

# Valerie Racine's Commentary on "Next-Generation Biofuels"

Commentary On  
Case: Next-Generation Biofuels

In the last few decades, there has been much research and development on reliable alternatives to non-renewable energy resources. Government mandates to adopt biofuels as a way to mitigate greenhouse gas (GHG) emissions resulted in large-scale production of plant-based liquid fuels - what are often referred to as "first-generation" biofuels.

The quick adoption of plant-based biofuel technologies during this time had many unforeseen negative social, environmental, and economic consequences. For instance, many challenged the claims that biofuels were effective at lowering GHG emission when compared to fossil fuels, and criticised large-scale production of biofuels as having adverse effects on environmental health, including the destruction of rainforests. Given that biofuel crops compete with food crops for land and resources, biofuels can also affect food prices and undermine food security. In addition to these negative impacts, resulting from direct land-use changes (dLUC), there are compounding effects of indirect land-use change (iLUC) in cases where other social and economic activities are displaced or natural resources are depleted because of large-scale production of biofuels (Buyx & Tait 2011; Mortimer 2011).

In 2009, the Nuffield Council on Bioethics established a working group to examine the ethics of biofuels and to outline an ethical framework to guide the future developmental and implementation of biofuel technologies in an economically feasible and sustainable way. The Council published its report in 2011 outlining five guiding principles for biofuel technologies:

1. Biofuels development should not be at the expense of people's essential rights (including access to sufficient food and water, health rights, work rights, and land entitlements).
2. Biofuels should be environmentally sustainable.

3. Biofuels should contribute to a net reduction of total GHG emissions and not exacerbate global climate change.
4. Biofuels should develop in accordance with trade principles that are fair and recognize the rights of people to just reward (including labor rights and intellectual property rights).
5. Costs and benefits of biofuels should be distributed in an equitable way (Buyx & Tait 2011, 633).

The ethical principles were designed to provide an ethical “test” for future biofuel technologies and to prevent some of the negative consequences of first-generation biofuel production. The Council also considered whether there is a moral duty to develop biofuel technologies in light of impending climate change. They claimed that the underpinning principle to their ethical guidelines for biofuels is the “duty not to do nothing” (Buyx & Tait 2011, 636). In other words, if one accepts that biofuels can play an important role in mitigating climate change, then there is a duty to ensure the ethical and sustainable development and adoption of biofuels.

The Council also looked forward to what some have called the “second and third generation” biofuel technologies, which aim to use less land and water resources and reduce social and environmental harms. These emerging technologies include using non-food crops, like trees, agricultural waste, and algae to produce biofuels, as well as taking advantage of better gene-modification tools to create variants with higher yields.

In addition to the ethical concerns already addressed in the Council’s report, these next-generation biofuel technologies present new challenges, such as concerns about intellectual property with new patented technologies, concerns about releasing genetically-modified organisms into the environment (and other environmental impacts), and concerns about how to govern and regulate the introduction of new technologies into existing social and economic structures (Tait & Oyelaran-Oyeyinka 2010).

In response to the Nuffield Council’s report, philosopher Paul B. Thompson, the W.K. Kellogg Chair in Agricultural Food and Community Ethics at Michigan State University, has argued that using the concept of a technological trajectory is useful to understand and analyze the ethics of different R&D strategies of biofuel technologies (Thompson 2012). He points out that some of the rationales used to justify the development and adoption of biofuels, such as a push for energy independence in the US and incentives to find alternative uses for commodities like

food-crops, have very little to do with the main goal of mitigating climate change. Attention to these trajectories can help foresee possible resistance to adopting new, next-generation, biofuels under current social and economic conditions.