the modification of genes, including the cultivation of cell and tissue cultures, DNA recombination technology and synthetic biology.

Since the peak of petroleum production in the 1970s, and as a result of its subsequent rise in market value, the search for alternatives has become a question of national security in many countries. This is especially true for the United States, which consumes 25 percent of energy produced worldwide, with just 4 percent of the world's population. Petroleum has also been essential for the production of plastic, auto parts and thousands of other products.

"Novartis, Bayer, Monsanto and other corporations have reduced their levels of production of agrochemicals and have instead directed a large part of their investments toward biosynthetic products, which use microorganisms, bacteria and fungi to convert simple inputs into more complex outputs. Systems are dependent on fermentation, on carbon chains or directly on the photosynthesis of the sun," Pinheiro said. They are particularly useful in the development of new pharmaceuticals, medical treatments and vaccines.

Petrochemicals Without Petroleum

The corporation Nova Petrochemicals in Brazil is the first of its kind in this country. It uses new chains of production, principally using soy derivatives to produce impact- and heat-resistant plastics, such as auto parts and construction materials. Nova Petrochemicals is part of the conglomerate Quattor, made up of Petrobras and the Unipar group. In 2010, the company Braskem bought the Brazilian company Quattor and the US company Sunoco Chemicals.

Currently, Braskem is the leader in thermoplastic resins in Latin America and is the third-largest producer on the continent. It has 18 plants in Brazil, and produces over 11 million tons of thermoplastic resin and other petrochemical products. In total, according to the company's website, it manufactures 16 million tons of products in 36 plants located in Brazil, the United States and Germany.

Braskem offers countless products, from construction materials and beauty accessories to air fresheners, solvents and automobile parts. According to the company, these products contribute to the global reduction of greenhouse gases.

"Soy has become embedded in the petrochemical tree, from food to auto parts," Pinheiro told Truthout.

The Biggest Producers in the World

According to an October 2014 report from the US Department of Agriculture (USDA), global production of soy in 2014-15 is estimated to be 311.2 million tons. Production in 2013 was 285 million tons. According to the USDA data, the United States has projected a production level of 106.87 million metric tons, followed by Brazil with 94 million and Argentina with 55 million. These countries are also the biggest global exporters.

"The three principal soy-producing countries produce 80 percent of global volume, which will mostly be sold to China to fatten chickens and pigs," said Merci Farin of the Federal University of Espiritu Santo.

However, according to 2014 data from the National Supply Company (CONAB), a public enterprise of Brazil's Ministry of Agriculture, the production requirement for such quantities of soy is 30.11 million hectares of land. This "requirement" has led to the decimation of entire ecosystems in order to make way for soy production.

"Bunge, ADM and Dreyfus dominated at least 95 percent of the exports from Brazil, and they are fighting for land in this country in order to be able to plant soy," Pinheiro said.

Ford, Biofuels and the "Green Revolution"

Petroleum is at the heart of the automobile industry, present at every stage in the production chain, but at the beginning this was not a foregone conclusion. As climate change provides the impetus for new models of transportation, an unevolved automobile industry risks stagnation. "Biofuels are an alternative that looks to create a new cycle of accumulation with a new fleet of vehicles built on the logic of clean energy," Pinheiro said.

The green revolution adopted the rationale of the production of food on a large scale in order to counteract hunger and poverty, but none of these social results came to fruition.

Henry Ford, founder of the Ford Motor Company, was the first businessman to apply the moving assembly-line technique in manufacturing in order to produce automobiles on a mass scale. At first, he was very interested in using the fermentation of alcohol and soy biodiesel as fuel for his cars, based on a recommendation by George Washington Carver. However, the Rockefeller family quickly made advances to consolidate their company, Standard Oil (later Exxon-Mobil), revolutionizing that industry at every level. "The technological matrix of oil was imposed by the Rockefellers, both as the principal source of energy in the chains of production and in the daily life in the United States and in the rest of the world," Pinheiro told Truthout.

However, down the line, Hitler ended up taking advantage of the scientific advances of Washington Carver. "Germany has no oil, and Hitler used the studies about soy and started to create petrochemicals without petroleum. From 1930, soy cultivation began across the Austro-Hungarian empire," Pinheiro said.

The first phase of the "green revolution" came about shortly after World War II. William Gaud, the director of the US Agency for International Development (USAID), first used the term in 1968. The United States had discovered a way to redirect and use all of the technology developed during the war to produce food on an industrial scale. This system was implemented in Brazil and the rest of Latin America, altering the biological cycles of food production in order to obtain greater quantities in less time.

According to researcher Merci Fardin, this agricultural model consisted of using improved varieties of corn, wheat and other grains, along with huge quantities of water and agrochemicals. "The agrochemicals and all the machinery used in this 'revolution' is an adaptation of the war technology - principally war machinery - that was adapted to convert them into tractors. This gave way to monoculture systems, known as green deserts," Fardin said.

The green revolution adopted the rationale of the production of food on a large scale in order to counteract hunger and poverty, but none of these social results came to fruition. "In the last 50 years, the world became impoverished and experienced famine, and today this famine is administered by corporations, who have gotten rich at the expense of hunger," according to Fardin.

First Interference of the United States After World War II

One of the United States' first interventions in Brazil after World War II was through agriculture, according to Sebastião Pinheiro, the agronomist. The United States introduced cotton, tobacco and improved seed varieties, soy among them. "The United States brought the complete package: the science, the technology and the financing. In an altruistic fashion, it gave all its improved seed varieties of soy to the Brazilian government," said Pinheiro, who argues that the objective at the time was to provide continuity with the plan to reconstruct Europe, which required a source of food that would meet demand from the European population. "The North American proposal would only be completed through the implementation of industrial agriculture in the Southern Hemisphere, which is now known as the breadbasket of the world," Pinheiro said.

"This industrial package called the green revolution was a military strategy."

Later, through the "Brother Sam" operation - the US support behind the military dictatorship of 1964 - 100 tons of weapons and munitions, oil tankers, a fleet of combat airplanes and military equipment were sent to Brazil. The package also included, Pinheiro says, a technology package for agriculture and above all scientific research.

"The military regime in Brazil, instructed in military doctrine by the United States, used it as a pretext to combat Marxist influence, and opened the doors of Brazilian universities to the Rockefeller Foundation, which gave financial donations for the modernization of

programs, curricula and training of professors in the United States," Pinheiro said. "It was a type of agreement between the Education and Culture Ministry and USAID, which provided follow up to the research for improving and genetically modifying seeds."

These conditions eventually permitted the concentration of land for monocultures in the hands of a half-dozen companies, Pinheiro said. He added, "This industrial package called the green revolution was a military strategy because all of the agrochemicals were produced in military factories. The principal objective of the dictatorship was to forcibly remove peasants and indigenous people from their lands, in order to concentrate the land in the hands of a few soy, sugar cane and eucalyptus-producing companies, among whom are Monsanto, ADM, Cargill, Bunge, Louis Dreyfus, Coca-Cola, Nestlé, Ford."

The Death of Family Farming

In addition to the destruction of forests, soy production has stoked the large-scale use of pesticides. According to the Landless Workers Movement (MST) in Brazil, the average consumption of pesticides is on the rise. In 2005, 7 kilograms per hectare were used. In 2011 that level had risen to 10.1 kilograms, an increase of 44.3 percent.

The MST fights for agrarian reform in Brazil, urging implementation of a model based on family farming. Due to this lack of agrarian reform, many peasants have decided to occupy the land. In Mato Grosso do Sul, there are 53 land settlements, the majority connected with the MST - the highest concentration in the country - that are configured like small islands within the green deserts, where diversified agriculture exists alongside the monocultures of sugar cane, eucalyptus and principally soy.

"The way out has been to produce in small quantities, in an artisanal system, gradually working to regenerate the soil."

"We are surrounded by soy, and the poison that is dispersed across the monocultures ends up on our land. You plant a native corn seed, for example, and it doesn't germinate," Sindy Gauber, who lives in the Geraldo García settlement in the municipality of Sidrolândia, in Mato Grosso do Sul, told Truthout. "It is difficult for us to be able to plant without coming into contact with pesticides. Our work to build an ecological and organic production is harmed by these conditions. It will take decades until we can plant the food that we consume in a totally free way."

Beyond this, said Gauber, the few lands expropriated by the federal government to be redistributed to peasant families via a federal program are not productive lands in general, since they have been used up by monocultures.

Gauber says that many families, lacking options, end up abandoning their land in order to work in the monoculture plants. In the settlement where she lives, many families lease their land to agribusiness.

Compounding this situation is the use of genetically modified (GMO) seeds. In Brazil, GMO plantations represent over 50 percent of the territory designated for agricultural activities in the country - and the majority are GMO soy varieties.

Despite the difficulties, Gauber says that the families have created the conditions for resistance by organizing cooperatives and participating in small markets. "The way out has been to produce in small quantities, in an artisanal system, gradually working to regenerate the soil," she said. "This disproportionate war is senseless because really those who feed the city are the small-scale farmers in Brazil. Monocultures are basically for export and for industry."

Depraved Cycle for Peasants

Soy fields and pasture for livestock: This is the monotonous scenery that can be glimpsed along the MS-164 highway, in the municipality of Ponta Pora, in Mato Grosso do Sul, on the border with Paraguay. On the edge of this highway is also one of the biggest settlements in Brazil, taken over by social movements led by the MST in 2002. The settlement, Itamarati, covers 50,000 hectares of land and is home to 3,000 families. Ironically, it used to be a large soy-producing farm. Its owner was Olacyr de Moraes, the largest individual soy producer in the world in the 1980s.

"This disproportionate war is senseless because really those who feed the city are the small-scale farmers in Brazil." Itamarati has two types of land, spaces for individual plots and collective ones. The individual plots (up to 10 hectares) are home to fruit trees and vegetable gardens; most of these fruits and vegetables are consumed by residents. The 12-hectare plots are for collective production, with irrigation and collectively owned equipment, where food is planted for commercialization.

The community has a health care structure, education, two cooperatives for production development, a small commercial center and even an urban center.

Ariovaldo Ciriaco is one of the settlement's farmers. He grows rice, manioc and peanuts. Beyond food for individual consumption, he also plants soy. "Of the total of 50,000 hectares of Itamarati, close to 20,000 of them have soy plantations," said Ciriaco, who is a member of the Association of Cooperative Farmers and the resistance group El Dorado dos Carajas.

Ciriaco has been living in the settlement since the beginning in 2002, and says that after moving onto the land, his family and other members of the settlement were besieged by the multinational corporations that produce corn, soy and fertilizers. "The discourse that they used was that the use of products [fertilizers, pesticides and GMO seed varieties] would reduce costs and we would have greater productivity. The argument was that, using the best technology, one could work less and earn more money. Afterward, we saw that this wasn't true. For example, in terms of corn, they said that the seeds would produce 160 sacks per hectare, but the truth is they don't make more than 100 sacks," Ciriaco said.

"Those who came to live and work here were either employed by a large farm or in other, smaller areas. We were not accustomed to working with soy on a large scale. So they sold us the package (seeds, fertilizers and pesticides) at expensive prices and with quantities of poison higher than necessary. So today we see the abuses they carried out because of our lack of knowledge," he added.

Ciriaco says that a large number of the farmers ended up in a cycle of dependence on products made by multinationals like Bunge, Cargill, ADM, Bayer and Syngenta. "Their representatives in Brazil even came to us to sell their products. The package is very expensive, so families had to get into debt in order to buy it, and when they harvested, they paid the debt. This cycle of dependence is a huge problem," he said.

The price of soy is defined by the international market, principally by the United States. Yet Ciriaco hasn't lost his energy: His goal now is to grow crops without having to be dependent on corporations and their technology packages. "Our challenge is to stimulate agricultural diversity - invest in alternatives, in order to diminish the dependence on soy."

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With pressures like this on the rainforests, it brings the home message the need to make the forests pay for themselves so that we can fight off these kind of threats, see Plant Forests and Make a Fortune. If this is not happening these places never will be safe; something to mull on over the holiday period.

Anyway, well be back again after the New Year and in the meantime I'll wish you all a merry Christmas but don't have too much.

Cheers for now.

Concluding: We print any letters here from all sides of both arguments. So long as it's relevant to subject matters, and provided it's not obscene, we will print it. If you disagree with anything that's said, please write in. This is a public arena so please feel free to have your say.