

Almuth Ernsting
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Dear Sir/Madam,

Re: Consent Application for Renewable Energy Plant at the Port of Leith by Forth Energy

On behalf of Biofuelwatch, I write to object to Forth Energy's planning application for a biomass power station at the Port of Leith.

Our grounds for objection are:

1. The wider impacts which the development will have on climate change, biodiversity and communities affected by plantations from which Forth Energy will source the wood which we understand to be material planning issues;
2. The low energy efficiency of the scheme;
3. Air quality impacts on local residents in Leith and on nearby protected nature sites
4. Impacts on marine ecology in the Firth of Forth SSSI, SPA and Ramsar Site, related to cooling water intake and discharge.
5. Other local impacts, including ash disposal, noise and odour.

As well as objecting to the application, we wish to point out that the application contains no information about the likely conversion efficiency of the power station. We consider this to be a serious omission, given that the EU Renewable Energy Directive (Article 13(6)) obliges member states to promote biomass conversion technologies with an efficiency of at least 70% for industrial applications, a rate which Forth Energy will clearly fail by a big margin.

Wider Impacts on climate change, biodiversity and communities

Planning context:

The Scottish Planning Policy on Renewable Energy (SPP6), states the following about biomass:

“Planning authorities should consider the extent to which there are opportunities through development plan policies to identify sites appropriate for new biomass plants in those areas where there are either existing long-term secure resources or new opportunities available to harness local resources. However, such policies should recognise that the identification of sites should not exclude development outwith these areas so long as they satisfactorily address specified broad criteria. This criteria is likely to include impacts on the natural heritage, landscape, built and cultural heritage, amenity (including public health and safety), environmental and transportation issues.”

SPP6 thus makes it clear that wider environmental impacts of biomass proposals must be considered. In the case of Forth Energy, up to 90% of the biomass is to be imported wood and, as we discuss below, the environmental as well as climate and social impacts of those wood imports are likely to be strongly negative.

“Choosing our Future: Scotland's sustainable development strategy” strongly emphasises the need to take the wider impacts of all developments into account. Here are two of the relevant statements:

“2.6 These priorities for Scotland and across the UK are our response to these challenges:

- *Sustainable consumption and production: achieving more with less. This includes reducing the inefficient use of resources, looking at the impact of products and materials across their whole lifecycle and encouraging people to think about the social and environmental consequences of their purchasing choices.*
- *Climate change and energy: securing a profound change in the way we generate and use energy, and reducing greenhouse gas emissions.*
- *Natural resource protection and environmental enhancement: protecting our natural resources, building a better understanding of environmental limits, and improving the quality of the environment...”*

“8.1 This strategy is based upon the principles of environmental justice. The ultimate goal is to secure a fairer world and a fairer future, enabling all people throughout the world to satisfy their basic needs and enjoy a better quality of life without compromising the quality of life of future generations.”

We believe, as discussed below, that Forth Energy's plans will have serious adverse impacts on climate change, the environment and the communities in countries which will be affected by the tree plantation expansion and possibly increased logging that would result from the development.

Finally, the second National Planning Framework for Scotland explicitly states: *"Biomass plants should be sited where they can make best use of locally available resources and will not encourage inappropriate planting."*

(<http://www.scotland.gov.uk/Publications/2009/01/12110011/7>)

Up to 90% of Forth Energy's biomass intake would be imported and environmentally and socially damaging eucalyptus and other tree plantations are a very likely result.

In summary, Scottish planning policy makes it clear that wider impacts of developments should be considered and does not in any way preclude biomass sourcing from this requirement.

Consistency of Forth Energy's sourcing claims:

There appear to be serious contradictions contained in Forth Energy's claims with regards to sourcing: Forth Energy state that up to 90% of the biomass will be imported woodchips and pellets. Their sourcing information appears contradictory: Under 'Frequently Asked Questions' on their website, they refer to wood from 'the Americas', which implies North America as well as Latin America. The 'Sustainability Statement' for the Leith Consent application claims that all imports will come from Sweden, Estonia and the US – though in other consent applications, Forth Energy has referred to Scandinavia and the Baltic States in General and (in the Rosyth application) to Canada. It appears unlikely that a company would enter into supply agreements with producers in different countries for their biomass power stations in the UK. Furthermore, the Sustainability Statement refers to eucalyptus as a feedstock, yet this is not commercially grown in any of the regions they list. There are large-scale eucalyptus plantations in South America, as well as other tropical regions, however.

Furthermore, Forth Energy's claims with regards to longer-term intentions to source more of the wood domestically conflict with evidence contained in the same Sustainability Statement. They state that imports would initially account for 80-90% of biomass but that domestic supplies are expected to increase over time and account for a greater proportion of biomass burned. At the same time, however, they also state that while at present “the overall forest increment [in Scotland] is more than sufficient for present levels of wood energy”, the projected increase in demand from

biomass schemes which have been announced, including Forth Energy's would “put strain on internal supply markets” - i.e. that demand constraints will grow, not diminish. Furthermore, they cite John Clegg's 2010 study “Wood fibre availability and demand in Britain 2007 to 2025, which shows that “the UK will have to significantly increase wood imports after 2012 in order to reduce the impacts of supply chain pressure and price increases”. Forth Energy/SISTech claim that “this report does not consider any developments in the fuel supply chain that may take place to realise further indigenous potential”. This is untrue – the Clegg report considers significant likely increases in forest residue removal as well as SRC. Claims about expected greater future biomass sourcing from Scotland is thus not borne out by the evidence referred to by Forth Energy/SISTech.

We would point out that so far biomass and biofuel power stations approved in the UK have been approved without any sourcing restrictions in the planning conditions. Companies are not bound by claims they make about 'planning intentions'. Last year, DECC approved MGT Power's application to build a 295 MW biomass power station at Teesside Port. MGT claimed that all or most of the wood would come from North America where there was no 'net deforestation' (even though significant recent losses of forest cover in North America have been well documented) (tinyurl.com/37upmz5 and tinyurl.com/36t3s36). Shortly after winning planning consent they signed a Memorandum of Understanding with Suzano Papel e Celulose for most of the wood to come from Brazilian eucalyptus plantations (tinyurl.com/3yukqn7).

Potential environmental and social impacts of large-scale wood sourcing from Sweden and the SE US:

Sweden: In many parts of Scandinavia, old growth forest logging and other highly destructive logging have been documented and appear to be accelerating, due to attempts to ‘harvest’ ever more wood, not least for bioenergy. A letter signed by over 200 scientists worldwide as well as by thousands of individuals and many groups warns against the destruction of the last of Sweden’s old growth forests and states: “The Swedish Government and the Swedish Forest Industries Federation advocate further forestry intensification, with methods such as stump extraction, increased use of non-native tree species, restoration of ditches, and fertilization, which threaten the biodiversity even more.” (<http://protecttheforest.se/upprop/en>). Such practices are commonly certified through the FSC or PEFC. Most recently, the Swedish Forest Agency has granted permission for clearcutting inside high-biodiversity oldgrowth forest in the Änok river delta (<http://protecttheforest.se/en/pressmeddelanden/26-pressmeddelanden/860-kontroversiell-urskogsavverkning-blottlaegger-ihalig-skogspolitik>).

SE US: In the Southern US, including Florida, large-sale pine plantations continue to displace large areas of biodiverse native forests and they deplete groundwater and aggravate droughts which are already becoming more frequent and severe due to climate change. More demand for wood from Florida and elsewhere in the SE US will thus lead to more deforestation and biodiversity losses in the region. According to a recent peer-reviewed study, Canada lost 5.2% of its forest cover between 2000 and 2005, the United States 6%. According to the researchers, industrial logging in the SW US, along the West Coast and in the Midwest played a major role in US forest loss. Researchers found: “Rates of Global Forest Cover Loss in regions such as the southeast United States are among the highest globally.” (www.pnas.org/cgi/doi/10.1073/pnas.0912668107). At the same time, the growing demand for biomass from that region, much of it for export, is leading to large-scale market displacement, since the southern US supplies much of North America's demand for paper at present. Diverting wood to power stations, such as those proposed by Forth Energy, means that more US paper will have to come from monoculture tree plantations in the global South, causing more tropical forest and grassland destruction and thus more climate change, human rights abuses and land-grabbing.

Forest Certification:

Certification, as proposed by Forth Energy, cannot prevent serious negative direct impacts, let alone indirect ones. None of the schemes include any greenhouse gas criteria. All of them certify industrial tree plantations as 'sustainable', despite their well-documented serious impacts on biodiversity, ecosystem destruction, land-grabbing and poverty, disruption of the freshwater cycle, and the high use of polluting, fossil-fuel based agro-chemicals on tree plantations.

Neither FSC nor PEFC certification can guarantee that even the most basic social and environmental criteria are met. Here are examples of some certificates, all of which would be classed as guaranteeing 'sustainability' by Forth Energy:

+ In Sweden, one of the countries listed by Forth Energy, a leading nature conservation organisation recently resigned from the FSC due to the fact that companies selling FSC-certified wood were violating Swedish law and the FSC's own standards and that those violations were being routinely ignored. FSC-certified forestry companies in Sweden have been shown consistently to be involved in destructive logging of old-growth, primary forest, high-biodiversity areas, destroying soils and water courses (tinyurl.com/685tceq);

+ A recent Germany documentary shows evidence of old-growth forests in Sweden being clearcut, with whole ecosystems, including soils and water regulation being destroyed under FSC certification (tinyurl.com/4sh2oz7).

+ FSC certification is supposed to offer protection for wildlife, yet in South Africa, up to 2,000 baboons have been killed on FSC-certified tree plantations (tinyurl.com/6htjrw2);

+ In Indonesia, the FSC has certified plantations by state-owned company Perum Perhutani. Perhutani is linked to the murder of 31 villagers between 1998 and 2008, with 69 others having been beaten or shot and injured, commonly for taking wood from trees planted on what used to be the villagers' own communal land (tinyurl.com/6lvdj4).

+ In Brazil, eucalyptus plantations by Veracel, which remain FSC-certified, have resulted in the company being fined by a Brazilian court for the destruction of rainforests and for planting invasive eucalyptus next to national parks, in violation of Brazilian law, as well as for using toxic herbicides on land earmarked for rainforest regeneration (tinyurl.com/6gpdaak);

+ The Indonesian pulp and paper company APP has been certified by the PEFC. According to WWF: "APP is responsible for more natural forest clearance in Sumatra than any other company" (tinyurl.com/6jhkme2). Greenpeace has shown that APP's parent company "has large areas of intact rainforest under concessions waiting to be cleared for acacia plantations, including areas around Bukit Tigapuluh National Park which is a vitally important habitat for the highly endangered Sumatran tiger as well as being one of the only sites where equally threatened orang-utans are reintroduced to the wild." (tinyurl.com/63cuog9)

+ A Greenpeace investigation into PEFC certification in Finland found: "Habitats of threatened species are being destroyed as part of normal PEFC practice. A recent investigation by Greenpeace, for example, found hundreds of endangered mushrooms, including species strictly protected under Finnish legislation in an area about to be logged under PEFC certification (tinyurl.com/6el7oq2).

Climate impacts:

SISTech states: "Changes from land use have been assumed to be negligible due to the lack of country specific data." In all of the regions from which Forth Energy intend to import wood, especially in the SE US and Sweden, domestic demand for 'forestry residues' is increasingly outstripping supplies. A new demand on the scale of what Forth Energy is planning will therefore

have to rely on increased logging and plantation expansion, including for the eucalyptus which the company seeks to burn. The fact that Forth Energy appears not to know where they will actually source the wood from is no credible reason for ignoring all impacts on land use and climate change, i.e. for assuming a 'best case' rather than a 'worst case' scenario for the purpose of the planning application. In the case of liquid biofuels, it has been shown that the carbon debt from converting forests and peatlands to dedicated plantations can take many centuries to repay – over 40 years if formerly set-aside land in the US is converted to biofuel production (www.sciencemag.org/content/319/5867/1235.abstract). In the case of wood-bioenergy, the carbon debt stems not from land use change alone but also from the long time it takes new trees and forests to re-absorb the carbon emitted from logging and burning older trees.

Two recent studies look in detail at the 'carbon debt' incurred by increased logging in temperate forests in the US and Europe. One is the Biomass Sustainability and Carbon Policy Study by the Manomet Center for Conservation Sciences, commissioned by the Massachusetts Department of Energy Resources (tinyurl.com/2whmljdj). The two main conclusion from the Manomet study were:

- If biomass is used in electricity-only power stations, the overall carbon emissions/climate impacts will still be worse than those of generating the same electricity of coal after a period of 40 years – the period is 90 years if biomass is compared to gas.
- The carbon impact of burning biomass for heat generation or CHP may be better, however even for CHP, when biomass is compared to natural gas, the climate impacts are still significantly worse after 40 years. (see: tinyurl.com/351b35e).

It is important to note that many of the assumptions made in the Manomet study are highly optimistic ones (as acknowledged by the authors), some of them contradicted by scientific evidence and by the realities of bioenergy markets and the forestry industry. For example, the authors assume that no additional forests would be logged as a result of bioenergy (something which would make the carbon footprint even worse), yet in the UK, EU and elsewhere, opening up more natural forests to logging for this purpose is being actively encouraged. The authors further assume that there will be no carbon emissions from removing residues from forest flaws, yet it has been shown that large-scale 'residue removal' significantly reduced forest carbon stocks and also diminish future tree growth and thus carbon sequestration. A detailed review of the Manomet study can be found at www.catf.us/resources/whitepapers/files/201007-Review_of_the_Manomet_Biomass_Sustainability_and_Carbon_Policy_Study.pdf.

Another scientific study which looks at the carbon debt from wood-bioenergy has been published by Joanneum Research in Austria (www.birdlife.org/eu/pdfs/Bioenergy_Joanneum_Research.pdf).

The main findings are:

- When trees are felled for bioenergy, there will be no 'climate benefits' compared to fossil fuels for a period of 200-300 years, i.e. bioenergy from whole trees will worsen climate change for two or three centuries.
- The removal of logging residues from forest soils will worsen the carbon balance of bioenergy by 10-40%;
- Where bioenergy results, whether directly or indirectly, in land conversion for tree plantations, the full greenhouse gas impact must be taken into account and if forests are converted to plantations, bioenergy will be worse for the climate than the fossil fuels replaced for at least 150 years.

The 'carbon savings' claimed by SISTech/Forth Energy are thus very much contrary to scientific

findings. Furthermore, the 'carbon savings figure' depends on 60 MW of heat being supplied to other uses, yet again a 'best case' scenario and a highly uncertain claim.

Low energy efficiency of the scheme:

Forth Energy's Leith application gives no information about expected conversion efficiency. However, their Combined Heat and Power Feasibility Study for Rosyth shows that at that location they expect a conversion efficiency of less than 30% until at least 2021, with a maximum efficiency of 34% by 2023, depending on potential heat customers. Their proposed electricity to heat proportion for Rosyth is identical to that for Leith and very uncertainties over future heat distribution are expressed in both applications. In both cases, assumptions are based to a large extent on unidentified and unconfirmed future developments in the vicinity of the power station. Forth Energy state that a district heating network, which would be the most efficient use of heat, is unlikely to be financially viable except with a substantial new development, yet close vicinity to a large combustion plant is likely to make future residential developments far less likely.

Greater efficiency and heat distribution, however, would not alleviate our other serious concerns about the impacts of the power station.

Air quality impacts on local residents and local ecosystems in and around Leith

We have serious concerns about the impacts which this power station would have on air quality and public health in Leith, as well as on several nearby protected nature sites. We are also concerned that the air quality assessment submitted by Forth Energy underestimates emissions of heavy metals and dioxins and furans.

NO₂:

According to the Air Quality Assessment, process emissions of NO₂ will reach a maximum of 5% of permitted short-term levels. At two nearby multi-storey buildings, the process contribution will be up to 1.3% of the air quality objective. We are deeply concerned that cumulative impacts have not been considered on the presumption that a process contribution of up to 5% from Forth Energy's proposed power station is 'negligible' and can be ignored for this purpose – this in an Leith where diffusion tubes show frequent exceedances of NO₂ objectives.

The current, 2010, “Updated guidance from Environmental Protection UK on dealing with air quality concerns within the development control process” ([www.environmental-protection.org.uk/assets/library/documents/Air_Quality_Guidance_2010_\(final2\).pdf](http://www.environmental-protection.org.uk/assets/library/documents/Air_Quality_Guidance_2010_(final2).pdf)) classes an increase of 5-10% in “ambient pollutant concentrations as percentage of objective/limit value/environmental assessment level” as being in the 'medium' category of change. The same definition is used by the Institute of Air Quality Management, which also uses the 1% threshold for 'imperceptible' changes (www.iaqm.co.uk/text/news/2009/iaqm_significance_nov09.pdf). The term 'negligible' does not occur in those documents.

Dioxins and Furans and Metals:

No information about local background levels of dioxins and furans or metals has been sought/supplied by Forth Energy.

Furthermore, there are serious flaws in the Exhaust Gas Parameters cited (Table 9.7), in that it is assumed that burning waste wood and agricultural residues releases neither dioxins and furans nor metals.

According to a Standardised Toolkit for Identification and Quantification of Dioxins and Furans, developed by the UN Environment Programme, dioxin and furan emissions from burning virgin wood will be lower than those from burning chemically treated wood, but they are still very relevant. Dioxins and furans are also emitted from burning straw, which falls within the scope of Forth Energy's Consent Application. (<http://chm.pops.int/Portals/0/Repository/toolkit1/UNEP-POPS-TOOLKIT.1-3.English.PDF>).

Similarly, Forth Energy's Air Quality model is based on the assumption that no heavy metals will be emitted from the combustion of virgin wood and agricultural residues. This is contrary to clear evidence that heavy metals from 'background air pollution' and from soils become concentrated in wood. See for example the following studies and articles:

www.springerlink.com/content/jjulpq2ktlel3912/ , www.jstor.org/pss/4312359 , www.jstor.org/pss/4312359 . The European Commission has called for the use of 'wood ash' as a fertiliser to be regulated because of levels of heavy metals found in ash from virgin wood from Norway, which were found to be so high that the ash qualified as 'toxic waste'.

Forth Energy's decision to ignore all metal and dioxin and furan emissions from virgin wood and agricultural combustion thus cannot be justified and renders the exhaust gas parameters unreliable.

Agro-chemicals used on tree plantations as well as chemical treatment of 'virgin' woodchips and wood pellets appear to have been ignored by Forth Energy. The 'Sustainability Statement' makes it clear that much of the wood will come from monoculture tree plantations. Such plantations generally require large-scale applications of pesticides and other toxic agrochemicals. Furthermore, chemical treatment of woodchips and pellets before shipping is common and this is particularly the case for woodchips and pellets from eucalyptus, which are routinely treated with methyl bromide and/or other pesticides for shipping. Methyl bromide is highly toxic: It is linked to cancer and also an ozone destroying substance and is therefore banned in the UK. In the US, pre-shipment use of methyl bromide is still permitted and eucalyptus wood is routinely treated that way before shipment (www.aphis.usda.gov/plant_health/ea/downloads/eucalpf.pdf). Eucalyptus woodchips and pellets from other regions, such as South America, are also fumigated with pesticides and in particular with methyl bromide. Compatibility of eucalyptus imports with the UK ban on methyl bromide may need to be investigated. The Air Quality impacts of burning large quantities of wood with such residues should be fully assessed rather than being ignored, as Forth Energy has done.

Finally, the air quality impacts of wood dust and dust from fly ash on and near the site do not appear to have been properly assessed even though both are serious problems reported by residents near existing biomass power stations.

Air pollution and ecosystems:

The Air Quality and Terrestrial Ecology Assessments submitted by Forth Energy show that legal emission limits at several protected nature sites are already being breached and that the proposed power station will exacerbate the situation:

- At the Firth of Forth SSSI/Ramsar Wetland, SPA, the critical acid deposition load is already being significantly exceeded. The modelled Process Contribution to acid deposition above the high tide line for the three power stations proposed by Forth Energy in the area is 1.1% at Levenhall Links and the Musselburgh Ash Disposal area and 1.3% at Cramond Pier. This will result in concentrations which will be 156% of the critical load at Levenhall Links, 161% at Musselburgh Ash Disposal area and 135% at Cramond Pier.
- At the Arthurs Seat SSSI, the critical acid deposition load is being significantly exceeded.

The Process Contribution from Forth Energy's Leith, Grangemouth and Rosyth power stations combined would be 1.5% of the critical load, bringing levels to 133% of the critical load. The modelled Process Contribution to ambient ammonia concentration for the three power stations is 1.1% of the critical level, resulting in a levels of 120.1% of the critical load.

- At the Otterston Loch SSSI in Fife, the critical acid deposition load is being significantly exceeded. The Process contribution from the Leith, Grangemouth and Rosyth power stations combined would be 5.8% of the critical load, bringing the PEC to 210%. Additional nitrogen deposition for the three schemes amount to 2.2% of the critical load, leading to a PEC of 185% of the critical load.

Forth Energy claim that their emissions will represent an 'insignificant increase' in all those cases, without proposing any basis for such a claim. As we mention above, common practice is to class contributions of less than 1% of legal limits as 'imperceptible' - and we are unaware of any basis for classing greater contributions as 'insignificant'. We are also aware that in England the Environment Agency and Natural England use 1% as a threshold for 'imperceptible' increases of air pollution. Forth Energy claims that the existing exceedance of the critical at those sites makes it "unlikely" that further increases will have a "significant impact on the conservation status of notified habitats", yet they admit that they do not know sufficient information about likely vegetation responses. Dismissing otherwise significant increases in emissions affecting ecosystems where the critical load already being exceeded appears to conflict with conservation aims.

Impacts on marine ecology in the Firth of Forth related to cooling water intake and discharge

We are concerned about the impacts of cooling water intake and discharge, including thermal pollution and biocide pollution, particularly in view of the Firth of Forth being a highly protected area (SPA, SSSI, Ramsar site).

Cooling water is to be discharged at a temperature up to 10 degrees C warmer than surrounding waters. Forth Energy claims that only a 'small area' will be warmed above 1 degree C and furthermore claims that temperature levels will be below those lethal to fish species found in the Firth of Forth, except possibly during warm summer temperatures. However, a sudden temperature rise of 3 degrees C can be immediately lethal to fish, regardless of what the final temperature is. Furthermore, there is clear evidence of very harmful effects of warm water discharges reducing oxygen levels, encouraging local algal growth (which can further reduce oxygen levels), disrupting the breeding cycle of fish and making fish more susceptible to disease (see: tinyurl.com/37hbu73, tinyurl.com/36coeor, tinyurl.com/3yx2u55).

The potential for accidental chemical and oil spills/runoffs is acknowledged and while Forth Energy believe it can be minimised, it seems particularly relevant given the proximity of the power station to marine sites designated as SPA, Ramsar and SSSI.

Forth Energy also state that biocides will be discharged into the Firth of Forth, which seems of particular concern in an SPA/SSSI/Ramsar site.

Forth Energy state that a mesh size of 3mm will prevent juvenile and adult fish from being killed through cooling water intake. Fish larvae and eggs as well as zoo-plankton will pass through the mesh, however, and effects this will have on local marine life appear not to have been considered. The effects of cooling water intake on marine species has for example been assessed in detail in a report published by the New York State Department of Environmental Conservation, which shows that 'entrapment' can kill very large numbers of small marine animals (tinyurl.com/36w4wwy).

Other local impacts:

We have serious concerns over ash disposal. Forth Energy do not fully acknowledge the toxic nature of wood ash. Wood ash from virgin wood, as shown above, can already contain such high levels of heavy metals and other toxins that it should be treated as toxic waste and in this case, it is likely to be mixed with wood ash from chemically treated wood, which will contain yet more toxins. Forth Energy's suggestion that it could be used as a fertiliser or by the construction industry therefore seems highly alarming. No measures are proposed to safely dispose of toxic ash and to prevent it from getting into the environment and thus causing serious health risks to people as well as to wildlife.

Finally, we are aware that both odour and noise problems have been reported by local residents living close to much smaller biomass power stations both in the UK and US. We are very concerned to see that Forth Energy claim that there will be no significant impacts on local residents of this type when experience elsewhere suggests otherwise.

Please acknowledge receipt of this planning objection – thanks.

Best regards,

Almuth Ernsting
Biofuelwatch