



The Foundation for the Economics of Sustainability

Submission to the European Commission on Long-term greenhouse gas emissions reduction

Below is a referenced version of the text-box answers to the submission questionnaire, with some additional explanations in the footnotes. For the sake of clarity we have included excerpts from the EC's text on the submission survey, in green. Feasta's text is in black.

The strategy will reflect on a long-term vision of a modern European economy working for all Europeans. Studies and stakeholder input will contribute to the formulation of this vision and help explain the choices to be made. The strategy should reflect on the essential opportunities and challenges stemming from the long-term decarbonisation and clean energy transition of the EU:

- modernising the economy;
- improving citizens' quality of life;
- ensuring fair transition and tackling social challenges;
- reindustrialising Europe through digital, circular and low carbon innovation and clean mobility;
- promoting free, fair and sustainable global competition for markets, trade and investments; and
- maintaining the EU's global leadership position on key geostrategic and security issues.

Q. In your opinion, what are the biggest opportunities and challenges? [to achieving long term greenhouse gas reductions]

A. Climate disruption's lethal effects remain largely invisible to powerful actors. Other serious challenges include a pervasive assumption that economic growth is crucial to human wellbeing^{1 2}. Thus, policymakers are pressurized to try and achieve 'green growth'

¹ Some counter-arguments to this assumption: <https://www.economist.com/the-economist-explains/2016/05/08/why-gdp-is-a-poor-measure-of-progress>
<https://www.theguardian.com/commentisfree/2017/nov/30/fixation-economic-growth-gdp-pollution-gambling>

despite evidence that this is a quixotic, and indeed dangerous, task³.

Further challenges include the financial system's current dependence on economic growth⁴; the danger that soil health and food security could be compromised by biofuel production⁵; potential public resistance to climate action if it destabilizes the economy; the Jevons paradox; misguided and destructive pressure from the WTO⁶; and problems

² Several alternatives to GDP as a measure of progress have been developed. Feasta, for its part, is currently developing a National Wellbeing Index for Ireland:

<http://www.feasta.org/beyond-gdp-new-approaches-to-measuring-well-being/>

³ The link between fossil fuel use and aggregate economic expansion is virtually impossible to break in absolute terms. See for example <https://foreignpolicy.com/2018/09/12/why-growth-cant-be-green/>,

<http://www.inderscienceonline.com/doi/abs/10.1504/IJGEI.2012.051687> and

<https://www.resilience.org/stories/2015-10-13/the-decoupling-debate-can-economic-growth-really-continue-without-emission-increases/>. See also the recent statement made by 238 academics on the need for degrowth in the EU:

<https://www.theguardian.com/politics/2018/sep/16/the-eu-needs-a-stability-and-wellbeing-pact-not-more-growth>

⁴ Under the current system of money issuance, 97% of money is created by private banks on a debt basis. Aggregate economic activity must therefore continually expand in order to ensure that sufficient funds remain in circulation; not only is it necessary to generate profits to pay back interest on loans, but the money's very existence depends on debt demand. Reforms along the lines suggested by the Positive Money campaign, or a variation of those proposed in the 2012 IMF working group paper "The Chicago Plan revisited", would considerably ease the pressure on the economy to expand recklessly and would also eliminate bank runs and lessen other destabilizing influences on the financial system. A more detailed discussion with references can be found at

<http://www.feasta.org/2018/08/08/money-through-the-looking-glass/>. Information about Positive Money and similar initiatives, including the recent Vollgeld campaign in Switzerland, can be found here: <http://positivemoney.org/>. In-depth discussion can also be found at <https://www.sovereignmoney.eu/>. It should be noted also that there is a lively debate as to whether publicly or privately issued money would be preferable.

⁵ The EC's 2015 decision to modify the Renewable Energy Directive, placing a cap on first-generation biofuel production, is a step in the right direction. However, with the exception of anaerobic digestion (and possible exception of biochar), biofuel production will inevitably increase greenhouse gas emissions and compromise soil health: see for example <http://iopscience.iop.org/article/10.1088/1748-9326/aaa512/pdf> <https://phys.org/news/2016-08-biofuels-decrease-heat-trapping-carbon-dioxide.html> and a more philosophical commentary: <http://www.feasta.org/2017/06/14/end-the-burning-begin-the-growing/>

⁶ The WTO appears at present to be highly focused on 'green growth' as a core objective. For example, the Doha agreement states "it is the potential impact of economic growth and poverty alleviation that makes trade a powerful ally of sustainable development." This presumably is a factor in the notorious environmental disputes that some of its member countries are involved in. See footnote 1 for links to critiques of growth as a goal in itself.

with accurate measurement of certain emissions and sinks⁷.

On the opportunities side, effective and well-implemented climate action could not only improve our chances of survival; it could result in a far more civilised society⁸, reducing poverty⁹, stabilising finance¹⁰ and improving intercultural solidarity.

How can opportunities and challenges (in particular related to carbon intensive sectors or regions) be addressed? What key economic transformations should the EU pursue to achieve a low carbon and resilient economy?
1000 character(s) maximum

1. Money should be issued on a debt-free basis by an accountable institution so as to decouple the payments system from GDP growth.¹¹
2. To ensure that fossil fuel production is gradually eliminated, a binding cap should be placed on fossil fuel production and imports, with producers being charged for production permits and with the permitted production shrinking over time to zero. Revenue from the auctioned permits would be distributed on a per-capita basis ('Cap and Share')¹². This system would ensure that the polluter pays, would overcome the Jevons paradox¹³, and could significantly enhance geopolitical stability if implemented as a bilateral or multilateral partnership¹⁴.

⁷ For example, accurate measurements of carbon stocks in soil can be hard to achieve: <https://www.sciencedaily.com/releases/2017/11/171108092406.htm>. This information is vital to any calculation concerning the relationship between soil and emissions.

⁸ The reforms suggested in this submission would, in the aggregate, result in a considerable reduction in inequality, both within the EU and elsewhere. A useful overview of the beneficial effects on the whole of society (including on the rich) of increased equality can be found in the book *The Spirit Level* by Richard Wilkinson and Kate Pickett. More equal societies' inhabitants are healthier, longer-lived, better educated and less likely to become addicts. More equal societies also tend to be more innovative and their members are more willing to trust each other.

⁹ Basic income, combined with land value tax, would relieve the economically vulnerable of short-term financial stress, freeing up time and energy. Land value tax cannot be evaded (as land cannot be moved elsewhere) and would help to stave off property price inflation. In addition, income from the sale of carbon permits under Cap and Share would have a redistributory effect on wealth, particularly if the EU partnered with a group of Global South countries to implement Cap and Share.

¹⁰ See footnote 4.

¹¹ See footnote 4.

¹² More information at <http://www.capandshare.org> and <http://www.sharingforsurvival.org>

¹³ The binding cap would ensure that fossil fuel production continued to diminish regardless of any price fluctuations brought about by increased energy efficiency.

¹⁴ An outline of how a bilateral Cap and Share partnership could be formed between Ireland and a Global South country can be found at <http://www.capglobalcarbon.org/2017/08/11/submission-to-the-citizens-assembly/>. Such partnerships would ensure that industrialised countries were effectively subsidizing the energy transition of Global South countries, within a framework that could be easily

3. Food security and carbon sink protection should be top priorities. Only biofuels deriving from anaerobic digestion will be viable, and the bulk of energy will need to come from locally-sourced hydro, wind and solar.
4. A universal basic income¹⁵, land value tax¹⁶ and other resource-based taxes¹⁷ should be introduced.

Energy

The energy system today is responsible for ca. 75% of the EU's greenhouse gases emissions and undergoes [sic] a rapid transition due to e.g. cost reduction of renewables, improvements of energy-efficiency and rapid development of new technologies (e.g. batteries) driven i.e. by policies put forward by the EU and its Member States. Accelerating this change will play a central role in the transition of our economy towards a carbon-neutral economy.

What are the biggest opportunities, including for the wider economy? What are the biggest challenges, including as regards public acceptance or the availability of land and natural resources, related to these future developments? [2000 characters]

Opportunities:

1. An economy that is powered largely by locally-produced renewables would considerably enhance the energy security of the EU, rendering it far less vulnerable

scaled up to a global level. They would also build on the lessons learnt from existing, and widespread, social transfer programmes in the Global South, and would be likely to ease the migration crisis by strengthening local economies within the lower-income countries. We are currently preparing a briefing that will describe a potential Cap and Share partnership between the EU-25 and a group of ASEAN member countries (due for publication in October 2018). Such a partnership could also be formed with a group of African and/or South American countries.

¹⁵There has been much discussion of the possible effects of basic income: some introductory material, with links to more information, is at <http://www.feasta.org/2017/11/30/why-i-put-time-and-energy-into-advocating-universal-basic-income/> and <http://www.feasta.org/2018/03/16/universal-basic-income-pennies-from-heaven-by-paul-obrien-review/>

¹⁶ For a detailed discussion of the advantages of land value tax see *The Fair Tax*, ed. Emer Ó'Siochrú, published by Feasta and Smart Taxes, 2012.

¹⁷ Such taxes would discourage waste and, in the case of Land Value Tax, discourage property speculation and resulting inflation. They could gradually replace taxes on employment and property improvements, thus incentivizing both of these.

to energy price shocks and ending the EU's current reliance on unstable and otherwise problematic regimes for much of its energy supply¹⁸.

2. If a 'Cap and Share'-type framework were implemented by the EU in partnership with a bloc of low-income countries in order to eliminate fossil fuel production, it could lay the groundwork for a worldwide elimination of fossil fuel use and a substantial alleviation of global poverty¹⁹.

3. The energy sector could be significantly democratised by the transition to renewables if overall policy supported community-owned energy, as is the case in Germany and Denmark²⁰. This would encourage public acceptance, create employment opportunities and ameliorate inequality.

Challenges:

1. As we have seen, the energy transition can only be achieved if the overall EU economy undergoes significant aggregate contraction and localisation²¹. This requires financial reform as described above²², along with a shift in emphasis away from economic growth as a priority in itself²³.
2. The transport sector is heavily dependent on fossil fuel²⁴. It is highly unlikely that renewables could support transportation at the same scale as at present, given their low energy return on investment, their intermittency of supply and the storage challenge²⁵. Long, fragile transportation supply chains will need to be shortened and strengthened by privileging local production of staple products²⁶, for example via extensive support for box schemes and farmers' markets.²⁷

¹⁸ See for example <http://energyfuse.org/europes-oil-import-dilemma/>

¹⁹ See footnote 16 for more detail. See

<http://www.capglobalcarbon.org/2017/03/31/capglobalcarbon-and-basic-income-how-could-climate-action-be-coupled-to-economic-empowerment/for-a-discussion-of-the-impacts-of-a-global-Cap-and-Share>.

²⁰ <https://climatepolicyinfohub.eu/community-energy-projects-europes-pioneering-task>

²¹ See footnote 2.

²² See footnote 4.

²³ See footnote 1.

²⁴ The transport sector accounts for two-thirds of the EU's final demand for oil and petroleum products:

https://www.transportenvironment.org/sites/te/files/publications/2016_07_Study_EU_oil_dependency.pdf “

²⁵ For a clear overview of these issues see

<http://www.lowtechmagazine.com/2017/09/how-to-run-modern-society-on-solar-and-wind-powe.html>

²⁶ Local food initiatives diversify the food network, drastically decrease foodmiles and

3. Public acceptance could be endangered by a contracting economy affecting employment and wages. A universal basic income would help to address this, as would the food policy changes mentioned above²⁸.
4. Current WTO directives, with their emphasis on increased international trade as an end in itself, are undermining localised and circular economies²⁹.

The role of Forests and Land Use

What should be the role of the land-use sector in reducing emissions and increasing absorptions emissions? For what purposes should biomass be used most to reduce greenhouse gas emissions? How and which sustainability concerns should be addressed? [1000 characters]

The land-use sector probably has the greatest potential for absorption of emissions.³⁰ Some caution should be exercised however as carbon sequestration rates can vary enormously according to location and the techniques used³¹, and accurate measurement can be challenging^{32 33}.

strengthen ecological resilience through a more diversified set of crops.

²⁷ This would also have the beneficial side-effect of lessening the impact of a financial collapse that could well be triggered by a decline in net energy availability. A number of analysts are warning that the energy return on investment (EROI) of fossil fuels is dangerously low compared to the past and that this might well trigger a catastrophic economic crash. While such a crash would certainly diminish greenhouse gas emissions, it is obviously highly undesirable for other reasons. A recent briefing on this is at <http://www.feasta.org/2018/09/20/end-of-the-oilocene-the-roar-of-the-oil-fizzle-dragon-king/>

²⁸ Agriculture will become more labour-intensive with the shift away from monoculture, creating a range of employment opportunities.

²⁹ See footnote 6.

³⁰ Discussion of biosphere-based sequestration can be found in several chapters of the Feasta publications *Fleeing Vesuvius* (<http://www.fleeingvesuvius.org>) , *Sharing for Survival* (<http://www.sharingforsurvival.org>) and a 2016 Feasta report on Closed Loop Agriculture by Feidhlim Harty (<http://www.feasta.org/wp-content/uploads/2016/04/Feasta-Closed-Loop-Agriculture-Report-2016.pdf>). See also research by Erik Toensmeier and others on agroforestry at <http://www.perennialsolutions.org/> , the Rodale Institute's publication "Regenerative Organic Agriculture and Climate Change" at <https://rodaleinstitute.org/assets/WhitePaper.pdf> , and these findings from Washington State University in 2017: <https://www.sciencedaily.com/releases/2017/11/171108092406.htm>

³¹ For example, biochar is a carbon sequestration mechanism that appears to deserve further research. Studies have thus far found that the net carbon worth of carbon sequestration using biochar, whether as cattle feed, slurry treatment or spreading it on the field, to be inconclusive. However, in practical use biochar is frequently made from crop and

Clear targets should be set for biosphere-based sequestration and could be implemented via a Carbon Maintenance Fee that would be paid to farmers (or to governments) who demonstrably manage to sequester carbon on their land. A corresponding penalty would be charged to those whose land 'leaks' carbon³⁴.

A major sustainability issue in this context is pressure on farmers to sell crops as biofuels (undermining not only sequestration, but also food security). It must be emphasised that most biofuels' renewable credentials are highly questionable³⁵.

Basic income would help to alleviate some financial pressure on farmers, but it may also be necessary to legally enforce land-use requirements in some areas³⁶.

tree waste, which would de-compose and lose its carbon to the atmosphere anyway. Also, in analyses of biochar use there is good evidence that it retains water in the soil, thereby prolonging the growing season in dry and difficult conditions. That extra growth will photosynthesise carbon from the air. Biochar itself is almost pure carbon and a kg of biochar in the soil is the equivalent of 2.5 kg of CO₂ which does not return to the atmosphere. Add to this the fact, as demonstrated both in the Upper Amazon Basin and in the Folach Fladhs (prehistoric cooking places) in Ireland, ground up charcoal in the ground is extremely stable and continues through the centuries to grow good crops. Carbon and microbes are also essential for retaining water in the soil. See <https://e360.yale.edu/features/soil-as-carbon-storehouse-new-weapon-in-climate-fight>.

³² See footnote 7. See also

<https://www.sciencedirect.com/science/article/pii/S0167880912003635>

³³ Indeed, some argue that the term 'sequestration' is misleading in this context:

<http://www.feasta.org/2017/07/03/biomass-is-a-common/>

³⁴ For more information on the Carbon Maintenance Fee, see the section describing it in <http://www.sharingforsurvival.org/index.php/policy-packages/>. The fee could be financed by a Tobin Tax, a Land Value Tax, or part of the revenue from Cap and Share.

³⁵ The emissions arising from burning living biomass such as arable and trees are often considered to be carbon-neutral, but this is a serious mistake. There is a time-lag ('carbon debt') between the release of emissions from burning biomass and their re-sequestration by the next generation of plants, which presents the danger of triggering atmospheric feedback in the interim and exacerbating climate disruption. There are also adverse side-effects, including on the ability of soil to nourish the next generation of plant growth, as valuable nutrients are being dispersed rather than recycled. Biochar, and Holistic Planned Grazing as advocated by Allan Savory, may have some promise but remain controversial (see for example this article and the comments following it:

<http://www.sharingforsurvival.org/index.php/panelbiochar-by-james-bruges/> and also footnote 33). The only biofuel which can definitely be considered to produce fewer emissions than fossil fuels, and to potentially (with careful management) be 'carbon neutral', is that produced from anaerobic digestion. But its production still needs to be carefully balanced with food security and the preservation, and where possible, expansion of carbon sinks. See also footnotes 5 and 7.

³⁶ This would particularly be the case if fossil fuel prices are pushed upwards by other climate mitigation policies such as Cap and Share or a carbon tax.

Education, research and innovation [1000 characters]

On which cross-sectoral domains should R&D efforts focus in the coming decades? Is there a particular need for large scale deployment of certain innovative technologies? Is there a different role for authorities and private sector in support R&D and Innovation?

Since the decarbonised economy will entail a shift towards localisation, community-level knowledge including strong familiarity with the requirements of local ecosystems is essential to effective R&D. We therefore advocate a (mainly) decentralised approach to R&D.

A useful role could be played by the open source model of technology sharing, including the use of Creative Commons licences.

Energy storage research merits a portion of R&D investment, although its potential should not be overestimated³⁷. Nevertheless, a regional focus could prove constructive here (e.g. by optimising the use of topography).

On the state level, Cap and Share would automatically steer investment towards carbon-free and localised initiatives while protecting improved energy efficiency and storage from the Jevons paradox³⁸. Similarly, a shift in taxation policy in favour of resource-based taxes would help to encourage conservation and lessen disincentives to employment, while basic income would encourage information sharing³⁹.

Actors

Do you have an example that you think is of particular importance to underline the role of such local and private sector actors in supporting the low carbon economy and energy transition? [1000 characters]

The traditional, pre-fossil fuel economy of a market town, connected to its agricultural terrain (or maritime resource) by street markets, market halls and squares, and by the ingenuity and dexterity of town tradespeople, is a model which remains culturally familiar to all the people of Europe. In it, fossil power is diminished to a human scale, with human-sized effects. This need not mean returning to the rigid social stratification (including stratified gender roles) of the past. As energy shrinks, it has the potential to dissipate in a more egalitarian dispersal of localised, specific and appropriate ingenuities, which, in turn, could

³⁷ There is a long history of much-touted battery improvements failing to live up to expectations. See for example <http://energyskeptic.com/2016/notes-from-the-powerhouse-inside-the-invention-of-a-battery-to-save-the-world-by-steve-levine/>

³⁸ See footnotes 12-15.

³⁹ This is because it would ease competitive pressure on innovators.

become the spur to appropriate and convivial settlement inside (not exceeding) the particular limits of a local terrain.

Adaptation [1000 characters]

Which adaptation measures are of particular importance for your sector and why?

The reforms and programmes which we advocate for mitigation in this submission would also be vital to adaptation. Any measure which alleviates hardship and stabilises the economy, such as the issuance of debt-free money and a basic income, would make it easier to adapt to an increasingly unpredictable and volatile environment (although obviously, serious challenges will remain).

Commons-based resource management, including land value tax and Cap and Share, would also help to ensure that everyone gets their 'fair share', reducing the potential for panic and extreme political unrest.

Role of CO₂ removal [1000 characters]

What main barriers do you see currently preventing the large scale deployment of CCS, including on how to use it to generate negative emissions? What are the particular challenges related to biomass CCS? What type of CCU (Carbon Capture and Utilization) would lend itself to create long term storage? Are there other technologies that should also be considered? What policies do you think the EU should pursue to better help development and deployment?

Given the shortage of time available to achieve decarbonisation, the degree of investment (including investment of energy) required to develop and scale up CCS and the disappointing results thus far of CCS research⁴⁰, we believe far greater emphasis should be placed on land-use techniques for CO₂ removal (see section on land use above). Biochar may have some potential but uncertainties remain regarding its potential impact on a global level⁴¹.

Moreover, sequestration attempts should not serve as a distraction from the need to end fossil fuel production altogether. (If it is not dug up in the first place, it will not need to be put back.)

⁴⁰ See for example

<https://www.technologyreview.com/s/544736/the-dubious-promise-of-bioenergy-plus-carbon-capture/>

⁴¹ <https://www.nature.com/articles/ncomms1053>

Additional Comments

If you wish to add further information, comments or suggestions - within the scope of this questionnaire - please feel free to do so here:

We welcome the opportunity to make this submission.

Many of the multiple-choice questions and some of the introductory texts for the questionnaire sections imply that decarbonisation can be achieved through a combination of innovation, widespread technology deployment and informed consumer choice. However, as our comments above suggest, we believe certain other factors to be of at least equal, and probably more, importance. These include the need for structural changes to the financial system, the introduction of commons-based frameworks for resource management (such as Cap and Share and land value tax), and a freeing up of time and energy through a basic income.

Part of the questionnaire also read disconcertingly as though it is simply a public opinion poll, or even a consumer survey carried out by a business to try to build customer profiles. It seems jarring to be asked in a multiple-choice format to specify the extent to which we believe recycling, or making buildings more energy efficient, are important to climate mitigation. Surely it is self-evident that all of these actions can be useful to decarbonisation but cannot achieve it by themselves. A broader, systems-based perspective seems to be missing.

A particularly disturbing question is the one on the relationship between decarbonisation and competitiveness, as it gives the impression that the compilers of the questionnaire are unconscious of – or, if aware of it, are badly underemphasizing - the extremely grave threat posed by climate instability. There are certain contexts in which prioritizing competitiveness is simply not a realistic approach and could actually prove dangerous.

Some general comments

We are very concerned that the European Commission's goals as stated in the questionnaire's introduction appear contradictory and risk undermining human wellbeing, including climate stabilisation.

Specifically, we believe that the goals of “promoting free, fair and sustainable global competition for markets, trade and investments” and of “maintaining the EU's global leadership position on key geostrategic and security issues” are problematic.

Given the existential threat that we are facing with regard to the climate, it is imperative to focus on meeting essential needs rather than increasing profits. As implied above, competition cannot ensure that everyone gets what they need to survive (hence rationing in times of war).

In a similar vein: emphasis now needs to be placed on global cooperation, not a quest for continued geopolitical domination (a domination which derives, moreover, from a dubious colonialist history).

Even if we were not facing such severe environmental challenges, the pursuit of free trade as a goal in itself would still be problematic. History indicates that countries do not become prosperous purely through a removal of trade barriers but rather through a judicious combination of trade and protectionism⁴². Fair and sustainable trade, on the other hand, do have some validity as goals –provided that we keep in mind that the phrase ‘infinitely expanding fair and sustainable trade’ is a contradiction in terms.

Finally, as mentioned above, we also believe that certain other changes in overall priorities are necessary, in particular a shift in emphasis away from economic growth and towards wellbeing as a goal.

Please contact us for more information:

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⁴² See for example *Bad Samaritans: The Myth of Free Trade and the Secret History of Capitalism* by Ha-Joon Chang, Bloomsbury, 2008

Feasta is an open-membership think tank based in Ireland with international membership. Its aims are to identify the characteristics (economic, cultural and environmental) of a truly sustainable society, articulate how the necessary transition can be effected and promote the implementation of the measures required for this purpose. It is a member of the Irish Environmental Network, the Environmental Pillar and Stop Climate Chaos Ireland.

