

## Research Article

# The Use and Abuse of The Term GMO in the “Common Weal Rhetoric” Against the Application of Modern Biotechnology in Agriculture

Philipp Aerni<sup>1</sup>

<sup>1</sup> Center for Corporate Responsibility and Sustainability (CCRS), University of Zurich, Zähringerstrasse 24, CH-8001 Zürich, Switzerland.

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## Introduction

Concerns about the risks of genetically modified organisms (GMOs) in agriculture are often framed as an ethical rather than a scientific issue. The ethical issue revolves around the question ‘who are the winners and losers?’ In today’s debate the answer appears to be obvious: the winners are profit-seeking global companies such as Monsanto, while the losers are believed to be consumers, local farming communities and the environment that are exposed to an untested technology. Yet, after more than twenty years of experience with genetic engineering in commercial agriculture, the technology is hardly untested. In fact, new gene-editing techniques may become the next generation breeding technologies that renders the term ‘GMO’ obsolete.

In view of rapid technological change and industrial transformation, the public debate on GMOs, shaped by the discursive power of the opponents, seems to be increasingly anachronistic. This chapter addresses the shift of discursive power from supporters to opponents of GMOs over the past three decades from a social psychology as well as a political economy perspective. In this context, the view that opponents of GMOs are driven by ethical concerns is challenged. Opportunistic behavior by professional anti-GMO factions will be illustrated through two specific political debates on GMOs in the Swiss and the EU Parliament. The two cases reveal how the public narrative against the case of GMOs allows opponents to conceal their private agendas behind a ‘common weal rhetoric,’ which portrays them as a selfless representatives of the common or public interest. However, as I will show, the credibility of this common weal rhetoric stands and falls with the credibility of the term ‘GMO’, which has developed a life of its own, very much detached from the technology itself.

## The ethical tension between changing technology and unchanging discursive debate

The period between 1997 and 2017 can be characterized by the commercial expansion of GM crops in many parts of the world. In addition, new plant breeding techniques (NPT), such as CRISPR/Cas9, have been developed that are, compared to genetic engineering, more precise, less invasive and less distinguishable from crops bred with established breeding techniques, including directed mutagenesis\*. The NPT revolution is even threatening the business model of the established agro-industry based on GM crops combined with other input products. Over the same period of time, the agro-ecological approach to farming has become mainstream and is applied in industrial agriculture wherever it is feasible.

\* The variation created by natural mutations has also been the basis for all plant breeding since we started cultivating plants many thousand years ago. Then, starting in the 1930s, the use radiation and chemicals to induce mutations became possible. It was based on a random approach blasting thousands of seeds to induce countless mutations and then trying to cherry-pick the rare few mutations that were beneficial. A much smaller plant population is sufficient to improve a particular trait with the more recently developed Oligonucleotide-Directed Mutagenesis (ODM). This technique of directed mutagenesis employs a complementary nucleotide sequence to introduce a mutation at a very specific location in the genome (see also epsoweb factsheet: <http://www.epsoweb.org/file/2182>)

However, the arguments for and against genetically modified organisms (GMOs) today are strikingly similar to the ones used 30 years ago. Why are we not curious about recent developments? Why do we still see and hear familiar but increasingly outdated arguments for and against genetic engineering in agriculture? Wouldn’t it be more effective to look at the problem on a case by case basis, taking into account the respective context and the technique used to address a particular challenge and possible alternatives?

While there can be many ways to answer these questions, one consideration is that shifting views is risky for political activists, especially if they have gained the moral high ground with their earlier position in the debate on agricultural biotechnology. For example, expressing general concerns about GMOs is popular with almost every constituency concerned about public health and the environment and thus allows the portrayal of oneself as an advocate for the public interest. In this common weal rhetoric, the term ‘GMO’ has become a convenient proxy for everything that is believed to be bad about economic and technological change in agriculture. It is relatively easy to create analogies between the presence of GMOs, loss of biodiversity, loss of traditional knowledge, loss of food sovereignty, land grabbing, farmer indebtedness, farmer suicide, environmental pollution [1] and even sterility and infant mortality [2]. Even though these claims may bear no direct causal relation to GMOs, they fit into a global narrative

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\*Corresponding author: Philipp Aerni, Center for Corporate Responsibility and Sustainability (CCRS), University of Zurich, Zähringerstrasse 24, CH-8001 Zürich, Switzerland, Tel: +41(0)44 6344060; Fax: +41 (0)44 634 49 00; E-mail: [philipp.aerni@uzh.ch](mailto:philipp.aerni@uzh.ch)

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of dichotomies dividing the good and desirable from the bad and undesirable. Dichotomies help reduce complexity and provide a sense of certainty for lay people when it comes to the question of where to stand on moral issues [3]. As such, claims that can be embedded in pre-existing and meaningful narratives and communicated in the form of dramatic imagery are intuitively credible to the audience, and this makes the narratives very powerful.

The powerful narrative against GMOs has the effect of making corporations, policy makers and also academic institutions anxious about becoming a target of symbolic protest once they endorse the use of GMOs in agriculture; for if that happens, they are likely to become associated not only with the technology itself but also with all kinds of assumed undesirable trends associated with the term ‘GMO’.

The low probability of being challenged in the public arena further strengthens the position and legitimacy of opponents of GMOs. Their influence on public opinion also translates into concrete policy outcomes that effectively ban the use of genetic engineering in agriculture, independent of the product, the market and the country context. Alas, those who suffer most from preventive regulation and the stigmatization of the technology are often not the multinational companies which have a broad portfolio of products in the business of plant protection and are able to bear the costs of burdensome and uncertain approval processes of GMO crops, but public research institutions in developed and developing countries focused on joint research on the genetic improvement of locally important orphan crops. Most were forced to abandon research that involves the use of genetic engineering due to the unwillingness of public donors to support a technology that is unpopular in their respective country.

But even as opponents of GMOs rely on simplistic, dichotomous arguments, there are internal ethical tensions within the anti-GMO coalition that arise from a growing awareness of collateral damage resulting from the stigmatization of genetic engineering in agriculture. While the anti-GMO stance may be perceived as the ‘ethical’ stance because it is associated with the preservation of sustainable food and agriculture, it renders almost all other technologies and inputs widely used in commercial agriculture unsustainable by default. As such, the term ‘GMO’ ceased to evolve as a metaphor in response to continual exchange between the abstract and the real. As a consequence GMOs become a mere cliché in people’s minds that is detached from any concrete reference to reality [4]. Relying on such clichés in the public debate prevents rather than enables sustainable solutions in agriculture. Such solutions are in most cases based on useful combinations modern technologies and traditional practices that reflect the priorities of local farmers and the needs of society at large [5,6]. A good example may be the use of modern and affordable tissue culture laboratories by indigenous women groups in Colombia. These women have learned how to clone the locally preferred virus-free planning material and then sell the clean cassava stakes to the famers in the region for a good price. In other words, they discovered a way to add value to their traditional knowledge about the agronomic qualities of local cassava by making use of modern technology

Service-oriented agribusiness companies in the 21<sup>st</sup> century are concerned with tailor-made solutions for farmers and society that combine advanced digital- and bio-technologies with agro-ecological approaches. For these innovative practitioners, the political struggle ‘organic farming versus GMOs’ is of no concern because it reflects ideologies of the 20<sup>th</sup> century that have very little to do with the actual knowledge frontier of the early 21<sup>st</sup> century.

### **Transnational advocacy networks against GMOs from a political economy perspective**

The first successfully commercialized GM varieties in the 1990s included soybean, corn, cotton and rapeseed, the major bulk

commodities mainly designed for industrial purposes or animal feed. These crops consisted primarily of two simple traits: pest resistance and herbicide tolerance. The US company Monsanto took a clear lead in the development and commercialization of such GM crops. It owned all the major patents and aggressively lobbied abroad for permissive regulation of genetic engineering in agriculture. In this context, one could argue that the 1990s were a test ground for GM crops. The concern was real that the new technology was in the hands not only of industry but also of a specific company. Many civil society groups rightly asked for caution in embracing a new technology without appropriate public risk assessments, especially after several food contamination scandals and mad cow disease in Europe undermined trust in food safety authorities. Even though these scandals were unrelated to genetic engineering, they nevertheless increased distrust in the technology.

During this time, advocacy groups organizing anti-GMO campaigns may have contributed to a balanced public discourse on agricultural biotechnology by asking for caution and pointing to the risk of corporate power in agriculture. However, once it became clear a decade later that the media-savvy anti-GMO campaigns gained in discursive power by creating mainstream beliefs that were embraced by policy makers and powerful global retailers, the portrayal of anti-GMO activists as ‘David’ fighting industry as the powerful ‘Goliath’ no longer applied. Nevertheless, the narrative became entrenched in the mass media and social media, as well as the education system, involving visualized horror scenarios of the effects of corporate-owned GMOs in agriculture.

### **The end of deliberative demos?**

DeLuca and Peeples [7] argue that mediated information and communication technology may have replaced a deliberative demos characterized by public controversy. Political bodies, civil society groups and corporations that vie for public attention tend to focus on constructing visually appealing campaigns as part of their political and business marketing. The core objective is to deliver the message to the public in a dramatic way rather than to engage with the arguments of those who do not agree with their views. Social media may have reinforced this trend [8]. In this context, the political marketing of the anti-GMO protest movement that also includes global retailers and the organic farming industry was more effective in shaping public opinion than the advertising and PR campaigns of the ago-industry [7,9].

### **From social benefits to psychological benefits**

Once they reached the moral high ground in the public discourse, opponents of GMOs started to replace expensive investigative journalism with media-savvy protests based on symbols and images that equated GMOs with ‘potentially catastrophic risk’ and ‘US interests’ [9]. In other words, the public benefit of anti-GMO campaigners was no more social in nature—for example, by assuming a watchdog function—but psychological—for example, by reducing complexity and providing a simple orientation for the lay public through dichotomous portrayals of “bad” GMO supporting actors and “good” GMO opposing actors [10].

### **GMOs and Corporate Power**

While associating the term GMO with Monsanto may have been appropriate in the 1990s, Monsanto has ceased being the unchallenged power in the business of agricultural biotechnology, because many of its GM-related patents have expired, and the company itself has been acquired by the German company Bayer. Yet, documentaries that link Monsanto to GMOs are still very popular as visual teaching material in European high schools. Moreover, the annual “March against Monsanto” in the United States has become a popular ritual,

undeterred by the fact that Monsanto has ceased to be an exclusively American company.

Ironically, the demand to ban GM crops, indirectly meant to harm the corporate power of Monsanto, have actually harmed many of the company's smaller, more innovative competitors that are unable to comply with the increasing regulatory costs resulting from preventive regulation of GMOs. Many of these companies have developed genetically modified food products with traits that have a genuine potential to benefit society and the environment (e.g., virus-resistant cassava, drought-tolerant white maize, potato with late blight resistance, apple resistant to bacterial leaf scorch, potato with blackspot resistance and reduced acrylamide development). Yet, these products face continued resistance from food processing companies and global retailers that do not distinguish between incumbents and new entrants in agribusiness but merely want to ensure that their products can be labelled GMO-free. As the gatekeepers in the global food value chain that decide what will be ultimately offered to consumers in the supermarket, they actually wield more corporate power than the large and established agro-chemical companies. By claiming to be 'GMO-free', they believe they are able to reassure consumers of their good motives and in turn gain their trust [11].

#### **The use and abuse of the term 'GMO'**

The term “GMO” when used in association with Monsanto is inconsistent because

- it does not cover many recombinant DNA products that belong to other areas of biotechnologies, such as “red” (medicine) or “white” (industrial) biotechnology;
- traits such as resistance to pests or tolerance to herbicides can often be obtained via techniques which are not technically “GMO”;
- defining what is and is not a “GMO” is not only a scientific decision but also a political one;
- with the advance of technology, the distinction between genetic modification and other plant biotechnological techniques blurs; and
- when “GMO” plants are processed, the results are often indistinguishable from the same “non-GMO” products [12].

In other words, there is no such thing as “GMOness”. But, the way the term is used suggests it has become a cultural construct associated with the fear of losing the natural and the innocent. In this context, the marketing of ‘organic’, also a cultural construct for the natural, healthy, fair and the innocent, lives from this dichotomous distinction [13].

Is it not odd, one may ask, that butterflies killed in an organic corn field where Bt (a natural soil bacteria) is widely sprayed do not seem to produce a public outcry, but when butterflies die in a field cultivated with genetically modified Bt corn (in which the toxin of the soil bacteria is expressed in the leaves of the corn plant), there is a public outcry? The monarch butterfly has become a symbol of protest against genetic engineering in agriculture, even when studies have shown that more of them die when Bt is sprayed, since butterflies do not feed on the corn plant itself but rather on the weed (milkweed) in the corn field [14,15].

Similarly, Europeans do not seem to have any qualms about eating an ‘organic’ French baguette that is made of flour from Renan wheat, a variety popular with organic farmers that contains more transgenic material than any currently approved GMO variety [16]. Renan is not a product of classic plant breeding but mutagenesis that comprises a chemical (colchicine) and radiation treatment—a technique that was available prior to genetic engineering and has been in use for decades [17,18]. So why has no one applied the metaphor ‘Frankenfood’ to mutagenesis? One reason might be because it would affect the

‘purity’-marketing of organic farming. Another reason might be that agriculture without crops produced by means of mutagenesis would have fatal consequences for farmers as well as consumer choice worldwide because too many of our most popular grains and vegetables are products of breeding involved techniques of directed mutagenesis. Moreover, in view of the resistance against GMO, they have literally become the alternative to genetic engineering in industrial plant breeding [19].

If GMO opponents are confronted with these contradictions, they tend to shift to another level of critique. Instead of discussing the technical problems associated with genetic modification, the discussion shifts to concerns about profits by a large multinational agro-chemical companies, the means by which the companies earn the profits (e.g., by allegedly duping farmers to adopt GM crops), and the resulting consequence of farmers becoming indebted and eventually commit suicide.

Proponents of GMOs might respond to these critique by noting that industrial concentration is a result of costly regulation rather than ownership of GM patents [20], or that research shows there is no evidence that suicide rates of farmers who adopt GM cotton in India are higher compared to those cotton farmers that have not [21]. When confronted with these facts, opponents of GM technology shift tactics again by raising the question ‘who is funding you?’ Even if pointing out that the studies cited are publicly funded, any response to such a question will not remove the stigma created by linking proponents to industry interests.

Efforts to maintain an artificial dichotomy between “GMO contaminated” and “GMO free” agriculture become pointless once the term ‘GMO’ is declared meaningless. Yet, GMO essentialism is widespread not only among the lay public but also among legal and environmental scholars who have proclaimed themselves experts on ‘GMO’s [13]. Moreover, too many actors may have a vested interest in the prevailing of GMO essentialism in the public debate [1].

#### **Convenient dichotomies to make claims in defense of the public interest**

For the French semiotician Roland Barthes, creating meaning is a product of social convention based on a shared understanding of signs that consist of the signified, an abstract concept, and the signifier that mediates the signified through images or metaphors [22]. As a cultural construct, the term GMO has become an empty signifier that draws its meaning from imagery language that is largely self-contained in its meaning [23]. Empty signifiers serve as a way to conceal particular vested interests behind a language of universal public interest and concern [24]. The very ambiguity of the term GMO demands for unambiguous, simple and identity-creating dichotomous distinctions (e.g., natural/ unnatural, sustainable/not sustainable, pure/contaminated, industrial/natural) in order to reduce complexity and provide moral orientation. As such, stakeholders concerned with public legitimacy must ensure that they stand on the “morally correct” side by adopting the common weal rhetoric against the use of GMOs in agriculture. It helps to conceal any private agenda in politics and business [25].

#### **Internal ethical tensions caused by portraying an ambiguous term in an unambiguous way**

Over the course of the past three decades, numerous vested interests in politics have emerged that benefit from the identity-creating dichotomous distinctions associated with GMOs. Sometimes it is not a material interest (like in the case of organic farming) that explains the opposition but an interest in being perceived as an actor in defense of the public interest. It represents a way to improve reputation at low cost due to the fact that an opposing statement against GMOs is hardly ever challenged in the public arena [3].

GMO opponents may not have to fear changes in public perception in the near future, since the educational system has embraced a narrative of ‘GMOs’ that ensures meaningfulness for the next generation [11]. But internal ethical tensions may nevertheless grow due to the growing number of young, curious and critical internet users who are dissatisfied with the existing persistent stories told by like-minded groups, teachers, TV documentaries, retail marketing departments, seasoned activists and politicians. Eventually, they may notice, based on their internet-based research that the claims of the health and environmental risks related to genetic engineering run counter to the findings obtained in public risk research: Hundreds of millions of US dollars have been spent in the US and Europe on public risk assessment of GMOs. While these studies do not deny that there are real risks, they explain that these risks are not specific to genetic engineering but also occur in conventional agriculture when devoid of the basic principles of sustainable agricultural practice [26,27]. Recognizing that genetic engineering is already a well-tested established technique, the critical-minded may wonder why those who claim to fight GMOs in the public interest refuse to adopt a more differentiated view of modern agricultural biotechnology.

Some commentators argue that the growing social and environmental challenges facing the world in the 21st century require a combination of agro-ecology and advanced biotechnology [28]. To adopt a dichotomous argument—that supporters of GMOs focus merely on how to increase productivity (e.g., feed the world) while opponents care more about systemic thinking, context, culture and resilience—contradicts the fact that many new agbiotech companies, such as Simplot, Intellia, Caribou Biosciences, Cibus, and Clara Foods, do not focus primarily on productivity but rather on food quality, the environment and health [29]. These companies combine biotech crops with big-data driven sustainable farm management. Moreover, new breeding techniques, such as the gene-editing method called CRISPR/Cas9, have the potential to revolutionize and democratize plant breeding [30]. This may be a reason why some leaders in organic agriculture have not declared new plant breeding techniques incompatible with organic farming [31].

### **The shift in discursive power**

The simple dichotomous narrative of ‘people versus profits’ does not allow for a more nuanced discussion of local challenges of agriculture and of the extent to which agricultural biotechnology may or may not be part of tailor-made local solutions. The term ‘GMO’ is convenient because it has the advantage of having turned into a ‘meme’ that can be transported in its meaning and spread in the form of images and symbols via the internet and social media [32].

After the year 2000, the anti-GMO rhetoric became part of a larger counter-hegemony narrative that comprised resistance against the World Trade Organization (WTO), US imperialism and industrial agriculture, and advocacy in favor of organic agriculture, food sovereignty and the protection of nature and indigenous rights. All of these issues underpin public concerns about genetic engineering in agriculture and why it is not good for society.

This led to a sort of scale shifting—a means by which a particular domestic discourse surrounding contentious local issues is shaped by the frame of the global counter-hegemony discourse propagated through the modern media of communication by professional international advocacy groups covering issues ranging from human rights to food sovereignty to environmentalism to eco-feminism [33,34]. As epistemic brokers, they succeeded in establishing knowledge claims that the use of GMOs harms sustainable agriculture and offends human rights, especially indigenous rights [35]. Yet, by taking advantage of the very limited concrete experience that consumers and taxpayers have with agricultural biotechnology, and by enhancing the diffuse anxiety about the technology through dramatic

and personalized media portrayals of farmers and consumers as victims of corporate power, the discursive power has shifted from supporters to opponents of GMOs worldwide [36,37].

### **Science and the Precautionary Principle**

An indicator of the change in public opinion and shift in discursive power from the supporters to opponents of GMOs is the regulatory response to genetic engineering in agriculture by the European Commission (EC). The EC published its communication on the precautionary principle (PP) in 2000. Taking into account not just scientific but also potential socioeconomic concerns, the EC communication made it legitimate for the EU and its member states to impose bans on GMOs, even if no scientific evidence of any additional risks posed by genetic engineering have been presented. This is called the strong version of the PP. The soft version is found in the Sanitary and Phytosanitary Agreement (SPS) of the WTO. It approves a temporary ban but asks the country imposing it eventually to produce scientific evidence of risk, otherwise the ban has to be lifted again.

In consideration of the soft version of the PP, the WTO dispute panel on GMOs decided in 2005 to support the plaintiffs (United States, Canada and Argentina) by arguing that the approval process for GMOs in the EU causes undue delay. The decision was not appealed by the EU. The plaintiffs would therefore have been authorized to undertake retaliation measures (e.g., punitive tariffs on selected European imports) [38]. Yet, they refrained from doing so in the hope that the EU will eventually align its regulatory framework on GMOs with WTO requirements. So far the European Commission (EC) responded only with a regulatory reform that contains an opt-out clause for member states, and a promise to review the existing regime of regulating not only GMOs but also NBTs such as gene editing [39]. As a result, many member states have legalized their bans of GM crops that have been approved at the EU level for cultivation.

The lack of political will of the EC to challenge the prevailing popular narrative on the potentially catastrophic risks of GMOs manifested itself once again when Jean-Claude Juncker, the President of the EC, decided in 2015 to abolish the post of Science Advisor to the EC in response to GMO opponents asking for the dismissal of Anne Glover, who failed to acknowledge the dangers of GMOs [40]. These decisions, combined with ever more restrictive regulation on field trials and the commercial release of GM crops, strengthen the view of the European public that there must be something wrong with the technology. In other words, anti-GMO advocacy groups have succeeded not only in shaping public opinion in Europe but also political decision-making processes on genetic engineering in agriculture. This success in gaining public legitimacy and political power may have led to political opportunism that will be illustrated in two cases studies of events in the parliaments of Switzerland and the European Union.

### **Case 1: Ethical concern or political opportunism in Switzerland?**

In 2006, the Swiss Federal Council launched a national research programme on the risk and benefits of genetically modified crops, briefly called NRP59. One of the main causes for funding this type of research through the Swiss National Science Foundation was the approval in 2005 of a national referendum for a five year ban on the cultivation of genetically modified crops.

In view of the averse attitude toward the technology, it was surprising that politicians of the main political parties (including the Green Party) emphasized the importance of science in political decision-making after approving the referendum. As such, regulation of GMOs after the end of moratorium would be contingent upon the findings of NRP59. In 2013, after a first three year extension of the

moratorium, the results of numerous NRP59 projects were published at [www.nfp59.ch](http://www.nfp59.ch). The summary report admitted that there are risks related to the cultivation of GM crops in Switzerland, but that these risks would also be found in conventional agriculture. They are related to inadequate sustainable practices and not necessarily to the GM technology itself. The Swiss parliament was aware of these findings before they were officially presented in September 2013. In order to avoid an inconvenient debate, the MPs decided in August 2012 to extend the moratorium for another 3 years. The SNF expressed its disapproval regarding the deliberate avoidance of debate in view of the prior agreement of the politicians to take the results of the NRP59 seriously.

In 2016, the federal council found that public acceptance would be insufficient to lift the ban on GM cultivation in Switzerland and submitted a report to the parliament citing a study on revealed consumer behavior of GM foods in Switzerland, which was part of NRP59, that allegedly (though, we will see, incorrectly) provided evidence that Swiss consumers are unlikely to buy genetically modified foods [41]. The study tested revealed consumer behavior by providing Swiss consumers with the freedom of choice between three types of clearly labelled corn bread, one made with organic corn, one with conventional corn and one with genetically modified corn respectively. Moreover, the study compared revealed political preferences (voting decision in the referendum in 2005) and revealed consumer preference (purchase at the market stand).

The discrete choice model used for the field study with market stands allowed researchers to measure sensitivities related to different price scenarios, sales groups, locations and package sizes. The corn bread was sold at five locations in four major cities in the French and German part of Switzerland. Roughly 5000 loaves of breads were sold to 3000 consumers and 1000 questionnaires were returned (found in the bread bag for the customer). It turned out that sales increased at all market stands on average by 30% once the GM option was available. Moreover, the package size (small/big bread) was more important than the product type (GM, conventional, organic) in explaining consumer behavior, and the price hardly mattered. The share of consumers who decided to buy GM corn bread was above 20% even if it was as expensive as organic. In other words, behavior toward GM corn bread was not any different from behavior toward any other novel food product introduced in the market. Moreover, voting behavior and purchasing behavior were not consistent with consumer decisions to purchase bread.

In the parliamentary debate on the first extension of the moratorium, the results of study were simply ignored. But in the documentary material in favor of the second moratorium prepared by the federal council for the parliament, the results were portrayed in a deliberately misleading way, suggesting that the results of the field study would provide evidence that Swiss consumers would not buy genetically modified food. When the author of the study wrote an op-ed in the national daily *Tages-Anzeiger* titled ‘politics as the enemy of science’ denouncing the wrong portrayal of the study, the president of the parliamentary commission on science, education and culture (WBK) replied by simply denying it, without citing any study that would confirm her view that consumers would avoid GM foods. Oddly, it was this commission that proposed to the parliament to reject the request of the federal council to extend the temporary moratorium and instead asked for a permanent moratorium. Why? The commission argued that there is a lack of willingness among its members to review the state of the art in risk and benefit research on GM crops every four years again. The open admission of the commission that they are not really interested in science and the misleading portrayal of the results of empirical research funded through NFP59 raises the question to what extent the opponents have actually abandoned their commitment to proper ethical conduct not

just in Switzerland but in the EU as well.

## **Case 2: The Heubuch Report of the EU Parliamentary Commission on Development**

As in the case of Switzerland, politicians representing national socialist and green parties in Europe were eager to chair commissions in the European parliament that deal with the issue of GMOs. The Rapporteur of the Committee on Development of the European Parliament, Maria Heubuch, is from the German Party Bündnis/die Grünen. Her career as a national politician with a farming background in Germany can be characterized by her lobbying activities for agricultural trade protection and against industrial agriculture. As a classical farm lobbyist in the German state of Baden Württemberg, she framed her private interest in the continuation of farm subsidies as a public interest issue, namely to protect sustainable and traditional agriculture in Germany against the power of global agri-business. By joining the Green Party, she ensured that her political activities were not called lobbying but actually ‘advocacy work’, which also included opposition against GMOs.

In March 2016, Heubuch presented the Report of the Committee on Development on the New Alliance for Food Security and Nutrition (NAFSN) to the European Parliament. NAFSN was an initiative launched in 2012 by the G8 to mobilize private sector investment for African agriculture in collaboration with African governments. The content of the Heubuch report was widely celebrated by anti-corporate, anti-GMO and anti-G8 activists.

After first citing international reports and agreements on sustainable development, food security and the environment that were endorsed by the European Union, the report portrays the NAFSN as an initiative that runs counter to prior efforts to promote sustainable agriculture, environmental protection and food security in Africa. After all, NAFSN involves the private sector and, even worse, does not necessarily exclude the use of agricultural biotechnology.

The report stands out for its paternalistic tone, portraying African governments participating in the initiative through the adoption of country cooperation frameworks as ignorant, gullible, or worse, deliberately selling their country’s land to multinational corporations at the expense of their own small-scale farmers. Moreover, the report warns European donors involved in the initiative of becoming complicit in a plot to replicate a second green revolution in Africa at the expense sustainable agriculture. It reminds EU member states of their commitments to multilateral environmental agreements such as the convention on biological diversity (CBD) that would essentially ban the use of GMOs through a strong version of the PP entrenched in its Cartagena Protocol on Biosafety.

The report does not mention the intense pressure of European public and private donors and NGOs on African governments to stay away from GMOs over the past two decades [42]. African countries knew they would be on the safe side in securing European aid and market access for their agricultural goods if they adopt a template of the European biosafety regulation, which was effectively declared as dysfunctional by the WTO when it comes to the approval process of GMOs.

Apart from urging G8 member states that support NAFSN not to support GMOs in Africa, the report criticizes the spread of certified seeds in Africa that happen through NAFSN. What is wrong with certified seeds? One study highlighted that the average adoption rate of improved hybrid maize seed was 44 percent and increasing fast in East Africa [43]. This high adoption rate has neither prevented farmers who want to use farm-saved seed from doing so nor undermined seed diversity. The challenge with traditional small-scale farming in Africa is that, due to high fertility rates and lack of off-farm employment,

average farm sizes have been shrinking over the past decades in many rural areas of Kenya and Ethiopia) [44]. Shrinking farms have been a cause of malnutrition and starvation, or otherwise deforestation and migration in rural Europe in the 19<sup>th</sup> century, and they are so today in rural Africa.

In this context, a blog posting by Margret Karembu [45], who grew up on a farm in Africa, accuses the Heubuch report for its unrealistic pretensions. According to her, rather than telling farmers that they should stick to traditional farming while accepting agro-ecology consultants from Europe, Europeans should give farmers the freedom of choice. She finds it cynical that a European left-wing politician advocates exclusive support for small-scale farming in Africa while simultaneously endorsing costly private and public food standards for food imports to Europe that make it virtually impossible for marginal small-scale farmers in Africa to benefit from European market access. **She also points out that Europe has approved at least 86 GM crop products and imported more than 30 million tons of GM soy bean for use as animal feed - making the claim to protect Africans from the risks of GM crops look rather hypocritical.**

By comparing NAFSN with the Green Revolution, the Heubuch report reveals a lack of understanding of history. The Green Revolution was a public sector initiative, not a public-private partnership [46]. The report also refers to prior accords, reports and initiatives that are assumed to be in line with its claims. But several do not: many parts of the Convention on Biological Diversity (CBD), the Comprehensive Africa Agriculture Development Programme (CAADP), and the Busan Declaration on Partnership for Effective Development Cooperation (BDPED) run counter to her claims.

The CBD states in Article 16 that ‘each Contracting Party, recognizing that technology includes biotechnology, and that both access to and transfer of technology among Contracting Parties are essential elements for the attainment of the objectives of this Convention.’ The Convention further urges Parties in Article 19 to promote priority access to the benefits arising from biotechnologies, especially for developing countries. A blog response by Diran Makinde (2016) denounced the report for being in breach with CBD. He also wonders why the report limits its demand to stick to small-scale subsistence farming to Africa only. Why is it not extended to other developing countries? Does Europe still consider Africa its backyard? This would reveal the neocolonial underpinnings of the report.

The Comprehensive Africa Agriculture Development Programme (CAADP) was endorsed by the African Union (AU) and the New Partnership for African Development (NEPAD) in 2003. CAADP is an Africa-led and Africa-owned initiative and framework to rationalize and revitalize African agriculture for economic growth and lasting poverty reduction. It champions reform in the agricultural sector by setting two main targets among its members that are reviewed on a regular basis: 6% annual growth in agricultural GDP and an allocation of at least 10% of public expenditures to the agricultural sector. CAADP emphasized the importance of private sector investments [47]. Yet, the Heubuch report implies that this Africa-owned initiative wants merely to preserve small-scale subsistence agriculture.

According to the Busan Declaration on Partnership for Effective Development Cooperation (BDPED), one of the main ‘shared’ principles of the BDPED and the prior OECD Paris Declaration of Aid Effectiveness is “ownership of development priorities by developing countries: Countries should define the development model that they want to implement” [48]. CAADP expressed the Africa-owned development priority of agricultural modernization, but the Heubuch report seems to claim otherwise. The Heubuch report, which openly urges donors to refrain from supporting agricultural modernization in Africa, nevertheless refers to the BDPED (“having regard to...”), as if the content of the report is in line with the ‘shared principles’.

One could argue that Maria Heubuch and her committee were simply ignorant of the content of these accords and declarations. Yet, if they were aware of the content, then one has to question the ethical conduct of the parliamentary committee on development. The European Parliament itself is hardly able and willing to scrutinize the quality and ethics behind such committee reports. Moreover, civil society groups that usually assume the role of independent watchdogs may be too concerned about upsetting their own constituency by highlighting ethical misconduct by members of the European parliament that use their own common weal rhetoric against GMOs.

## Concluding Remarks

The term ‘GMO’ has been embraced in law and politics in an essentialist way that allows proponents and opponents to make simple and dichotomous distinctions that reduce complexity and, simultaneously, provide meaning, identity and orientation. In public narrative that rely on GMO essentialism, the GM technology is associated with negative attributes, such as unnatural, unsustainable, contaminated, risky, and unfair, whereas alternatives such as organic farming and agro-ecological approaches are linked to the corresponding positive attributes. The narrative is embedded in the popular ahistorical myth of the original farming community that was in harmony with nature and societal needs. This state of blissful equilibrium is then disrupted by technological and economic change, an external force imposed on the community. The agents of this force are profit-seeking multinational companies. They try to coax innocent local farmers into adopting genetically modified crops to generate profits at the expense of the local environment and community. Fortunately, anti-GMO activists and their allies in politics, the mass media, the retail industry and the organic farming industry come to rescue by seeking to ban the use of GMOs and restore the old harmony with nature and the community and by introducing sustainable agriculture—understood as organic farming or agro-ecological improvements of local agricultural systems. The sustainable agricultural products cultivated by the restored farming community are then sold to affluent consumers who are invited to join the epical struggle against bad industrial agriculture by paying a small price premium. This mythical story is timeless and strongly attached to the values of postmaterial societies [49]. It has therefore been integrated into a common weal rhetoric by many stakeholders in affluent economies who would like to be seen as actors on the ‘good’ side of the epical struggle. By making use of this common weal rhetoric they strengthen their public legitimacy and may indirectly gain votes and/or new customers at low cost.

However, the success of this convenient way of gaining popularity while concealing the concrete private agenda behind the claim to act on behalf of the public interest stands and falls with the term ‘GMO’. The term is used as a metaphor in the mythical struggle against industrial agriculture but is increasingly detached from the concrete reality of the adoption of certain GM crops and its consequences, as well as from the fact that agricultural biotechnology covers a wide range of techniques, products and processes that offer context-specific challenges and opportunities when concrete applied in agriculture. As such, the use and abuse of the term ‘GMO’ may also produce considerable collateral damage for society and the environment over the long run because it excludes in advance any potential positive impact of the technology for sustainable agriculture.

The global sustainability challenges in agriculture cannot be effectively addressed by either relying on GMOs or on organic alone. Effective solutions must be based on locally tailored combinations of advanced technologies as well as system-oriented organic or agro-ecological farming practices. It should, however, be the local farmers rather than the input industry, retail industry or anti-GMO advocates who decide which combination is most sustainable for their particular

local context. Alas, the narrative of an epical global struggle for or against GMOs deprives local stakeholders of their own local stories and the articulation of their own local interests [22,49,50].

The two cases presented here illustrate the collateral damage of the common weal rhetoric relying on the use and abuse of the term GMO. Despite the inaccurate claims and the paternalistic tone, the anti-GMO narrative prevails in Europe and has entrenched itself also in the education system. Yet, the dichotomous portrayals in the GMO debate make sense to the public only as long as the term GMO makes sense as a metaphor for everything unwanted in agriculture. New gene-editing techniques such as CRISPR/Cas9, as well as successful combinations of the agro-ecological approach with agricultural biotechnology, may eventually challenge the old metaphor and open space for effective collaboration and tailor-made solutions for farmers. This will also be the moment when the established common weal rhetoric ceases to be perceived as the ‘ethical’ view and the role of science and empirical research may again gain in importance in policy decision making.

## Author

Philipp Aerni is Director of the Center for Corporate Responsibility and Sustainability (CCRS) at the University of Zurich. He graduated in Geography from the University of Zurich and completed his PhD from the Institute of Agricultural Economics at ETH Zurich. Subsequently he continued his postdoctoral research at Harvard University, ETH Zurich, the University of Bern and the Food and Agriculture Organization (FAO) of the United Nations on issues related to the ethics and politics of sustainable agriculture.

## References

1. Aerni P (2011a) Food sovereignty and its discontents. *African Technology Development Forum (ATDF) Journal* 8(1/2), 23-40.
2. Smith J (2010) Genetically Modified Soy Linked to Sterility, Infant Mortality in Hamsters. *The Huffington Post*.
3. Heldke L (2015) Pragmatist Philosophical Reflections on GMOs. *Journal of Agricultural and Environmental Ethics* 28: 817-836.
4. Johnson N (2014) What I learned from six months of GMO research: None of it matters. *Grist*, January 9.
5. Ogero KO, Mburugu GN, Mwangi M, Ombori O, Ngugi M (2012) In vitro micropropagation of cassava through low cost tissue culture. *Asian Journal of Agricultural Sciences* 4: 205-209.
6. Montpellier Panel (2017) Agriculture for Impact: Tissue Culture.
7. DeLuca MK, Peeples J (2002) From public sphere to public screen: Democracy, activism, and the “violence” of Seattle. *Critical Studies in Media Communication* 19: 125-151.
8. Sunstein C (2017) #Republic: Divided Democracy in the Age of Social Media. Princeton University Press, Princeton, New Jersey.
9. Aerni P, Bernauer T (2006) Stakeholder attitudes towards GMOs in the Philippines, Mexico and South Africa: The issue of public trust. *World Development* 34: 557-575.
10. Luhmann N (1993) Risk: A Sociological Theory. Walter de Gruyter, Berlin, Germany.
11. Aerni P (2013) Resistance to agricultural biotechnology: the importance of distinguishing between weak and strong public attitudes. *Biotechnology Journal* 8: 1129-1132.
12. Tagliabue G (2016) The necessary “GMO” denialism and scientific consensus. *Journal of Science Communication* 15: 1-11.
13. Blancke S, Van Breusegem F, De Jaeger G, Braeckman J, Van Montagu M, et al. (2015) Fatal attraction: the intuitive appeal of GMO opposition. *Trends in Plant Science* 7: 414-418.
14. Mintz K (2017) Arguments and actors in recent debates over US genetically modified organisms (GMOs). *Journal of Environmental Studies and Sciences* 7: 1-9.
15. Gustafsson KM, Agrawal AA, Lewenstein BV, Wolf SA (2015) The monarch butterfly through time and space: The social construction of an icon. *BioScience* 65: 612-622.
16. Daynard T (2015) A genetically modified organic wheat? It already exists. Terry Daynard’s Blog.
17. Ferrand E (2013) Le blé préféré de l’agriculture biologique.
18. Johnson N (2016) Es ist fast unmöglich zu definieren, was Gentechnik ist. *Krautreporter*, January 21.
19. Kharkwal MC, Shu QY (2009) The role of induced mutations in world food security. In: Shu, Q. Y. (ed.) *Induced Plant Mutations in the Genomics Era. Proceedings of a 2008 International Joint FAO/IAEA Symposium*, Vienna, Austria, pp. 33-38.
20. Aerni P (2014) The motivation and impact of organized public resistance against agricultural biotechnology. In: Castle, D., et al. (eds) *Handbook on Agriculture, Biotechnology and Development*. Edward Elgar, Cheltenham, UK, pp. 482-521.
21. Grùere G, Sengupta D (2011) Bt cotton and farmer suicides in India: An evidence-based assessment. *Journal of Development Studies* 47: 316-337.
22. Barthes R (1972) *Mythologies*. Translation by Annette Lavers. Noonday Press, New York.
23. Clancy KA, Clancy B (2016) Growing monstrous organisms: the construction of anti-GMO visual rhetoric through digital media. *Critical Studies in Media Communication* 33: 279-292.
24. Wullweber J (2015) Global politics and empty signifiers: The political construction of high technology. *Critical Policy Studies* 9: 78-96.
25. Aerni P (2011b) Die Moralisierung der Politik als Kehrseite der Angst vor dem globalen Wandel. In: Aerni, P. and Grün, K.-J. (eds.) *Moral und Angst*. Vandenhoeck und Ruprecht Verlag, Göttingen, Germany, pp. 13-32.
26. National Academies of Sciences, Engineering, and Medicine (NAS) (2016) *Genetically Engineered Crops: Experiences and Prospects*. National Academies Press, Washington, DC.
27. European Commission (EC) (2010) A decade of EU-funded GMO research. EUR 24473 EN: European Commission, Brussels.
28. Ronald PC, Adamchak RW (2008) *Tomorrow’s Table: Organic Farming, Genetics, and the Future of Food*. Oxford University Press, Oxford, UK.
29. *The Economist* (2016) The future of agriculture. *Technology Quarterly*, June 9.
30. Brinegar K, Yetisen A, Choi S, Vallillo E, Ruiz-Esparza GU, et al. (2017) The commercialization of genome-editing technologies. *Critical Reviews in Biotechnology* 37: 1-12.
31. Gheysen G, Custers R (2017) Why organic farming should embrace coexistence with cisgenic late blight-resistant potato. *Sustainability* 9: 172.
32. Mazanek C (2016) Frankenfoods: Conceptualizing the anti-GMO argument in the anthropocene. *New Errands: The Undergraduate Journal of American Studies* 3: 1-12.
33. Tarrow S (2005) *The New Transnational Activism*. Cambridge University Press, Cambridge, UK.
34. Della Porta D, Tarrow SG (eds.) (2005) *Transnational Protest and Global Activism*. Rowman & Littlefield, Lanham, MD.
35. Herring RJ (2010) Epistemic brokerage in the bio-property narrative: contributions to explaining opposition to transgenic technologies in agriculture. *New Biotechnology* 27: 614-622.
36. Motta R (2014) Social disputes over GMOs: An overview. *Sociology Compass* 8: 1360-1376.
37. Heller C (2001) From risk to globalization: Discursive shifts in the French debate about GMOs. *Medical Anthropology Quarterly* 15: 25-28.
38. Bernauer T, Aerni P (2009) Trade conflict over genetically modified organisms. In: Gallagher, K. (ed.) *Handbook on Trade and Environment*. Edward Elgar Publishing, London, UK, pp. 184-194.
39. European Commission (EC) (2015) More freedom for Member States to decide on the GMOs use for food and feed. Press Release, April 22. Brussels, Belgium.
40. Wildson J (2014) Juncker axes Europe’s chief scientific adviser. *The Guardian*, November 13.

41. Aerni P, Scholderer J, Ermen D (2011) What would Swiss consumers decide if they had freedom of choice? Evidence from a field study with GM corn bread. *Food Policy* 36: 830-838.
42. Paarlberg R (2009) *Starved for Science*. Harvard University Press, Cambridge, MA.
43. Marechera G, Muinga G, Irungu P (2015) Assessment of seed maize systems and potential demand for climate-smart hybrid maize seed in Africa. *Journal of Agricultural Science* 8: 171-181.
44. Aerni P (2015a) *The Sustainable Provision of Environmental Services: from Regulation to Innovation*. Springer Series on CSR, Ethics and Governance. Springer, Dordrecht, Netherlands.
45. Karembu M (2016) How European-based NGOs block crop biotechnology adoption in Africa.
46. Aerni P (2015b) Agricultural biotechnology and public attitudes: An attempt to explain the mismatch between experience and perception. In: Watson, R. and Preedy, V.R. (eds.) *Genetically Modified Organisms in Food*. Elsevier, Amsterdam, Netherlands, pp 149-156.
47. NEPAD (2011) CAADP engagement to call for improved Private Sector partnerships and investments.
48. OECD (2011) *The Busan partnership for effective development co-operation*.
49. Rangan H (2011) *Of Myth and Movements: Rewriting Chipko into Himalayan History*. Verso Books, New York”.
50. Makinde D (2016) Institutionalizing poverty in Africa by members of the European Parliament.