



The Bassetti Foundation and Technology Bloggers:

Can We Improve the Health of the Planet?

A series of blog postings
By Jonny Hankins

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All contents previously published on Technologybloggers.org

Introduction to the series

I have always seen technological innovation within the field of power production as a matter pertaining to the Bassetti Foundation as it invokes responsibility in the broadest terms of the word's use. Sustainability is responsibility, and our consumption of energy in a responsible manner can lead to improvements in the quality of life for all, and herein lays the motivation for the series.

Technology Bloggers is a community blog and open to anyone to both read and publish articles about technology. I started to write articles and post them here in the summer of 2011, and to prepare the series in November of the same year.

Writing a blog article is different to writing an article for publication on the Foundation website in many ways, the first being the people respond directly to the author. Another difference is in the language used as the presumed readership is different. Bassetti Foundation followers are largely professionals, whereas technology blog followers come from different walks of life but all have an interest in technology, not necessarily ethics or politics, but they do have an interest in communication that should not be overlooked.

Bloggers and blog readers tend to see authors as their peers, and may be inclined to trust information they find on a blog more than that found in a newspaper or on TV, and this makes the medium extremely interesting but also fragile. It has the power to reach a large interested population, but that also means that it is open to the abuse of power and distortion. I always aim to be as correct as I can be in both types of publication and avoid false or misleading information but when blogging try to make my personal views on the subject matter involved evident.

The series consisted of one post a week and ran through December 2011 and January 2012. I have included all comments posted before 1st February 2012, but as all arguments and expressions are personal I cannot take responsibility for their content.

I would like to thank Christopher of the Technology Bloggers Admin team for his help and advice and all of the people that took time to read and comment, and all at the Bassetti Foundation for their support.

Can We Improve the Health of the Planet?

“Have a bias towards action – let’s see something happen now. You can break that big plan into small steps and take the first step right away.”

Mohandas Karamchand Gandhi

A couple of weeks ago I read Christopher’s article on this blog entitled ‘We Need to Act on Climate Change For The Sake Of Others’¹ and it started me thinking about green technology.

Scientists are in general agreement that the Earth is warming, there is plenty of debate as to why however. A large proportion claims that this warming factor is caused (or at least worsened) by human actions such as burning fossil fuels and deforestation.

Members of this group therefore believe that we need to produce energy without burning fossil fuels and that we should take other steps to avoid releasing carbon into the atmosphere such as stopping deforestation (incidentally this is cause number 1, burning fossil fuels is secondary in comparison). I should say I count myself amongst them.

Every Thursday over the next month or so I am going to post one of a series of articles that will look at different aspects of these problems. I want to propose an argument that I borrow from the sociological study of science and is directly drawn from an economic analysis. It is simple, and should be borne in mind when reading the posts.

When we think about costs we only think about money. How much for example does a litre of petrol cost? Or a flight to Boston from London? “Oh \$3.50 a litre” or “\$1200 dollars” we might say. But this excludes social and environmental costs that should be added on, a bit like governments add on VAT.

The real cost of my litre of petrol should include various other factors. How did the raw materials come out of the ground? Did the company leave a mess and pollute the local drinking water in the process? How was it refined, and transported? How much did the local people who live

¹ <http://www.technologybloggers.org/science/we-need-to-act-on-climate-change-for-the-sake-of-others/>

nearby suffer or benefit from its production? And finally how much pollution will it cause when I burn it?

And here we have a sliding scale, LPG is environmentally less damaging and therefore environmentally cheaper than petrol. By this logic natural gas might be cheaper than wood to heat your house too (unless produced through fracking some would argue), and taking the train might be cheaper than taking the bus. I hope this is a little clearer than a bland phrase about 'going green' and offers a slightly more defined point of view.

The series will be structured something like the following:

- Environmentally cost efficient transport
- Electricity production
- Engineering climate change
- Problems faced and the miracle cure
- Conclusions and a review of comments

I hope to present you with some interesting new technologies that really offer a much 'greener' future, as well as looking at some of the ways that different institutions view and approach the problems that I will address.

I am certainly not pessimistic about the future but I don't believe that 'technology will save the day' on its own, but a little thought and a few small actions from a lot a people can make an enormous difference (as someone once said).

I hope you will follow and comment, and don't hold back on your criticisms, that is what I am here for.

4 Responses to *Can We Improve the Health of the Planet?*



1. **Ruth Sayson** says:

I believe that each us can help a lot in making improving the health of our planet the only problem is that we have great vision but has no action.

Why don't we act first and through that action we start making some vision. It usually take one man to stand for the rest to follow, with out it I think that Saving our Planet is just a word everyone is dreaming to achieve.



○ **Christopher (admin team) says:**
I see what you mean Ruth. Many people say 'what difference can I make?' but if they start reducing their energy consumption (for example) then others may follow 😊

Thanks for the comment, welcome to Technology Bloggers!
Christopher – Admin Team



○ **jonny hankins says:**
There is a great deal of politics involved unfortunately as well. Canada has just dropped out of the Kyoto accord, the US is the biggest polluter and will not enact any type of regulation. China will do anything it needs to do in order to industrialize. If industrial growth remains the goal then the environment will always come second.



David says:
The longer we take to realize, more damage will be done to our planet because of unnecessary practices taking place throughout the world.

Cutting Fuel Emissions from Transport Systems

In this the second post of my series about environmental conservation issues, I look at technology whose use could contribute to lessening the planet's dependency on fossil fuels.

One of the major concerns for the environmental lobby is, and has for a long time been, the environmental cost of transport systems. As we know the vast majority of goods and people use petrol as a propellant, produce lots of pollutants and don't do the planet any good whatsoever.

There are various options however that are readily available today for cutting down on petrol use, and in this post I would like to introduce a few.

The internal combustion engine is a simple machine, an explosion in a chamber forces a piston out and that is attached to a rod that drives a wheel (or 4 in most cases), but it is a simple operation to exchange the explosion for another form of inertia. We can in fact run a standard vehicle on air.

In 2010 for example the Royal Melbourne Institute of Technology unveiled a prototype of a motorbike powered solely by compressed air². The project was created by lecturer Simon Curlis and carried out by a team of students. Curlis's goal was to produce an emissions free motorbike capable of travelling at more than 100 miles per hour, a feat that went on to achieve on a dried up lake in Australia. Take a look at the report cited above for further details.

The motorbike is a standard Suzuki GP 100 frame fitted with a rotary engine and a couple of tanks of compressed air stored under the bodywork. A wonderful idea, but you just have to bear in mind that

² <http://www.motorcycle-usa.com/360/5406/Motorcycle-Article/Green-Speed-Air-Motorcycle.aspx>

compressed air is highly explosive and doesn't produce as much power as petrol, but is of course emissions free!

But we can address one of these problems as well as the cold hands in winter issue by investing in an AIR car³. In order to resolve the problem of having to store huge quantities of air the AIR car has a small petrol driven compressor that refills the tanks when they are low. The fuel required to maintain this system is incomparable, with the owners claiming at least 100 Km to two litres of fuel, with the advantage that you don't need to use any petrol at all in town, you just run the compressors during out of town driving.

The development company that produce the cars above have signed a deal with TATA, and hope to produce production models soon, and they have several different models today including a small urban transport bus. Several US manufacturers are also following suit.

If a life on the ocean waves is more your scene take a look at the largest solar powered ship, currently sailing round the world. The 60 ton Planet Solar is an impressive looking catamaran, and can sail for 3 days without even seeing the sun due to its enormous production capacity and batteries. You can check it out via this video on YouTube⁴.

The ship above may look like an expensive toy for boys, (as does this fuel free solar powered aeroplane⁵), but solar powered sails do exist and are in use on commercial freighters. A company called Eco Marine Power produces rigid sails that not only harness the wind on large cargo ships but also produce electricity as they are in effect giant solar panel sails. Check out the photos and description of their research⁶. Ironically enough they are best suited to oil tankers, as they don't have the problem of cranes for cargo that get in the way.

³ <http://www.mdi.lu/english/>

⁴ <http://www.youtube.com/watch?v=aLjjeSgw0nQ>

⁵ <http://www.globaltrends.com/about/129-a-renewable-future-for-flying-if-we-want-it>

⁶ <http://www.ecomarinepower.com/en/research>

And talking about sailing ships another company called Sky Sails produces a large Kite⁷ that you attach to the front of your ship to harness the wind. On a 25000 ton ship the 320 square metre kite lowers fuel consumption by about 30%. Hardly new technology though, Sir Francis Drake knew how to do it!

Shipping may not strike you as particularly relevant to this argument but you might be surprised. Shipping is the main cause of sulfur emission into the atmosphere, and the problem is political in nature. At sea you can burn anything you want and so the shipping companies buy and burn something called heavy or bunker fuel, in short the dregs of the petroleum refining industry. Extremely polluting and damaging to the health. Had you ever noticed how much smoke a ship makes when it is steaming into the distance?

On a personal note I would just like to add that sailing ships are still used across South East Asia to transport goods. I saw lines of men and women carrying sacks of grain on their backs up planks on to wooden ships with my own eyes no more than 10 years ago. Wooden schooners are sailed to larger ports where they are unloaded by hand and their goods (sacks of foodstuffs) are left in piles that are then craned onto big ships and sent to Europe, unfortunately not by sail and producing a lot of smoke!

I haven't addressed the related issue of bio fuels for use in transport in this article but will do so in a later post. Next week I will take a look at alternative forms of electricity production and new technological developments on that front.

⁷ <http://www.skysails.info/english/>

4 Responses to *Cutting Fuel Emissions from Transport Systems*



1. **Neil** says:

I read about the compressed air motor bike a few months back and was impressed with the concept. Unfortunately you probably still need to use fossil fuels to generate the energy to compress the air.

It seems to me that over the past decade the builders of internal combustion engines have made some great breakthroughs in generating more energy from their engines with the same amount of input and we have seen the KW output of many engines jump significantly. It would be good to see these same producers working backwards to produce smaller engines that produce an adequate amount of power from a minimal amount of fuel.



o **Jonny Hankins** says:

If you look round there are some cars with tiny engines. I have a Chevrolet Matiz, 800 cc and runs on LPG, does everything that a car needs to do (just), extremely low emissions and does 200 km for 20 Euros. A family car (I have a Skoda station wagon) can run on a smaller engine than a car produced 10 years ago (1.2 instead of 1.6) due to the advances you mention.



2. **Darci** says:

Jonny,

First of all congratulations on your Technology Bloggers award! Very nice.

Secondly, this article is a great source of information. Cutting fuel emissions from transport systems (even if it's only by 30%) would be great. Even though some of these may seem like expensive toys hopefully they will lead us into a more consistent lifestyle of reduced fuel emissions.

Enjoying your article series!



o **Jonny Hankins** says:

Thank you very much. I think it is fair to say that we could all cut down on our waste production and emissions by some extent, and in the light of the lack of a strong political will to change, we should follow Gandhi's advice from my first post. If we all did it we might make a lot of difference and also create the political will to adopt these ideas.

Cleaner Electricity Production

Producing electricity is often a dirty and polluting affair. Here in the US most is still produced by burning coal, rather like in the 19th century. Nuclear power production is seen by some as an answer as it doesn't throw a tone of gasses and toxins into the atmosphere and can produce an enormous amount of power in comparison to the fuel it uses. But nuclear power brings its own sets of problems, you only have to look at recent events in Japan or take a trip to Ukraine to see that. And parts of the North Sea round the British Isles are contaminated from leaks from an infamous UK nuclear power station that shall remain nameless (although like New York it too was so good they named it twice) and the unforeseeable problems involved in storing radioactive waste for tens of thousands of years to name but a few rather thorny issues.

However some people that define themselves as fighting for a cleaner environmental electricity production policy, do argue that nuclear power is a move in the right direction, that alternative forms could never provide enough power to feed the planet and the very fact that nuclear power production does not create tons of carbon means it is advantageous in fighting the possible problems of global warming. There are undoubtedly advantages and disadvantages to this form of power production, but political and financial interests are also important factors to bear in mind.

There are several other ways of producing cleaner electricity though as we know, but they too have their problems. Building a dam to use the water to drive turbines can have devastating effects on the surrounding areas. Look at the Yangtze Dam project in China and the effect of this engineering project on the people and animals that used to inhabit the newly flooded areas.

Wind farms also seem a good solution but some people say they are ugly and here in Cape Cod in the US there is a large protest movement growing out of claims by people that live near wind turbines who claim health problems, stress and migraines due to the flickering effect of the

blades turning in the sun. See the Responsible Wind Energy website⁸ for arguments against wind turbine use, but bear in mind that their coverage is not necessarily bias free.

Solar panels are always sold as a good option, but they are expensive to manufacture because processed silicon is costly due to its high demand. There are also the problems of how to dispose of the panel when it is no longer efficient and the nature of the silicon purification process.

In Italy farmers have taken government subsidies and covered their land with solar panels in a bid to improve profits. In some cases the panels form a sort of protection for the crops while they produce electricity, but in a lot of cases the agricultural land is just lost to a sea of silicon, causing people to complain both about the aesthetics and the land use issue. Government green incentives mean that there is no need to ask for planning permission so these 'silicon farms' as they are known are cropping up in some rather inopportune places (sorry, couldn't resist the pun) and are in massive expansion as a recent article in PV magazine demonstrates⁹

But fortunately as we would hope in a blog like this there have been some really interesting developments recently in non silicon based solar energy production that we can look at.

A couple of years ago researchers in Italy unveiled something called the Dye Solar Cell¹⁰ (DSC). It doesn't use silicon to produce electricity but guess what? It uses vegetable dye from egg plant (aubergines). Well not being a scientist myself I thought, 'yes, plants do photosynthesis don't they, why didn't I think of that?', and I wasn't far wrong.

The cells don't have the same productive power so the area needs to be bigger to produce the same amount of power but they are incomparably cheaper and greener. Ideal for use for example on large low buildings such as barns or industrial units that can have the entire roof covered in

⁸ <http://www.responsiblewindenergy.org/health-effects.html>

⁹ http://www.pv-magazine.com/news/details/beitrag/italy--espe-grid-connects-10-mw-worth-of-solar-farms_100004226/

¹⁰ <http://www.chose.uniroma2.it/en/>

vegetable cells and produce the electricity the occupants require for free. Good news.

But what if you haven't got a huge roof? Well an Austrian company called Bleiner AG has developed a type of paint called Photon Inside that has the same capability. It has to be applied in a few coats and cost more than standard paint but a 50 square metre wall generates 3 Kw of electricity. It was developed for use on sailing boats so that they could operate a radio and radar while out at sea. Sorry but the only articles I can find online are in Italian.

Konarka¹¹ is an interesting American company who have developed a power generating plastic. It can be made very thin and comes in a roll that you just cut to size, stick on your Venetian blinds or any other surface that takes a lot of sun and away you go. They also sell Power Fibre, as you would imagine it is a thread that you can weave, so you can make textiles that produce energy and can be made into clothes. I like this idea, you could buy a computer case that charges the computer using sunlight as you walk to work.

At the Massachusetts Institute of Technology (MIT) they have recently unveiled their ability to print solar panels on to paper¹². A great breakthrough as it makes the technology easy to transport and place in position but also cheap and hardwearing (you can laminate it). Research at the University of Verona in Italy goes one step further, they are developing completely transparent thin sheets of solar panels¹³ that you can attach to the window and look through.

These final applications described above really take solar electric production to a higher level, as practically any surface can be used to produce electricity. The breakthrough here is in the technology required to transport the current more than its production, as attaching the diodes

¹¹ <http://www.konarka.com/>

¹² http://news.cnet.com/8301-17938_105-20078431-1/mit-demos-flexible-solar-panels-printed-on-paper/

¹³ <http://www.project-alpine.eu/webpage.php?idpage=60>

has long been the most difficult part of thin surface electricity production as they tend to come off with any movement in the surface.

Using the sea is also an option. Off the UK there is the giant Sea Snake trial¹⁴ taking place as well as the Oyster wave generator¹⁵ installation, and in the US_buoys have been developed that generate electricity¹⁶ from their constant up and down motion, easy to place and a help rather than a hindrance to shipping.

As Christopher pointed out in a recent post, global warming is a real and serious problem and electricity production could be a major element in pollutant gas production, but as I hope to have shown above there are many interesting developments if we allow ourselves a slightly different point of view on electricity management.

A less centralized way of thinking and we could produce a lot of the electricity we need in situ, using our own buildings as power plants.

I have written more extensively on this problem on the Bassetti Foundation website and there are also various related articles about renewable energy sources and the problems involved in their use.

Next week I will have a look at possible engineering solutions for the problematic issue of global warming.

¹⁴ <http://video.mpora.com/watch/UVmxt51oh/>

¹⁵ <http://inhabitat.com/aquamarine-power-unveils-oyster-800-wave-energy-generator-exclusive-photos/>

¹⁶

http://www.nj.com/business/index.ssf/2010/07/pennington_firm_a_pioneer_in_u.html

14 Responses to *Cleaner Electricity Production*



1. **custom items** says:

These are a great bunch of suggestions. It's really sad that we all what we need and what is right but can't do anything about it. I've always felt that the government was taking sides with the big corporations. In this world of ours, money and power talks.



o **Chris** says:

I can't agree more with the fact that the government takes sides with big corporations which is the reason I think many great ideas (including cleaner energy ideas) are going to take a long time, if ever, to be put into effect.



■ **Christopher(adminiteam)** says:

I know what you mean Chris, governments have to try to appease everyone though...

Thanks for the comment, welcome to the blog!
Christopher – Admin Team



o **Jonny Hankins** says:

It requires a different way of thinking, less centralization. Instead of having a large power producer and lots of cables why not produce power where it is needed. As you suggest though some people might not like

this idea. This is of course all personal opinion, governments and power produces tell us that they are leading the way in clean production.



2. **Celeste** says:

It's really sad that we all what we need and what is right but can't do anything about it. Thanks for sharing this to us...



o **Christopher (admin team)** says:

How do you mean Celeste?

Welcome to the blog Christopher – Admin Team



3. **solar panels sheffield** says:

Well This is indeed a very informative blog .and this is true time has come where we should apply some other techniques for producing electricity as first we need to reduce the pollution caused by generating electricity second our sources for generating electricity is also ending.



o **Christopher (admin team)** says:

Reducing pollution and sourcing cheaper, cleaner sources of power seems to be the way forward. Fossil fuels will run out, and Nuclear has huge opposition, so the likes of biomass, solar, tidal, hydro electric and wind, look like they hold the key to the future!

Thanks for the comment, welcome to the blog 😊
Christopher – Admin Team



4. **Darci says:**

Once again you have provided an inspiring blog. I learn so much reading and then looking up all of the information you provide. Very exciting technology going on and the more people who know about it the more momentum builds.

Thank you for your research and your obvious passion on the subject. I was particularly interested in the Photon Inside paint. I will look forward to reading more about it when the information is not solely in Italian!



o **jonny hankins says:**

Thanks, I am glad you like it. I am passionate about the problem of responsibility, and problems of the environment are about responsibility. We are all responsible at the end of the day. This is a difficult thing to reconcile. I live in Italy, I am working in the US and my mum lives in the UK. I may think about not wasting things everyday, walk whenever I can, buy fair trade products and produce my own food like a good Earth lover, but I also fly many times a year, and so all good deeds are undone. We each have to determine our line, and information helps us to do that.



5. **Samantha says:**

Cleaner environment is what we actually need today especially if we want to provide our new generation better atmosphere for the years to come. I hope that everybody would help in cleaning our environment.



o **jonny hankins says:**

Unfortunately politicians are hard to convert. A couple of weeks ago Canada pulled out of the Kyoto agreement and the US and China do little

or nothing in terms of improvement and they are the big polluters. Newly industrializing countries will do what they need to do in order to grow and feed their populations, and who are we to criticize when the Industrialized countries did the same and are reluctant to change even now?



6. **Christopher (admin team) says:**

Sorry I have taken a while to comment Jonny, I just sort of forgot at the time, so here I am 😊

It is a really interesting article, and I really hope that we can make our electricity production more efficient via the use of new technologies. The future can look good, we just have to keep working on it!

I do think that more people should put solar on their roofs, especially those who live nearer to the equator, it can earn you money, reduce your bills and help the environment, by using space more efficiently!

Solar paint, that sounds cool, I am eagerly awaiting further developments in that!

A really good article, well done you – it's always good if you can get a pun in somewhere, you seem better at it than me 😊



7. **Jean says:**

I think electricity generated by nuclear fission is the way to go for the future. Yes there are risks like we saw in Japan but they were also behind on security measures. Coal reserves will run out one day after all.

-Jean



o

jonny hankins says:

coal is certainly not the way forward, but I am not taken by nuclear power myself. Thousands of years of unstable waste to cope with for one, and the possibility of disaster for another. I accept though that at the moment options seem limited, but that should not lead to pulling away from research into other fields.

Engineering a Solution to Global Warming

Most scientists agree that the Earth is warming, whether due to the effects of human habitation and lifestyle or as part of a cycle that is as natural as the rotation of the Earth itself. Whatever the cause it looks as if sea levels are going to continue to rise, weather patterns are changing and this is going to cause serious problems for millions of people across the globe. But what can be done about it?

Firstly I should define the terms used both here and elsewhere a little better. Climate Change and Global Warming are the two main terms we hear in both the scientific and popular press. They are not however interchangeable. Climate change represents changes in the climate (obviously), increased or decreased rainfall for example as well as temperature change, but from a geographical point of view. Global warming specifically represents the increase in the Earth's surface temperature in general as provoked by the increase in so called 'greenhouse gas' emissions, it is not geographical but global. An article on the NASA website¹⁷ describes the development of the terminology.

Global warming is therefore the tricky term. Recently however a group of scientists that included global warming skeptics agreed that the planet is in fact warming, although there is still some debate as to why. The results were a surprise as the research was carried out by a long time global warming skeptic at the University of Berkley, and reported to Congress last year. Read the article in the Los Angeles Times that is available online¹⁸.

Those scientists that have accepted the definition of the problem have offered various engineering solutions to the problem, some seem a little

¹⁷

http://www.nasa.gov/topics/earth/features/climate_by_any_other_name.html

¹⁸ <http://articles.latimes.com/2011/apr/04/local/la-me-climate-berkeley-20110404>

absurd and others foolishly simple, so I would like to have a look at a few of them.

See the US Global Change Research Program¹⁹ for a description of the problem of the 'greenhouse effect' that is believed to cause global warming, and the two main variables that could be manipulated, heat coming

in and heat leaving the atmosphere. Those in the know call it Geo-engineering, and its intentions and goals can be grouped into 2 basic classes, carbon dioxide removal techniques and solar radiation management techniques. The first involves the removal of carbon dioxide from the atmosphere through means such as ocean fertilization, changes in land use, afforestation, bio-energy, enhanced weathering and direct mechanical air capture techniques. This should let more heat out. The second involves surface albedo, cloud enhancement, stratospheric aerosol and space based methods. The first addresses the perceived cause of the problem, carbon and other pollutants in the atmosphere, while the second attempts to alleviate the problem by reflecting some of the heat from the sun back into space.

In terms of removing the carbon dioxide from the atmosphere they have a couple of large scale proposals, either land or sea based. Land based involve the obvious stuff like reforestation and stopping deforestation, also enhanced weathering techniques that involve spreading minerals on agricultural land to help the earth absorb the carbon as it is washed down by the rain, but also some interesting large scale engineering projects. One is to build lots of huge carbon alkali filters, probably above disused mines or in a desert somewhere and filter out the carbon as the air passes through them, before storing it in the chambers left by the mining. This technique is touted as interesting because the facilities can be built anywhere, and so cheap unpopulated zones can be used.

¹⁹ www.globalchange.gov/

Ocean fertilization is another option being looked into, the oceans are fertilized with algae that soak up the carbon and sink down into the sea where the water then breaks it down. From a personal point of view I think the possibility of forever changing the oceans' ecosystem is clear for all to see however (there is also a possibility that the volume of the seas might expand, not a desired side effect by any stretch of the imagination).

The second options are more interesting, they involve reflecting the sun's rays back before they arrive, or reflecting more as they hit the Earth.

I like the simple ideas. Seeing as black soaks in more heat and white reflects it back into space, painting all roofs white and making all the roads white would do a great deal. As would growing light coloured plants in large numbers. Suggestions include planting huge areas of light coloured trees, a doubly productive approach. These ideas seem more reasonable to me as at least they can be managed relatively easily, something that cannot be said for ocean fertilization or some of the following suggestions.

One of which is to disperse millions of tiny pieces of reflective paper into the outer atmosphere so that less sun physically arrives. This seems a bit risky to me though as you can't get rid of them once they are up there and the effect may be disastrous for some regions that could experience dramatic weather changes. Irreversibility is a big no as far as I am concerned, as is complete lack of control. In the event of the Earth starting to cool how could you get them down?

Artificial cloud production or whitening is also on the table, but also has the problem of control, you cannot determine where the clouds will go, and their very existence in one area can have huge impacts on others. If it rains too much in one place it may well cause drought in others. Stratospheric aerosol use poses similar risks and problems. Placing huge seas of mirrors in the desert to reflect the sun back up seems a bit

less risky to me, maybe they could even produce some electricity while they were at it!

The solutions above do not address the problem of carbon emissions, and many seem to be rather haphazard operations. Many of them will be outside human control even during testing operations, and I can't help but feel that they are talking about point of no return.

If you were wondering, I promise you that I did not make any of this stuff up, and if you would like to read an in depth report about the proposals outlined above you can download one from the Royal Society of Engineering for free²⁰. More of my writing on this subject as well as many related issues can be found as ever on the Bassetti Foundation website. If anybody else has any ideas I would love to hear them. Next week I look at the Holy Grail, pollution free, cost free energy, patented, on sale, and for you to behold from the comfort of your own computer.

20 Responses to *Engineering a Solution to Global Warming*

1.  **Christopher (admin team)** says:

You write about some really interesting solutions here Jonny, the thing is, I would rather we focused research and money on reducing CO2 in the first place, rather than trying to solve the problems it can cause.

For example, you say we could paint all roofs white which could help lesson the problem, however why not just plaster all roofs in solar panels, so that there are less greenhouse gasses being emitted in the production of energy?

I think the second paragraph where you talk about the difference between global warming and climate change is really good. It is sometimes easy to refer to the two as the same thing.

²⁰ royalsociety.org/policy/publications/2009/geoengineering-climate/

"If you were wondering, I promise you that I did not make any of this stuff up" – I wouldn't ever believe that you would make something up Jonny! WE don't blog about what we think might be real, we blog about what is real 😊

Overall a very good article, I am looking forward to the next one!
Christopher



○ **jonny hankins** says:

Thanks for your comment, the making stuff up line refers exactly to your point. Extreme measures that seem beyond the realm of reasonable action! It seems that these proposals do not address the core issues, and in fact in most circles are considered an emergency measure. When all else fails then we try this.... Certainly not a great scenario but these scientists argue that if there is a need to cool the planet these solutions can do it, more or less quickly and in a more or less controlled manner. Placing solar panels on every roof is a great idea, but emissions will not suddenly drop very much and the effects of the pollution from recent years will continue to effect the atmosphere so the immediate effect is minimal.

▪



▪ **Christopher**

(adminteam) says:

I see what you are saying Jonny.

Regarding placing solar panels on peoples roofs, would that not significantly reduce daytime domestic emissions, were everyone to have solar roofs?



▪ **jonny hankins** says:

Yes it would reduce emissions so in the long term would be of great advantage, but emissions themselves would not stop, so the problem would remain, the greenhouse gasses remain and continue to be added to, although at a lower rate.



Christopher

- **(admin team) says:**
I see what you mean.



2. **Shane Ryans says:**

This is one of those huge topics that no matter who you talk to, you generally get different opinions. In my opinion the earth has gone through many different cycles, throughout its lifetime. The earth has gone through ice ages so why would there not have been, for lack of a better word, “hot” ages. What makes today so different from the past. We are just going into yet another cycle. Now that being said, I am sure that we as a race have made the circumstances different and added to the problem and sped up the process, with all the different chemicals and air pollutants we have introduced into our environment. I do hope that scientists can come up with a viable solution.



- **Jonny Hankins says:**
If this is natural process should scientists really be looking to alter it?



3. **Strategyard says:**

I don't think there is any doubt on global warning. Simply from scientific point of view, energy can never be destroyed. So all that heat energy coming from the sun has to be absorbed or converted to other forms. But the process is very gradual and will not significantly affect anyone living today.



○ **Christopher (admin team)** says:

The idea of global warming is not that the sun is warming the earth, (well it sort of is) but that humans are through the generation of greenhouse gases. These gases trap more of the sun's rays inside the atmosphere, hence the warming.

Thanks for commenting, welcome to the blog.
Christopher – Admin Team



○ **Jonny Hankins** says:

Oh it is affecting a lot of people today, rainfall patterns are changing and agricultural land is being lost and sea levels are rising submerging land. There are already serious problems in low lying areas. Look up Bangladesh for example.



▪ **Christopher (admin team)** says:

That is a good example Jonny, Bangladesh is very unlucky, as it suffers from river flooding due to deforestation in the north (as these can help to act as a barrier to slow water down and can help soak up water) as well as tidal flooding. I think they all need houses on stilts 😊



4. **Eliza D. Arbogast** says:

Hi Jonny,

Indeed the atmosphere today is getting warmer. I really learned a lot from this post. But I have summarized the solution for global warming and that would be – human being should stop destroying the nature.

Human being should love earth again!



○ **Christopher (admin team) says:**
The thing is Eliza, that would mean losing our current lifestyle – at least for many of us – and most people would resist that :-/



○ **Jonny Hankins says:**
Everything has an environmental cost, how can we determine what is acceptable? We might feel lost without a computer and mobile phone but their production involves environmentally and ethically debatable practices. And we should remember that we are talking about the rich minority here doing the damage, not the economically poorer parts of the world.



5. **Alex says:**

Hi Jonny,

This is indeed an interesting topic. I also like the simple ideas being suggested like painting roofs white and planting more light-coloured trees. I guess in these simple approaches, people can help in reducing the effects of global warming. For the riskier parts like reducing CO₂, maybe we could leave that to the experts.



○ **Christopher (admin team) says:**
The thing is Alex, how many people are going to paint their roofs white? My guess is not many!

Thanks for taking the time to read our content and add your view, welcome to the community 😊
Christopher – Admin Team



○ **Jonny Hankins** says:

Every little helps, white roads would be great too. The problem is that anything like this would be difficult to implement on a large scale and the results difficult to measure, and that factor alone makes it unattractive to the political community. If you decide to go for it single handed use a harness when on the roof, remember what happened to Rod Hull!



▪ **Alex** says:

Yeah, not too many people might do this but I agree with Johnny, every little thing helps. It might indeed be difficult to measure on a large scale basis but, if you do it, you know that you've helped even in the smallest way possible. 😊



6. **Jean** says:

Interesting to read about all these suggestions. I think the biggest solution is to simply create mass awareness. Nothing will work as well as people all over the world themselves taking initiatives every step of the way rather than one body of people only.

I hope the reflective paper dispersal idea never materializes. It would produce disastrous amounts of space junk which we will never get rid of. Not a good thing in our already crowded orbit.

-Jean



o

jonny hankins says:

I agree with you, information and a bottom up movement would be the best thing. As for the engineering solutions nothing looks too appetizing to me, I can't help but think about Wall E.

Is cost and pollution free power already here?

In this the fifth post in my series I will introduce some of the inventions that claim to produce free and/or pollution free energy. I would like to make it clear from the outset however that I do not know whether these techniques actually work. Many of them have been patented, some replicated and some demonstrated several times. Some defy the accepted laws of physics. Some have been proven false.

The following examples are just a few drawn from dozens found on the internet.

The patenting of machines that claim to harness energy directly from the atmosphere has a long history. At the turn of the 20th century Nikola Tesla registered several patents for inventions of this type. One particularly simple device is known as his 'aerial device'. It is something like a large insulated sheet of metal with a capacitor and transformer attached below it. The metal plate vibrates, possibly due to static and the capacitor is charged. The transformer lowers the voltage and the current can be fed into the system. It works day and night and the size of the metal sheet determines how much power is produced. Tesla's biography is worth a look²¹. As you see he was not a crank, without his work we would probably not have computers today.

Tesler's invention might be described as producing free energy, and this is certainly one aim for inventors of these types of objects. Another objective however is to build a machine that produces more power than it uses to operate it. Simple enough, I use 10 units of power to make the machine work, and the machine provides me with 11 units of output, or more. There are several machines that claim to succeed in this goal, and the final section of the Free Energy Info article²² that describes many of both types of these inventions is extremely informative. It even tells you

²¹ <http://www.kerryr.net/pioneers/tesla.htm>

²² <http://free-energy-info.co.uk/>

how easy each project is to construct, how well it is likely to work and how reliable the ideas upon which it is based are.

First to free energy. The internet is full of demonstrations of magnet motors and how to build them. This magnetic motor experiment video on Youtube is an example²³. The builders claim that using only magnets they can build a motor that spins without any external force being applied. A quick search will find plans and detailed explanations of materials needed and results expected. The only problem seems to be that the results are 'physically unexplainable' and many people say impossible. Are these machines fraudulent? I would love to know, because if they are not then it looks like clean electricity is possible today.

Other systems involve using different types of fuel from those conventionally thought of. A current example is the claim made about recent successes in what we in the non-science world call 'cold fusion' and is correctly termed a low energy nuclear reaction.

Early last year engineer Andrea Rossi and Physicist Sergio Focardi built a machine in Bologna Italy that they claim can produce huge amounts of power without polluting or causing radiation using only nickel as a fuel. The nickel is turned to copper during the process (proof of a nuclear reaction taking place) but only tiny amounts of fuel are used. There is however an undisclosed secret ingredient to the operation, and Rossi will not divulge his secret to anyone, including Focardi. The two demonstrated the machine on at least 2 separate occasions last year and are currently constructing a huge version for trials later this year. See the article on the Bassetti Foundation website²⁴ for a fuller explanation and links to a video of their demonstration.

The water powered car is another thing to look at, and has been in existence for many years. There are several videos on the Internet

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<http://www.youtube.com/watch?v=l2ycczuFEF8&feature=related>

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http://www.fondazionebassetti.org/it/rassegna/2011/05/the_problem_of_cold_nuclear_fu.html

demonstrating converted internal combustion engines that run on water. In a video on Youtube inventor Paul Pantone demonstrates his "GEET Plasma Reactor Motor"²⁵, explaining how it works and showing it running. Here we get into conspiracy territory however, as the video states that after posting the video on Youtube the inventor was arrested and denied medical therapy while under arrest. There is an implicit claim that those in authority did not want his invention to be made public, but this is not backed up by any evidence however.

A related story is of the guy who invented a car that ran on water in the 1980's²⁶. Stanley Meyer built a sort of dune buggy and the Pentagon reportedly showed interest in his invention. He died in strange circumstances however in a car park outside a restaurant in Ohio in 1998, probably poisoned. Some (as this video demonstrates²⁷), go as far as to say that he was murdered by the state but again without providing evidence, but the conspiracies abound once more. Several other sites claim that his car was then stolen along with all of his plans and technology, although there are several long videos and rediscovered tapes on Youtube in which he explains how the car works. As the photo below demonstrates, modern versions do exist today. This water powered car was built in Japan, watch the video on the Engadget website²⁸.

And here to the thorny matter, many of these machines are available to buy today, well the plans are at least. The Hojo motor promises free electricity for example, but at a price, and what if you buy the plans to discover that you can't get the thing to run?

²⁵ <http://www.youtube.com/watch?v=ISiShiu9Sgs&feature=related>

²⁶ <http://www.youtube.com/watch?feature=endscreen&v=Ir5XgMiXlzM>

²⁷ <http://www.youtube.com/watch?v=PSS1ZMdt3FQ&feature=related>

²⁸ <http://www.youtube.com/watch?v=PSS1ZMdt3FQ&feature=related>

An article on NMSR.org²⁹ describes how the Federal Trade Commission investigated allegedly false claims by a well-known inventor and character in this field named Denis Lee. They found that the promoters 'are marketing a product that cannot exist and function as claimed' and allowed complaints to be filed. Pseudo-science and marketing at its best we might say.

If you want to read more about these devices the free energy website cited above will keep you occupied for days. Chapter 16 should be your starting point.

I would love to hear from anyone that has either constructed or seen any of these machines in real life. Next week I will conclude the series so speak now, of forever hold your peace!

6 Responses to *Is cost and pollution free power already here?*



1. **Samantha says:**

Actually, there are so many inventions nowadays that can actually lessen our cost and pollution as well. However, they are having problems of getting support from our government. Of course, this body is after of money from businesses like big petroleum companies.



o **Jonny Hankins says:**

This is a comment that I find repeated throughout the series unfortunately. Political will and large scale industrial involvement is lacking on this topic.



2. **Michael Bellemeur says:**

I wish this could be the case. A world which is less polluted would be such a wonderful place to be. However this might come with a lot of loses especially for those economies which thrive because of oil.

²⁹ <http://www.nmsr.org/denislee.htm>

Reply



- **jonny hankins** says:
even those that thrive suffer from the consequences and so have something to gain in the long run



- 3. **Shane Ryans** says:
That is really interesting it is funny to see the ones complete break the laws of physics.



- **jonny hankins** says:
What we want to know is are they fake or are the laws of physics inaccurate?

A review of the environment and power series

Here I would like to review the series and look at the way people commented the individual posts, before concluding with a few lines about the experience.

In my first post I introduced the idea of environmental cost. This was the measurement that I wanted to use to address the issue of pollution, and more specifically that produced through energy use.

I tried to avoid the term 'clean energy', as I feel this overlooks certain aspects of all forms of production. Modern solar panels for example may provide clean energy from the sun but they themselves present issues during their manufacturing and disposal phases.

Another point I hoped to raise is that the problem needs to be viewed from a realistic standpoint. We are not all going to convert to a zero emissions life overnight any more than we are going to return to being a hunter and collector society that lives in caves. The world will continue to operate more or less as it does now, and it is through this framework that the problem should be addressed.

The first comment I received contained the following line from Vicky, and it really is worthy of note:

“I believe that each of us can help a lot in improving the health of our planet, the only problem is that we have great vision but no action. Why don't we act first and through that action we start making some vision?” This is echoed by the quote from Gandhi that I used to open the first post, and could really be a manifesto for the series.

The second post was about cutting fuel emissions from transport systems, and it received a couple of interesting comments. Darci commented that even cutting emission by 30% (referring to the commercial use of Kites on ships) would be a great improvement, and I

must agree with her. Neil's comment included the following lines that are worth thinking about:

"It seems to me that over the past decade the builders of internal combustion engines have made some great breakthroughs in generating more energy from their engines with the same amount of input and we have seen the KW output of many engines jump significantly. It would be good to see these same producers working backwards to produce smaller engines that produce an adequate amount of power from a minimal amount of fuel." An extremely astute comment I would say.

Post 3 entitled Cleaner Energy Production was one of the most commented of the series. I think this is because the technology described is on the verge of becoming commercially available, and because solar panels are now an every day piece of urban furniture.

The article also provoked a series of comments lead by the following from Custom Items:

"These are a great bunch of suggestions. It's really sad that we all what we need and what is right but can't do anything about it. I've always felt that the government was taking sides with the big corporations. In this world of ours, money and power talks."

This obviously provoked discussion with the other commenters in agreement with the sentiment, some seeming to suggest that development is hindered by large corporations and governments and that although the people recognize the need for change they may be incapable of achieving it.

Not all doom and gloom though and I for one am optimistic and agree with some of the brighter outlooks expressed.

Post 4 was all about a report published by the Royal Society for Engineering in which they looked at possible ways of artificially cooling

the planet. Again many comments were left, a couple of which raise issues that should be addressed.

The post involves the problematic debate around global warming. Two comments really show the diversity of belief that surrounds the issue, even though not taking radical standpoints. The following comment was made by Shane Ryans:

“In my opinion the earth has gone through many different cycles, throughout its lifetime. The earth has gone through ice ages so why would there not have been, for lack of a better word, “hot” ages. What makes today so different from the past. We are just going into yet another cycle. Now that being said, I am sure that we as a race have made the circumstances different and added to the problem and sped up the process, with all the different chemicals and air pollutants we have introduced into our environment. I do hope that scientists can come up with a viable solution”.

Although Shane does not make the line that humans do not contribute to the problem, many people do, and go on to argue that the greenhouse effect does not exist. From their point of view any change is merely a product of nature. People that espouse this line have powerful lobbies, and invest large sums of money to promote their line to the point that the debate has become a business, and dirty tricks and smear campaigns abound. See the page on Wikipedia³⁰ for plenty of information and links to further reading

Returning to the post a second comment made by Virtual Stock Trading runs as follows, the edit is mine but you can see the original comment where it was left:

“I don’t think there is any doubt on global warning..... But the process is very gradual and will not significantly affect anyone living today.”

³⁰ http://en.wikipedia.org/wiki/Climate_change_denial

I cannot agree with the final line. Global warming is affecting communities all over the world as we speak. Sea levels are rising and threatening the very survival of some of the Maldives Islands, flooding is rife in low-lying countries and London has to thank the Thames Barrier to avoid Joe Strummer's classic prediction³¹. And a simple look at its use tells a story, it was closed four times in the 1980s, 35 times in the 1990s, and 80 times since 2000.

Post 5 was a review of inventions and power generating machines that profess to generate free or pollution free energy. It did not generate the number of comments that the previous posts managed, but Samantha returned to the non support from governments and big business argument once more:

“Actually, there are so many inventions nowadays that can actually lessen our cost and pollution as well. However, they are having problems of getting support from our government. Of course, this body is after of money from businesses like big petroleum companies.”

From a personal point of view writing the series gave me great satisfaction. I have all the articles on a single file and it looks like a small book! I wrote 2 of the articles before posting the first, as Christopher suggested, and it was a very good idea. I wanted to reply to each comment and that took a lot of time, so I found it quite a strain researching while the series was running (each post took about 6-8 hours to research and write).

I found all of the comments interesting, and thank everyone who took the time to post. I did not have the problem that I sometimes have of people missing the point. I do not like to express my arguments too openly and rely on a bit of intuition, and sometimes this is lacking and I find comments that express the opposite of what I wanted to convey. This was not the case during the series, and that pleases me.

³¹ London Calling lyrics (London is drowning and I live by the river).

I can definitely recommend the experience, and will undoubtedly write another.

7 Responses to *A review of the environment and power series*

1.



Samantha says:

I hope we could do something for our environment in order to give a better future for our next generations. Hopefully, we could help one another and support all organizations who have the same advocacy.

o



Jonny Hankins says:

Yes, I agree, but political will is also a must.

2.



John says:

Hey Jonny,

Global warming is definitely affecting communities all over the world. It's a shame that more people don't realize what's going on. Even though the process is gradual it has a great effect on everything.

o



Jonny Hankins says:

It does, maybe better information may help, what do you think?

3.



Reese says:

I smile can't help but sprout on my face every time I read on someone's blog or website an entry about the environment specially if the blog or site is not dedicated to eco-friendly discussions. Because it means that the owner had to go out of his or her way and had to digress from his or her usual topics bringing this to the attention of others who do not normally read about stuff like this.



○ **Christopher (admin team) says:**
Jonny has written a whole series about the environment Reese 😊

I would say that it is definitely worth a read!



○ **Jonny Hankins says:**
One post is about new technology in electrical production, another about geo-engineering, a third about low emission transport systems and one about patented technology that appears to offer cleaner forms of power generation. This is a technology blog and these are posts about technology. All of my posts on this site and in my work are about ethics and responsibility, so the topic is not a digression from my interests or those of the people who follow the blog. Also if an objective is to inform then there is no point in speaking to the converted.