

## **Written Evidence Submitted by Christian Aid (HNZ0055)**

### **1. Introduction**

1.1 Christian Aid insists the world can and must be swiftly changed to one where everyone can live a full life, free from poverty. We work for profound change that eradicates the causes of poverty, striving to achieve equality, dignity and freedom for all, regardless of faith or nationality. We are part of a wider movement for social justice. For example, we are a member of the Act Alliance, which has 137 members in 100 countries. We provide urgent, practical and effective assistance where the need is greatest, tackling the effects of poverty as well as its root causes.

1.2 Christian Aid's interest in climate arises from our understanding that this crisis has the potential to reverse decades of development work. It has the greatest impacts on the poorest, those who have done the least to cause climate change. Our interest extends beyond 'merely' reducing emissions in line with pathways consistent with not exceeding the Paris Agreement's 1.5°C goal, but that the required transformation in response to the climate crisis is done sustainably. This means that the climate emergency is tackled through means that have positive co-benefits for people and planet and are consistent with the precautionary principle. Too much is at stake, on the only planet in the universe known to support life, to take risks through relying on unproven technologies, when we have many, if not all, of the solutions we need already. We just need the political will to implement them at the necessary speed and scale. In light of this overall framing, we offer the following views on the role of hydrogen in the energy mix.

### **2 Hydrogen may have a role to play in the UK energy mix**

2.1 Hydrogen is a storable source of energy and could bring additional diversity to the energy mix. These are both potentially useful properties of the gas. However, any integration of hydrogen into the energy mix will require careful analysis and planning, taking into account the wider energy mix, with parameters including penetration by renewables including solar and wind, energy efficiency upgrading, energy storage methods, and transmission. It will also require consideration of the costs and benefits of using available renewable energy to produce hydrogen, with all the implied energy losses of multi-step transformation, against simply focusing on electrification of the economy through direct use of renewable energy in the myriad applications where this option exists.

### **3 Hydrogen should not be produced from fossil fuels**

3.1 Hydrogen can be produced through two main routes: electrolysis and converting fossil gas into hydrogen and CO<sub>2</sub>.

3.2 Electrolysis through use of renewable energy should certainly be explored as an option for hydrogen production, albeit within the wider perspective of transformation of the overall energy mix, including consideration of supply side and demand reduction measures, and other, perhaps more effective/ efficient uses of that renewable energy resource.

3.3 In order to avert the worst of the climate crisis it is imperative that we move away from a fossil fuelled economy as fast as possible. This is the only proven stable means to reduce atmospheric CO<sub>2</sub> loading: fossil fuels have been stored securely for between 300-360 million years and will remain stable and unproblematic if they are kept in the ground. Biological carbon can be subject to rapid fluxes, as we have seen in California, Amazon and Australian fires, and other carbon removal technologies are, at best, highly immature and should not be relied upon. Ending fossil use is imperative for the needed precautionary approach to climate change.

3.4 The UK government is signalling not to move directly and rapidly to a possible clean hydrogen economy but explicitly aims to “work with industry to complete testing necessary to allow up to 20% blending of hydrogen into the gas distribution grid for all homes on the gas grid”. This is incrementalism, not energy revolution, and continues to provide a lifeline to the fossil fuel industry through signals of ‘blending’, not ending, the fossil fuelled era. This is unacceptable in a time of climate crisis, which needs to be addressed with the same fervent energy as was invested in the COVID vaccines.

3.5 There are significant emissions associated with production of natural gas: about 100 kg CO<sub>2</sub>e/boe are emitted, although this does vary with the source of gas and the trade routes. There are also significant issues of fugitive gas emissions during production and transportation phases: one study calculates that burning natural gas is only better for the climate than coal if fugitive emission levels stay below 3.2 per cent. Coal is rightly becoming an energy pariah, but methane (natural gas) also poses huge climate risks: it is 86x stronger a greenhouse gas than CO<sub>2</sub> over the 20-year time horizon and its direct impact is estimated to have caused around 20% of additional climate forcing since 1750 . Simply producing natural gas for making hydrogen carries a significant climate penalty.

#### **4 Moves towards hydrogen production should not be predicated on availability of CCS and should be consistent with the 1.5°C goal**

4.1 The Government's 10 Point Plan explicitly states that "Producing low carbon hydrogen at scale will be made possible by carbon capture and storage infrastructure". This implies an intention to use fossil gas in hydrogen production, a position that should be revoked for reasons outlined above. Making use of hydrogen reliant on CCS means making two highly immature technologies highly interdependent, hardly a precautionary approach, and one with significant financial costs associated with it. In 2015, the government rightly pulled £1bn of ring-fenced capital budget for CCS. CCS should be paid for by the polluters, including the oil and gas companies, that have caused this crisis in the first place.

4.2 Even in an ideal CCS world, where the technology is proven and all the legal complexities resolved without placing liability on taxpayers, there are still concerns. A report by the Global CCS Institutes found "The International Energy Agency (IEA), IPCC, and many other groups estimate CCS projects must mitigate 1.5 Gigatonnes per annum (Gtpa) by 2030 to stay on a 1.5°C increase climate trajectory—an increase by a factor of 35 from today." With lead times of up to a decade for technological roll out and hugely complex legal issues including around where liability for failure of CCS storage lies, it does not seem likely that CCS on such a scale could be rolled out on the time frames required in the scientific literature for limiting global heating to 1.5°C. Even assuming the CCS option is shown to work, fossil hydrogen would not be a viable energy option until this is demonstrated, putting in significant timelags into climate action, where investment could have been expedited to rolling out proven renewable technologies and energy efficiency measures. The remaining carbon budgets compatible with the Paris 1.5°C temperature goal do not allow for time lags.

4.3 When applied to the most common way of making fossil hydrogen, CCS can capture less than 60% of the emissions produced. This could be increased to around 90%, but at much greater cost. Even this higher rate would lead to significant CO<sub>2</sub> emissions to the atmosphere if hydrogen were to be used at a large scale. CCS also runs the risk of placing power in the hands of the fossil fuel companies who have caused this climate crisis, in that they control the pipelines and many of the potential storage formations.

**5 The overall aim of energy policy must be to end the use of fossil fuels, rapidly.** In so doing, we not only tackle the climate crisis in the most rational and precautionary manner possible, but we garner the co-benefits of ending new plastic pollution and of cleaner air. At present 40, 000 people in the UK and 7 million globally die each year from air pollution causes<sup>1</sup>.

***(January 2021)***

---

<sup>1</sup> <https://www.who.int/westernpacific/health-topics/air-pollution>