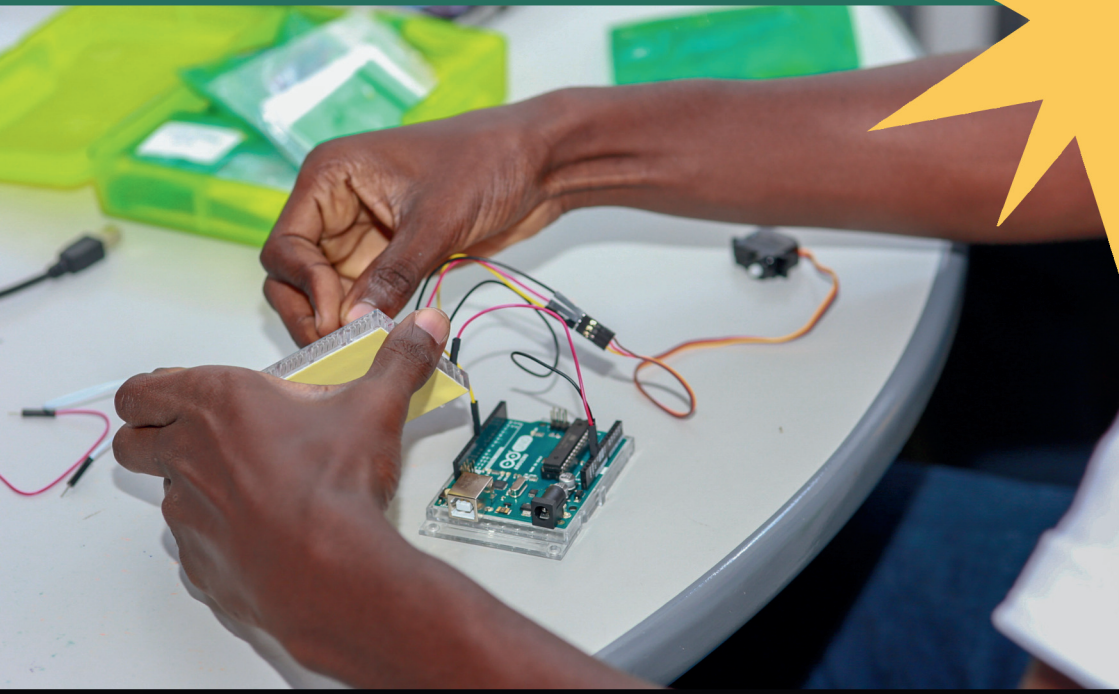
MAKE African European Maker Innovation Ecosystem

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 101016858.

Right to Repair Policy Directive

An instrument for green and digital transformation



Author:
Geraldine de Bastion

Editors:
Samuel Boadu Duah, Freda Yamorti Gbande, Barbara Kieslinger and Joseph Agyina

gig GLOBAL INNOVATION GATHERING

Scan me to learn about the project

makeafricaeu.org

Executive summary

The Right to Repair is an instrument for green and digital transformation. It can help reduce waste and resource use, democratise access to technology, as well as promote economic and social justice by empowering citizens and upholding consumer rights. The EU can strengthen the Right to Repair globally by:

- **Mandating Modular and Open Design**: Enforce modular and open design standards for digital hardware to allow easy replacement of components, requiring access to repair manuals and spare parts while balancing intellectual property rights.
- **Encouraging Producer Responsibility**: Require manufacturers to design products with longevity and repairability in mind, promoting sustainable practices such as cradle-to-cradle production and accountability for full product life cycles, including end-of-life recycling.
- **Preventing Software-Induced Obsolescence**: Regulate software updates to ensure they do not shorten hardware lifespans, preventing unnecessary e-waste by maintaining device functionality.
- **Building Open Repair Ecosystems**: Develop open-access repair databases and repositories for sharing repair knowledge, methods, and resources, fostering a culture of community-led repair and supporting a global repair network.

Distributed manufacturing empowers consumers and local repair facilities by enabling the production of parts closer to where they are needed, thus minimising transportation emissions and supporting local economies. The Right to Repair and distributed manufacturing both support local economic resilience, reduce e-waste, and provide consumers with greater autonomy. Together, they can be part of a systemic approach for a just and inclusive digital and green transition.

Photo credits: Peter Nicholls | the Times

1. Why the Right to Repair matters globally

The amount of waste electrical and electronic equipment generated every year in the EU is increasing rapidly. 13.5 million tonnes of electrical and electronic equipment is put on the European market. When it turns into e-Waste, the majority of it gets shipped to Africa. Whilst electronics contain rare and expensive resources, including critical raw materials, they can also contain hazardous materials that can cause environmental and health problems. Further, Digital Rights Management (DRM) and the digitization of hardware are steadily stripping consumers of their ownership rights. Increasingly, manufacturers restrict repair access through DRM, software locks, and proprietary components, making it difficult, if not impossible, for consumers to repair or modify their devices without voiding warranties. This trend represents a shift from ownership to a model of restricted access, where consumers essentially "lease" functionality at the whim of manufacturers.
The Right to Repair is closely aligned with key EU policies and agendas, such as the Digital Decade and the Green Deal, by promoting sustainable, fair, and inclusive digital and environmental goals. It is an instrument of economic liberty, granting consumers the autonomy to repair, reuse, and maintain their devices independently. By levelling the playing field between consumers and Big Tech, Right to Repair democratises technology, encouraging innovation from independent repair shops and community-based repair initiatives. This Right to Repair has the potential to reduce socioeconomic disparities by lowering repair costs and fostering local repair economies, particularly in regions where corporate repair services may be unavailable or unaffordable. It can also contribute to more responsibility and fairness in waste management, leading to a more equitable distribution of resources and opportunities.

2. The role of Makerspaces and the mAkE project

Makerspaces play a pivotal role as nexus points for knowledge exchange, access to technology, and community building. In a circular economy, they could act as local production and recycling sites, providing access to the necessary machines and knowledge. Makerspaces serve as local hubs where individuals can learn essential repair and fabrication skills, access shared tools and technology, and collaborate with others who share an interest in sustainable practices. By fostering hands-on learning and innovation, makerspaces empower communities to repair, modify, and even create digital hardware, reducing dependence on centralised manufacturing and extending the lifespan of devices. This community-driven approach to technology not only reduces waste and resource use but also strengthens local economies, creating a resilient ecosystem where sustainable digital practices are cultivated and sustained.

Makerspaces and the Right to Repair contribute to achieving the sustainable Development Goals in different ways, e.g:

8 DECENT WORK AND ECONOMIC GROWTH

Makerspaces offer training and revitalizing repair professions that generate employment opportunities, particularly for youth and underserved populations.

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

Makerspaces are hubs for innovation, learning about repair practices as well as production sites that contribute to resilient infrastructure and economic growth.

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Makerspaces are places that foster responsible consumption and production processes using local materials and creating local value chains

13 CLIMATE ACTION

Makerspaces are places for regenerative and circular practices that offer recycling and upcycling infrastructures.

mAkE is a European H2020 project working with hardware-focused Digital Innovation Hubs (DIHs) in Europe and Africa to pilot distributed manufacturing systems. During the past three years the mAkE consortium has worked with makerspaces and local hardware initiatives, as key drivers for local digital innovation, to create infrastructures and resources for distributed manufacturing,. This includes the Open Source Resources created by mAkE such as the data standard by the Internet of Production and the Open Business Model Catalogue. Further, mAkE has published research on policy engagement by DIHs and a framework for a common policy agenda for African and European DIHs. The following observations and recommendations are based on the research outcomes of the mAkE project.

Photo credits: Fab Lab Barcelona | IAAC

3. Distributed Manufacturing and the Right to Repair

Distributed Manufacturing is a production model where manufacturing processes are decentralised and spread across various locations rather than being concentrated in a single, central factory. This model leverages advanced technologies like 3D printing, digital fabrication, and cloud computing to enable small-scale, local production facilities or even individual consumers to produce parts, components, or entire products. The main characteristics of distributed manufacturing include:

- **Decentralisation**: Production is spread across multiple locations, often closer to the end user.
- **Customization**: Products can be customised to meet local needs or individual preferences.
- **Reduced Transportation Costs**: By producing goods closer to where they are needed, transportation costs and related environmental impacts are minimised.
- **Flexible Production**: Distributed manufacturing allows for more agile and adaptable production processes, capable of quickly responding to changes in demand.

Distributed Manufacturing is highly complementary to the Right to Repair movement and reinforces each other. When coupled with the Right to Repair, distributed manufacturing can provide the necessary infrastructure for a decentralised repair network, making it feasible to extend the life of devices, reduce e-waste, and promote resource conservation. Policymakers should recognize this synergy as a way to foster sustainable and resilient communities, ensuring that repair and maintenance capabilities are accessible and equitable. Together, the two models create a stronger framework with higher likelihoods of positive outcomes which are outlined below:

Empowerment of Consumers: Distributed manufacturing allows consumers to produce their own spare parts locally, making it easier to repair products without relying on the original manufacturer. This could be particularly beneficial in regions where official parts are not easily accessible.

Reduction of E-Waste: By enabling repairs through local manufacturing of parts, both distributed manufacturing and the right to repair contribute to reducing electronic waste. Instead of discarding a device due to lack of available parts, consumers can produce or acquire parts locally to extend the device's life.

Local Economic Development: The rise of distributed manufacturing facilities or hubs could stimulate local economies by creating jobs related to the production and repair of goods. This aligns with the right to repair emphasis on supporting local repair shops and independent technicians. In the African context, the right to repair reduces dependency on imports, allowing African communities to manage their own waste and economic systems sustainably. Distributed manufacturing further empowers communities to produce and repair locally.

Legal and Policy Synergies: Advocates for the Right to Repair can leverage distributed manufacturing as a practical solution to overcome some of the barriers set by manufacturers, such as proprietary parts and tools. Laws promoting the right to repair might also support or even mandate distributed manufacturing models as a way to ensure that repair parts are available.

Distributed manufacturing can play a significant role in advancing the Right to Repair by making it easier for consumers to maintain and repair their products, reducing dependency on centralised manufacturers, and promoting sustainability through localised production and repair.

4. Right to Repair Policy Recommendations

4.1 Repair Environment

Photo credits: Global Innovation Gathering

Empower Consumers Globally: The Right to Repair can address gaps in access to costly repair services and resources. When consumers have the right to repair their own products an environment of empowerment and self-sufficiency emerges. Therefore, policies should ensure that disparities based on physical access, knowledge, skills or finances are mitigated through accessible community educational and skills building workshops as well as supporting spaces such as Makerspaces or Repair Cafes that encourage a safe repair movement.

Revitalise Repair and Craft Professions: To support the repair movement, professionals with the appropriate repair knowledge and skills are required to support local repair environments. Professional pathways for repair and craft roles need to be revitalised as well as incentivised to promote uptake. This aligns with the New European Bauhaus Initiative and Horizon European Culture and Heritage Cluster.

4.2. Hardware – Design for Repairability and Circularity

Photo credits: Cristian Rojas (Pexels)

Mandate Modular and Open Design: Policy and regulation should be adapted to ensure modular design of devices and technology. Modular design allows for easy replacement and upgrading of individual components, reducing waste and extending product lifespans. For modularity to occur some standardisation of parts or interfaces between modules may be required. Additionally, open design policies should also be implemented to allow consumers access to required manuals and information which will allow them to not only repair but recycle parts and devices. However, a balance between access to information and IP rights is necessary.

Ensure Access to Spare Parts: Legislation should guarantee that consumers and independent repair providers have access to spare parts with equivalent functions and features as original parts at fair prices and within a reasonable timeframe. Such legislation can fuel the development of spare part markets and local and regional product maintenance infrastructures and services.

Encourage Producer Responsibility: In order to support the repair process producer accountability should be addressed. This means manufacturers must ensure their products are designed for longevity with the ability of the product to be repaired to extend the life. Additionally, producers need to consider the whole life-cycle of the device which includes end of life and recyclability to ensure minimal environmental impact. This can be done by promoting sustainable design and cradle-to-cradle production practices.

Extend beyond the current EU Eco-Design guidelines: The Right to Repair should extend beyond the current EU Eco-Design guidelines and fully encompass digital hardware products for several compelling reasons. While the Eco-Design guidelines represent an important step toward sustainability, they fall short of empowering consumers and tackling the broader environmental and social issues tied to digital hardware.

4.3. Software - Ethical and Considered

Photo credits: African Makerspace Magazine | OpenFlexure Microscope

Prevent Software Obsolescence from Hindering Repairs and Ensure Software Supports Hardware Longevity: Regulations should prevent software updates or practices that render hardware obsolete or unusable. This ultimately results in increasing numbers of devices becoming e-waste. Software should be designed to support the ongoing functionality of hardware throughout its life-cycle, free from unnecessary software-induced obsolescence. This then ensures devices like printers, tractors, and household appliances continue to function as intended and extend usage.

Prohibit Data Exploitation in Everyday Devices: Regulations are obliged to protect citizens' privacy and therefore should prevent everyday devices from becoming data collection traps. The primary function of devices should remain their core functional purpose. Data collection via devices should be transparent, optional, and limited to what is necessary for the device's operation. Device data collection processes should also be structured so that consumer consent is required before any data can be collected, that consent can be withdrawn at a later stage, that consumers can request a copy of all personal data on file and data be deleted upon request. By creating a safer data structure this can alleviate some privacy concerns consumers may have in recycling their personal devices.

4.4. Data - Accessible and Open

Photo credits: Global Innovation Gathering

Provide Open Access to Repair Knowledge: Repair information, tutorials, guidelines, and instructions should be made openly accessible. By ensuring that technical manuals and diagnostic tools are available to all, it can foster a culture of repair and maintenance in the community. This also assists to mitigate any knowledge, skills or cost barriers that may exist.

Repair Ecosystem Open Databases: The creation of repair databases can provide information to communities about available repair services, repair communities, repair cafés, and makerspaces. This can provide citizens with practical information about where they can go to get support or access repair services. It may be beneficial to have different databases with different focuses, but an overarching repository would allow for simplified navigation and prevent wasting resources.

Develop Open Repositories for Repair Data: The establishment of open repositories where data on repair methods, outcomes, and best practices can be shared have numerous benefits. Citizens could then make basic repairs to their devices and repair professionals can share best practices and improve the sector. This would support the growth of a global repair community and enhance collective knowledge on repair techniques and methods. Initiatives such as open ledgers, like those pioneered by Leandro Navarro, track the lifecycle of second-hand electronics, making it easier for consumers and businesses to trace a device's history and determine its repair potential. This transparency fosters trust and fairness in the second-hand market, creating more sustainable, equitable electronics reuse systems.

Integrate Data for Circular Economy and Climate Protection: Right to Repair aligns with circular economy principles by facilitating repair, refurbishment, and reuse, keeping products in use longer. This example shows the necessity to collect and make accessible data relevant to circular economy management and climate protection. This should include material data, digital product passports, and life-cycle assessments. This is critical for informed decision-making both for producers in sustainable design and production as well as consumers in their purchases.

***

mAkE

The mAkE consortium is committed to continuing its work with makerspaces in Africa and Europe as well as with different Right to Repair and digital sustainability and promoting projects at the intersection of the Right to Repair and distributed manufacturing. Consortium members are continuing to develop relevant infrastructure and knowledge, for example the Internet of Production Alliance is currently designing a new standard for open electronics design-data, that will focus on design information and documentation of electronics components, assemblies and sub-assemblies.

Photo credits: Fab Lab Barcelona | IAAC

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 101016858.