GUIDELINES FOR ASSESSING NEW AND EMERGING TECHNOLOGIES IN AFRICA
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Guidelines for Assessing New and Emerging Technologies in Africa

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ABOUT THIS GUIDELINE

This new and emerging technologies guideline was created in response to the concerns of Africans (researchers, CSOs, community people etc.) on proposals and influx of new and emerging technologies in the continent. The information written here is intended to guide government/policy makers, CSOs and community people in deciding whether or not to embrace any new technology. It will help to better position Africans to know how to engage with technologies, knowing when to uplift, challenge and resist new and emerging technologies, for the protection of Africa and the African people.
ACKNOWLEDGMENTS

With support from Carmack Collectives through Tides Foundation, this New and Emerging Technology Assessment Guidelines/Tools was produced by Health of Mother Earth Foundation (HOMEF) in collaboration with the ETC Group and Hands Off Mother Earth Alliance (HOME) as part of HOMEF’s efforts to help sensitize Africans on the dangers lurking with embracing new and emerging technologies without timely and continuous assessment as updates and diverse applications could pose new threats.
INTRODUCTION

Technologies are usually thought of as new tools or objects such as computers, smartphones, robots, and artificial intelligence. In the world we live in, they are often seen in a positive light: it is widely assumed that technologies make our lives faster, more efficient, and more comfortable. For instance, the United Nations considers technology and technological solutions to be an important pillar for sustainable development. However, there is much more to technologies considering their, sometimes, unforeseen and dangerous impacts on humans, other-than-humans, and the overall environment as well as, the latent intents of the original innovators.

Technology is, in fact, neither merely a tool nor an object, but rather a set of techniques brought together into a system and sustained overtime, often in physical form. They can range from everyday items like clothes, and pens, to more complex systems like writing or fermentation. Although most people tend to see technologies as positive, essential for progress and solving problems—or as neutral—neither good nor bad, but variable depending on how they are used—technologies are in fact political: they are the products of political processes, knowledge, and systems. They are often products of capitalism.

A powerful technology introduced into an unjust society will always increase the gap between the powerless and the powerful.

Today, increasingly more powerful technologies are shaping and transforming our world. Digital technologies, especially Artificial Intelligence (AI), agricultural technologies, climate technologies, nanotechnology and a host of others are emerging and growing rapidly. Many of these new technologies are being introduced into the world without placing a premium on their overall, but especially negative, impacts on society. The philosophy behind the engineers of Silicon Valley, home to the largest technology companies in the world, is to “move fast and break things” which means that although things might go wrong, they will be able to fix any problems quickly, minimizing harm. This is in fact not realistic because once a technology is deployed, without adequate understanding or overall assessment of its impacts, it may be too late to prevent any harmful consequences that may emerge from its use. It is, therefore, essential for governments and policymakers to be able to thoroughly assess new and emerging technologies. One of the first steps is knowing which technologies are being developed and deployed, and where.

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1 United Nations Department of Economic and Social Affairs, “Technology,” [https://sdgs.un.org/topics/technology](https://sdgs.un.org/topics/technology)
Why Technology Assessment?

The Case of Genetically Modified Soybeans in South America

GM (genetically modified) soybeans were first planted in Argentina in 1996, when the agricultural sector, as well as the country as a whole, was being neoliberalised. Until the 2000s, GM soybeans spread across the entire country. From Argentina, these soybeans were then adopted in neighbouring countries such as Brazil, Paraguay, and Bolivia. The impact of the introduction of GM soybeans was manifold: environmental, social, political, and economic.

In terms of environmental impact, the expansion of GM soybeans in Argentina indirectly led to the deforestation of forests in Bolivia and Paraguay. In terms of social impacts, GM soybean introduction led to an uptick in violence toward peasant and indigenous communities. And in 2012, a clash between armed forces and peasant organisations over a land conflict resulted in a massacre where seventeen people were killed.

Economic impacts were varied: a quarter of Argentina’s exports came from the soybean industry, but most of the wealth generated went to corporations with some benefits going to Argentine agribusinesses and farmers. In the towns where GM soybeans were grown, the more privileged classes of farmers benefited from the crop, but inhabitants of these areas who were not linked to farming did not. GM soybean, therefore, had wide-ranging impacts in the countries where it was introduced.

Anticipating these impacts through prior technology assessment could have perhaps led to different outcomes in the region, and knowing these impacts is important in anticipating and assessing what may happen to other countries and regions, for instance, in Africa, when a technology like GM soybean is adopted on a large scale.

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Genetic Technologies and Gene Drives

A range of new technologies are being developed to alter the genetic material of plants, animals, and microbes. GMOs (Genetically Modified Organisms) constitute one well known example of genetic technologies. In recent years, emerging technologies in the genetic sector include gene editing which involves changing the DNA sequences in an organism, for instance by inserting new genes. There are different kinds of gene editing, but one example uses the technology called CRISPR-cas9 which cuts DNA at specific locations and enables genetic material to be added or deleted to the DNA strand.

In Burkina Faso, a research institution called Target Malaria has been experimenting with the gene editing tool called CRISPR-cas9 to create “gene drive” mosquitoes for malaria control. A gene drive organism is created by genetically engineering a living organism with CRISPR-cas9 and then modifying its sexual system of reproduction to force the modified genes onto future generations so it spreads through the whole population. For example, a gene drive to turn fruit flies yellow can spread through the whole population causing all fruit flies to become yellow. When it comes to gene drives for malaria control, the research institute, Target Malaria, is working to create a generation of sterile male mosquitoes which reproduce with wild female mosquitoes but are not able to produce any viable offspring. The gene drive in this way causes the entire species of malaria-causing *Anopheles gambiae* mosquitoes to collapse and eventually become extinct.

Proponents of gene drive technology focus on its potential uses in health and conservation. Target Malaria, an institution funded by the Bill and Melinda Gates Foundation and the Open Philanthropy Project, is active in Burkina Faso, Uganda, and Ghana. In Bana village in Burkina Faso, the institute released several batches of mosquitoes as part of its experiment toward creating gene drives mosquitoes for malaria control. They argue that current interventions such as bed nets and insecticides have not been successful in eradicating the disease and “new approaches” are needed. In the conservation sector, gene drive technology has been proposed in order to wipe out invasive species. For instance, a project called GBIRd aims to conserve island seabirds whose chicks and eggs are being attacked by mice, by releasing gene drive mice that will cause subsequent generations of mice to be single sex, eventually wiping out the entire species.

Critics of gene drive technology include farmer organisations, civil society groups and independent scientists. One major concern is the funding for gene drive technology. In 2017, civil society organisations found that the largest funder of gene drive technology was the US Defense Advanced Research Projects Agency (DARPA) and that other sections of the US military and intelligence community were very involved in this.”

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7 Target Malaria, “Where We Operate in Africa,” https://targetmalaria.org/about-us/where-we-operate/
9 GBIRd - Genetic Biocontrol of Invasive Rodents, https://www.geneticbiocontrol.org/
interested in gene drive technology.\textsuperscript{10}

Research by civil society groups also found that funding for gene drives was not only going to the technology itself but toward influencing international governance of the technology at the UN’s Convention on Biological Diversity (CBD) through a PR firm funded by the Gates Foundation. Other concerns about gene drive technology include possible unintended consequences of altering ecosystems for instance through mutations, harmful power dynamics of using rural Burkinabe people as guinea pigs to test a risky technology, and possible weaponization of the technology.

One of the greatest concerns is not the use of gene drives for health purposes, but the secretive ways in which gene drive technology is being readied for use in agriculture.\textsuperscript{11}

In 2018, the UN’s CBD decided that a precautionary approach be adopted and a thorough risk assessment be carried out before an environmental gene drive release.\textsuperscript{12}

It also decided that new safety measures be put in place to prevent potential adverse effects. The decision acknowledged that more studies and research on impacts of gene drives were needed to develop guidelines to assess gene drive organisms before they are considered for release.

\textsuperscript{11} The ETC Group, “Forcing the Farm: How Gene Drive Organisms Could Entrench Industrial Agriculture and Threaten Food Sovereignty,” 16 October 2018, https://www.etcgroup.org/content/forcing-farm
\textsuperscript{12} Friends of the Earth International and ETC Group, “United Nations Hits the Brakes on Gene Drives,” 29 November 2018, https://www.etcgroup.org/content/united-nations-hits-brakes-gene-drives\#_edn6
Agricultural Technologies

Technologies have always played an important role in agriculture and agricultural transformation. Technologies like hoes, tractors, as well as crop rotation, drip irrigation and agroecology are all examples of technologies deployed in agriculture. In recent years, new and emerging agricultural technologies are being designed and implemented very rapidly with the rise of agtech, an industry that combines agribusiness, biotechnology, digital/software technology, and financial technology. Agtech is often advertised as high-tech processes and platforms such as drone farming, robot harvesters, e-commerce sites and financial services, and gene-edited crops.

One major technological development that has grown rapidly in Africa is the rise of digital apps which bring together big technology companies with agribusiness bodies and companies. For example, the Gates-funded Alliance for a Green Revolution in Africa (AGRA) and Microsoft together created a chatbot called Kuzabot which provides advice about farming practices and crop varieties to small holder farmers via Whatsapp and SMS. A chatbot is a computer programme that stimulates conversations with human beings, in this case with farmers, and in turn has access to the data coming from the farmers which the chatbot then analyzes and in turn proposes products and “solutions” to farmers about their practices and products. Chatbots are one of many technology tools which make up part of what is referred to as “smart agriculture,” – the use of technology and data analysis in the domain of agriculture.

Another chatbot service, Arifu, is available in Kenya and also offers product and farming advice to farmers. Arifu is a service of Digifarm, a digital agricultural platform belonging to Safaricom, Kenya’s largest telecommunications provider. Other digital tools and apps include Esoko in Ghana which collects data, conducts biometric profiling, provides agronomic services and helps agribusinesses reach rural communities. Another is Hello Tractor, which has been called “Uber for the Farm,” – a digital platform that connects tractor owners to farmers, and is connected to the cloud, enabling data to be collected and transmitted.

In addition to digital apps, drone technology is also being widely propagated in the agtech sector. Drones can now spray herbicides, fertilizer, and insecticides on crops, as well as track irrigation and monitor plants and soil. Various drone companies have partnered with agribusiness companies to deliver these drone services. For instance, Syngenta has a drone operation called Digital Data Capture which provides data and insights based on images from drones scanning fields and generating high-definition images and data about soil pests and diseases. Delta Drone

13 The ETC Group, Autonomy in the Face of Agtech,” 8 November 2023, https://etcgroup.org/content/autonomy-face-agtech
17 Ibid.
20 ESOKO “About Us,” https://esoko.com/who-we-are/
International, a drone-based data provider, has partnered with Syngenta to bring drone-based agricultural projects in Zambia, and its subsidiary, Rocketfarm, already works with Syngenta in South Africa.22

The uptake of agtech across the world is widely assumed to be a positive development. International institutions such as the World Bank see the uptake of technology in agriculture as necessary for boosting agricultural productivity, eliminating poverty, meeting a rising demand for food, and dealing with the adverse effects of climate change.23 In Africa, the African Union has developed a ten-year strategy for the digital transformation of the continent, from 2020 to 2030, which includes digital technologies in agriculture. The AU sees these technologies as opening opportunities for investors and entrepreneurs and has mentioned drone technologies specifically as a priority for Africa.24 Most proponents of agtech argue that the new technologies are beneficial for small scale farmers; that drones, precision agriculture, and data-driven technologies will lead to higher yields and efficiencies.

On the other side of this push for new agricultural technologies are those who are concerned about the consolidation of big tech companies and big agricultural companies, the lack of governance around the extraction and use of agricultural data, and the role of digital platforms in shaping food and agricultural policies. As Amazon, Microsoft, Google, and others move into agriculture, partnering with big agricultural companies like Deere, Bayer and Syngenta, data such as weather data, data on crop yields, and soil nutrition information is extracted from farms and analyzed by algorithms to increase profits. Those who lose out are farmers who must give up control and ownership of their data and end up paying for the inputs, equipment, modified seeds, and other products, thereby enriching the profits of a few agricultural corporations.

The push toward agtech also locks farmers into agreements. For instance, a farmer can get Bayer’s Fieldview digital platform for free, but they are required to follow the company’s prescriptions and sell their crop at the rate set by the company. The governance of these new technologies is very limited. When it comes to

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Drones, only 26% of all African countries have UAV (Unmanned Aerial Vehicles) regulations in place and Mauritius, Morocco, Rwanda, South Africa, and Tanzania are already using drones for crop scouting. Very few countries have domestic legislation in place on privacy and data protection and information storage. Such a lack of governance and oversight over these new digital technologies can become a serious issue on a national, regional, and continental scale as these technologies are taken up with little or no scrutiny.

**Climate and Geoengineering Technologies**

As climate change worsens, new proposals are in the works to apply new technologies, or “technofixes” to the problem of climate change. One of these technologies is geoengineering which refers to large-scale schemes to intervene in the earth’s oceans, soils, and atmosphere with the aim of reducing the effects of climate change, usually temporarily. Geoengineering refers to a wide range of techniques which can be divided into three broad areas: Solar Radiation Modification (SRM), Carbon Dioxide Removal (CDR), and Earth Radiation Management (ERM).25

SRM involves reflecting sunlight back into space through techniques like blasting sulphate particles into the atmosphere, placing mirrors between the sun and the earth to reflect sunlight back into space, and modifying clouds, plants and ice to reflect sunlight. CDR technologies are designed to absorb carbon from the atmosphere on a mass scale through creating whole forests of artificial trees or creating plankton blooms in the oceans to absorb the gas. ERM techniques involve enabling heat to escape into space by for instance, thinning cirrus clouds.

A number of geoengineering experiments are underway across the African continent. While the Convention on Biological Diversity (CBD) put in place a moratorium on geoengineering in 2010, it did not preclude small-scale scientific research studies. In 2023, a British organisation, the Degrees Initiative together with the UN’s World Academy of Scientists distributed funding to scientists in Benin, Cameroon, Ghana, Mali, Nigeria, South Africa and Uganda, to study the effects of Solar Radiation Modifications through a programme called the Degrees Modelling Fund.26 In January 2024, researchers at the University of Cape Town received funding from the Rockefeller Foundation for the development of an Africa Research Coalition on SRM to be created between the Degrees Initiative and the Climate System Analysis Group (CSAG).27

The Degrees Initiative also has a research team based at the University of Abomey-Calavi in Cotonou, Benin and at the Institut de Recherches Halieutiques et Océanologiques du (IRHOB). The research team in Cotonou modeled the possible impacts of SAI (Stratospheric Aerosol Injection) on rainfall, temperature, and river discharge in West Africa. In Kenya, a Swiss technology company, Climeworks AG, and a Kenyan venture company called Great Carbon Valley are planning to develop a Direct Air Capture project which will remove carbon dioxide from the atmosphere and inject it into the Rift Valley.28 Other Direct Air Capture projects are in the works in Kenya. In Madagascar, a company called OPR Madagascar intends

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to carry out ocean fertilization in the Indian Ocean. \(^{29}\) Numerous other geoengineering experiments are underway across the continent.

Proponents of geoengineering believe that it can slow the progress of climate change and reduce its impacts such as heat waves, storms and rising seas. \(^{30}\) The most vocal advocates of the technology belong to a small group of people from Europe and North America, some of whom have direct connections to the fossil fuel industry or the military. For instance, David Keith, one of the founders of the Harvard Solar Geoengineering Research Program, has a company that received funding from tar sands extraction. The Harvard programme, which not only conducts research but also has a mandate to develop technologies to improve the effectiveness of solar geoengineering, receives funding from a range of Foundations and philanthropists including the Open Philanthropy Project and Bill Gates. \(^{31}\) The US Congress has given millions of dollars to scientists to research geoengineering. \(^{32}\) Right-wing groups like the Heartland Institute and politicians like Newt Gingrich are also proponents of geoengineering. \(^{33}\)

Critics of geoengineering see the technology as an attempt by powerful actors to uphold the status quo and to divert attention from reductions in carbon emissions and real solutions to climate change: industries can continue to pollute and contaminate the atmosphere because geoengineering presents a way to engineer our way out of the climate crisis. \(^{34}\) The most polluting industry on the planet, the fossil fuel industry, is deeply involved in developing, patenting, and promoting key geoengineering technologies. \(^{35}\) Critics of the technology also argue that because geoengineering occurs on a planetary scale, and has not yet been deployed, it is not clear that the technology will work. Moreover, although the experiments underway are said to be part of “research” into geoengineering, and therefore harmless, experiments can also be understood as political acts, rather than technical processes, and can in fact be harmful: experiments generate greater interest into the technology, and more incentives for development, making it more likely for the technology to be realized. \(^{36}\)

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29 Hary Rakoto, “Secteur halieutique - Planification stratégique sur la restauration des océans,” La Vérité, 9 November 2022, [https://laverite.mg/economie/item/17442-secteur-halieutique-planification-strat%C3%A9gique-sur-la-restauration-des-oc%C3%A9ans.html](https://laverite.mg/economie/item/17442-secteur-halieutique-planification-strat%C3%A9gique-sur-la-restauration-des-oc%C3%A9ans.html), [https://afrimag.net/madagascar-pour-la-restauration-des-oceans/](https://afrimag.net/madagascar-pour-la-restauration-des-oceans/)


31 Harvard's Solar Geoengineering Research Program, “Funding,” [https://geoengineering.environment.harvard.edu/funding](https://geoengineering.environment.harvard.edu/funding)

32 John Fialka, E&E News, “U.S. geoengineering research gets a lift with $4 million from Congress,” Science, 23 January 2020, [https://www.science.org/content/article/us-geoengineering-research-gets-lift-4-million-congress](https://www.science.org/content/article/us-geoengineering-research-gets-lift-4-million-congress)

33 James Pethokoukis, “Time for the GOP to Take the Lead on Climate Change?” [AEI](https://www.aei.org/pethokoukis/time-for-the-gop-to-take-the-lead-on-climate-change/), 31 May, 2013, [https://www.aei.org/pethokoukis/time-for-the-gop-to-take-the-lead-on-climate-change/](https://www.aei.org/pethokoukis/time-for-the-gop-to-take-the-lead-on-climate-change/)


Climate expert Chukwumerije Okereke has argued that Africa is becoming a testing ground for geoengineering technologies.\(^37\) Researchers that have looked into the potential effects through modeling have found that it may have serious and damaging consequences\(^38\). SRM could cause entire regions of the world to experience droughts and if the technology is deployed and then suddenly stopped, global temperatures could rise very rapidly; ocean fertilization could lead to dead zones in the ocean through the removal of oxygen; and the technology called Bioenergy with Carbon Capture and Storage (BECCS) which involves burning biomass, could lead to huge amounts of land being taken for the technology to be implemented and could possibly lead to more carbon emissions.\(^39\)

With Carbon Capture and Storage Technology (CCS), the billions of tonnes of carbon that are taken out of the atmosphere have to be stored somewhere, with potential lethal effects if the stored carbon is released in concentrated form as the storage medium exceeds its carrying capacity. In some cases, companies use the captured carbon for oil production through a process called Enhanced Oil Recovery. Finally, critics are concerned with the possible weaponization of geoengineering technology: the US has already used cloud seeding as a weapon during the Vietnam war, in an attempt to extend the Monsoon season and create landslides to disrupt North Vietnamese military supplies.

The battle over SRM geoengineering technology research came to the fore at the United Nations Environment Assembly (UNEA) 6 in Nairobi in February 2024. There, countries like Canada, the US and Saudi Arabia pushed for gathering information including on the benefits of solar geoengineering, while the African Group expressed concern about the lack of transparency from those conducting geoengineering research. The African Group, endorsed by Colombia and other Global South countries, called for a mechanism to ensure the non-use of solar geoengineering. They pointed out a need to compile knowledge on SRM from governments, Indigenous Peoples, local communities, civil society and other stakeholders, and make it accessible to all countries.\(^40\)

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40  The ETC Group, “A solar geoengineering Trojan horse at UNEA-6,” 1 March 2024, https://www.etcgroup.org/content/solar-geoengineering-trojan-horse-unea-6
ASSESSING NEW AND EMERGING TECHNOLOGIES

We live in a time where new technologies are presented as magical solutions to all kinds of problems. This perspective allows new technologies to be introduced into countries and societies with little or no assessment or oversight. Once they are already introduced, it is difficult to prevent any harm that may be caused or to have any control over their deployment, use, and possible consequences. Technology assessment subjects new technologies to critical scrutiny. The table below outlines some key questions that can guide the assessment of a new technology before a decision is made as to whether or not to allow its introduction and use.
# NEW AND EMERGING TECHNOLOGIES ASSESSMENT GUIDELINES

<table>
<thead>
<tr>
<th>Who decided that we needed this technology?</th>
<th>Why is this technology being developed now?</th>
<th>Who is behind its design, building or development?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who and/or what was the technology designed for?</td>
<td>Where did the parts of this technology come from? Or what raw materials were the technology built from?</td>
<td>Who gathered the raw materials needed to build it?</td>
</tr>
<tr>
<td>What was the ecological impact of gathering those resources?</td>
<td>Who will implement the technology?</td>
<td>Who owns the intellectual property rights of this technology?</td>
</tr>
<tr>
<td>Who will benefit from this technology?</td>
<td>What are the likely negative impacts of this technology and how widely felt will the impact be?</td>
<td>Who will be impacted most by this technology?</td>
</tr>
<tr>
<td>Will the impact of this technology spread beyond humans to other beings?</td>
<td>What practices will this technology alter or displace?</td>
<td>How will this technology be deployed and governed?</td>
</tr>
<tr>
<td>Where will the technology be deployed?</td>
<td>Who would have access to this technology and who wouldn’t?</td>
<td>Are there other alternatives to this technology?</td>
</tr>
<tr>
<td>Has the technology or a similar version been deployed and used somewhere else?</td>
<td>What were the recorded or observed impacts of similar technology?</td>
<td>Who or what sections were the most impacted?</td>
</tr>
<tr>
<td>What regulations are in place to control deployment and use of the technology?</td>
<td>What bodies are responsible for implementing these regulations and at what level (local, state, national, regional, or international)?</td>
<td>How strict are the regulations?</td>
</tr>
<tr>
<td>What stakeholders need to be engaged to scrutinize the technology?</td>
<td>What level of engagement might be necessary?</td>
<td>What levels or forms of scrutiny would be involved?</td>
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*Adopted and improved from Politics of Technology, A Growing Culture and ETC Group*
Processes of technology assessment are most effective when they take into consideration different kinds of knowledge. While technology assessment can be undertaken by any one group or individual, participatory technology assessment brings together different groups to assess a technology. For instance, a participatory technology assessment process for digital agriculture may include government representatives, policymakers, think tanks, farmer groups, Indigenous People and Local Communities (IPLCs), social movements, and independent scientists. Each group will have their own information about the technology, grounded in their own background and experiences. One example of participatory Technology Assessment is a citizens’ assembly where a group of people are brought together to learn about, deliberate and agree on the way forward for an issue or technology.41

A citizens’ assembly is usually commissioned by public authority. An advisory board comprised of a diversity of interests oversees the process, including the framing of the issue, the evidence provided to participants and overall design. Citizens’ assemblies generally include 50-100 participants and are run over a number of days. Citizens’ juries are a means of setting technologies in the broader context of ethical, social, and economic issues. However, technology assessment processes do not have to include public authorities. Other kinds of participatory assessments include agrarian assemblies, community assemblies, parent and teacher associations, local media presenting information about a specific issue, and existing networks that bring technology assessments into their debates.

IMPORTANT PRINCIPLES OF TECHNOLOGY ASSESSMENT

Technology assessment processes are often built on the precautionary principle, the principle of transparency, and the principle of consent.

The Precautionary Principle

The Precautionary Principle is contained in the legal system of numerous countries including the European Union. It enables decision makers to adopt precautionary measures when scientific evidence, for instance about a new technology, is uncertain.42 The Precautionary Principle does not necessarily mean a ban on new technologies. Rather, it urges that if there is any uncertainty about a new technology, early measures can be taken to prevent its release in order to avoid environmental and health risks.

The Principle of Transparency

This principle is based on the idea that it is not only people with specialized knowledge that should have influence over decision-making. The principle of transparency means that information about new technologies should be made visible and available, for instance, public information about the uses and abuses of a new technology and its risks and uncertainties should be made available to the public. In this way, everybody can bring their own knowledge and their own values and wisdom to bear upon how a technology is assessed and ultimately governed for the common good. To have information about new technologies, it is also important to have early warning systems in place, similar to systems for disaster management, where detection, monitoring and dissemination of information on new technologies take place.43

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41 Assess Technology, “How are Technologies Assessed?” https://assess.technology/how/
The Principle of Consent: Free, Prior and Informed Consent (FPIC)

Free, Prior and Informed Consent (FPIC) is a specific right that applies to Indigenous Peoples and Local Communities and is recognised in the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP). It allows them to give or withhold consent to a project that may affect them or their territories. Once they have given their consent, they can withdraw it at any stage. Furthermore, FPIC enables them to negotiate the conditions under which the project will be designed, implemented, monitored, and evaluated. This is also embedded within the universal right to self-determination.

FPIC is a potentially powerful tool for communities but has been ignored or manipulated far too often. For example, proponents of projects often conflict consultation with consent, claiming that because they met with some members of a community, they have consent. It is also often the case that projects will hand-pick or manipulate certain members of the community into giving consent, but not include everyone in a free and fully informed process.44

An Example of Technology Assessment from Latin America: Terminator Technology45

The Latin America technology assessment platform (RED TECLA) undertook a process of technology assessment for terminator technology, a controversial technology developed by publicly funded breeders at the US Department of Agriculture and Monsanto. Also referred to as ‘suicide seeds,’ terminator technology was intended to genetically engineer plants to produce sterile seeds, preventing farmers from saving and reusing harvested seeds. It was never introduced: in the year 2000, it was struck down through a de facto moratorium, including on experimental releases, at the UN Convention on Biological Diversity. At that time, companies like Syngenta and Monsanto had patents on the technology and were keen on its introduction, with no evaluation of the technology in terms of its risks or its potential social and environmental impacts.

Civil society organisations (CSOs) and social movements undertook their own assessment of terminator technology and communicated its impacts to a wide public and to policymakers. Civil society groups concluded that terminator would restrict farmers’ ability to produce food and would destroy their practices of seed-selection and seed-saving dating back 10 millennia. The campaign rapidly gained momentum. Soon, big agricultural institutions like the FAO (the Food and Agriculture Organization) and the CGIAR (Consortium of International Agricultural Research Centres) rejected the technology and a moratorium was put in place at the CBD in 2000.

45 Assess Technology, “TECLA: A brief history of how Latin Americans have assessed new technologies,” 23 November 2023,
With time, Monsanto itself came to call this technology ‘terminator’ – a word that illustrated the life destroying objective of the technology and the danger it posed to people’s lives. The process of fighting down terminator began with a process of different people (stakeholders) coming together to assess the technology, and then campaigning against it through lobbying at the CBD; mobilizing farmers, Indigenous Peoples’ organisations, social movements, scientists, and public plant breeders; and creating materials about terminator that could be translated into several local languages. Terminator turned out to be a typical example of a technology assessment process that had a direct impact on the introduction of a new technology to the world.

Resources

Assess Technology: https://assess.technology/
The Latin America Technology Assessment Platform: https://redtecla.org/
Teach Yourself Citizens’ Juries: https://www.academia.edu/11223382/Teach_Yourself_Citizens_Juries

https://assess.technology/featured/how-latin-americans-have-assessed-new-technologies/
Guidelines for Assessing New and Emerging Technologies in Africa

A proposal by James Highfield at A*STAR’s Institute of Chemical and Engineering Sciences, together with co-workers at the National Junior College of Singapore and Åbo Akademi University in Finland claiming Ammonium salts could provide viable way of removing carbon dioxide from atmosphere via carbon mineralization.


A proposal that algae bioreactor can remove as much carbon dioxide as an acre of trees by Hypergiant Industries - https://www.inverse.com/article/59334-this-algae-bioreactor-can-sequester-carbon-dioxide

A proposal by Captura Corporation, a spinoff of the California Institute of Technology to remove carbon emissions by creating an aquatic purification facility in the middle of the sea. - https://newatlas.com/technology/captura-carbon-dioxide-ocean/

Sneak Peak into some untested, very expensive, false technologies.
About Health of Mother Earth Foundation (HOMEF)

Health of Mother Earth Foundation (HOMEF) is a registered NGO/non-for-profit organization in Nigeria and prides herself as the ecological think tank organization advocating for environmental justice, climate justice and food sovereignty in Nigeria and Africa at large with headquarters in Benin City, Nigeria. HOMEF was founded in 2011 but commenced full operations in 2013.

Our vision is to have an ecologically just world where all beings live in harmony with Mother Earth and our driving mission is: working to support a wholesome ecological and socially cohesive/inclusive communities where people live in solidarity and dignity. We focus on tackling problems relating to harmful extractives and the exploitation of nature and peoples. We also tackle problems created by an agricultural model that is basically colonial and sees food as a commodity thereby generating hunger and encouraging biodiversity erosion through approaches including by using genetic engineering varieties and harmful agricultural chemicals such as pesticides and herbicides.

HOMEF has been instrumental in the formation, hosting and growing of networks like the FishNet Alliance (a network of fishers fighting against destructive offshore extractive activities), The West African Climate Justice Movement (which is a movement of climate justice campaigners projecting a West African position on climate issues, fossil phaseout and the needed just energy transition) and Ocean and Human Right Platform (committed to integrating human rights principles and approaches into ocean economy activities and to operating within environmentally safe and socially just boundaries).

The values that we bring on, are hinged around preserving the integrity of the Planet and ensuring that her natural cycles are not unduly disrupted. We also value justice, equity, respect, dignity, knowledge and solidarity at the core of our engagements.

Other Publications by HOMEF

- Politics of Turbulent Waters
- Eco-Instigator (quarterly journal)
- Defending our Biological Diversity
- To mint and Illusion
- Community Dialogue Guide (Oil/Gas)
- Community Dialogue Guide (Forest)
- Oil Politics; Echoes of Ecological war
- Re-source Democracy
- Beyond Oil- Reimagining Development in Niger Delta
- Community Guide to Environmental Monitoring and Reporting
- Community Dialogue Guide on Food and Farming Systems
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