

## RESISTING **DIGITAL COLONIALISM**



- Targets **Indigenous Peoples' territories**<sup>1</sup> – **80% of biodiversity**<sup>2</sup>
- Converts **Nature** into **digital property** for **foreign and corporate control**<sup>3</sup>
- **Land Grabs** with a click of a mouse
- Sells **crypto biodiversity** and **carbon credits** for **greenwash**<sup>4</sup>
- **Spies on Indigenous Peoples** with **satellites, remote sensors, AI and drones**<sup>5</sup>
- **Pollutes**,<sup>6</sup> drives **Extractivism**,<sup>7</sup> and is compared to **Columbus' invasion**<sup>8</sup>



### **DIGITAL COLONIALISM: GRABS, TOKENIZES and DOLLARIZES NATURE**

**Converts Nature into digital files, a form of private property, which can be sold as carbon credits**

Based on the **CO2lonialism** of **REDD**,<sup>9</sup> **digital colonialism**<sup>10</sup> chops up, commodifies and converts **Nature**, Indigenous Peoples' territories and sacred animal relatives into **DIGITAL FILES** called "**tokens**."<sup>11</sup> These virtual tokens are a new form of **PRIVATE PROPERTY** stored on **blockchain**, which can be **SOLD** as **biodiversity** and **carbon credits** for **cryptocurrency** to polluters for **GREENWASH**. Thus, Indigenous Peoples' territories, where 80% of Nature's biodiversity is found,<sup>12</sup> become "**natural capital**," "**a new asset class**,"<sup>13</sup> and "**digital gold**."<sup>14</sup> Wall Street is turning **Mother Earth** into **money** and plans to **expropriate Indigenous Peoples' lands and oceans**.<sup>15</sup> *Look sharp!* Now your territory could be grabbed with the click of a mouse.<sup>16</sup>

### **Digital Files and Carbon Credits can include OWNERSHIP of Territory**

The virtual carbon trader Moss.Earth,<sup>17</sup> which received the 2020 UN Global Climate Action Award,<sup>18</sup> sells **crypto carbon credits** in the form of digital files called **Non-Fungible Tokens (NFTs)** for "**ownership**"<sup>19</sup> of chunks of the Amazon rainforest to **polluters** such as the Brazilian airline GOL.<sup>20</sup> According to *Ledger Insights*, each NFT "**represents the ownership of one hectare of the Amazonian forest**..."<sup>21</sup> Moss.Earth sells carbon credits based on supposedly "**safeguarding 250,000 hectares of the Amazon**."<sup>22</sup> If you think signing a crypto carbon credit contract is a good way to get money for your community, you should know that in 2023, the **value of NFTs crashed to zero**.<sup>23</sup> Since carbon offsets are a total **scam**,<sup>24</sup> it is fitting that one of Moss.Earth's investors was called "**JIVE**,"<sup>25</sup> and that the value of its MCO2 crypto carbon credits<sup>26</sup> has also crashed.<sup>27</sup>

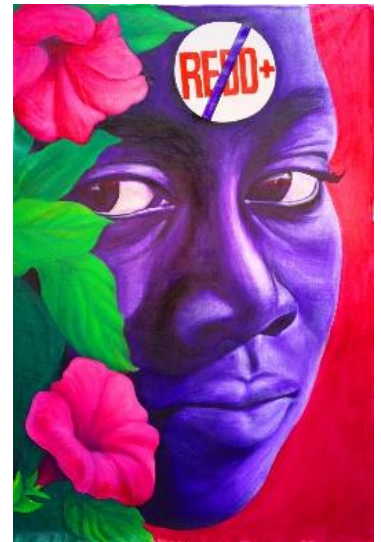
### **AMAZON GRAB**

Without the free, prior, informed consent of the thousands of Indigenous Peoples and communities who live in the Amazon, the company **O.N.E. Amazon** plans to **convert the entire Amazon into 750 million digital files** called "**Digital Assets Securities**" representing **one hectare each**, and sell them for **\$100 a piece** using **cryptocurrency and blockchain technologies**.<sup>28</sup> According to O.N.E. Amazon, "each security will represent the perceived value of one hectare of biome in the Amazon rainforest, backed by a **30-year preservation agreement**

over that land.”<sup>29</sup> O.N.E. Amazon alleges to have already secured “an impressive long-term land preservation agreement for **50 million hectares** of rainforest, **an area larger than Spain**.”<sup>30</sup> This grand plan<sup>31</sup> hopes to cash in on the Amazon’s “**\$1 trillion**” “Nature-Positive Economy.”<sup>32</sup> In 2022, O.N.E. Amazon signed a 30-year contract for the **Shuar People’s** territory in Ecuador, which could potentially entitle it to sell carbon credits.<sup>33</sup> In 2023, a concerned assembly of the Interprovincial Federation of Shuar Centers (FICSH) passed a resolution to cancel the contract,<sup>34</sup> but that may prove to be impossible.<sup>35</sup> Alarming, digital colonialism may not even bother to sign contracts with communities. *Debt from Above: The Carbon Credit Coup* explains how industrialized countries and big banks are using secret **foreign debt** negotiations to **force Latin America to acquiesce to digital colonialism for carbon credits** and its **massive land and ocean grabs** without consulting communities at all.<sup>36</sup>

### **Big Brother: HIGH TECH SURVEILLANCE GRIDS**<sup>37</sup>

According to *Threats of Digital Capitalism: The Case of O.N.E. Amazon* published by Acción Ecológica,<sup>38</sup> a **neocolonial high-tech surveillance grid of the Amazon** called the “**Internet of Forests (IoF™)**”<sup>39</sup> is being created by firms like O.N.E. Amazon to constantly **monitor, expropriate and control Indigenous Peoples’ territories**.<sup>40</sup> All over the world, Big Brother uses fancy tools: **live-streamed drone footage**, **satellite** imagery, LiDAR, which creates **3D replicas of Nature**,<sup>41</sup> Synthetic Aperture Radar-Ground Moving Target Indication,<sup>42</sup> geospatial intelligence, **remote sensors** and **Artificial Intelligence**, whose mega-polluting datacenters<sup>43</sup> gobble land,<sup>44</sup> water<sup>45</sup> and energy.<sup>46</sup> This technology “datifies” Nature, and “delivers **real-time ecological intelligence**”<sup>47</sup> via low-power radios and Wi-Fi.<sup>48</sup> Such grids could serve to **sell digital assets including biodiversity and carbon credits, claim land rights**,<sup>49</sup> and **restrict and even criminalize communities’ way of life**;<sup>50</sup> as well as facilitate **extractivism, biopiracy, patents on Life**,<sup>51</sup> **biotech**,<sup>52</sup> and **Debt-for-Nature Swaps**.<sup>53</sup>



Sacred animal relatives like **whales** and **jaguars** are also being tracked with GPS, satellites and Artificial Intelligence to use their bodies and habitats for offsets.<sup>54</sup> High tech and the “datafication of biodiversity”<sup>55</sup> can generate **DIGITAL TWINS**,<sup>56</sup> **3D virtual replicas of Nature**,<sup>57</sup> the ocean<sup>58</sup> and **whales**.<sup>59</sup> Digital twinning, used for war,<sup>60</sup> is now applied to **false solutions to the climate emergency** like offsets,<sup>61</sup> CCS and Net Zero.<sup>62</sup>

### **Could DIGITAL COLONIALISM criminalize Indigenous Peoples?**

According to O.N.E. Amazon *et al*, “all collected data can be used to create AI training sets aimed at identifying and resolving threats to biodiversity.”<sup>63</sup> “Sustainably” *Surveilling and Tokenizing Nature: The Case of O.N.E. Amazon* explains that “data could be used to train an **AI that deploys ‘swarm intelligence DRONES** that are in contact with sensors on the ground’ to ‘manage **threats and shocks to biodiversity**.’”<sup>64</sup> If **Indigenous Peoples** and their **lifestyle** are considered “threats” to biodiversity or drivers of deforestation, they could be **criminalized** or even **harmed**. Is **cyber-militarization** of the Amazon on the horizon?

### **PROTECT YOUR COMMUNITY: DO NOT SIGN CONTRACTS**

**RESEARCH** if your territory is being expropriated for digital colonialism. Search the name of your territory or state and carbon. Carbon credits are also called REDD, **Nature-Based Solutions**, Net Zero, offsets, insets, onsets, contributions, Nature-Based Tokens and silly crypto coin names. **Don’t be tricked into thinking you will get rich!** Carbon markets and crypto tend to **CRASH!**<sup>65</sup> **Mother Earth is Sacred, NOT tech bros’ toy!**<sup>66</sup> **NO OFFSETS!**

<sup>1</sup> [Sustainability Directory](https://prism.sustainability-directory.com/scenario/tokenization-of-nature-a-new-asset-class/) Tokenization of Nature a New Asset Class. Nature, now tradable: a digital revolution or ecological risk? June 10, 2025.

<https://prism.sustainability-directory.com/scenario/tokenization-of-nature-a-new-asset-class/>

"The risk of **'carbon colonialism'** also looms large, where developed countries use tokenized nature in developing countries to offset their emissions, without addressing their own [unsustainable consumption patterns](#) or providing adequate financial and technological support for developing countries to transition to low-carbon economies." "Exacerbation of Inequality and Environmental Injustices could further marginalize vulnerable communities and **deepen the gap between the rich and the poor**. For example, if land tenure and resource rights are not clearly defined and equitably distributed, tokenization schemes could inadvertently **dispossess indigenous communities and local populations of their traditional lands and livelihoods**." **"Corporations or wealthy individuals** could accumulate large holdings of nature-based tokens, gaining **control over vast swathes of natural resources** and potentially **dictating access** and use rights to the **detriment of local communities**. This form of **'biopiracy 2.0'** could **concentrate wealth and power in the hands of a few, while those who are most dependent on nature for their survival are further disenfranchised...**" [*Emphasis added.*]

<sup>2</sup> IPS. "Indigenous Peoples Lands Guard 80 Per Cent of World's Biodiversity". February 9, 2017.

<http://www.ipsnews.net/2017/02/indigenouspeoples-lands-guard-80-per-cent-of-worlds-biodiversity/>

<sup>3</sup> Unlimited Hangout. Mark Goodwin and Whitney Webb. Debt From Above: The Carbon Credit Coup. April 4, 2024.

<https://unlimitedhangout.com/2024/04/investigative-reports/debt-from-above-the-carbon-credit-coup/>

"Latin America is quietly being forced into a carbon market scheme through regional contractual obligations – enforced by the satellites of a US intelligence-linked firm – which seeks to create an inter-continental "smart grid," erode national and local sovereignty, and link carbon-based life to the debt-based monetary system via a Bitcoin sidechain... At its core is a serpentine set of contractual obligations, held at the municipal level, cast throughout Central and South America, upheld by an intelligence-linked satellite company, and controlled by a private sector consortium of green-washed financiers aiming to turn the region's forests into equity and carbon credits." *On banks as partners see:* Happy Eco News. Grant Brown. Amazon Rainforest Conservation Blockchain Initiative Launched by CAF and D.N.E. Amazon. March 28, 2025.

<https://happyeconews.com/amazon-rainforest-conservation-blockchain/>

<sup>4</sup> Ibid.

<sup>5</sup> Ibid.

<sup>6</sup> Forbes. Yusuf Sar. The Silent Burden Of AI: Unveiling The Hidden Environmental Costs of Data Centers By 2030. August 16, 2024.

<https://www.forbes.com/councils/forbestechcouncil/2024/08/16/the-silent-burden-of-ai-unveiling-the-hidden-environmental-costs-of-data-centers-by-2030/>

<sup>7</sup> Derechos Digitales Lucía Camacho Emergencia climática y centros de datos: el nuevo extractivismo de las Big Tech. August 1, 2025.

<https://www.derechosdigitales.org/recursos/emergencia-climatica-y-centros-de-datos-el-nuevo-extractivismo-de-las-big-tech/>

<sup>8</sup> Brighter Future. Origin Story Interview W/ Walid Al Saqqaf, Rebalance Earth. February 22, 2023.

<https://www.brighterfuture.studio/blog/origin-story-interview-w-walid-al-saqqaf-rebalance-earth>

"I love what I'm doing— I love it. It's like being Christopher Columbus at the front of Santa Maria and discovering new land, which no one has been to before."

<sup>9</sup> Observer. Rich Stockdale. Understanding the New Paradigm of Natural Capital Investment: Once the domain of campaigners, natural capital has entered mainstream finance, reshaping investment in ecosystems worldwide. August 29, 2025.

<https://observer.com/2025/08/future-of-natural-capital-as-an-asset-class/>

"This represents a profound paradigm shift: nature's services are no longer just to be protected, but also priced, traded and embedded within financial systems. To understand how we reached this point, it's worth tracing the origins of natural capital markets in early carbon trading systems, which laid the groundwork for today's more sophisticated structures..."

<sup>10</sup> [Sustainability Directory](https://prism.sustainability-directory.com/scenario/tokenization-of-nature-a-new-asset-class/) Tokenization of Nature a New Asset Class. Nature, now tradable: a digital revolution or ecological risk? June 10, 2025.

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"Tokenization, by its very nature, frames nature as an asset class, primarily valued for its economic utility. This instrumental valuation risks **overshadowing the inherent worth of ecosystems, biodiversity, and natural landscapes, independent of their market price.**"

"When nature is primarily seen as a source of tradable tokens, there is a danger of reducing complex ecological systems to simplistic metrics and overlooking the intangible cultural, spiritual, and aesthetic values that nature provides. This **commodification** creep could lead to a shift in societal attitudes, where nature is increasingly perceived as **a mere commodity to be exploited for economic gain, rather than a fundamental life support system to be respected and protected.**" [*Emphasis added.*]

"Exacerbation of Inequality and Environmental Injustices could further marginalize vulnerable communities and **deepen the gap between the rich and the poor**. For example, if land tenure and resource rights are not clearly defined and equitably distributed, tokenization schemes could inadvertently **dispossess indigenous communities and local populations of their traditional lands and livelihoods.**" [*Emphasis added.*]

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June 10, 2025. <https://prism.sustainability-directory.com/scenario/tokenization-of-nature-a-new-asset-class/>

<sup>11</sup> BitPanda. What is a token? A simple guide. October 27, 2025. <https://www.bitpanda.com/en/academy/what-is-a-token-a-simple-guide#how-can-you-buy-tokens>

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"Asset tokens are a form of digital assets that map real, tangible values such as real estate, art or precious metals on the blockchain. What do these tokens mean for investors? They allow you to acquire **fractions of assets**, thus democratizing the concept of ownership. For example, you can purchase a tokenized gold certificate at a lower price." [*Emphasis added*]

<sup>12</sup> IPS. "Indigenous Peoples Lands Guard 80 Per Cent of World's Biodiversity". February 9, 2017.

<http://www.ipsnews.net/2017/02/indigenouspeoples-lands-guard-80-per-cent-of-worlds-biodiversity/>

<sup>13</sup> Unlimited Hangout. Mark Goodwin and Whitney Webb. "Sustainably" Surveilling and Tokenizing Nature: The Case of O.N.E. Amazon August 28, 2024.

<https://unlimitedhangout.com/2024/08/investigative-reports/sustainably-surveilling-and-tokenizing-nature-the-case-of-o-n-e-amazon/>

<sup>14</sup> Ibid.

"The architect of BlackRock's ETFs has teamed up with a group of companies tied to US intelligence and US government debt trading to tokenize the Amazon rainforest and borgify it with a large-scale sensor network in order to create a new form of 'digital gold.'"

<sup>15</sup> Sustainability Directory. Tokenization of Nature a New Asset Class. Nature, now tradable: a digital revolution or ecological risk? June 10, 2025.

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June 10, 2025. <https://prism.sustainability-directory.com/scenario/tokenization-of-nature-a-new-asset-class/>

<sup>16</sup> Nemus. EN: The Future of Nemus: An Update on Our Mission | by Nemus | Medium

<https://medium.com/@Nemus.Earth/en-the-future-of-nemus-an-update-on-our-mission-fccfa3e6e52b>

"The property Nemus used for the Genesis Drop is currently under litigation."

Reuters. Context. Andre Gabetto Fabio, Avi Asher-Schapiro. "Brazilian prosecutors probe company over Amazon forest NFT sale". July 29, 2022.

<https://www.reuters.com/article/brazil-cryptocurrency-environment/brazilian-prosecutors-probe-company-over-amazon-forest-nft-sale/idUSL8N2Z9ARW>

<sup>17</sup> Tracxn. Moss. [https://tracxn.com/d/companies/moss/\\_zG9J8\\_QTDvk3a-kMqiETB9kGy\\_-mi\\_8ofN\\_vqcXS7Q](https://tracxn.com/d/companies/moss/_zG9J8_QTDvk3a-kMqiETB9kGy_-mi_8ofN_vqcXS7Q)

<sup>18</sup> NetZero. Our Partner | Moss.Earth. <https://netzero.earth/moss/>

"Moss: Leading the Movement to Preserve Amazon Forest. Moss.earth, founded in 2020 in Brazil, leads in Amazon preservation via carbon credit projects.

They've transacted 10 million tons of credits, safeguarding 250,000 hectares of the Amazon. Awarded the 2020 UN Global Climate Action Award and recognized in the 2023 Environmental Finance Ranking. A paradigm for green start-ups, Moss.earth champions global environmental conservation and carbon reduction."

<sup>19</sup> Ledger Insights. "Moss Earth Sells NFTs for Ownership of Amazon Forest to Prevent Deforestation". February 11, 2022.

<https://www.ledgerinsights.com/moss-earth-sells-nfts-for-ownership-of-amazon-forest-to-prevent-deforestation/>

Moss Earth. <https://moss.earth/en>

YouTube. Moss Forest: Technology to Revolutionize the Carbon Market. 2023. <https://na.moss.earth/>

<sup>20</sup> Reuters. Gabriel Araujo. Top Brazilian airlines say passengers not willing to pay to offset emissions. August 8, 2023.

"It does not bring me any pride, but I think it's important to share that when we started our program, there was a very low adherence of 0.01%," GOL's Operations Control Center Director Eduardo Calderon said at an event hosted by Boeing (BA.N), [opens new tab](#) and Roundtable on Sustainable Biomaterials. When the company upgraded its system to add the carbon-offset platform to its own website, giving the travelers the option of buying the carbon credits at the same time they purchase the ticket, adherence jumped some 30%, Calderon said. But that means it rose from 0.01% to 0.013%. Azul's sustainability manager, Filipe Alvarez, told the same panel that even though at seven months the carrier's carbon-offsetting program was far newer than GOL's, results from its first months were similar, with very low adherence."

Aeroflap. GOL: First Carbon Neutral route in Brazil completes 1 year, September 1, 2022

<https://www.aeroflap.com.br/en/gol-first-carbon-neutral-route-in-brazil-completes-1-year/>

Simple Flying. Daniel Martinez Garbuno. Incredible: GOL Neutralizes 7,295 CO2 Tons On One Route. September 3, 2022.

<https://simpleflying.com/gol-neutralizes-7295-co2-tons-one-route/>

Moss Earth. <https://moss.earth/en>

YouTube. Moss Forest: Technology to Revolutionize the Carbon Market. 2023. <https://na.moss.earth/>

<sup>21</sup> Ledger Insights. "Moss Earth Sells NFTs for Ownership of Amazon Forest to Prevent Deforestation". February 11, 2022.

<https://www.ledgerinsights.com/moss-earth-sells-nfts-for-ownership-of-amazon-forest-to-prevent-deforestation/>

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YouTube. Moss Forest: Technology to Revolutionize the Carbon Market. 2023. <https://na.moss.earth/>

<sup>22</sup> NetZero. Our Partner | Moss.Earth. <https://netzero.earth/moss/>

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<sup>23</sup> Marketplace. "Is it RIP for NFT?" December 22, 2023. <https://www.marketplace.org/2023/12/22/nft-market-crashes-value-worthless/>

<sup>24</sup> No REDD. <https://no-redd.com/>. REDD Monitor <https://reddmonitor.substack.com/>

<sup>25</sup> FBS. Moss.Earth. Operator of a carbon credits platform. Moss.Earth investors.

<https://www.fbs.com/company/moss.earth#about>

PR Newswire. [Moss.earth](#). Leading climate tech Moss.earth announces US\$ 10 million series A round to expand its web 3.0 applications in environmental markets. January 31, 2022. <https://www.prnewswire.com/news-releases/leading-climate-tech-mossearth-announces-us-10-million-series-a-round-to-expand-its-web-3-0-applications-in-environmental-markets-301471553.html>

<sup>26</sup> Cryptopedia. Moss.Earth and MCO2: Tokenizing Carbon Credits. [Luis Adame](#). October 15, 2023.

<https://www.gemini.com/cryptopedia/moss-earth-mco2-token-moss-carbon-credit-trading>

"MOSS.Earth is a global climate tech company focused on environmental services with global operations. In 2020, MOSS created the first carbon credit-backed token used to offset greenhouse gases, called Moss Carbon Credit (MCO2)."

<sup>27</sup> Coingecko. Moss Carbon Credit. MCO2 Price: \$0.07149. March 29, 2026.

<https://www.coingecko.com/en/coins/moss-carbon-credit>

<sup>28</sup> REDD Monitor. Chris Lang. "More details about ONE Amazon's proposal to preserve the Amazon biome with a digital asset security". January 25, 2024.

<https://reddmonitor.substack.com/p/more-details-about-one-amazons-proposal>

<sup>29</sup> REDD Monitor. Chris Ling. "ONE Amazon's US\$ Trillion Dollar Plan for the Amazon Basin." December 18, 2023.

<https://reddmonitor.substack.com/p/one-amazons-us1-trillion-plan-for>

<sup>30</sup> Ibid.

<sup>31</sup> D.N.E. Amazon. Project Impact Map. <https://oneamazon.com/impact-dashboard>

<sup>32</sup> REDD Monitor. Chris Ling. "ONE Amazon's US\$ Trillion Dollar Plan for the Amazon Basin." December 18, 2023. <https://reddmonitor.substack.com/p/one-amazons-us1-trillion-plan-for>

<sup>33</sup> Acción Ecológica. AMENAZAS DEL CAPITALISMO DIGITAL: El caso de One Amazon. January 30, 2023.

<https://www.accionecologica.org/observaciones-al-convenio-de-asociacion-entre-one-amazon-y-la-ficsh/>

"Como el convenio que firmó con la FICSH es muy general, es probable prever que los valores, tokens o activos, y su información digital contenida, estará asociada a mercados de carbono y servicios ambientales en el futuro o a otro tipo de negocios."

<sup>34</sup> REDD Monitor. Chris Lang. "In September 2022, ONE Amazon and the Shuar Federation in Ecuador signed a deeply inequitable Agreement. In February 2023, the Shuar Federation held an assembly and agreed to cancel the Agreement". February 23, 2023.

<https://reddmonitor.substack.com/p/in-september-2022-one-amazon-and>

<sup>35</sup> Yvonne Yanez. Acción Ecológica, Diálogos Ecológicos. Webinar. June 1, 2023.

<sup>36</sup> Unlimited Hangout. Mark Goodwin and Whitney Webb, Debt From Above: The Carbon Credit Coup. April 4, 2024.

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"Latin America is quietly being forced into a carbon market scheme through regional contractual obligations – enforced by the satellites of a US intelligence-linked firm – which seeks to create an inter-continental "smart grid," erode national and local sovereignty, and link carbon-based life to the debt-based monetary system via a Bitcoin sidechain... At its core is a serpentine set of contractual obligations, held at the municipal level, cast throughout Central and South America, upheld by an intelligence-linked satellite company, and controlled by a private sector consortium of green-washed financiers aiming to turn the region's forests into equity and carbon credits. "  
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<sup>37</sup> Unlimited Hangout. Mark Goodwin and Whitney Webb, Debt From Above: The Carbon Credit Coup. April 4, 2024.

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"While the goal is framed as "conservation" of the Amazon, the Satellogic-D.N.E. Amazon proposal seeks instead to enable the exploitation of a protected resource like never before while also building a **cybernetic surveillance grid** into one of nature's greatest monuments – not to ensure the forest's "health" – but to ensure the "integrity" of the digital asset security it is now poised to uphold." [*Emphasis added.*]

<sup>38</sup> Acción Ecológica. AMENAZAS DEL CAPITALISMO DIGITAL: El caso de ONE Amazon. January 30, 2023.

<https://www.accionecologica.org/observaciones-al-convenio-de-asociacion-entre-one-amazon-y-la-ficsh/>

<sup>39</sup> D.N.E. Amazon. Technology. How is forest conservation verified? <https://oneamazon.com/how-it-works>

"We use a combination of IoT sensors, satellite imagery, drone monitoring, and on-ground verification to ensure real-time monitoring of conservation activities and impact measurement."

<sup>40</sup> Diálogos Ecológicos. Yvonne Yanez. "Digitalized Capitalism". June 1, 2023.

<sup>41</sup> Aerial Precision. Ana Rouxinol. What Are Digital Twins and How Do They Relate to LiDAR? October 31, 2024.

<https://www.aerial-precision.com/blogs/blog/what-are-digital-twins-and-how-do-they-relate-to-lidar>

"As industries evolve toward data-driven solutions, the concept of **digital twins** is gaining prominence. These virtual replicas of physical assets and environments allow organizations to monitor, analyze, and improve their operations with unprecedented accuracy. But how do digital twins work, and why is **LiDAR technology** such a powerful tool in their creation? In this blog, we'll explain what digital twins are, how they benefit various industries, and how **Aerial Precision's LiDAR solutions** bring digital twins to life efficiently and effectively." [*Emphasis added.*]

<sup>42</sup> MDPI. Application of Digital Twin Technology in Synthetic Aperture Radar Ground Moving Target Intelligent Detection System.

Hui Liu *et al.* August 5 2024. <https://www.mdpi.com/2072-4292/16/15/2863>

"Abstract In recent years, the detection performance of SAR-GMTI (synthetic aperture radar-ground moving target indication) algorithm based on deep learning has always been limited by insufficient measured data due to the heavy operation complexity and high cost of real SAR systems. To solve this problem, this paper proposes an overall DT-based implementation framework for SAR ground moving target intelligent detection tasks. In particular, by virtue of a SAR imaging algorithm, a high-fidelity twin replica of SAR moving targets is established in digital space through parameter traversal based on the prior target characteristics of the obtained measured datasets. Then, the constructed SAR twin datasets is fed into the neural network model to train an intelligent detector by fully learning features of the moving targets and preset the SAR scene in the twin space, which can realize the robust detection of ground moving targets in related practical scenarios with no need for multiple and complex field experiments. Moreover, the effectiveness of the proposed framework is verified on the MiniSAR measured system, and a comparison with traditional CFAR detection method is given simultaneously."

<sup>43</sup> Environmental Burden of United States Data Centers in the Artificial Intelligence Era. Gianluca Guidi *et al.* 2025. <https://arxiv.org/pdf/2411.09786>

"The increasing demand for digital services has made data centers essential and widespread in modern society (4–6). In 2024, there were more than 7,945 data centers worldwide (7). Of these, 2,990 are located in the US (37%) (7). Globally, according to the International Energy Agency (IEA), energy consumption of data centers in 2022 was estimated to be between 240 and 340 terawatt hours (TWh), which represents approximately 1-1.3% of global electricity consumption (8). Data center

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energy consumption is projected to double by 2026, reaching 480-680 TWh worldwide (8). This **exceeds the energy consumption of Canada**, the country with the **sixth highest energy consumption in the world** (9)." [Emphasis added]

<sup>44</sup> The Guardian. Niamh Rowe. US farmers are rejecting multimillion-dollar datacenter bids for their land: 'I'm not for sale.' February 21, 2026. <https://www.theguardian.com/technology/2026/feb/21/us-farmers-datacenters>

<sup>45</sup> The Guardian. Luke Barrat *et al.* Revealed: Big tech's new datacentres will take water from the world's driest areas. April 9, 2025. <https://www.theguardian.com/environment/2025/apr/09/big-tech-datacentres-water>

<sup>46</sup> Forbes. Yusuf Sar. The Silent Burden Of AI: Unveiling The Hidden Environmental Costs of Data Centers By 2030. August 16, 2024.

<https://www.forbes.com/councils/forbestechcouncil/2024/08/16/the-silent-burden-of-ai-unveiling-the-hidden-environmental-costs-of-data-centers-by-2030/>

"In 2023, data centers are responsible for [approximately 2% of global electricity demand](#). This demand is further accelerated by the increasing use of AI and other data-intensive applications. The International Energy Agency estimates that the power consumption of data centers and cryptocurrency mining will increase by 80% worldwide from 2022 to 2026. In the EU, data center power consumption could increase by 60% by 2030."

CNN. Laura Paddison. [Scientists have found an alarming environmental impact of vast data centers](#) April 6, 2026.

<sup>47</sup> Unlimited Hangout. Mark Goodwin and Whitney Webb, Debt From Above: The Carbon Credit Coup. April 4, 2024.

<https://unlimitedhangout.com/2024/04/investigative-reports/debt-from-above-the-carbon-credit-coup/>

<sup>48</sup> Business Wire. Mato Grosso Government (Brazil) and D.N.E. Amazon Join Forces to Protect the Amazon Through an Innovative Conservation Finance Model. September 23, 2025. <https://www.businesswire.com/news/home/20250923260325/en/Mato-Grosso-Government-Brazil-and-D.N.E.-Amazon-Join-Forces-to-Protect-the-Amazon-Through-an-Innovative-Conservation-Finance-Model>

"In addition to financial investment, the agreement with D.N.E. Amazon will support the State Secretariat for the Environment (Sema) in its environmental protection efforts by deploying the Internet of Forests (IoF™), an advanced monitoring system powered by satellites, LiDAR, and sensors connected via LoRaWAN and Wi-Fi networks."

<sup>49</sup> Unlimited Hangout. Mark Goodwin and Whitney Webb, Debt From Above: The Carbon Credit Coup. April 4, 2024.

<https://unlimitedhangout.com/2024/04/investigative-reports/debt-from-above-the-carbon-credit-coup/>

"Latin America is quietly being forced into a carbon market scheme through regional contractual obligations – enforced by the satellites of a US intelligence-linked firm – which seeks to create an inter-continental "smart grid," erode national and local sovereignty, and link carbon-based life to the debt-based monetary system via a Bitcoin sidechain... At its core is a serpentine set of contractual obligations, held at the municipal level, cast throughout Central and South America, upheld by an intelligence-linked satellite company, and controlled by a private sector consortium of green-washed financiers aiming to turn the region's forests into equity and carbon credits. " *On banks as partners see:* Happy Eco News. Grant Brown. Amazon Rainforest Conservation Blockchain Initiative Launched by CAF and D.N.E. Amazon. March 28, 2025.

<https://happyeconews.com/amazon-rainforest-conservation-blockchain/>

<sup>50</sup> Acción Ecológica. AMENAZAS DEL CAPITALISMO DIGITAL: El caso de One Amazon. January 30, 2023.

<https://www.accionecologica.org/observaciones-al-convenio-de-asociacion-entre-one-amazon-y-la-ficsh/>

desInformémonos. El sueño de la razón. Silvia Ribiero. Control digital de territorios y pueblos. February 15, 2023.

<https://desinformemonos.org/control-digital-de-territorios-y-pueblos/>

"Al igual que con los servicios ambientales, se presenta a los indígenas como algo donde recibirán dinero y no tendrán que hacer nada, pero la contracara es que implica una intensa vigilancia y control de su territorio, que incluso les podría impedir seguir con actividades importantes para su subsistencia y formas de vida... En el contrato es ambigua la relación entre la imagen y el territorio en sí mismo, porque One Amazon se arroga asegurar la "protección" de la fuente de la imagen, es decir que podría incluso -más aún conjugado con otros objetivos y cláusulas abusivas del contrato- intervenir directamente para impedir que los Shuar usen su territorio, en función de su objetivo de "conservación" o protección ambiental."

<sup>51</sup> desInformémonos. El sueño de la razón. Silvia Ribiero. Control digital de territorios y pueblos. February 15, 2023. <https://desinformemonos.org/control-digital-de-territorios-y-pueblos/>

<sup>52</sup> D.N.E. Amazon. Biodiversity Data Monetization. Licensing Opportunities. <https://oneamazon.com/how-it-works>

<sup>53</sup> Carbon Credits. Debt-for-Nature Swaps Are Drawing Attention, Carbon Credits Play a Role. Jennifer I. November 9, 2022.

<https://carboncredits.com/debt-for-nature-swaps-are-drawing-attention-carbon-credits-play-a-role/>

CFFA. Andrew Standing. Galapagos Debt-Swap: "These deals are being used to privatize the management of strategic areas without the consent of those who inhabit these territories". June 9, 2025.

<https://www.cffacape.org/publications-blog/galapagos-debt-swap-these-deals-are-being-used-to-privatize-the-management-of-strategic-areas-without-the-consent-of-those-who-inhabit-these-territories>

"In December last year, your government announced that it had signed a deal with the **US government to open a military base on the Galapagos Islands**. **Unfortunately, it is hard not to wonder whether the US government's support for the Galapagos Bond had some part to play in getting the approval for the military base...** This swap allowed for the restructuring of Ecuador's debt with the aim of securing financing for the conservation of the **Hermadad Marine Reserve**, a 60,000 km<sup>2</sup> protected area that connects the Galápagos Islands with marine reserves in **Colombia, Panama, and Costa Rica**. **The primary justification for this initiative was the protection of biodiversity and the fight against illegal fishing, which necessitated enhanced maritime monitoring in the region. At the same time, in October 2023, Ecuador and the United States signed the 'Agreement on the Status of Forces' (SOFA), which establishes the legal framework for the presence of U.S. military personnel in Ecuador.**" [Emphasis added]

<sup>54</sup> GJEP. No Offsets! Indigenous Peoples Defend Our Territories and Sacred Relatives from the Colonialism of Carbon and Biodiversity Offsets. 2025.

<https://globaljusticeecology.org/no-offsets/>

<sup>55</sup> Unlimited Hangout. Mark Goodwin and Whitney Webb. "Sustainably" Surveilling and Tokenizing Nature: The Case of D.N.E. Amazon August 28, 2024.

<https://unlimitedhangout.com/2024/08/investigative-reports/sustainably-surveilling-and-tokenizing-nature-the-case-of-o-n-e-amazon/>

"The paper notes that the biodiversity data obtained under this framework could be used to develop new green bonds and derivatives that could be traded on a blockchain. To accomplish this, they propose the 'datafication of biodiversity,' which they define as 'the process of creating digital representations of various species in the

ecosystem.' They also propose 'data repurposing cascades,' which refers to 'the process of reusing collected biodiversity data for various purposes [...] that are not necessarily and directly connected to conservation efforts,' i.e. commercializing the biodiversity data they obtain."

<sup>56</sup> Ansys TwinAI. AI-Powered Digital Twin Software.

[https://www.ansys.com/products/digital-twin/ansys-twinai?utm\\_content=digital%20digital-twin%20cnprl6di%20contact%20contact-us%20ansys%20twinai-digital%20twin-nonbrand-search%20la%20en%20global%201162185688037415%2072636945579425%20&utm\\_campaign=70IPf0000HVxLTIAI&utm\\_campaign=product&utm\\_medium=paid-search&utm\\_source=bing&utm\\_term=ai%20digital%20twin%20simulation&plid=1162185688037415&cid=72636945579425&msclkid=2fcacd4f3a3d12b3a706a40a88c32589](https://www.ansys.com/products/digital-twin/ansys-twinai?utm_content=digital%20digital-twin%20cnprl6di%20contact%20contact-us%20ansys%20twinai-digital%20twin-nonbrand-search%20la%20en%20global%201162185688037415%2072636945579425%20&utm_campaign=70IPf0000HVxLTIAI&utm_campaign=product&utm_medium=paid-search&utm_source=bing&utm_term=ai%20digital%20twin%20simulation&plid=1162185688037415&cid=72636945579425&msclkid=2fcacd4f3a3d12b3a706a40a88c32589)

<sup>57</sup> Aerial Precision. Ana Rouxinol. What Are Digital Twins and How Do They Relate to LiDAR? October 31, 2024.

<https://www.aerial-precision.com/blogs/blog/what-are-digital-twins-and-how-do-they-relate-to-lidar>

"As industries evolve toward data-driven solutions, the concept of **digital twins** is gaining prominence. These virtual replicas of physical assets and environments allow organizations to monitor, analyze, and improve their operations with unprecedented accuracy. But how do digital twins work, and why is **LiDAR technology** such a powerful tool in their creation? In this blog, we'll explain what digital twins are, how they benefit various industries, and how **Aerial Precision's LiDAR solutions** bring digital twins to life efficiently and effectively." [*Emphasis added*]

<sup>58</sup> DITTO - Digital Twins of the Ocean

<sup>59</sup> MSN. Blue whale skeleton at UC Santa Cruz gets a digital twin.

<https://www.msn.com/en-us/science/zoology/blue-whale-skeleton-at-uc-santa-cruz-gets-a-digital-twin/vi-AAISD0Cp>

<sup>60</sup> Wikipedia. Digital Twin. [https://en.wikipedia.org/wiki/Digital\\_twin](https://en.wikipedia.org/wiki/Digital_twin)

"The evolving **US DoD Digital Engineering Strategy** initiative, first formulated in 2018, defines a digital twin as 'an integrated multiphysics, multiscale, probabilistic simulation of an as-built system, enabled by a Digital Thread, that uses the best available models, sensor information, and input data to mirror and predict activities/performance over the life of its corresponding physical twin.'<sup>[3]</sup> The creation of a digital twin for an existing physical asset, such as a factory floor or a piece of industrial machinery, often begins with a 3D scan of the object or environment. Technologies like **LiDAR** and **structured-light scanning** are used to capture the precise geometry of the asset, creating a detailed **point cloud** or mesh that serves as the foundation for the digital model.<sup>[6]</sup>"

<sup>61</sup> DITTO - Digital Twins of the Ocean

"The Vision of the DITTO Programme is a world where Digital Twins of the Ocean are used to support ocean protection, ocean governance and a sustainable Blue Economy. **What's a digital twin?** A digital twin is a virtual copy of a physical object or system that uses real-time data to monitor and simulate behaviour. It has various applications in manufacturing, healthcare, and transportation. By identifying and addressing issues before they occur, digital twins can improve overall performance and optimise processes. The use of digital twins has the potential to revolutionise how organisations operate and innovate."

The Blue Economy includes marine offsets.

<sup>62</sup> [Using Carbon Capture and Storage Digital Twins for Net Zero Strategies | NVIDIA Technical Blog](#)

<sup>63</sup> Preserving Nature's Ledger: Blockchains in Biodiversity Conservation Kostas Kryptos Chalkias, Angelos Kostis, Ali Alnuaimil, Peter Knez, John Naulty, Allen Salmasi, Ryan Servatius, and Rodrigo Veloso. IMysten Labs. Stanford University. Shafra. Nobel Sustainability Science Academy. InCapture Group. Veeva. O.N.E. Amazon. Stamp; April 18, 2024. <https://arxiv.org/pdf/2404.12086v1>

"*Constructing training datasets for AI solutions targeting biodiversity threats.* Third, our framework indicates that all collected data can be used to create AI training sets aimed at identifying and resolving threats to biodiversity. This is key because it can provide the possibility to engage with biodiversity threats in a proactive way based on predictions offered by the trained models or even in a reactive way where bushfires are for instance timely recognized and dealt with autonomous solutions, such as swarm intelligence drones that are in contact with sensors on the ground. Yet, this requires investments in infrastructure and various digital technologies and sensors as those are essential to enable real-time interventions to manage threats and shocks to biodiversity timely and effectively. Overall, on/off-chain AI can be deployed to analyze the data and proactively manage threats to biodiversity, while also potentially enabling reactive interventions from a distance."

Unlimited Hangout. Mark Goodwin and Whitney Webb. "Sustainably" Surveilling and Tokenizing Nature: The Case of O.N.E. Amazon, August 28, 2024.

<https://unlimitedhangout.com/2024/08/investigative-reports/sustainably-surveilling-and-tokenizing-nature-the-case-of-o-n-e-amazon/>

<sup>64</sup> Unlimited Hangout. Mark Goodwin and Whitney Webb. "Sustainably" Surveilling and Tokenizing Nature: The Case of O.N.E. Amazon, August 28, 2024.

<https://unlimitedhangout.com/2024/08/investigative-reports/sustainably-surveilling-and-tokenizing-nature-the-case-of-o-n-e-amazon/>

"The paper notes that the biodiversity data obtained under this framework could be used to develop new green bonds and derivatives that could be traded on a blockchain. To accomplish this, they propose the 'datafication of biodiversity,' which they define as 'the process of creating digital representations of various species in the ecosystem.' They also propose 'data repurposing cascades,' which refers to 'the process of reusing collected biodiversity data for various purposes [...] that are not necessarily and directly connected to conservation efforts,' i.e. commercializing the biodiversity data they obtain. One example given later on relates to how "all collected data can be used to create AI training sets aimed at identifying and resolving threats to biodiversity." That example claims that the data could be used to train an AI that deploys 'swarm intelligence drones that are in contact with sensors on the ground' to 'manage threats and shocks to biodiversity.'"

<sup>65</sup> El País. Ianko López. De valer millones de dólares a no llegar a las cuatro cifras: la gran ruina de los NFTs. March 10, 2026. <https://elpais.com/icon-design/2026-03-10/de-valer-millones-de-dolares-a-no-llegar-a-las-cuatro-cifras-la-gran-ruina-de-los-nfts.html>

<sup>66</sup> Sustainability Directory. Tokenization of Nature a New Asset Class. Nature, now tradable: a digital revolution or ecological risk? June 10, 2025.

<https://prism.sustainability-directory.com/scenario/tokenization-of-nature-a-new-asset-class/>

"Tokenization, by its very nature, frames nature as an asset class, primarily valued for its economic utility. This instrumental valuation risks **overshadowing the inherent worth of ecosystems, biodiversity, and natural landscapes, independent of their market price.**"

"When nature is primarily seen as a source of tradable tokens, there is a danger of reducing complex ecological systems to simplistic metrics and overlooking the intangible cultural, spiritual, and aesthetic values that nature provides. This **commodification** creep could lead to a shift in societal attitudes, where nature is increasingly perceived as a **mere commodity to be exploited for economic gain, rather than a fundamental life support system to be respected and protected.**" [*Emphasis added*].