WATER[FALSE]

LOW-WASTE PRACTICES IN DIGITAL ART

Sylwia Żółkiewska

2026

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This publication was created as part of the KPO scholarship entitled *Water[false] – low waste practices in digital art,* which aimed to improve artistic, digital, and ecological skills in the context of creating and presenting art in the era of generative AI. It summarises the research and creative process, which included:

- completing courses on ecology, sustainable development, and the impact of new technologies on the environment;
- conducting netnographic research on ecological practices in digital art;
- conducting and compiling interviews with designers, curators, and activists involved in the relationship between technology and the environment;
- creating a multi-channel audiovisual installation developing the idea of digital mindfulness and low-waste creativity;
- developing a synthetic model of ecological creative practices in the field of digital art.

The publication combines critical reflection on the environmental and cognitive costs of digital image overproduction with documentation of the artistic project.

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ABOUT THE AUTHOR

Sylwia Żółkiewska is a Polish new media artist, designer, and visual culture researcher based in Warsaw, Poland. She uses art as a method of exploring emerging technologies, including AI, and their impact on contemporary visual culture. Her practice focuses on how digital tools and platforms reshape visual language, environment, perception, and experiences of time, memory, and emotion. Working with adaptive, often minimalist formats, she examines the fragile and ephemeral nature of visual culture situated between digital and physical space.

More: www.art.zolkiewska.pl, www.zolkiewska.pl

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GLOSSARY

The dictionary organizes concepts functioning at the intersection of ecology, technology, and digital art. It serves as a guide for artists, designers, and curators. It can open up space for reflection on the conditions of digital art production—from the choice of medium and form of presentation to methods of archiving and promotion. It is divided into four parts: the field of art and culture, critical frameworks, technological infrastructure, and design strategies.

THE FIELD OF ART AND CULTURE

Concepts related to artistic practices, institutions, curatorship, and responsibility in the field of art.

Adaptive reuse in exhibition design – reusing existing infrastructure, materials, and exhibition spaces instead of producing new elements.

Artivism / eco-artivism – combining artistic practice with social or climate action.

Environmental balance of an art project – a comprehensive assessment of the environmental impact of an artistic project, including production, transport, energy, and promotion.

Decolonizing nature – a critical approach to the relationship between humans and the environment in art, questioning exploitative and colonial models of representation.

Digital art ecology – reflection on the relationship between the production, distribution, and reception of digital art and its infrastructural and environmental background.

Aesthetics of restraint – a creative strategy based on reduction of means, minimalism, and conscious limitation of visual production.

Greenhushing – the failure of cultural institutions or artists to communicate their pro-environmental activities for fear of criticism.

Greenwashing – “going green,” declaring pro-environmental values without any real change in production practices by cultural institutions or artists.

Regenerative art practices – artistic strategies focused not on representing the climate crisis, but on co-creating conditions for ecological, social, and mental renewal. They involve a change in the logic of production (fewer one-off projects, more processes), forms of distribution, and relationships with the audience and place.

Sustainable residencies – artistic programs that take into account the locality of production and minimize the carbon footprint.

Digital art – an artistic practice in which digital technology is the primary medium or creative tool.

Eco-art, environmental art – artistic activities addressing ecological issues, often combining art, science, and activism.

CRITICAL FRAMEWORKS

Terms describing contemporary models of thinking about the climate and technological crisis.

Anthropocene – a proposed geological epoch in which human activity has become the dominant force shaping the planet.

Degrowth / post-growth – the concept of reducing production and consumption as a response to the climate crisis.

Ecocide – serious, long-term destruction of the natural environment, proposed as an international crime.

Ecolyps – catastrophic ecological narratives functioning in culture.

Attention economy – an economic model based on monetizing user attention.

Entropocene – a concept describing the present day as an era of accelerated production of material and informational entropy.

Deep ecology – a philosophical movement recognizing the intrinsic value of all forms of life.

Hydrocene – a conceptual and curatorial proposal for an "era of water," used to describe the present day as a time of conflict and interdependence around water in the context of the climate crisis.

Infocene – a metaphorical term for an era dominated by the overproduction of information.

Platform capitalism – an economic model based on platforms that control data and digital infrastructure.

Dark ecology – a perspective emphasizing the indelible interdependence of humans and the degraded environment.

Grey ecology – a concept developed by Paul Virilio that points to perceptual and informational pollution as parallel to environmental degradation.

Cognitive footprint – the impact of information overload and digital stimuli on attention and mental well-being; intrinsically linked to the environmental footprint.

TECHNOLOGICAL INFRASTRUCTURE

Concepts related to energy, data, equipment, emissions, and the material basis of technology.

Life cycle assessment (LCA) – a method of assessing the environmental impact of a product or service at all stages of its existence.

Digital carbon footprint – greenhouse gas emissions associated with the use of digital services and data infrastructure.

Rebound effect – a situation in which improvements in technology efficiency lead to increased resource consumption.

Energy mix – the structure of energy sources powering a given system.

Minimal computing – practices that reduce infrastructure complexity and computing resource consumption.

Vampire power/phantom load – energy consumed by devices in standby mode.

Renewable energy sources (RES) – inexhaustible natural resources from which energy can be obtained, e.g., wind, sun, or biomass.

Cradle-to-grave – an analysis model covering the entire life cycle of a product.

Graphics processing unit (GPU) – a computing system used, among other things, in AI, which is energy-intensive on a large scale.

Tensor processing unit (TPU) – a specialized processor optimized for machine learning.

IPCC **report (Intergovernmental Panel on Climate Change report)** – a summary of the current state of knowledge on climate change.

Embodied carbon – emissions generated during the production and transport of materials, "built into" the product before its use.

Green IT – strategies for reducing the environmental impact of IT infrastructure.

Green hosting – storing data in data centers powered by renewable energy.

DESIGN AND OPERATIONAL STRATEGIES

Methods and practices that enable more environmentally and socially responsible operations.

Autoplay – automatic playback of video content without user initiative on a website or social media.

Digital sobriety – conscious reduction of the production and consumption of digital content on the Internet and social media platforms.

Eco-design – design in accordance with the principles of waste minimization and circular economy.

Infinite scroll – a mechanism of website or social media interfaces that increases usage time and data transfer.

Handprint – the positive impact of an action or project, e.g., a reduction in emissions or a change in behavior that would not have occurred without its implementation.

Twin transition – the parallel transformation of digital and energy systems towards climate neutrality.

Green digitalization – digital transformation that takes environmental costs into account and aims to reduce energy consumption and emissions.

Sustainability by design – taking environmental impacts into account at the product design stage.

Regenerative design – an approach that, instead of limiting negative impacts, seeks to create conditions conducive to renewal: ecosystems, social relationships, and ways of thinking. In the context of art and design, it means working on form, process, and narrative in a way that supports long-term change, not just reducing emissions or resource consumption.

Static web – a website generated without dynamic database queries, which reduces data transfer, server load, and energy consumption.

Digital waste management – reducing excess data, files, and archives.

Sustainable digitalization – digital transformation that takes environmental and social costs into account.

Sustainable HCI – designing human-technology relationships with environmental impact in mind.

INTRODUCTION

This publication is an invitation to reflect on artistic and design practice as part of a larger ecosystem—material, technological, and perceptual. In it, I explore the topic of image overproduction in the context of the technological revolution and its impact on the environment and our cognitive abilities. I am interested in the materiality of seemingly ephemeral digital images – their energy, environmental, and perceptual costs, which are inherent in everyday creative practice.

The whole publication is a summary of several months of artistic and research work, in which theory and art-based research complement each other. Therefore, the publication includes a theoretical analysis, estimated calculations of the digital production footprint, a model of ecological practices that can be implemented in artistic work, as well as a description of the video installation *Water[false]*, developed in the spirit of reduction and minimization of resources. The analyses show that the cost of digital art is not limited to the production of files or renders, but is closely linked to promotional pressure and the constant reproduction of images on social media, where excess becomes the rule of the system.

Based on the examples collected, it is clear that the climate crisis and the attention crisis are playing out in the same infrastructure—in energy networks, data centers, and platform interfaces. The production of energy, data, and images creates a single system of dependencies. In this sense, digital practice is not immaterial: its effects are both energetic and cognitive.

1.

LOW-WASTE PRACTICES IN DIGITAL ART - MATERIAL AND MENTAL FOOTPRINT OF “NON-EXISTING” IMAGES

We live in the era of overproduction - it also concerns visual culture and art, which is becoming easier and easier to create. In the aftermath of the NFT boom and the AI tsunami, digital art - much like fast fashion and film production - no longer enjoys the privilege of being perceived as innocently immaterial. Internet users, artists, curators and researchers become more and more interested in what is hidden behind the screen - how exactly images circulate online, what is the real cost of “cloud-based” services and creative genAI tools or constant social media scroll. Step by step, the illusion of digital art’s ethereal properties fades away and questioning its environmental cost and sense of existence begins. We finally see that nothing online is weightless.

On the contrary - digital art (especially AI-generated), servers, social media, AI models and generative tools need vast computational power, which translates directly into electricity consumption, carbon emissions and water use for cooling data centers. This is where digital stops being ephemeral and becomes hard, heavy and even dirty: the infrastructure behind instant (almost magical) image generation depends on fossil fuel–based power grids - often in poor or dry regions of the world. Every time we scroll the screen or post an image, the dense mesh of servers, cables, cooling systems, and extractive supply chains is activated IRL.

IRL HIDDEN COSTS

But why bother, one might ask? Don’t we have more challenges to handle than digital creations? The answer is not so simple, since human web activity expands year by year. It is currently estimated to account for 6-7% of global annual greenhouse gas (GHG) emissions, which is twice as much as the aviation industry. Every website is now over 1000 % heavier than it used to be 20 years ago (see HTTP Archive infographic). Also on social media the situation is similar and there is “the flood of visual elements that these platforms demand in order to stay relevant”, as Sandy Dähnert, UX/UI designer and Green the Web portal creator, observes. What started innocently on Myspace now brings to life an estimated 1-2 billion units of content every day, additionally accelerated by genAI.

Digital artists, new media creators and designers constantly repeat enchanted sequences of energy-consuming operations: create, upload, download, share, click, refresh, scroll. Seen individually, those events seem isolated, dispersed and almost invisible thanks to the increasingly faster Internet connection. But the image, once created, is very easy to replicate.

So when we take a closer look and conservatively assume that one post (1 graphic + 1,000 views) generates approximately 44–207 g CO_2e (carbon dioxide equivalent), then on this scale, the total rises to 44,000–207,000 tons of CO_2e per day. That is, annually: 16–75 million tons of CO_2e – comparable to the emission of countries like Greece, Portugal, or Morocco. If we take video content into account, it could be 5 times as much.

As Joanna Murzyn, tech activist and regenerative designer emphasizes, the latent impact of the online image or video also lies in the production, wear and tear of the computer equipment we need to create visuals with. The figures she mentions prompt reflection: “If you think about the entire supply chain — extraction, transport, assembly, distribution — a single personal computer can involve the work of around 100,000 people.” We tend to forget that the process of producing hardware’s batteries and chips depends on the work of those who mine rare earth metals or deliver other crucial components - often under unsafe or unjust conditions. So the costs of creativity without limits are not abstract - they are environmental, material and human.

However, the digital sphere, shaped by the attention economy, rarely rewards restraint. The dominant logic favors accumulation: more images, more pixels, more resolution, more layers, more screens, more posts to feed the algorithms - because art today is inseparable from promotion.

Moreover, in digital art, quality is often conflated with technical intensity. High-end visuals, 4K resolution, and immersive 3d environments become benchmarks, not because they are always necessary, but because they signal seriousness and aspirations of the artist - often associated with masculine-coded notions of ambition and scale. In these circumstances, choosing less can feel like a risk of self-depreciation and a simple recipe for being left behind.

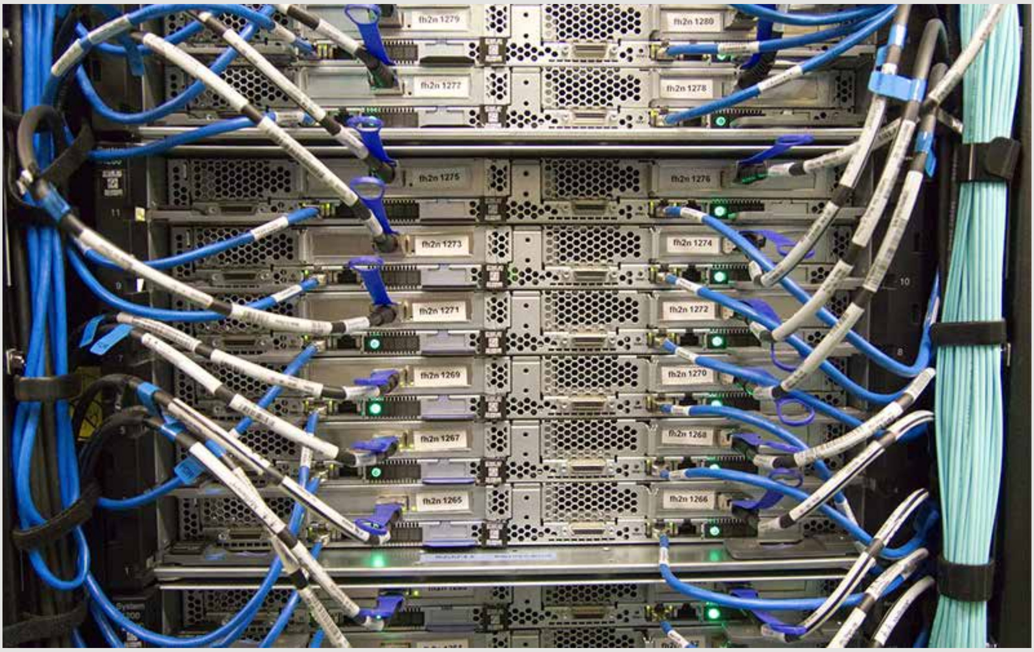


Illustration 1.1. Network cables, server racks, and cooling systems inside a data center. This physical infrastructure is activated whenever we work in the cloud, stream media, or publish content online.

Illustration 1.2. Large-scale immersive installation by digital artist Refik Anadol, Machine Hallucinations (2019). The work visualizes vast datasets through monumental, dynamic projections, creating an aesthetically compelling yet, for some viewers, sensorily intense experience.
Source: https://refikanadolstudio.com/projects/machine-hallucination/

Illustration 1.3. View from the exhibition If/Then, presented at the Ujazdowski Castle Centre for Contemporary Art in Warsaw, 8 October 2025 – 1 February 2026. Curated by Sara Szostak and Marta Grytczuk. Photo: Sylwia Żółkiewska.

IMAGE ENTROPY: WHEN MORE MEANS LESS

Yet even this approach might prove counterproductive if juxtaposed with nowadays visual excess in the instant-creation era. Slowly but steadily, while the quantity overcomes the cyber sphere, separate visual content loses its power. What we experience today could be described as a kind of unbearable lightness of digital production. Images appear, circulate, and disappear with almost no resistance (I wrote about it in my previous article - "AI (versus?) artists: snapshot from the eye of the hurricane", Contemporary Lynx, December 18th, 2024). In a world saturated with visuals, they become harder, not easier, to be seen and remembered. Every added image, render, and update contributes not only to data storage and energy consumption, but also to a culture of disposability. Images - even those strikingly colorful and monumental - lose their power. Paul Virilio famously analyzed this condition through dromology - his concept about modernity organized by speed - and then through grey ecology, warning that technological environments generate pollution not only of matter, but of perception.

Artificial intelligence, often framed as either a threat or a solution, occupies an ambivalent position in this landscape. Used uncritically, it accelerates hyperproduction and strengthens big tech's power. Applied intentionally, it can support analysis, optimization, reuse, and informed decision-making in the artistic process. The difference lies not in the tool itself, but in the intentions and limits we impose on its use. Training models to generate more content, play with aesthetics and scale is easy. Using AI - or any other technology - to reduce waste, extend lifespans, and reveal hidden costs requires a certain shift in mindset.

HOW MUCH IS ENOUGH? THE COGNITIVE FOOTPRINT OF THE INFINITE SCROLL

There is also another aspect to the cause which is often treated separately or omitted in the main discourse on nowadays hypercreativity. Technology and Communication Industry (ICT), including rising online activity, not only affects the environment, but also us, humans, disrupting our own balance on a much deeper level. "We overload ourselves with content, and later we don't even remember what we have seen", observes Joanna Murzyn. This results in overstimulation, reduced attention span, and mood deterioration, especially in young or neurodiverse individuals, as recent research shows. Graphics, animation, sounds, video, colors (interestingly, each to a different degree) – are neither neutral for us nor for the environment. Paradoxically, these consequences can be reversed not only by practicing restraint but also by expending time spent in nature, so we really need to preserve some.

What is more, many artists and designers observe this fatigue appearing long before environmental awareness enters the conversation. It begins with overstimulation, with the feeling of being constantly behind, of never producing enough or fast enough (do not worry, it is also my case). It manifests as burnout, anxiety, and a creeping doubt about the value of one's own work. Ecology consciousness comes later, as a second layer of realization. Recognizing overproduction fatigue becomes a crucial step toward rethinking digital artistic practice - it allows us to understand limitation not as deprivation, but as a form of agency.

RETHINKING QUANTITY, QUALITY AND SCALE

Low-waste practices in digital art can easily be misread as a resignation from what is most exciting about emerging technologies: experimentation, new forms of expression, breaking down styles and barriers between media. However, if they are understood not as a mundane rulebook but as a stimulating constraint, they redirect artistic attention toward processuality and sustainability instead of focusing solely on the outcome. This attitude questions considering mostly what a work communicates, but asks how it is produced, stored, circulated and maintained. In this sense, ecology becomes less of a fashionable theme and more of a structural condition of practice.

Is this way of thinking entirely new? In digital art, to some extent, yes, because the field itself is relatively modern, and is strongly influenced by constantly emerging new technologies, bringing with them new opportunities and challenges. However, we already have initiatives such as Rhizome Climate Impact Portal, eco web design, restorative design, or manifestos advocating for infrastructural justice. These practices suggest that sustainability is not opposed to technological thinking — it refines it.

The shift toward sustainability is even more visible in the sphere of public commissions and physical works. Some cities, such as Turku in Finland, have introduced practical ecological guidelines that address the entire life cycle of artworks - from concept, production and transport to maintenance and storage. Cultural institutions form "green teams" and start to reuse exhibition elements instead of producing new ones for each show. When asked about the concept of adding physical objects to the digital artform during the latest CSW Zamek U-jazdowski exhibition *If/Then*, curator Sara Szostak explains that "many of the scenographic elements were upcycled from previous exhibitions. We try to work with what we already have instead of producing everything from scratch".

At the same time, inconsistencies remain. Large-scale artistic events such as the Venice Biennale may publish sustainability recommendations for visitors while leaving art works and artistic production itself largely unquestioned. The climate crisis is increasingly becoming the subject of many works that are often based on energy-intensive infrastructure or materials, which contradicts their message. This combination of monumentality and ecological rhetoric is increasingly becoming the subject of criticism.

Studio visits and artistic residencies are also undergoing recalibration. Intercontinental travels are being replaced by more local and sustainable solutions, such as Cycle up! project publication on sustainable creativity shows. In other creative sectors - fashion, film production, architecture or furniture design - sustainability guidelines and certification systems are already reshaping production models and competitions' rules. In visual arts and digital culture, similar conversations are emerging, but they still remain fragmented or symbolic.

LOW-WASTE PRACTICES — 5R PRINCIPLE

So what can we actually do? In a world as complex and tightly interconnected as ours, simple answers are rare. Yet staying passive is hardly neutral — particularly in Europe, where per capita emissions remain among the highest and where a large part of global digital cultural production is concentrated. Many of the creators, designers, curators and institutions shaping the discourse operate from this region, which makes responsibility difficult to outsource.
In animation, video compositing, generative systems or immersive environments, thinking about ecological impact should begin long before the production, publication or promotion phase. The 5R principle (Refuse, Reduce, Rethink, Replace, Reuse), adapted from sustainability frameworks, may offer a clear structure for decision-making during the artistic process[1].

Refusal means asking the following questions: does this piece need to be that long? Does the showreel need autoplay? Does the immersive 3d environment deepen the idea, or simply amplify it? In animation and compositing, every additional layer, every re-render, every export moves away from the idea of sustainability. As Sandy Dähnert boldly puts it, "The best low-carbon and low-waste digital product is the one that does not exist."

1 This 5R rule description is adjusted to digital art context; it builds on recommendations from following publications: Cycle Up! Sustainable Creativity 2025, Ecological Guide for Public Art in Turku 2025, Regenerative Digital Transformation Sustainable Pathways Report 2025, Culture for Climate 2022 guide and Sandy Dähnert approach to eco web design, described or her portal www.greentheweb.com

Reduction is about shorter films instead of endless loops, 2D where 3D adds little beyond surface, fewer effects, fewer iterations, fewer technical redundancies, and finally: smart file compression, if applicable, done by dithering or colour reduction. In a culture that equates quality with intensity, this approach feels almost countercultural.

Rethinking shifts the perspective from the image to its lifespan. The questions are: how will this work circulate, will it require permanent hosting, high-lumen projection, constant hardware updates? Digital does not eliminate impact - it merely displaces it. What appears light on the screen may be heavy in infrastructure. As Sara Szostak advises: "even if we are optimistic about a digital tool we use, we should critically reflect on its possible negative consequences before we start working with it".

Replacing asks for substitution possibilities: replace autoplay video with still frames, animation with simple coding (script-based movement is much faster to render, but can carry more conceptual weight than a fully rendered 3d environment).

Reuse slows down the cycle of novelty and hyperproduction. Reusing assets, systems and formats not only reduces workload, but also disrupts the logic of the endless production cycle. Reuse can also mean maintaining and adapting existing works instead of building them from scratch for each event or exhibition. "It is all about mindset — about asking what we already have before extracting something new.", says Joanna Murzyn. In the current instant-creation era, longevity can be more radical than innovation.

It is worth emphasizing that the 5R rule does not only apply to artists. Curators, along with institutions, are those who define art value criteria and technical requirements. Commissioners decide what kind of art they really want. The ecology of digital art lies less in individual action than in systemic thinking. Between what we can produce and what truly needs to exist, low-waste practice begins.

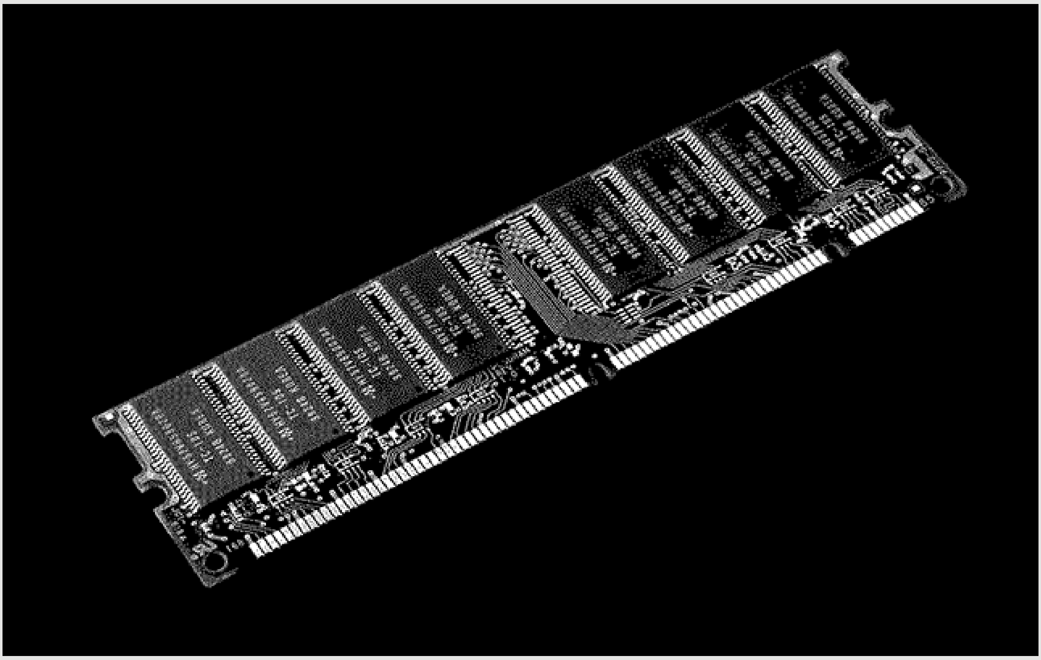


Illustration 1.4. Example of the dithering technique used to significantly reduce the file size and data weight of images published online while maintaining visual clarity.

Illustration 1.5. Fragment of the experimental digital installation *Water[false]* (2026) by Sylwia Żółkiewska. The project explores and implements low-waste principles within contemporary digital art practice

FUTURE (RE)GENERATIONS?

Sustainable art is art that does not compromise the ability of future generations to meet their own needs — not only material, but also cultural and cognitive. The future of art - and of us - will not be decided by a single manifesto or technological breakthrough. It will rather be shaped through everyday decisions, often invisible ones: an artist choosing a shorter format, a curator limiting technical scale, a designer compressing a file, an audience deciding what to watch, scroll or ignore. Voting with one's feet - or rather with one's views and clicks - can be the most efficient effort.

Why does drawing attention to this issue matter? It is rather certain that human online activity will be rising and what it means is more electrification, more computation, more hardware and more data created, transferred and stored. This trajectory will not shift on its own. Renewable energy or quantum computing may change the infrastructure, but they will not erase global demand. As more regions strive to reach the technological standards long established in Europe and North America - the same regions that shaped much of contemporary design and art discourse - global energy consumption will continue to grow.

The question, then, is not whether technology develops, but what we choose to value. Will technical novelty and monumentalism remain synonyms for quality? Or can coherence and responsibility gain equal value and such a digital art can be promoted and exhibited?

Low-waste digital art does not promise a total solution. It accepts compromise, imperfection, glitch and contextual decisions. What it offers is alignment - between intention, infrastructure and consequence. In a world where image creation and sharing is instant and unlimited, choosing less may be one of the few remaining ways to make them matter.

And this is where ecological and mental questions converge. The same excess that strains energy grids also strains our attention span. The same hypercreativity that increases carbon emissions accelerates cognitive overload. Sustainable digital art and design, then, is not only about reducing environmental impact. It is also about restoring perceptual balance and creating artworks that do not exhaust the (v)users before they can move them.

2.

INTERVIEWS WITH EXPERTS SUMMARY

As part of the project, I conducted three online interviews with experts, the themes of which I developed in the article and followed when creating a model of ecological practices. Each conversation had a different dynamic, pace, and focus—from ethical and philosophical to institutional to highly technical considerations. Therefore, I treat them not as a set of answers to the same questions, but as three different perspectives that complement each other.

What emerges most strongly from these conversations is the link between ecology and the attention economy. The topic of overproduction—of images, content, events, travel, updates—recurred in various forms throughout the conversations. Each of my interlocutors emphasized that environmental and mental resources are depleted under the pressure of visibility, the pace of institutional production, and the need for constant mobility. Thus, the climate crisis and the attention crisis are not two separate phenomena, but result from the same logic of excess and scaling. Ecology in artistic practice raises questions about the size, rhythm, form, and frequency of messages.

1. INTERVIEW WITH JOANNA MURZYN

My conversation with Joanna Murzyn, a technology activist and designer working in the field of regenerative design, focused on the responsibility of creators operating online. The starting point was the overproduction of images and the question of whether artists and designers can treat their online presence as neutral.

In our conversation, we touched on the topic of online portfolios and promotional activities on social media, which, when added up globally, place a burden on both us, humans, and the environment. As Joanna pointed out, every update, animation, or autoplay generates real energy and infrastructure costs. The problem is not visibility itself, but thoughtlessness and succumbing to the pressure to constantly publish and “feed the algorithm.”

An important theme was the issue of double standards: can artists afford to travel extensively by plane in the name of art when we expect others to restrict their travel? The conversation did not provide simple answers, but it did point to the need for ethical consistency. Creativity does not exempt us from responsibility. The most important conclusion: caring for the environment is not an addition to design practice, but an integral part of it.

JOANNA'S RECOMMENDATIONS:

- designing a portfolio as a permanent structure, not an endless feed,
- limiting heavy elements on pages (video, animation, excessive graphics),
- thinking about the quality of visibility rather than its intensity,
- treating mobility as an ethical decision, not an industry given.

Joanna Murzyn – technology activist and regenerative designer. She works at the intersection of communication technologies, community practices, and field research. She combines scientific knowledge with reflection on the relationships between people, nature, and digital code, co-creating solutions based on shared responsibility.
www.murzyn.website

2. INTERVIEW WITH SARA SZOSTAK

The conversation with Sara Szostak concerned ecology in an institutional context – curating, exhibition production, and residency programs. The focus was on the tension between programmatic ambition and environmental constraints. The most important observation was that sustainability in a cultural institution is not about one-off “green” gestures, but about redefining the entire process. It means thinking about the transport of works, exhibition materials, the frequency of events, but also about the well-being of the team and artists.

The theme of conscious downscaling as a strategy for quality and responsibility emerged. Sara proposed a shift from the logic of production to the logic of care—fewer events, more time; less spectacle, more relationships. We also discussed whether the cultural sector can be a leader in the shift towards an ecological approach. Although culture cannot solve systemic problems, it can shape imagination and practices. The main conclusion: an institution can become a laboratory for change if it starts to act consistently and transparently externally.

SARA'S RECOMMENDATIONS:

- taking environmental criteria into account at the planning stage,
- building local partnerships instead of defaulting to international mobility,
- documenting and analyzing the production footprint of exhibitions,
- practicing transparency, including on the issue of compromises.

Sara Szostak – a curator with a background in art and IT, working at the Centre for Contemporary Art Ujazdowski Castle. She combines art and technology, exploring their impact on contemporary culture. She creates narrative and participatory projects that analyze the ecological, social, and political consequences of technological development.
www.srszstk.com

3. INTERVIEW WITH SANDY DÄHNERT

The conversation with Sandy Dähnert focused on the ecology of digital design and UX/UI responsibility. The starting point was the thesis that web design influences both emissions and user behavior.

According to Sandy, designers have real agency. Choosing renewable energy-based hosting, a lightweight CMS, limiting video and tracking tools, or setting a page weight limit are concrete decisions that reduce carbon footprint. At the same time, user experience design can either reinforce or weaken the culture of overconsumption.
Sandy emphasized that eco-friendly design also has functional benefits: faster loading, greater accessibility, and less cognitive overload. It is not "aesthetics of scarcity," but more conscious and effective design.

The topic of the psychology of change was also important – the interface can support more responsible user decisions. Ecology on the web is not only about infrastructure, but also about the relationships we build with our audience.

SANDY'S RECOMMENDATIONS:

- introducing page weight limits as a universal design rule,
- choosing green hosting based on renewable sources and lightweight themes,
- minimizing the number of fonts, colors, shapes, and animations,
- designing the user path to reduce the number of clicks (and therefore steps and pages),

Sandy Dähnert – UX/UI designer and founder of Green the Web. She has been involved in digital design for over a decade, combining it with social and climate activism. She supports creators and companies in developing environmentally friendly, accessible, and socially responsible websites and applications.
www.greentheweb.com

3.

EXAMPLES OF OPERATIONAL CLIMATE FOOTPRINT CALCULATIONS FOR SELECTED DIGITAL ACTIVITIES

The calculations below cover the operational energy footprint of digital content production and distribution. They focus on energy, data transmission, mobility, and printing. They do not take into account emissions and environmental costs associated with equipment manufacturing, raw material extraction, infrastructure construction, or social working conditions in technology supply chains.

It is very difficult to fully estimate the actual environmental cost of digital activities today. Technology companies, platforms, and data centers do not provide detailed data. There are online calculators available, but they are usually limited to CO_2e emissions, ignoring other important environmental and social aspects.

In practice, the following aspects, among others, remain outside the scope of these calculations:

- **Embedded carbon** – emissions associated with the manufacture of laptops, phones, graphics cards, servers, and data center infrastructure. ICT sector research indicates that 40-80% of the footprint of devices is attributable to the production phase, not use.
- **Mining of raw materials and metals** – landscape degradation, water consumption and pollution, tailings, heavy metal contamination of soil. Rare earth metals (e.g., neodymium, praseodymium, europium, terbium, yttrium), as well as cobalt and tantalum, are essential for the production of screens, batteries, and electronic components.

- **Semiconductor production** – consumption of clean water, chemicals, and energy in clean rooms.
- **Working conditions and social costs** – documented cases of child labor in cobalt mining, informal e-waste recycling in West Africa, exposure to toxins in electronics dismantling processes.
- ***E-waste*** – short life cycle of devices, export of used equipment, burning of cables and printed circuit boards, soil and water contamination.
- **Infrastructure** – concrete and steel in server rooms, cooling systems, fiber optic construction.
- **Water consumption** – for cooling data centers, chip production, and raw material extraction.

This means that the following calculations are a simplified, operational fragment of a much broader system. These calculations allows to see the proportions in the carbon footprint of contemporary digital creation and to discuss about what elements of artistic practice and circulation we can change with more clarity.

The basic assumptions I used for the calculations:

- Average EU electricity emissions: ~0.25 kg CO_2e / kWh
- Data transfer: 0.05 kWh / GB (average IEA / ICT literature)
- 1 km driven in a combustion engine passenger car: ~0.2 kg CO_2e
- European flight (average, 1 person, 1000 km): ~250 kg CO_2e
- Train (1000 km): ~20–40 kg CO_2e

I based my assumptions on data from the EEA, IEA, DEFRA, and ICT literature (Malmodin & et. al 2018; Andrae 2020). The values used are conservative averages for the EU.

METHODOLOGY

The calculations are inspired by the Life Cycle Assessment (LCA) method, in accordance with ISO 14040 and 14044 standards. LCA consists of four stages:

- **Defining the objective and scope** – here we define the functional unit (i.e., what exactly we are measuring) and the boundaries of the system (what we include in the analysis and what remains outside it).
- **Inventory analysis** – a summary of all inputs (energy, materials) and outputs (emissions, waste) related to the activity under study.
- **Impact assessment** – conversion of data into specific impact categories, such as carbon footprint, water consumption, or other environmental indicators.
- **Interpretation** – critical analysis of the results to identify areas of greatest impact and make optimization decisions.

In my calculations, I use a simplified, operational version of this method: I focus on the creation, publication, and exhibition phases to capture those elements over which the artist or curator has real influence.

EXAMPLE 1: POST

Functional unit (FU)

- 1 graphic post (3 MB) + 1,000 views.

System boundaries (operational)

- I take into account data transmission and network infrastructure energy according to the basic assumptions.
- I do not take into account equipment production or the energy consumption of recipients' devices.

Input data (inventory)

- file size: 3 MB (0.003 GB)
- number of views: 1000
- total transfer: 3 GB
- energy intensity of transmission: 0.03–0.14 kWh/GB
- energy emission intensity: 494 g CO_2/kWh

Calculation

- 3 GB × 0.03–0.14 kWh = 0.09–0.42 kWh
- 0.09–0.42 kWh × 494 g CO_2 = 44–207 g CO_2e

Result

- 1,000 views of a static post (with graphics or photos, no video) generate approx. 44–207 g CO_2e (operational layer).

Impact assessment

- For a functional unit (1 graphic post 3 MB + 1,000 views), the operational climate footprint is 44–207 g CO_2e. This is comparable to approx. 1 km driven in a combustion engine car or a few minutes of HD video streaming. This value only includes data transmission and network infrastructure energy, excluding equipment manufacturing and infrastructure construction.

Interpretation

- In isolation, a single post has little impact, but emissions increase with the number of generative iterations, the use of video (significantly higher transfer), the autoplay and infinite scroll environment, and the scale of reception. Globally, 1–2 billion posts are published daily by over 5 billion users. With a conservative assumption of an average of 100 g CO_2e per post, this amounts to 100,000 tons of CO_2e per day. The conclusion is systemic: it is not a single post, but the scale of content production and platform architecture that generate a significant environmental burden.

EXAMPLE 2: WEBSITE WITH AN ART PORTFOLIO

Functional unit (FU)

- A website weighing 2 MB, 10 subpages, 10,000 visits per year. I assume that one visit means loading 10 subpages.

System boundaries (operational)

- The analysis covers data transmission and server infrastructure energy (hosting). It does not cover equipment production, energy consumption by user devices, or data center construction.

Input data (inventory)

- 2 MB × 10 subpages equals 20 MB per visit.
- 10,000 visits per year means 200,000 MB, or 200 GB of transfer.
- I assume an energy intensity of transmission of 0.05 kWh/GB and an average energy emission in the EU of 0.25 kg CO_2e/kWh.

Transmission calculation

- 200 GB × 0.05 kWh = 10 kWh per year.
- 10 kWh × 0.25 kg CO_2e = 2.5 kg CO_2e per year.
- To this must be added the hosting of a small website, estimated at 5–20 kg CO_2e per year, depending on the provider and energy mix.

Result (operational, annual)

- A portfolio website generates approx. 7–22 kg CO_2e per year (transmission + hosting).

Impact assessment

- 7–22 kg CO_2e corresponds to approx. 40–100 km of driving in a combustion engine car or 1–2 days of average energy consumption in an apartment. For a single website, this is not much.

Interpretation

- The problem becomes apparent when scaled up. If, hypothetically, 7.5 million digital creators in the EU have similar websites, this amounts to 75,000 tons of CO_2e per year, assuming an average of 10 kg per website. This is still the variant without video. Embedding autoplay video (e.g., 10 MB) can increase transfer by 5–10 times, and with it, emissions. The conclusion remains systemic: it is not a single page, but the scale and video-centric presentation model that increase the environmental footprint.

Good practices

- The weight and emissions of a website are influenced by the resolution and number of images, the presence of video (especially autoplay), external fonts and scripts, the number of page views, and the quality of hosting. Limiting resolution to real needs, compressing images, reducing video, and choosing hosting based on renewable energy can significantly reduce the operational footprint of a website.

EXAMPLE 3: 3D VIDEO INSTALLATION

Functional unit (FU)

- Production of a 10-minute 3D animation in 4K quality and its monthly exposure (30 days, 8 hours per day).

System boundaries (operational)

- I include energy consumption during rendering and energy consumed during display (projection/screen).
- I do not include equipment production (GPUs, projectors, monitors), equipment transport, or author mobility.

Input data (inventory): production

- Assumption: 300 W (0.3 kW) computer.
- Moderate variant:
- 50 hours of rendering (including testing)
- 0.3 kW × 50 h = 15 kWh
- 15 kWh × 0.25 kg CO_2e = 3.75 kg CO_2e

Realistic variant (common in practice):

- 200 hours of rendering
- 0.3 kW × 200 h = 60 kWh
- 60 kWh × 0.25 kg CO_2e = 15 kg CO_2e

Input data (inventory): exposure

- 300 W projector for 30 days, 8 hours per day:
- 0.3 kW × 240 h = 72 kWh
- 72 × 0.25 kg CO_2e = 18 kg CO_2e
- 100 W LED monitor under the same conditions:
- 0.1 kW × 240 h = 24 kWh
- 24 × 0.25 = 6 kg CO_2e

Operating result

- 3D production (200 h of rendering) + monthly projection with a projector:
- approx. 33 kg CO_2e

Impact assessment

- The production of a 10-minute 3D animation (200 hours of rendering) together with monthly projection results in a total of approx. 33 kg CO_2e, which corresponds to approx. 160 km of driving in a combustion engine car.
- For comparison, generative animation created in code, without frame rendering, generates approximately 0.45 kg CO_2e for 30 hours of work on a 60 W laptop. This means that in the production phase, full 3D rendering can be 10–30 times more energy-intensive than generative animation.

Interpretation

- In video installations, the exposure footprint is sometimes equal to or greater than the production footprint. A month-long screening can exceed the emissions associated with rendering alone. At the same time, a single flight to an event (1,000 km, approx. 250 kg CO_2e) exceeds the footprint of the entire production and exhibition of the work many times over. Similarly, publishing a film on a video platform and thousands of views can generate emissions comparable to its production.
- It is worth adding that generating animations using AI models (e.g., Midjourney, Runway) shifts a significant portion of energy consumption to cloud infrastructure. Unlike local rendering, where energy consumption is relatively measurable (device power × operating time), in the case of generative models, the actual computational cost remains largely unknown. Multiple iterations, tests, and prompts can significantly increase the energy footprint, even if a single generation seems "lightweight."
- The conclusion is consistent with previous examples: logistical decisions and distribution models often have a greater impact than the creative technique itself.

Best practices

- Limiting the number of rendering hours (working on proxies, testing at lower resolutions), reducing scene complexity, choosing smaller formats, and shortening exposure times reduce the operational footprint. Limiting the number of generative iterations and doing conceptual work before using AI models also reduces the hidden computational footprint in data centers.
- In exhibition spaces, monitors are usually less emissions-intensive than projectors. At the organizational level, limiting air travel and using hybrid models remain key.

EXAMPLE 4: DIGITAL EXHIBITION (8 WEEKS) AND ITS PROMOTION

Functional unit (FU)

- An 8-week digital exhibition, open 5 days a week, 8 hours a day, with 10 artists participating.

System boundaries (operational)

- I take into account the energy consumption of exhibition equipment, the mobility of people, the printing of promotional materials, and simplified promotion on social media.
- I do not take into account the production of the works exhibited, the production of equipment, the construction of the building's infrastructure, or the energy consumption of online viewers.

Input data (inventory)

Exhibition equipment

- 6 screens at 100 W = 600 W
- 4 projectors at 300 W = 1200 W
- 2 VR sets at 200 W = 400 W
- Total 2200 W, or 2.2 kW

Operating time: 8 weeks × 5 days × 8 hours = 320 hours

- 2.2 kW × 320 h = 704 kWh
- 704 kWh × 0.25 kg CO_2e = 176 kg CO_2e

Mobility (exhibition opening)

- 4 flights of 1000 km = 4 × 250 kg = 1000 kg CO_2e
- 6 train journeys (average 500 km) = approx. 90 kg CO_2e
- Total mobility: approx. 1090 kg CO_2e

Printouts

- 500 leaflets and 100 posters: estimated 30–50 kg CO_2e

Promotion on social media

- 4 static posts and 4 short videos, 1000 views each.

Based on previous calculations, emissions of several to a dozen or so kilograms of CO_2e (depending on the share of video). On the scale of the entire exhibition, this impact remains relatively small compared to mobility.

Operating result

- Equipment: 176 kg
- Mobility: 1090 kg
- Printing: approx. 40 kg
- Promotion: several to over a dozen kg
- Total: approx. 1,300 kg CO_2e

Impact assessment

- 1,300 kg CO_2e corresponds to approximately 6,500 km driven in a combustion engine car or one intercontinental flight per person. It is also similar to the annual per capita emissions in some countries of the Global South.

Interpretation

- In this model, mobility accounts for by far the largest share of emissions – many times greater than the energy consumption of the exhibition itself. Equipment and printing are significant, but do not dominate the balance. Digital promotion is relatively small compared to transport.
- The conclusion is consistent with previous examples: in the case of artistic events, logistical decisions are key, not just technical ones. Hybrid attendance,

limiting flights, and rethinking the scale of the event can change the balance much more than optimizing projection parameters.

Good practices

- The greatest potential for reduction in this case lies in limiting flights and choosing rail transport. Hybrid models (remote appearances, recorded presentations, local representations of work) are also recommended, as they can reduce the environmental footprint of an exhibition more than optimizing equipment.
- In terms of display, the choice of technology and duration are important. LED monitors consume less energy than projectors, and reducing opening hours or automatically turning off devices when there is no public traffic effectively reduces emissions.
- In terms of production and set design, smaller formats, limiting the number of devices, reusing existing equipment, and designing modular installations instead of disposable structures are helpful.
- In the area of promotion, it is worth limiting video where it is not necessary, compressing materials, and planning communication instead of generating excess.

HOW TO READ THESE CALCULATIONS?

The examples and calculations presented show the operational footprint of creative activities in the field of digital art: energy consumption, data transmission, mobility, promotion, and printing of promotional materials. These are elements that an artist or curator can realistically change: shorten the exhibition time, change the production technique, limit flights, reduce file sizes, or rethink the promotion model.

At the same time, this is only a fragment of a larger system. The calculations do not include the costs of equipment production, raw material extraction, data center construction and cooling, water consumption in semiconductor production, industrial waste, or working conditions in global technology supply chains. These elements require much more complex cradle-to-grave analyses. This means that the operating values presented represent the lower limit of the actual environmental cost.

However, four examples provide clear conclusions. First, individual digital activities are relatively low-carbon. Second, scale—the number of recipients, the number of publications, the length of exposure—radically changes this balance. Third, transport very often dominates production, as in analog creation. Fourth, promotion on social media, especially on platforms based on video, autoplay, and endless scrolling, can generate a larger footprint than the work itself — as is the case with material art projects.

The LCA method, which is the reference point for these calculations, refers to hotspot analysis: after collecting data, the areas with the largest share of emissions are identified. On this basis, a decision can be made — whether to optimize the process or question the system. In the examples presented, there are two such hotspots: mobility (transport) and promotion on social media.

This shifts the focus beyond the technology itself. The problem is not only rendering efficiency or file compression, but also a cultural model that rewards frequency, visibility, and constant content production. The calculations allow us to see the proportions, but they do not replace the question of why we produce and promote so much and so often. In this context, the question arises as to whether artistic practice, subordinated to the logic of results and visibility, loses some of its cognitive potential. Analogous to the academic principle of publish or perish, the pressure of constant presentation and promotion may marginalize those forms of artistic work in which in-depth reflection, experimentation, and processuality are of key importance.

4.

MODEL OF ECOLOGICAL DIGITAL PRACTICES

The original model of ecological digital practices developed as part of the project is reflective-decisive in nature. Inspired by the Life Cycle Assessment (LCA) method and the 5R principles (*Refuse, Reduce, Rethink, Replace, Reuse*), it treats the natural environment as a full stakeholder in the process. It presents the creative process and highlights decisions that have a real impact on the environmental footprint, the scale of content production, and the circulation of images. It reminds us that the effects of these decisions are cumulative – both energetically and cognitively.

Structurally, it divides the creative process into stages according to its logic: from concept, through design and production, to distribution, promotion, and archiving. It reveals the relationships between the scale of the project, the choice of technique, mobility, emissions, and the intensity of image distribution, rather than treating them as separate issues. It is also iterative: after identifying the most burdensome elements, previous decisions can be revisited and adjusted. It operates on two scales. At the micro level, it supports the optimization of specific design, exhibition, and logistical (transport) choices. At the macro level, it reveals the systemic mechanisms of overproduction, visibility pressure, and attention overload that shape contemporary artistic practices. The model focuses not solely on reducing the operational footprint but aligns with regenerative practices—it assumes reduction and re-scaling of the project at the conceptual stage. It considers the reuse of existing materials, extending the life cycle of existing elements, and consciously limiting the circulation of content.

STAGES OF CREATIVE PROCESS

STAGE 1 — CONCEPT

Does this work need to be created?
Are the digital format and its scale justified?
Can the length, resolution, or complexity be simplified?
Are multiple AI iterations necessary?

- Clearly define the project's purpose and its purpose.
- Choose the smallest appropriate format.
- Reduce the scale at the ideation level.
- Set iteration and generation limits, and work analogue.

STAGE 2 — DESIGN

What tools do you choose?
Are you working locally or in the cloud?
Are 3D and hyperrealistic textures necessary?
Can you use existing assets?

- Choose adequate tools, not the maximum.
- Prefer local work when possible.
- Use 2D or code, reduce textures and colors.
- Use existing assets or those from the public domain.

STAGE 3 — PRODUCTION

How many hours do tests and renders take?
Are you working at the highest quality without need?
How many "trial" versions are created?
Is the hardware running in energy-saving mode?

- Limit the number of renders and test exports.
- Render at the target quality only once.
- Don't generate more versions than you need.
- Enable eco mode and disable unnecessary previews.

STEP 4 - OPTIMIZE

Is the file compressed?
Is the format efficient?
Does the project contain unnecessary layers and data?
Is the quality appropriate for real-world use?

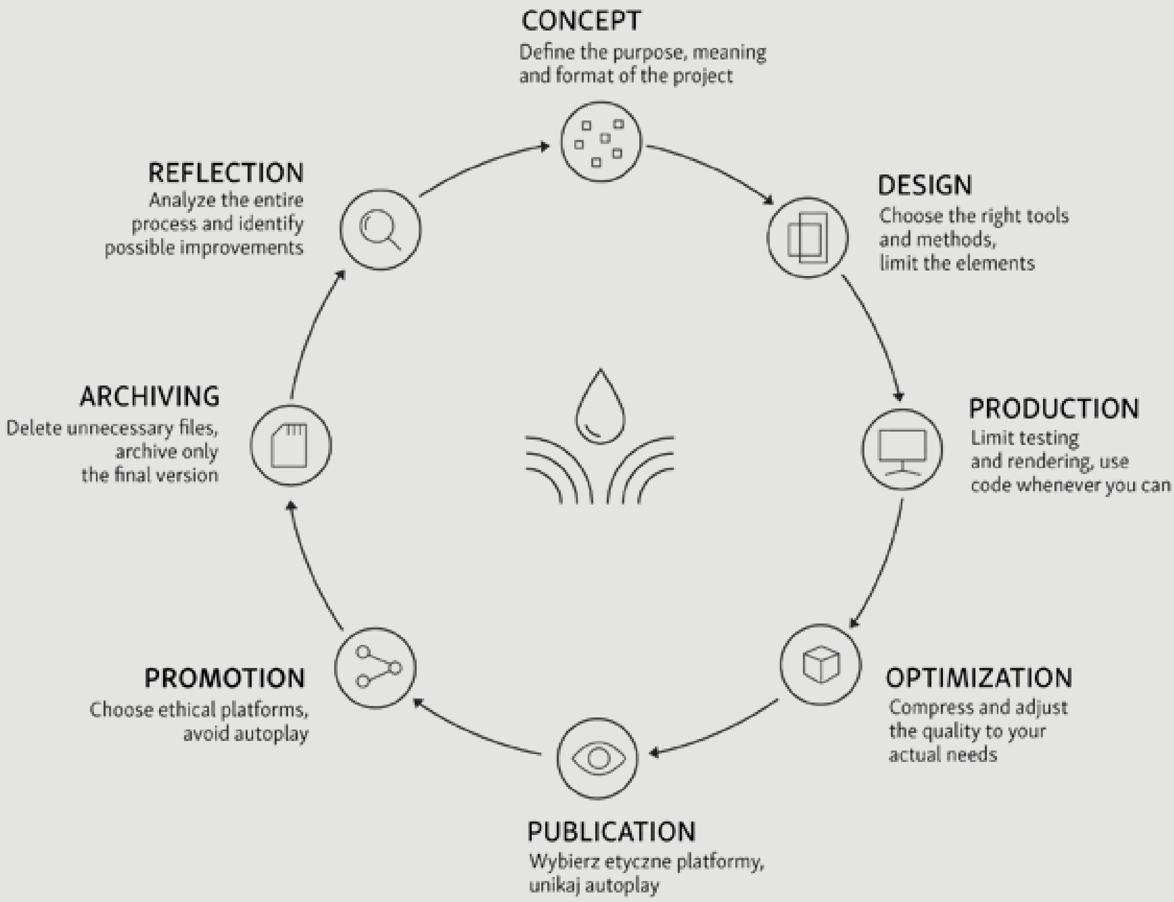


Illustration 1.6 . This infographic presents an eight-stage, iterative model of sustainable practices in digital art. The structure corresponds to the successive phases of a project's lifecycle: concept, design, production, optimization, publication, promotion, archiving, and reflection. Each stage consists of two layers. The first consists of short questions that help pause and examine the project's assumptions: does the work need to be created, are the format and scale justified, which tools to choose, how many versions to generate, is the quality adequate to the intended audience, and does publication and promotion not excessively increase reach and mobility. The second layer consists of specific operational decisions that address these questions: limiting scale, setting iteration limits, selecting energy-efficient tools, reducing renders, compressing files, disabling autoplay, eliminating printing, limiting the number of platforms, and minimizing cloud storage. The model is iterative in nature. The final stage, reflection, involves identifying the most energy-intensive or unnecessary project elements and revisiting previous decisions. This means that each subsequent project can be planned more consciously than the previous one.

- Compress before publishing.
- Choose an efficient format (e.g., WebP, AV1, H.265).
- Remove unnecessary layers and metadata.
- Adjust the quality to the intended audience.
-

STEP 5 - PUBLISH

Does the platform support infinite scroll and autoplay?
Is autoplay enabled?
Do you publish to multiple platforms simultaneously?
Is there an alternative with a smaller footprint?

- Choose your platform wisely.
- Disable autoplay where possible.
- Limit content duplication.
- Consider less intensive distribution.

STEP 6 - PROMOTION

Who is the target audience for your promotional campaign?
Are you creating additional printed materials or merchandise?
Are you generating additional content just for the promotion?
Are you planning a flight trip for the promotion?

- Define your target audience precisely, their preferences, and challenges.
- Avoid print and merchandise.
- Don't create content solely for algorithms.
- Choose rail transport or a hybrid model.

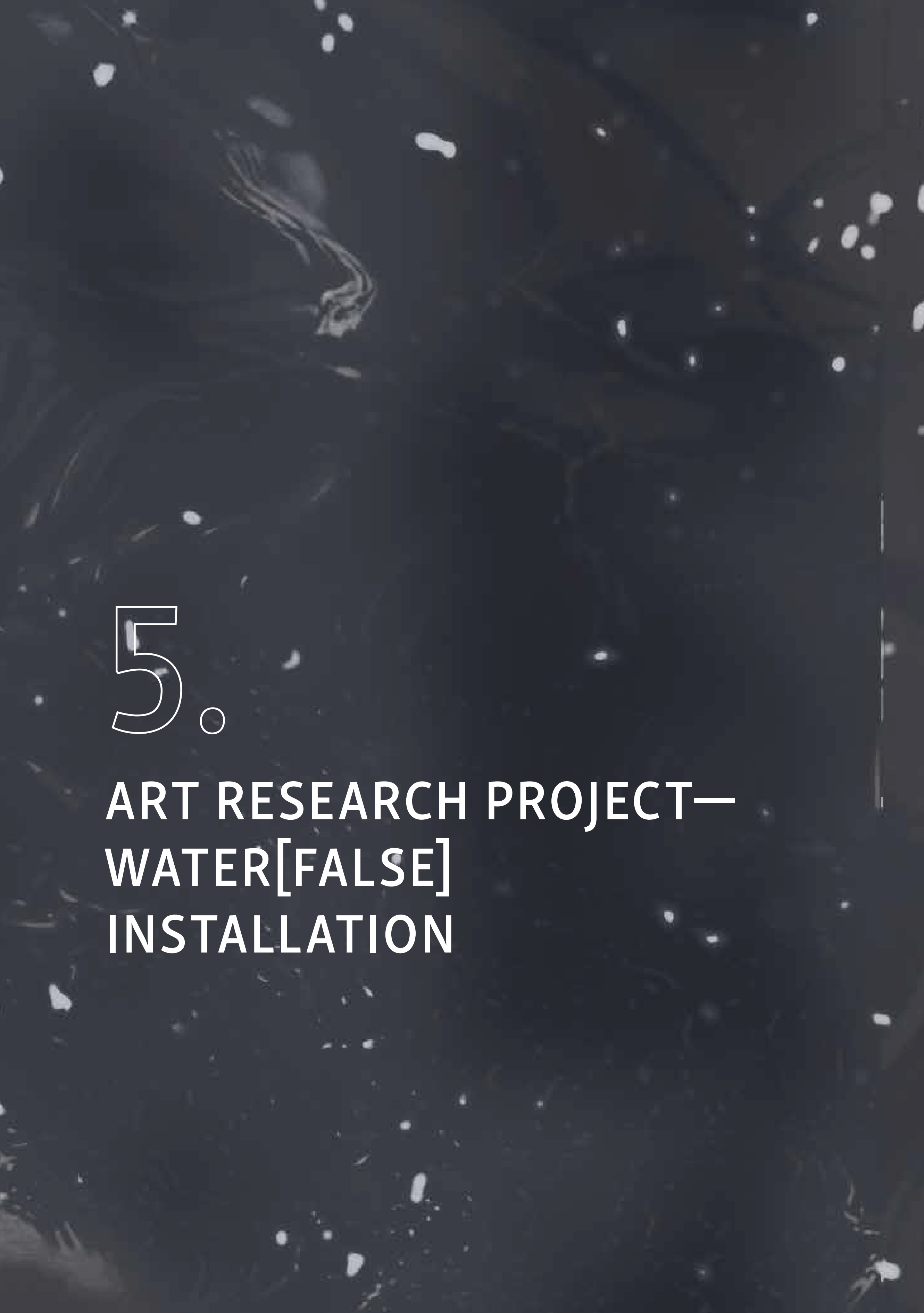
STEP 7 - ARCHIVING

How many versions of the project and files do you keep?
Do you delete unused materials?
Is backup proportional to your needs?
Is cloud storage justified?

- Archive only the final version.
- Delete unnecessary drafts.
- Limit the number of backups.
- Minimize cloud storage.

STEP 8 - REFLECTION

What was the most energy-intensive?
What was unnecessary?
What increased scale but not value? What can be simplified next time?



5.

ART RESEARCH PROJECT— WATER[FALSE] INSTALLATION

As part of an artistic and research project exploring ecological practices in digital art, I created a three-channel video installation that is both an artistic realization and a practical experiment in low-waste digital art and conscious reduction of image overproduction.

During my work, I tried to follow the guidelines developed in the ecological practices model. In accordance with the refuse principle in the 5R logic, the installation, originally planned as a five-channel installation, was reduced to three projections. The reduction in scale was not a compromise, but rather a conscious gesture: limiting the number of channels reduces the hardware and energy load, while at the same time strengthening the viewer's perceptual concentration. However, I decided to use more than one channel to see if more complex installations could be created in an ethical and ecological way, without escalating resources.

TECHNOLOGICAL LAYER

I created the installation in the familiar environment of After Effects, using simple animations, compositing, and basic effects (color key, brightness/contrast, blur, hue/saturation). I avoided heavy simulations, 3D effects, and redundant layers. Where possible, I used scripts to reduce rendering time and computing power requirements. The visual material was largely reused from my earlier projects, such as Dual AI Mirror

(2025) and the single-channel installation Water[false], which I created in the fall of 2025. Both of these works were created using my own method of peaceful hacking of AI models by saturating them with reference images from the public domain. This strategy had a dual dimension: it restored agency and authorship to the generated images and fed the models with legal and open materials instead of relying on resources of unclear origin (more in the publication [A]inspirations, 2024).

I supplemented the reused materials with resources from the public domain (including Pixabay) and music from the Free Music Archive portal. The song "Recollection" by French artist Mariette Auvray's project Water Sark, licensed under CC-BY, combines a raw lo-fi aesthetic with a reflective, looped motif that introduces a dimension of memory and intimacy to the installation.

In the spirit of low-waste, I limited the color scheme of the installation—shades of black, white, and gray dominate, with minimal presence of navy blue, blue, and green. I tried to avoid stroboscopic effects and sudden transitions, taking into account the perceptual accessibility and sensitivity of neurodiverse people. The reduction of color works here as both an aesthetic and ecological decision: fewer layers and less processing mean less visual noise and less strain on the system.

THE SYMBOLIC AND THEORETICAL LAYER

The starting point for the installation was theoretical research, interviews with artists, curators, and designers: Sara Szostak, Joanna Murzyn, Sandy Dähnert, and netnographic research—my own notes and a collection of images on the theme of water, generated by AI and collected on my Pinterest portal. This collection is very diverse: it includes quasi-realistic images resembling thousands of ordinary photographs, as well as bizarre, kitschy depictions of waterfalls, elves by lakes, and sunsets in the so-called AI slop convention. These visual cultural carbon copies, reproduced ad infinitum and devoid of context, are a symptom of generative overproduction.

The title Water[false] – "false waterfall" – becomes a metaphor for this situation: the stream of images flooding the Internet, social media, and mental space is not only an unnecessary aesthetic cliché, but also a real consumption of energy and water needed to cool the servers that support the AI infrastructure.

That is why I do not generate new, spectacular images of water in the installation. Instead, I reconfigure existing materials – I transform them using simple effects and scripts, reduce, filter, recover, and "treat" them. The waterfall in Water[false] is not a romantic landscape, but a vehicle for questioning the value of the image and creative co-responsibility.

In creating the installation, I was guided by the principles formulated in my Agile Art Manifesto (2025), in which I describe the philosophy of adaptive art—art that adapts to different formats and contexts, fitting into the principles of digital minimalism on a conceptual, aesthetic, production, and exhibition level.

The song “Recollection” by Water Sark and natural sound effects reinforce the reflective and humanistic dimension of the installation. The looped, meditative nature of the composition and the lyrics evoking fragments of everyday life contrast with the impersonal generativity of the images, restoring them to the scale of human experience and memory.

WATER[FALSE] AS A REGENERATIVE PRACTICE

The installation is part of a broader trend of regenerative practices in design and digital art. It is not limited to minimizing the “footprint,” but attempts to create a “handprint” —a working model that can be replicated as a strategy.

Reducing channels, reusing materials, working with public domain resources, limiting color, shortening rendering time – these are production decisions resulting from an ecological philosophy of creation. They prove that a multi-channel form does not necessarily mean a drastic increase in resource consumption.

The work proposes a shift in focus:

- from production to process,
- from effect to infrastructure,
- from excess to selection,
- from acceleration to deceleration.

In this sense, it operates simultaneously in two registers: aesthetic and systemic. The climate crisis and the attention crisis are intertwined here – image overload is both an energy and a cognitive problem. The installation responds to this double crisis through reduction, reuse, and conscious composition.

THE CREATIVE PROCESS IN THE MODEL OF ECOLOGICAL PRACTICES ON THE EXAMPLE OF WATER[FALSE] 3.0

STAGE 1 — CONCEPT (reduction before production)

I began the process with the question: does the installation have to be created in a new, expanded form? The answer was reduction – from five to three channels – and the decision to reuse previous materials and use resources available in the public domain instead of generating new ones.
I set an AI iteration limit for a few additional materials and decided not to overproduce additional variants. Part of the conceptual work was done analogously — in notes and simple sketches — before I started working with digital tools.

STAGE 2 — DESIGN (adequacy instead of maximization)

Instead of reaching for 3D engines and advanced AI simulations, I chose an environment I know — After Effects — and a simple 2D aesthetic based on compositing and code.
I created the project locally, not in the cloud. I used existing resources: my own materials from previous projects and public domain images as references for AI. I limited the color palette and avoided excessive effects and transitions.

STEP 3 — PRODUCTION (iteration control)

I planned one final render in the target quality. Tests were conducted in lower resolution, and the number of exports was kept to a minimum.
I did not generate additional "spare" versions. The equipment operated in energy-saving mode, and previews and cache were cleared on an ongoing basis to avoid accumulating unnecessary data.

STAGE 4 — OPTIMIZATION (removing excess)

Before publication, the files were compressed to formats appropriate for the presentation method. Unused layers, precompositions, and metadata were removed.
The quality was adjusted to the actual viewing conditions — not to the maximum capabilities of the equipment, but to the planned exhibition and online context.

STEP 5 — PUBLICATION (conscious distribution)

The installation was not unnecessarily multiplied across all possible platforms; I limited myself to one — YouTube.

STAGE 6 — PROMOTION (communication minimalism)

The promotion was directed at a specific, defined audience—the art, design, and digital ecology communities with whom I am in contact via LinkedIn and Facebook. I decided not to generate additional content solely for algorithms and used static graphics instead.

STEP 7 — ARCHIVING (data control)

Only the final version of the project and the necessary source files were archived. Drafts, tests, and unused variants were deleted. The number of backups was limited, and the files are stored locally.

STEP 8 — REFLECTION (learning from the process)

I estimate that the most energy-intensive stage was testing generative animations with AI, as well as previews and high-quality test renders. The experiment showed that decisions made at the concept stage, rather than during production itself, have the greatest impact on the scale of the project.

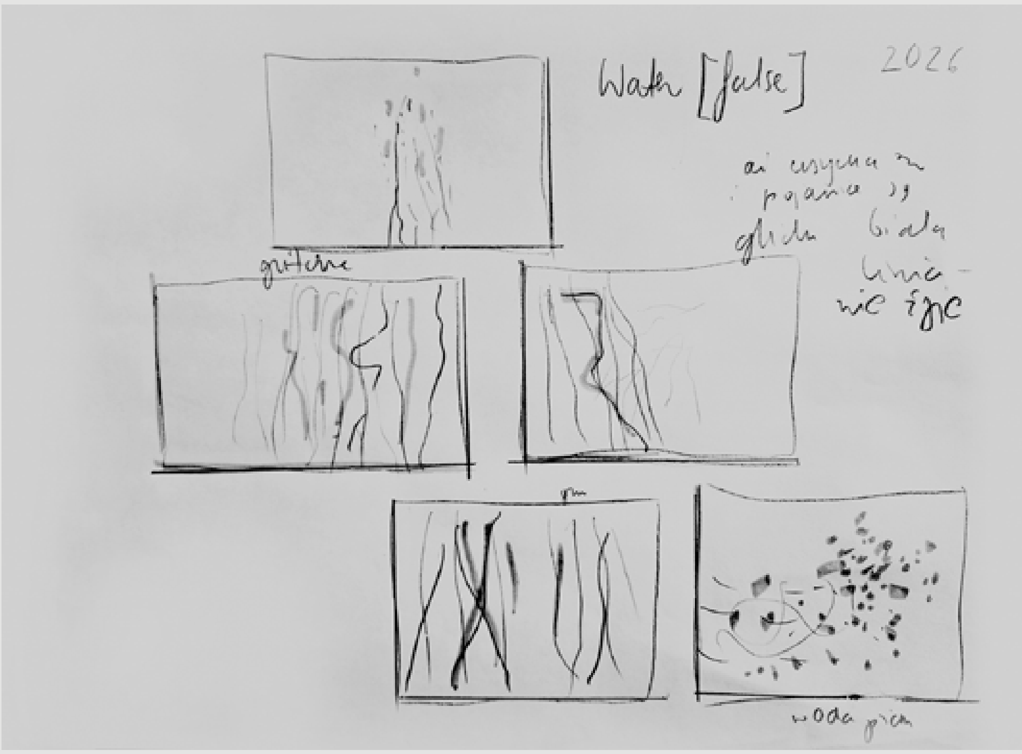
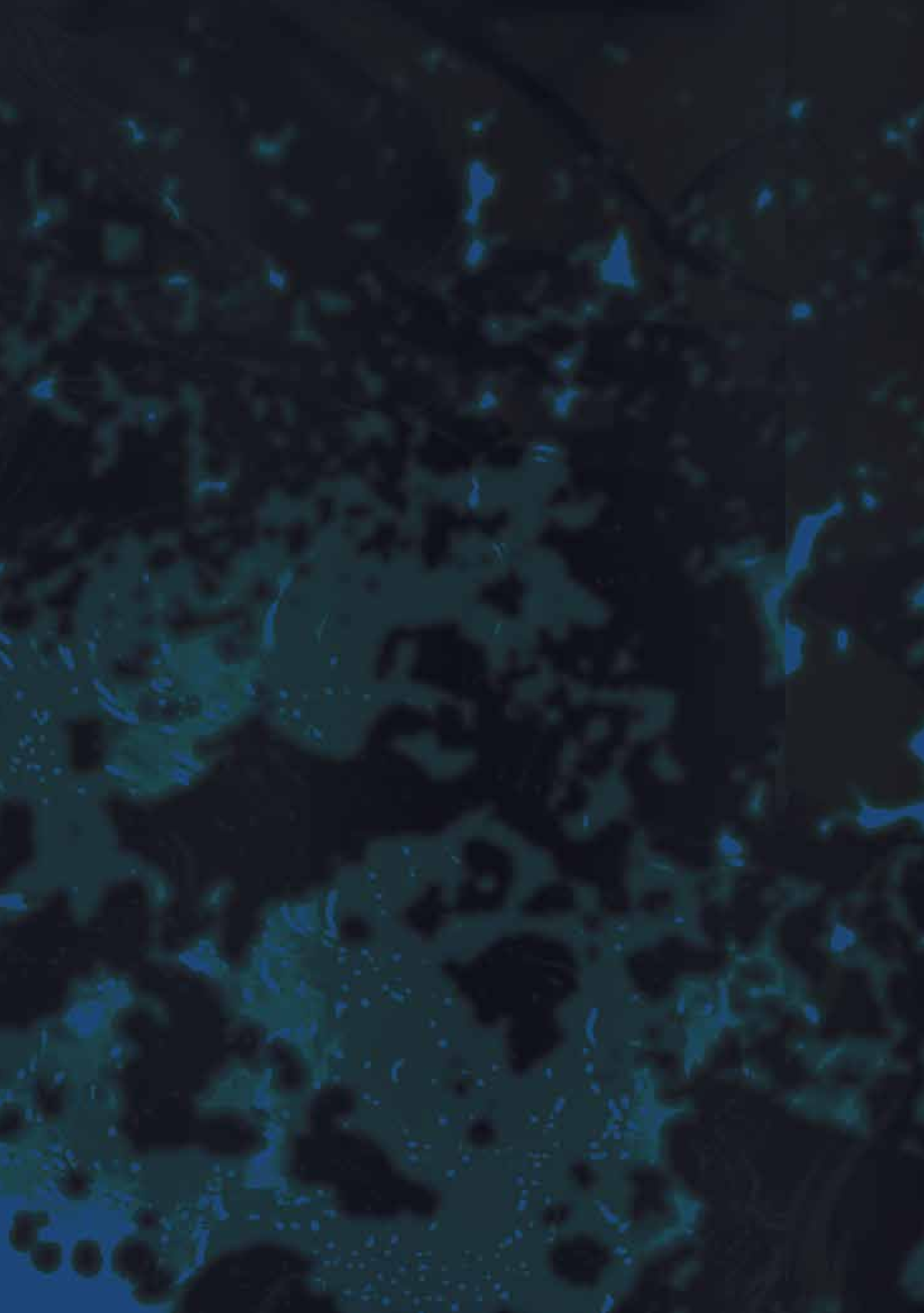
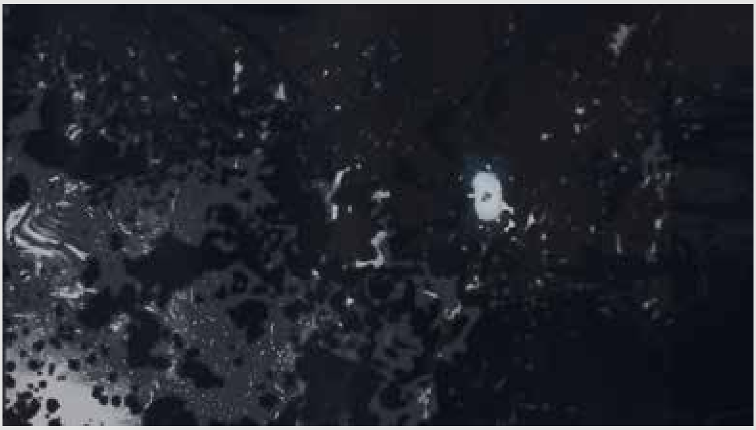
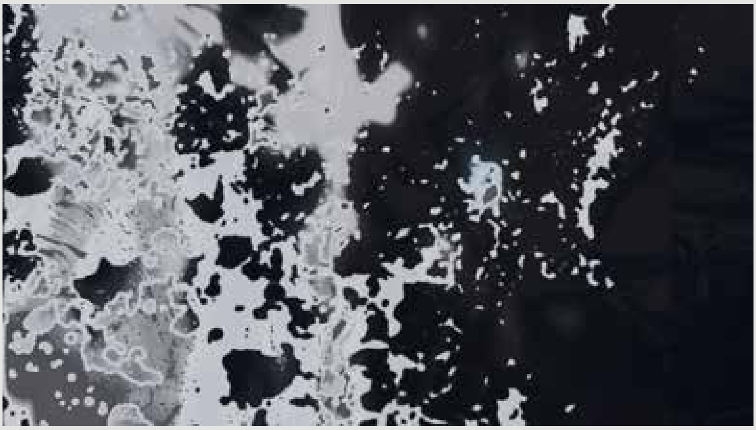


Illustration 1.7. *Water[false]* installation concept scetches

INSTALLATION
— SELECTED KEYFRAMES







THREE-CHANNEL PRESENTATION
OF THEINSTALLATION



SUMMARY

The analyses, interviews, and experiments collected in this publication show that digital practice today finds itself at a point of tension: between the technological possibility of unlimited production and a growing awareness of its costs. This tension is not solely technical or environmental—it also has a perceptual and existential dimension.

The philosophy of new technologies has long drawn attention to the ambivalence of progress: every acceleration generates new forms of loss. Virilio wrote about dromology—the logic of speed—which reorganizes not only space, but also time and attention. In this light, the overproduction of images is not merely an aesthetic or energy problem, but a symptom of a deeper reorganization of experience.

Further steps, therefore, do not consist of simple "restriction," but of careful testing of new processes, rhythms of work, and circulation. The model of ecological practices requires further verification in specific projects, as do the tools for estimating the digital production footprint. It also seems important to deepen research on the relationship between visibility in social media and the real environmental and psychological costs of creativity.

Perhaps the key question is no longer just how much we produce, but what kind of relationship with technology we want to co-create. Do we treat it as a tool for intensification and acceleration, or as a medium that requires selectivity, limitation, and responsibility?

In this sense, further work on this issue does not lead to unambiguous solutions, but to more conscious participation in the system that we co-create – materially, energetically, and perceptually.

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Sylwia Żółkiewska

TRANSLATION
Sylwia Żółkiewska, Milena Górczyńska and DeepL

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