

GENETICALLY MODIFIED ORGANISMS: A CASE FOR SUSTAINABLE DEVELOPMENT IN AN ANTI-GLOBALISATION ERA*

Abstract

The research aims at critically analysing the nationalism and anti-globalisation arguments in opposition to biotechnology, particularly Genetically Modified Organisms (GMOs), in a bid to address their impact on the achievement of the sustainability objectives. The research further sought to examine the key international instruments regulating the cultivation and trade of GMOs. The methodology adopted is doctrinal with primary and secondary sources on Law and biotechnology, aided by international treaties, textbooks, journal articles, newspapers and online materials. This work, following the nationalist arguments in opposition to GMOs, finds among others that differences in laws on GMOs cause trade conflicts and that by genetically engineering products, big biotechnology companies are trying to impose food totalitarianism on the world. Nevertheless, these arguments were outweighed by the numerous sustainability objectives to be derived from the globalisation of GMOs. The research therefore made a case for States to be more receptive of GMOs, provided adequate and less complex national and international standards have been met.

Keywords: Genetically Modified Organisms, Biotechnology, Sustainable Development, Anti-Globalisation.

1. Introduction

Although a considerable uncertainty is seen to surround the field of genetic modification, GMO's nevertheless have a significant role in shaping the future of sustainable agriculture globally. It is discovered that some of the nationalist anti-GMO arguments, particularly as it has to do with perceived long term health and environmental risks from the use of GMOs, are based on mere rebuttable presumptions. According to a report from the National Academy for Sciences (NAS), it is revealed that the 'cultivation of GM crops has had no negative impact on the environment, ecosystems biodiversity, or health. By growing herbicide- and insect-resistant crops, the amount of pesticide and herbicide has been decreased, whereas yield has been increased'.¹ Therefore, as we live in times where nations are employing strict regulations on the use and trade of genetically modified products, with an outright ban in certain cases, one should not fail to appreciate the numerous sustainability goals that these GMOs will help achieve across the globe. Some of these objectives attainable through the globalisation of these GM products include; ensuring food security, ending hunger, poverty eradication, climate change prevention among others.

2. Applicable Laws

The Convention on Biological Diversity provides a 'comprehensive and holistic approach to the conservation of biological diversity, sustainable use of natural resources and the fair and equitable sharing of benefits deriving from the use of genetic resources'.² It recognises the necessity of regulating or controlling 'the risks associated with the use and release of living modified organisms resulting from biotechnology which are likely to have adverse environmental impacts that could affect the conservation and sustainable use of biological diversity, taking into account the risks to human health'.³ Biosafety is one of the issues addressed by the Convention, which underscores 'the need to protect human health and the environment from the possible adverse effects of modern biotechnology. At the same time, modern biotechnology is recognized as having a great potential for the promotion of human well-being, particularly in meeting critical needs for food, agriculture and healthcare. The Convention clearly recognises these twin aspects of modern biotechnology. On the one hand, it provides for the access to and transfer of technologies, including biotechnology that is relevant to the conservation and sustainable use of biological diversity'.⁴ On the other hand, it also 'seeks to ensure the development of appropriate procedures to enhance the safety of biotechnology in the context of the Convention's overall goal of reducing all potential threats to biological

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¹ National Academy of Sciences, *Genetically Engineered Crops: Experiences and Prospects*. (1st edn, The National Academies Press 2016)

² Convention on Biological Diversity (adopted 5 June, 1992, entered into force 29 December 1993) 31 ILM 818

³ *Ibid*, Article 8(g).

⁴ *Ibid*, Articles 16(1), 19(1) and (2).

diversity, taking also into account the risks to human health'.⁵ Article 19(4) of the Convention provides that in the event of transboundary movement of Living Modified Organisms (LMOs, referred to as GMOs in this work), adequate information concerning the use and safety regulations as well as potential adverse effects of the LMOs should be furnished to the contracting state in which it is to be introduced. Due to the difficulty in having a comprehensive biosafety regulation at the Earth Summit, the Biodiversity Convention made provision under Article 19(3), for an opportunity to conclude a Protocol particularly regulating the transfer and use of LMOs which may have harmful effects on the conservation and sustainable use of biological diversity.

The 'Biosafety Protocol was finally adopted on 29 January 2000 in Cartagena, mostly at the request of developing countries, especially in Africa, who feared becoming a testing ground for potentially harmful technologies'.⁶ LMOs are defined in the Protocol as 'any living organism that possesses a novel combination of genetic material obtained through the use of modern biotechnology'.⁷ The Biosafety Protocol has been applauded as a step in the right direction, given that it provides an international framework to reconcile the respective needs of trade and environmental protection with respect to the ever growing biotechnology industry. The Protocol is based on the assumption that LMOs are inherently different from non-GM organisms and carry special risks. The Protocol is based on the principle of Advance Informed Agreement (AIA), according to which proposed movements of LMOs have to be notified in advance to the Party of import and may proceed only after said Party has given its written consent. Decisions by the receiving State must be taken as a result of a risk assessment procedure, according to what is established under Article 15 and Annex III of the Protocol, and should be based on the precautionary principle'.⁸ This Precautionary Principle is to the effect that, 'lack of scientific certainty due to insufficient relevant scientific information and knowledge regarding the extent of the potential adverse effects of a living modified organism on the conservation and sustainable use of biological diversity in the Party of import, taking also into account risks to human health, shall not prevent that Party from taking a decision, as appropriate, with regard to the import of the living modified organism in question as referred to in paragraph 3 above, in order to avoid or minimize such potential adverse effects'.⁹ Basically, the 'Precautionary Principle mandates precautionary action where we have a certain reason to believe that an activity will lead to a seriously harmful outcome. The Principle thus sets thresholds for adverseness of outcomes (the harm condition) and the strength of our reasons to believe such outcomes will obtain (the knowledge condition), such that if we have a sufficiently strong reason to believe that a sufficiently bad adverse outcome will occur if we implement policy P, then P should not be implemented (it is forbidden)'.¹⁰

Article 26 of the Protocol provides that the socio-economic impact of LMOs on local and indigenous communities may also be taken into consideration in national biosafety regulations. The Biosafety Clearing House (BCH) established under the Protocol aids the exchange of information. Under Article 11, the 'contracting Parties which have approved a particular GMO to be put on the market for human consumption have to transmit all relevant information to the BCH, including a risk assessment report evidencing potential risks for human health. Also, each contracting Party has to create a national authority to implement the AIA procedure'.¹¹ This provision is commendable in the sense that receiving states not having the technical capacity to carry out risk assessments may benefit from the assessments already carried out by other contracting states which has been shared through the BCH. It is quite unfortunate that some of the leading nations in the biotechnology industry such as the United States, Australia, Canada and South Korea, are not parties to this Protocol, thereby limiting the applicability of these regulations in such States. States employ different methods in conducting risk assessment of GMOs. 'According to US law, GM products are considered to be equivalent to the non-GM ones and restrictions are justified only if risks for human health have been scientifically proven'.¹² The regulation of GMOs in the US is favourable to the

⁵ Ibid, Articles 8(g) and 19(3)

⁶ Simone Vezzani, 'The International Regulatory Framework for the Use of GMOs and Products Thereof as Food Aid' (2018) 9 *European Journal of Risk Regulation*, 120,127.

⁷ Cartagena Protocol on Biosafety to the Convention on Biological Diversity (adopted 29 January 2000, entered into force 11 September 2003) 39 ILM 1027, Art 3(f).

⁸ Simone Vezzani, (n. 6)

⁹ Cartagena Protocol, Article 10 (6).

¹⁰ Andreas Christiansen, Martin Andersen and Klemens Kappel, 'Are Current EU Policies on GMOs Justified?' (2019) 28 *Transgenic Res* 267, 271.

¹¹ Cartagena Protocol, Article 11.

¹² T Findley, 'Genetically Engineered Crops: How the Courts Dismantled the Doctrine of Substantial Equivalence' (2016) 27 *Duke Environmental Law and Policy Forum* 119.

country's development; this is likely because GMOs are part of the biotechnology industry, which plays a significant role in the United States economy.¹³

On the contrary, European legislation emphasises the precautionary principle, according to which 'where there is uncertainty as to the existence or extent of risks to human health, the institutions may take protective measures without having to wait until the reality and seriousness of those risks become fully apparent'.¹⁴ The 'precautionary principle has inspired EU legislation harmonising risk assessment and management procedures for the approval of GM food and feed and establishing labeling obligations'.¹⁵ In particular, risk assessment is undertaken by EFSA (European Food Safety Authority), 'which has to evaluate whether the applicant for authorisation for a GM product has adequately and sufficiently demonstrated that the product has no adverse effect on human or animal health or the environment. While risk assessment has an exclusively and strictly scientific basis, the risk management decision of the Commission can also take into account other legitimate factors not relating to the protection of health or the environment, such as social or ethical'.¹⁶ The precautionary principle is intended to ensure a high level of protection of the environment, which might imply an imbalance prioritising environmental protection over business interests. The European Commission noted that it is necessary to avoid unwarranted recourse to the precautionary principle which could serve as a justification for disguised protectionism'.¹⁷

3. Anti-Globalisation Arguments within the context of GMOs

The era of globalisation has advanced many opportunities for lots of people around the globe through increased trade, foreign investments, new technologies and rapid economic growth. These have been helpful towards attaining the sustainability development goal of poverty eradication. Nevertheless, 'it is also evident that these agents of advancement are also the same instruments for potential environmental degradation, health risks, increased North-South equity divide, growing human insecurity and consequently potential stimulants of unsustainable development, particularly, in the developing countries'.¹⁸ Globalisation advocates have been criticised for focusing on economic issues alone. From the anti-globalisation activists' perspective, the dominant concern in the globalisation debate should not be just about economic development.

Rather, it should be about preserving biodiversity, addressing the ethics of patents on life, ensuring access to health care and respecting other cultures' forms of ownership. It should also go further to address the growing technological gap between the knowledge-driven global economy and the rest trapped in its shadows. To achieve this, the benefits of economic growth should be shared equitably, so that the increasing interdependence arising from globalisation should work for all people, and not just for profits. Additionally, the environment should be treated as a scarce resource so that some of the benefits derived from economic growth are utilised in its preservation. Thus, while economic growth combined with environmental protection leads to sustainability, economic growth coupled with less poverty deprivation results into development. This is why anti-globalisation activists are more concerned with sustainable development, which is an outcome of a combination of economical, ecological and social-political factors.¹⁹

Certain areas of conflict have emerged between national and supra-national institutions: 'First, consumer protection, especially in terms of health and safety, is a common motivation for trade barriers. For example, breeding practices for cattle, genetic modification of foods, labelling requirements for food ingredients and chemical treatment of meats are issues where views on what is ethical and what is safe differ across societies, leading to different preferences for

¹³ The Law Library of Congress, (Library of Congress, 6 September 2015) 'Restrictions on Genetically Modified Organisms: United States' <<http://loc.gov/law/help/restrictions-on-gmos/usa.php>> accessed on 29 December 2019.

¹⁴ Case C-157/96, *R v Ministry of Agriculture, Fisheries and Food* [1998] ECR I-2265, para 63.

¹⁵ Council Regulations (EC) 18/2001 on the deliberate release into the environment of genetically modified organisms and repealing Council Directive 90/220/EEC [2001] OJ L106/1; Council Regulation (EC) No 1829/2003 on genetically modified food and feed [2003] OJ L268/1; Council Regulation (EC) 1830/2003 concerning the traceability and labeling of genetically modified organisms and the traceability of food and feed products produced from genetically modified organisms and amending Directive 2001/18/ EC [2003] OJ L268/24.

¹⁶ Simone Vezzani, 'The International Regulatory Framework for them Use of GMOs and Products Thereof as Food Aid' *European Journal of Risk Regulation* (2018) 9, 120,125.

¹⁷ Artem Anyshchenko, 'The Precautionary Principle in EU Regulation of GMOs: Socio-Economic Considerations and Ethical Implications of Biotechnology' (2019) 32 *Journal of Agricultural and Environmental Ethics* 855, 861.

¹⁸ Anthony Bende-Nabende, *Globalisation, FDI, Regional Integration and Sustainable Development* (2nd edn, Routledge 2018) 1.

¹⁹ *Ibid* 3.

regulation, which in turn are viewed as trade barriers by others'.²⁰ Multilateral agreements such as the World Trade Organisation, Biosafety Protocol create rules and regulations on such issues. Nevertheless, 'their rulings may not be acceptable to consumers or other interests, creating potentially a sense of lost national sovereignty with respect to issues that affect people very personally that is their health and safety'.²¹

Shiva Vandana, a leading anti-globalisation activist opposing GMOs, has been taking on the big six producers of GMOs (Monsanto, Dow Chemical, Dupont, Syngenta, BASF and Bayer) even as their agricultural use is banned or restricted in some countries, and they are fighting court cases in others. Her works have consistently criticised these corporations that are known for their absolute domination of the agricultural market through their ownership of the world's seed, pesticide and biotechnology industries. She argues that living organisms, including seeds, belong to farmers but they have become the intellectual property of these biotechnology industries. 'Companies should not be allowed to own living organisms, she explains, because these organisms create themselves: they are not invented or engineered like machines. By falsely claiming GMOs as an 'invention', the big companies are attempting to own millions of years of nature's evolution'.²² Secondly, the practice of extensive gene-mixing by these companies is causing antibiotic resistance among humans. Traditionally, all breeding has been done within the same species: but genetic engineering allows the introduction of genes from unrelated species into a plant. The process involves mixing antibiotic-resistance marker genes, and thus GMOs in food carry genes that may worsen the current epidemic of resistance to antibiotics. Shiva further states that 'when a few transnational corporations control the seed market, it is no longer a free market but a cartel. And when such big companies write the rules of free trade, it is corporate dictatorship, not free trade'.²³

France has been the worst hit by the anti-globalisation forces with respect to GMOs. It would be reasonable to assume that the adoption of GMOs in France would have changed the position of GMOs in Europe, given that France was the leading agricultural economy in Europe as of the 90s. The importation of the first transgenic soybeans into Europe at the time of the 'mad cow' crisis, met a strong opposition as a result of the prevalent food mistrust then.²⁴ Some of the Newspapers like the French newspaper; Liberation launched the media lynching of GMOs by its front page headline 'Beware of mad soya (*Alerte au sojafou*)'. The crisis reduced government's support of agricultural biotechnology as well as the support of the nation's main agricultural union (FNSEA). The major reason for the withdrawal of these supports was that the 'mad cow crisis was associated in the public perception to modern agriculture and unnatural practice. For the Anti-GMO activists, environmental organisations like Greenpeace teamed up with a movement defending a peasant agriculture, which then joined forces with a diverse but highly vocal coalition of anti-capitalism and anti-globalisation groups, including some consumer organizations'.²⁵

According to Marcel, because 'the term [genetically modified] is semantically vague, it can be used by opponents to target all new breeding techniques since their final goal is to destroy seed trade which is perceived as 'smothering peasants'²⁶ These activists have gone as far as invading one of the top GMO companies, Monsanto located in France. In a situation where 'farmers, food activists, rural workers and increasingly knowledgeable consumers prioritise local farms and markets, organic produce, or food grown locally over that shipped thousands of miles, they are participating in acts of resistance that are often times hidden below the surface of more widely known mobilizations against multinationals and corporate control'.²⁷

A Further objection to GMOs by the anti-globalisation proponents has to do with social and economic justice. The argument projected is that the use of GMOs leads to a shift in power towards large biotechnology companies and away from farmers. There is a concern about the ability of companies to impose high prices on farmers that have

²⁰Klaus Meyer, 'International Business in an Era of Anti-globalization' (2017) 25 *MBR* 78, 82.

²¹ C Coté, 'Is it chilly out there? International Investment Agreements and Government Regulatory Autonomy' (2016)16(1) *AIB-Insights*, 14, 16; P Satyanand, 'Once Bitten, Forever Shy: Explaining India's Rethink of its Bilateral Investment Treaty Provisions' (2016)16(1) *AIB-Insights*, 17, 20.

²² Mehta Harish. 'Anti-GMO 'Rock Star' continues to Challenge 'Big Six' Corporations' *The Business Times* (Singapore, 8 October 2019) 2.

²³Ibid 3.

²⁴ M Setbon, J Raude, C Fischler and AFlahault, 'Risk Perception of the 'Mad Cow Disease' in France: Determinants and Consequences' (2005) 25 *Risk Anal* 813.

²⁵ Marcel Kuntz, 'The GMO Case in France: Politics, Lawlessness and Postmodernism' (2014)5(3) *GM Crops & Food*, 163, 164.

²⁶ Ibid

²⁷ Jeffrey Ayres & Michael Bosia 'Beyond Global Summitry: Food Sovereignty as Localized Resistance to Globalization' (2011) 8(1) *Globalizations* 47, 48.

little option but to buy their seeds. Also, there is the issue about intellectual property rights. Since companies have the property rights to GM seeds, they can engage in vexatious suits against farmers who use these seeds in ways companies do not want. Furthermore, they can limit poorer farmers' access to seeds, and will, likely develop new seeds that mainly benefit wealthy farmers.²⁸

Many European countries such as 'Germany, France, Italy, Austria, Greece, Poland, Scotland, Northern Ireland and Belgium, among others have eschewed GM crops since March 2015 when a European Commission rule was passed giving countries in the European Union the option to opt out of growing GM crops. This means that biotech companies are banned from selling GMO seeds in those countries. In Africa, the list of countries banning GMOs includes Algeria and Madagascar; Saudi Arabia Bhutan and Kyrgyzstan in Asia; and Ecuador, Belize, Venezuela and Peru in the Americas. In the US, the counties of Mendocino, Trinity and Marin in California are the only ones that have successfully banned GM crops. In Hawaii, Kauai County and Hawaii County have banned the cultivation of most GMO crops. In Australia, most states that had banned GM crops have lifted the restraint, and some may have temporary restrictions in place. Russia imposed a 10-year moratorium on GMOs in 2013 believing that while biotechnology in other forms is beneficial, the spread of GMOs should be stopped'.²⁹

Some U.S. corporations have been particularly concerned of the E.U. regulation of biotechnology. Brandon Mitchener, Public Affairs Lead for Monsanto Europe, was reported to have stated that 'the E.U. has chosen to fund NGOs that demonise GMOs; even though the E.U.'s best scientists say they are perfectly safe. Years of such political hypocrisy have marginalised GM seeds in Europe to the point that most companies have given up trying to sell there... [Industry] faces nearly impossible hurdles, starting with a regulatory review system that is highly political and costs more than €100 million per biotech traits—with no guarantee of successes'.³⁰ It is therefore not surprising that the approval process for GMOs takes an average of eighteen months in the United States as against forty-five months in the European Union.³¹ The 'existence of an expensive and cumbersome authorization procedure within the EU which Member States contribute to by withholding authorisation increases barriers to entry for prospective biotech companies, thereby limiting the number of competing companies and increasing the market power of established players, and it is thus directly counterproductive'.³²

4. Examining the Sustainability of the Nationalistic Arguments on GMOs

Genetically Modified Organisms shall be analysed in this work against the background of its conformity to the sustainable development objectives and otherwise. Special emphasis shall be placed on Sustainable Development Goals (SDG) 1, 2, 13, 15 and 17. One of the biggest fears of the nationalist forces with respect to GMOs is the monopolisation of the biotechnology industries and an assertion of property rights over genetically engineered plants and organisms. This would in turn become unfavourable to small scale farmers as they would be bound by the dictates of the big GMO corporations. This argument is very much appreciated given that it is consonance with target 2.1 of the SDG goals which provides that, 'by 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment'.³³ According to the UN Secretary General, 'agriculture is the single largest employer in the world, providing livelihoods for 40% of today's global population. It is the largest source of income and jobs for poor rural households. 500 million small farms worldwide, most still rain fed, provide up to 80% of food consumed in a large part of the developing world'.³⁴ It therefore poses a great concern if this sustainability objective could be attained given the nature of control inherent in GMO

²⁸ Andreas Christiansen, Martin Andersen and Klemens Kappel, 'Are Current EU Policies on GMOs Justified?' (2019) 28 *Transgenic Res* 267, 274.

²⁹ Mehta Harish, 'Anti-GMO 'Rock Star' continues to Challenge 'Big Six' Corporations' *The Business Times* (Singapore, 8 October 2019) 1.

³⁰ Michatlopoulos, Sarantis 'Commission: Organic Farming 'not enough' to Address Food Security.' (EURACTIV, 21 October 2015) <<https://www.euractiv.com/section/sciencepolicy/news/commission-organic-farming-not-enough-to-address-food-security/>> accessed on 3 January 2020.

³¹ James Kanter, 'US Calls on Europe to Ease Limits on Gene-Altered Food' *The New York Times* (London, 18 June 2014)

³² Andreas T. Christiansen . Martin Marchman Andersen and .Klemens Kappel, 'Are Current EU Policies on GMOs Justified?'(2019) 28 *Transgenic Res*, 267,282.

³³United Nations, (Sustainable Development Goals, Knowledge Platform) 'Sustainable Development Goal 2' <https://sustainabledevelopment.un.org/sdg2> accessed on 3 January 2020.

³⁴Report of the Secretary-General, 'Progress towards the Sustainable Development Goals' (United Nations, Economic and Social Council, 11 May 2017) E/2017/66 <<https://sustainabledevelopment.un.org/sdg2>>accessed on 3 January 2020.

industries. Another area of concern by the anti-GMO nationalist forces is the perceived long term health and environmental risks from the use of biotechnology. ‘It is the desire to avoid such harms that justify both pre-release authorisations based on a safety assessment, and bans of GMOs deemed too unsafe’.³⁵ This ordinarily should be a threat to the third sustainable development goal which reinforces ensuring healthy lives and wellbeing for all persons. SDG 3.9, specifically provides that ‘by 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination’.

The writer believes that this should in no way pose a threat, as these beliefs are based on presumptions without any scientific proof. In addition, adequate safety assessment measures have already been provided by the relevant regulations governing GMOs, therefore, we cannot because of ‘perceived risks’ deny the world an opportunity to transform sustainable agriculture.

Notwithstanding the fears of the anti-globalisation forces, GMOs are necessary towards attaining the sustainability goals of achieving food security, ending hunger and eradicating poverty globally. GMOs give the assurance of greater yields of crops from the earth’s limited land surface, which will be enough to meet the growing demands of the world’s large population. Under the SDG, particularly 2.5, recognition is given towards maintaining ‘the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed’.³⁶ The Biosafety Protocol made relevant provisions on GMOs in a bid to attain the above goal. Ending hunger requires sustainable food production systems; this is achievable through maintaining the genetic diversity of plants and animals.

Notable progress has been made by the United Nations in this regard, according to the Secretary General, ‘In 2016, 4.7 million samples of seeds and other plant genetic material for food and agriculture were preserved in 602 gene banks throughout 82 countries and 14 regional and international centers — a 2 percent increase since 2014. Animal genetic material has been cryoconserved, but only for 15 per cent of national breed populations, according to information obtained from 128 countries. The stored genetic material is sufficient to reconstitute only 7 percent of national breed populations should they become extinct. As of February 2017, 20 per cent of local breeds were classified as at risk’.³⁷ Goal 1 of the SDG which relates to ending poverty in all its forms is equally achievable through GMOs. ‘The use of GM crops has considerable potential to increase yields of crops, thereby improving agricultural practice and the livelihood of poor people in developing countries’.³⁸

GMOs have aided in climate change prevention in line with the SDG 13. ‘GM technology is changing agriculture’s carbon footprint by helping farmers adopt more sustainable practices such as reduced tillage, which has decreased the burning of fossil fuels and allowed more carbon to be retained by the soil’.³⁹ In addition, GM crops have reduced the quantity and toxicity of pesticides sprayed by farmers. GM crops are reported to have ‘used 37% less chemical pesticide (that is, both insecticide and herbicide) than conventional versions of the same crops, thanks largely to the new crops’ internal biological protection against insects’.⁴⁰ These are equally in line with the UN sustainability goal under 2.4, which provides that ‘by 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, ‘that strengthen capacity for adaptation to climate change’, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality’.⁴¹

³⁵Andreas Christiansen, Martin Andersen and Klemens Kappel, ‘Are Current EU Policies on GMOs Justified?’(2019) 28 *Transgenic Res* 267, 268.

³⁶ United Nations, (Sustainable Development Goals, Knowledge Platform) ‘Sustainable Development Goal 2’ <https://sustainabledevelopment.un.org/sdg2> accessed on 3 January 2019

³⁷Report of the Secretary-General, ‘Progress towards the Sustainable Development Goals’(United Nations, Economic and Social Council, 11 May 2017) E/2017/66 <https://sustainabledevelopment.un.org/sdg2> accessed on 3 January 2020.

³⁸Report of Nuffield Council on Bioethics, ‘The Use of GM Crops in Developing Countries’ (Nuffield Council on Bioethics, 28 December 2003) <<http://www.nuffieldbioethics.org/publications/gm-crops-in-developing-countries>>accessed on 4 January 2020.

³⁹ Graham Brookes and Peter Barfoot, ‘Environmental Impacts of Genetically Modified (GM) Crop Use 1996–2015: Impacts on Pesticide Use and Carbon Emissions’ (2018) 9(3) *GM Crops & Food*, 109, 120.

⁴⁰Lynas Mark, ‘Confession of an Anti-GMO Activist’ (2018) *Wall Street Journal* 1.

⁴¹ United Nations, (Sustainable Development Goals, Knowledge Platform) ‘Sustainable Development Goal 2’ <https://sustainabledevelopment.un.org/sdg2> accessed on 3 January 2020.

GMOs which is an offshoot of biotechnology has aided towards achieving the sustainability goals on technology in enhancing the ‘North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation and enhance knowledge sharing on mutually agreed terms...’⁴² Furthermore, progress has been made towards protecting, restoring and promoting a sustainable ecosystem as well as halting biodiversity loss. The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization, which is a supplemental to the Convention on Biological Diversity creates incentives towards attaining SDG 15.6, which provides for the ‘promotion of fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources’.⁴³

It may be rightly argued that this nationalistic force now spreading around the globe is in many ways a false flag operation as they are not majorly geared towards sustainability. The arguments it postulates are however not entirely baseless. ‘A large number of people have indeed been left behind financially by corporate globalisation, and people are also concerned at the loss of local embeddedness, social cooperation, community and a declining sense of cultural belonging. The resulting sentiments need to be rechannelled in the direction of a struggle for genuine democracy, and for a more appropriate form of globalisation that removes the pressures for forced mobility and serves the common good’.⁴⁴

5. Conclusion

This work examined the sustainability of the anti-globalisation arguments in opposition to GMOs. The relevant international conventions governing GMOs such as the Biodiversity Convention and Biosafety Protocol were analysed. Specific emphasis was made with respect to the regulation of GMOs in the United States and European Union, which revealed a great difference in laws by these two power blocks. While the United States is seen to be more receptive of GMOs, the same cannot be said for EU as it has a complex regulatory procedure with most of its member states banning GMOs. The arguments of the anti-GMO nationalist forces presented in the work revolves around the absolute domination of the agricultural market by the big biotechnology corporations and the assertion of property rights over GMOs which will invariably threaten small scale farmers. Also the perceived long term health and environmental risks associated with the biotech practice of extensive gene mixing. These nationalist arguments were subsequently examined in line with Sustainable Development Goals 1, 2, 13, 15 and 17. The research discovered that these arguments were outweighed by the sustainable development objectives attainable through globalisation of GMOs. A case is therefore made for the globalisation of GMOs through more receptive national and regional laws just like in the United States.

⁴² United Nations, (Sustainable Development Goals, Knowledge Platform) ‘Sustainable Development Goal 17’ <https://sustainabledevelopment.un.org/sdg17> accessed on 3 January 2020

⁴³ United Nations, (Sustainable Development Goals, Knowledge Platform) ‘Sustainable Development Goal 15’ <https://sustainabledevelopment.un.org/sdg15> accessed on 3 January 2020

⁴⁴Thomas Reuter, ‘The Principle of ‘Unity in Diversity’ as a Measured Response to Resurgent Nationalism: Valuing Local Diversity as well as Global Citizenship is not a Contradiction’ (2018) 3 *Cadmus Journal*57, 61.