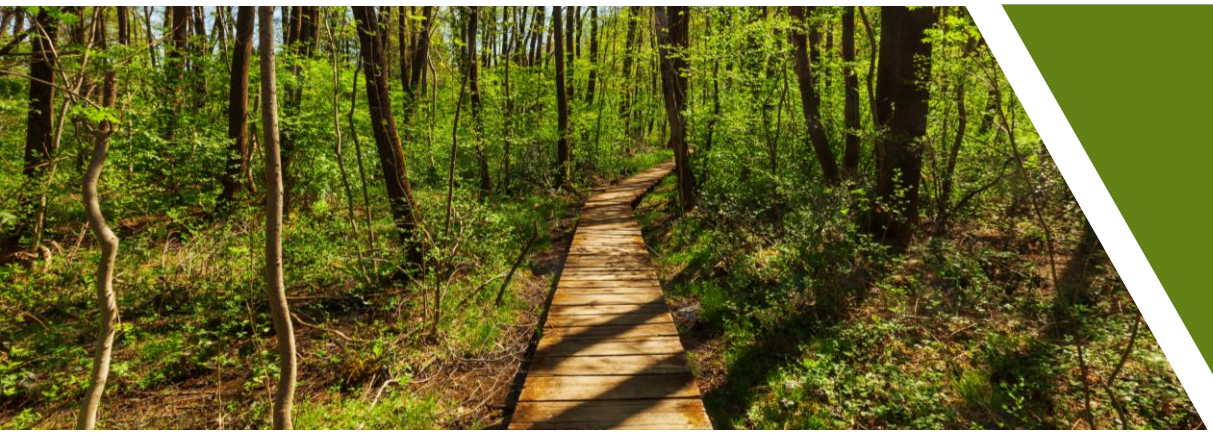
IEEP submission to the Talanoa Dialogue: How do we get there?



1. Introduction

This paper is submitted as the Institute for European Environmental Policy's (IEEP) contribution to the Talanoa Dialogue under the question "How do we get there?". We understand this to mean: how do we achieve the goals of the Paris Agreement of keeping the increase in global average temperature to well below 2°C above pre-industrial levels and to aim to limit the increase to 1.5°C, while increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development, in a manner that does not threaten food production. We have highlighted a few areas, based on our history of policy research, which are most important to consider in any mitigation and adaptation strategies to be put into place globally or by any parties to the Agreement. While not a comprehensive overview, we believe that these areas should guide political decision making at all levels of governance, from international to local. The principle of common, but differentiated responsibilities must be respected and the global process should be guided by solidarity and cooperation, both in decision making and the division of financial responsibilities. This submission does not comment on the broader international governance issues required to implement these strategies, or specific ambition mechanisms needed to operationalise them[1], which are well covered by others, but rather focuses on the practical steps that would be needed.

Critically, any strategy to limit climate change needs to consider the economy as a whole. We will need a clear understanding of the likely mitigation achievable in individual sectors; and the implications of the potential in each sector for emissions in other sectors as well as for trade-offs between sectors (for example, electrification of the transport or heat sector has implications for the need for further investment in renewable electricity generation). Reaching net-zero GHG emissions will require coordinated effort across all economic sectors. Targets for each sector need to over-programme the total level of emissions reduction required across the economy, given the risk of unforeseen difficulties emerging in one or more sectors. Sectoral targets also need to be coherent with each other, reflecting both the fact that not all sectors will be able to decarbonise at the same speed, and the likelihood that successful strategies in one sector will have implications for emissions in another, but also taking into account the geographical differences within sectors.

Coherent action is therefore needed in all sectors; and in the EU **we need to move on from excessive reliance on incremental price signals**. Emissions trading systems and carbon taxes, for example, are a vital backbone of any abatement strategy, but even with a significantly stricter prices than we see today, they cannot on their own provide the market with clear enough signals to reach the emission reduction targets needed. They encourage an optimisation within the current infrastructure for power generation, but do not provide clear enough signals about the need for a shift away from a global system reliant on excessive GHG emissions or about the system that should replace it. Unless we set clear political ambitions about, for example, the phase-out of petrol use in passenger vehicles, and the phase-out of fossil fuels in energy production, we risk a lack of clarity among investors, and stranded assets

[1] For example: Levai, David & Baron, Richard, (2017) "Beyond emission targets: ambition in the context of the 2018 Facilitative Dialogue" *IDDRI Policy Brief N. 12/17,* https://unfccc.int/sites/default/files/resource/8_IDDRI%202017_Beyond%20Emissions%20Targets.pdf

in the form of new, carbon-based generating capacity (which in turn will create stakeholders with a vested interest in weaker progress towards decarbonisation).

We also need early progress on new low-, zero-carbon, and particularly carbon negative technologies. The story of wind power and solar is one of a transformational reduction in costs as a result of learning from early deployment. As decarbonisation challenges become more complex, and require the involvement of new areas of the economy or new technologies (heat, agriculture, carbon capture and storage, for example), we need to get an early idea of feasibility at scale, and the wider impacts of these technologies, in order to understand their potential contribution to more ambitious future emissions reduction targets. That in turn demands early deployment – but because current carbon targets and prices can be met through existing tried and tested technologies, incentives for deployment of the next generation of decarbonisation technologies have been weak. Any long-term strategy therefore needs to go hand in hand with a short-term focus on innovation and deployment.

Finally, **we need to address issues of consumption**. The issue of consumption must on the global scale take into account different levels of income and prosperity; and it must be acknowledged that the biggest changes in consumption must be made in the countries that are the most economically developed, while there naturally is an obligation also amongst developing and the least developed countries to assure more sustainable consumption. Decarbonisation policy in the EU has – so far – not called on citizens to make difficult choices about their own lifestyles, but has applied a carbon price to some of those choices (e.g. in energy consumption and in transport). Policy has therefore largely focused on different approaches to production, and on replacing relatively high-carbon approaches with lower-carbon ones within the same system. The scale of the challenge we now face means that we need to consider whether and how a zero net emissions target, or beyond, requires potentially far-reaching conclusions about types of technology, types of products, and types of infrastructure which are simply not compatible with a least-cost approach to delivering that limit. The physical resource needs of increased consumption impose an irreducible minimum of carbon and wider environmental costs which cannot be innovated away. In some areas, therefore, there will need to be a serious and honest political debate about consumption choices. Livestock products are a case in point – can we significantly reduce the environmental footprint of our food and agriculture systems without reducing the per capita level of consumption of livestock products? Here we get into issues which are – literally – visceral, and cultural, and where politicians are understandably nervous; but the discussion will need to be launched.

2. Emissions reduction:

2.1 Agriculture, Forestry and Other Land Use (AFOLU)

The AFOLU sectors, covering agriculture, forests and other rural land use can make a substantive contribution to climate mitigation efforts not only by reducing GHG emissions within these sectors, but also through negative emissions (carbon sequestration in soils and biomass) and through support to other sectors in replacing a proportion of carbon-intensive fuels and materials.

Long term strategies need to better manage the carbon that flows through the AFOLU sectors, maximising the size of the carbon sink, and maintaining it for as long as possible.

The AFOLU sectors, particularly forests, are being looked at as a means of offsetting emissions that are costly or difficult to achieve in other sectors, and, given that a residual level of GHG emissions is inevitable, the long-term strategy implicitly relies on the net-sink of the LULUCF sectors to reach net-zero across the economy. A long term strategy should consider carefully the challenges in monitoring carbon flows through the land sector over time, and should consider how carbon rights or value can be linked with forest biomass production, recognised as an output from the production process and the effort/investment of the land manager.

Coherence between efforts to reduce emissions, on the one hand, **and the demand for bioresources from a growing bioeconomy on the other hand is crucial for AFOLU sectors to play a positive and proportionate mitigation role.** In addition to their potential as a carbon sink, the AFOLU sectors are also seen as a source of biomass to replace traditional energy sources in transport, heating and power and as a source of material products to replace more carbon intensive or fossil-based alternatives e.g. traditional plastics. Whilst regrowth of biomass can re-sequester carbon, the 'carbon debt' impact (including that linked to increased intensity of forest extraction) of utilising biomass for energy is significant and limits the generation of a carbon sink thus ability to offset emissions from other sectors. The use of biomass from forests should follow the principles of resource efficiency including cascading use, circularity, promoting the use of harvested wood products, re-use and recovery before its use for energy generation. Prioritisation of desired uses, consideration of scale consequences and application of efficiency principles will help to deliver biomass inputs to the economy while retaining the carbon sink provided by forests.

Long term strategies need to look at what can be done to reduce emissions in each sector coherently, before looking to net sinks in the forestry sector. **In the land use sector, this means that agriculture needs to focus on improved management of livestock and manures, more efficient use of organic and inorganic fertilisers, and improved management of carbon in soils and vegetation.**

Finally, policy to maximise emissions reductions in the agriculture sector will increasingly need to be complemented by a debate on consumption, and the scope for measures to reduce the environmental footprint of EU food consumption by reducing its focus on livestock products.

2.2 Transport

Transport GHG emissions make up an increasing share of the total, and making progress in mitigation has proven difficult in comparison with most other sectors. Road transport makes up the vast bulk of this, but aviation and shipping emissions are growing more rapidly and must also be urgently addressed. Transport emissions have not yet been decoupled from economic growth, and the rapid growth in mobility over recent decades has led to large increases in emissions despite major improvements in efficiency. Thus, technical efficiency improvements are important and within reach with the right policies, but without a broad range of strategies and initiatives to change patterns of transport use it will be difficult to make the necessary reductions in emissions by 2050. These individual strategies often produce only modest reductions on their own, but can work in synergy to add up to major improvements as well as offering important co-benefits in terms of other SDGs.

Transport infrastructure investment must immediately be directed to avoid lock-in of carbon intensive modes over the next decades, and efforts to integrate electrification, new fuels and low carbon modes into the existing infrastructure redoubled. Electrification of ground transport is the most important single technology to emphasise given the

technological feasibility of electrification especially for lighter vehicles, and their high turnover rate. Personal vehicles running on the internal combustion engine should be heavily curtailed, and widespread bans on new sales could be implemented by 2040 at the latest. Urban mobility makes up a significant portion of all CO_2 emissions of road transport, and has many possible mitigating strategies given that most urban trips are over short distances. Sustainable Urban Mobility Plans should be further emphasised and integrated into planning, with renewed emphasis on improved public transit, increased use of non-motorised transport and improved land use strategies. HDVs (mostly trucks and busses) can be made zero GHG by 2050 using a combination of technologies and policies.

Emissions from leisure travel, primarily from aviation, must also be addressed. Aviation made up 13% of EU transport emissions in 2015. ICAO projects a 300-700% increase by 2050 under a business as usual scenario (BAU). Technological and managerial solutions can be developed to lower emissions, but a global agreement to reduce aviation emissions is necessary, and viable alternatives for medium distance trips should be developed, possibly high speed rail or low emission busses. Fiscal and regulatory advantages of the airline industry should be eliminated, and international integration of the railway industry should be encouraged.

2.3 Buildings

Fortunately, the technologies needed to make most buildings near zero emission are well known and all that is required is implementation. A wide variety of technologies are available for deployment, but need to be scaled up across the world. These include district heating and cooling, improved insulation, enhanced design, lighting, cooking and more. However, this will require a major effort, particularly in terms of renovation of the existing building stock and development of adequate building stock in developing countries. Funding and information needs to be provided to individuals and local levels of government in order to catalyse transition in this area, which is technically feasible but presents many hurdles due to the diffuse implementation requirements. Building renovation and improvement would also have major co-benefits in terms of economic activity, health, social well-being, and reduced energy poverty.

2.4 Carbon capture and storage

Without an understanding the implications of negative emissions technology, and hence its potential contribution at scale in later decades, it is impossible to develop a clear understanding of the sorts of emissions trajectories required in other sectors. There is a strong case to be made for enhanced public support for innovative projects, in particular with a view to identifying both the potential for sequestration, and the potential unintended consequences in terms of environmental impacts. It will be critically important to ensure that successful deployment of CCS does not lead to the exploitation of new fossil fuel resources or lead to unsustainable harvesting of biomass, but that it is used as a bridging technology to minimise the impact of current carbon-emitting infrastructure. In addition, further research is needed for concepts such as bio-energy with carbon capture and storage (BECCS), including on its impact on the wider bio-economy, identifying, for example, the risks of making energy use of biomass more attractive than material uses. It is also crucial to better understand how potential large scale use of BECCS could affect the geographic areas where the bulk of the biomass used would be grown and what potential social and land use trade-offs are linked to this.

3. Wider challenges of a low carbon world

3.1 Employment and a socially fair transition

Long term strategies must aim at transition that is fair and rights-based. Moving towards a decarbonised world will mean big transformations in most economic sectors and have implications on people's everyday lives, livelihoods and consumption. It is crucial that the burden of the transition is distributed fairly between and within countries. Transformation strategies must be drawn up and put in motion for both geographical regions and economic sectors relying on fossil fuels. This should be coupled with investments into the transition, the creation of alternative livelihoods, and a major investment in skills and training for those affected. A shift away from fossil fuels can also become a driver for sustainable economic growth and job creation. In this transition there is also a potential to shift ownership structures, especially relating to energy systems, towards public ownership and democratic participation in the energy production. Individuals and communities should be empowered, with information, knowledge, and access to seed funding, to set up renewable and sustainable energy sources. A successful GHG emissions reduction strategy needs both to be fair and to be seen as fair, and requires the active participation of all stakeholders and open communication to help find solutions that can ensure that the transition does not punish the most vulnerable or lead to unemployment blackspots. Rather, the potential employment benefits of future low-, zero- and negative-carbon technologies need to be emphasised, and attention focused on the potential for locating those opportunities in areas with current high levels of carbon-intensive industry.

3.2 Adaptation

Long term strategies should also focus on adaption, as climate change is not just something which will be happening in the future, but something that we can experience already today, but whose impact will increase over time. There should be increased efforts and investment to model climate impacts at regional, national and local levels and to create plans to prepare for potential extreme weather events and climate extremes and to build resilient societies. We are now developing a better understanding of the ways in which coherent adaptation action can be more effective, and more experience of the effectiveness of policy approaches to encourage action; and this, coupled with the way in which recent climate and weather events have increased public understanding of the urgency, mean that the time is right to consider a more active approach. Any adaptation measures need to address both fast onset and slow onset climate change and decisions should be made in a rights based and inclusive approach.

For the AFOLU sectors, adaptation actions often take precedence over mitigation actions. To improve coherence between private interests and societal needs, adaptation support should be 'mitigation proofed' to ensure adaptation action contributes to mitigation needs, or is at least consistent with them. Climate adaptation requires coordination across different levels of decision making; this needs to be addressed, and implementation of public sector action needs to improve, in order to make sure that the adaptation measures and decisions needed can start to take shape now rather than later. Climate adaptation also need financing and

there needs to be a signinficant financial support from the most developed economies to the developing ones in order to facilitate this common transformation to societies adapted to and prepared for a changing climate.

4. Conclusions

The challenges involved in developing a credible long-term strategy to mitigate and adapt to climate change are significant. In particular, it demands an approach which looks at the interactions between sectors, and creates an understanding of the systemic nature of decarbonisation decisions. We have set out in this paper some initial suggestions on policies and priorities, which may or may not be the right choices. What matters more than the specific choices made, however, is that hard choices are identified and resolved. What is clear already now is that there is no option not to pay for climate change. The choice is between making investments now, and delivering a low-carbon future through a least-cost path; waking up to the scale of the problem later, when the cost of decarbonisation will be much greater, because of the mistaken investments we will have made in the meantime; or ignoring the problem altogether, and condemning ourselves, and future generations, to the sorts of damage the IPCC has just explained so clearly.