Workshop on harnessing the contribution of creative industries to Ethiopia's sustainable development

Digitalisation, artificial intelligence and the creative economy

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We are not in Kansas anymore

The phrase “We are not in Kansas anymore”, famously uttered by Dorothy in the movie “The Wizard of Oz” upon her arrival in the magical Land of Oz, symbolises a transition into an unfamiliar, transformative world. This sentiment aptly captures how digitalisation and artificial intelligence have ushered the world, including creative industries, into a revolutionary era far removed from conventional experiences.

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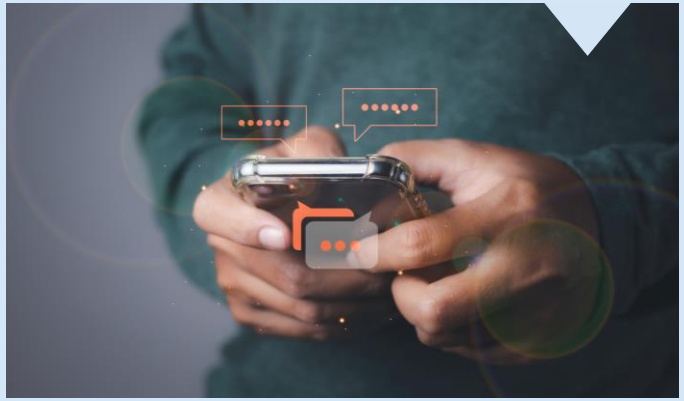
Digitalisation transforming creative economies

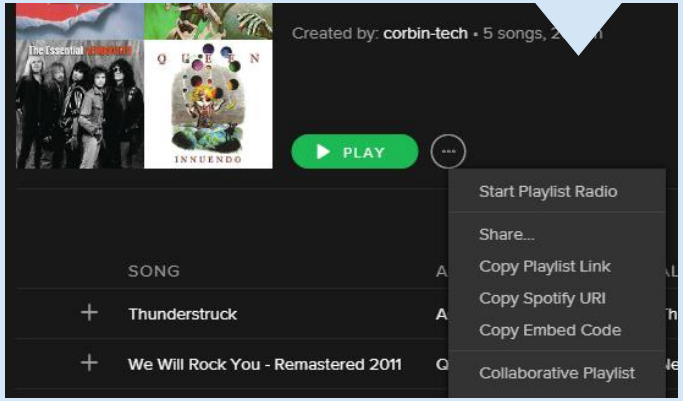


Producing content

- Affordable digital tools lower entry barriers and allow individual creators to innovate collaboratively (UNCTAD, 2022a).
- Digital tools improve cost efficiency in producing content.
- Players in creative industries have been among the fastest to adopt digital technologies, impacting their business models (UNESCO Institute for Statistics, 2016).

Distributing content

- Digital tools improve cost efficiency in distributing content.
- Some websites and platforms allow artists to reach global audiences (International Trade Centre, 2019).



Consuming content

- Streaming technology shifted the way users consume content. Users moved from ownership to access.
- In the music industry, users move from purchasing albums or songs to monthly subscribing music access services (International Trade Centre, 2019).

Producing content >

Creating content

- Artificial intelligence (AI) created the script for a science fiction movie in 2016 and selected areas of the sequel in 2017. The 1st movie had unnatural storylines, but the sequel was more fluid, confirming that current technology works better with people.
- Automated journalism generates news articles by scanning large data, ordering key points and inserting details (names, places, statistics and figures). In music, AI analyses data to find patterns to suggest melodies that may inspire artists. A software launched a song in The Beatles style in 2016 and the first AI album in 2018.
- AI can transform images of faces to add age or change hair colour. AI models static images to create moving images. AI made a video of the Mona Lisa speaking.
- Augmented and virtual reality are computer technologies that create a different environment. Augmented reality adds digital layers to the physical world, and virtual reality creates an immersive experience through a fully simulated environment. Augmented reality can expand experiences in movies and theatres, and virtual reality is used in health services for surgical simulations and physical therapy.

Producing content >

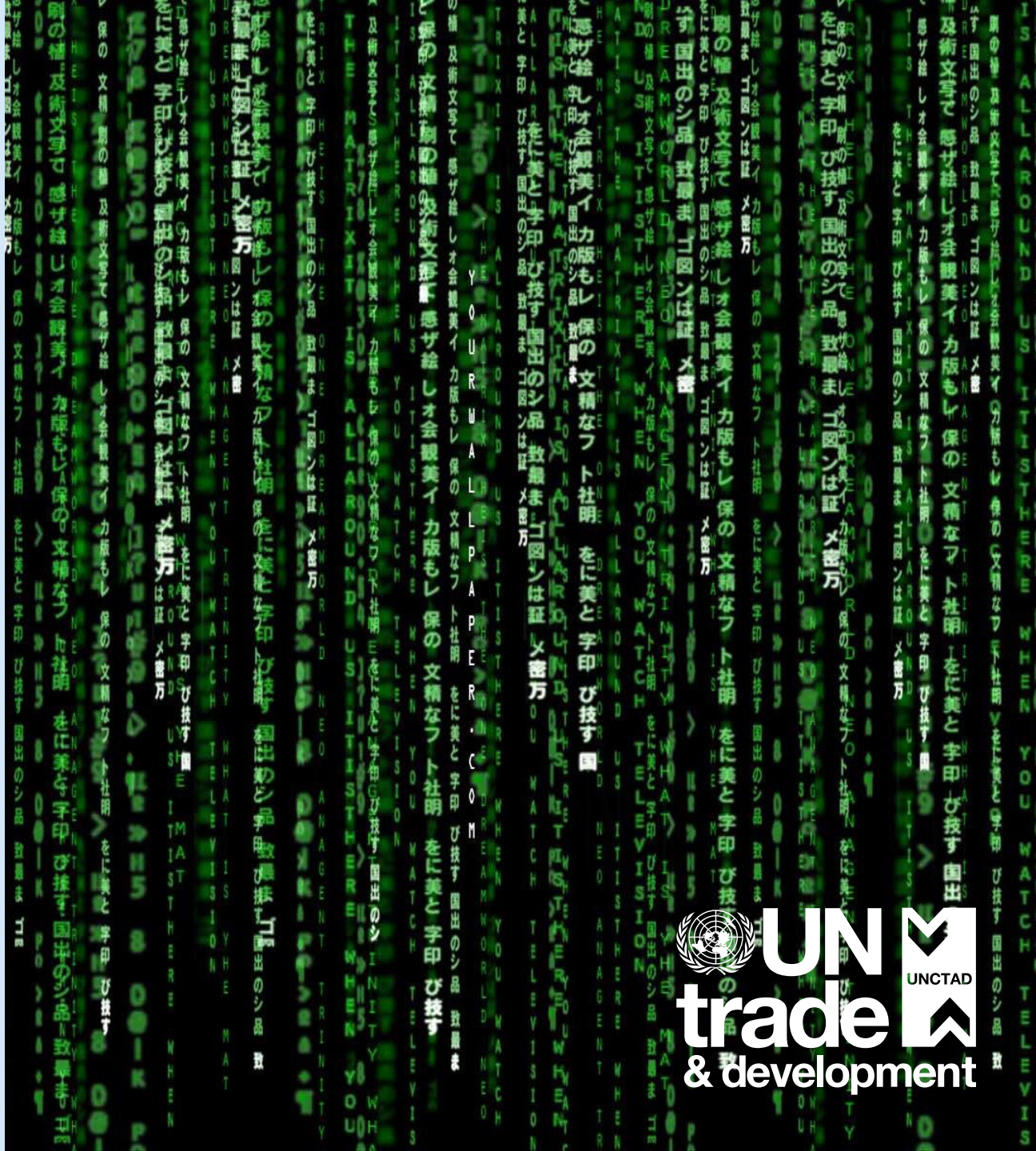
Enhancing content, post-production, compressing data

- AI improves contrast, colouring, restoring content or adding visual special effects. Contrast makes objects distinct. Colouring transforms black-and-white content or restores colour to aged films.
- AI increases image and video resolution. Upscaling imagery became popular, for example, to convert legacy content to be compatible with modern formats.
- AI enhances content to add visual special effects, a type of enhanced animation. Movies can combine physics models with algorithms to create 3D. Head-mounted cameras and facial tracking markers can transform actors' faces into characters.
- Compressing data, audio and video, improves quality and user experience. Compressing data, notably video, is necessary to reconcile demand with network capacity.

Producing content >

Extracting, enhancing and analysing information,

- AI segments and recognises content, detecting and tracking salient objects, combining images, and producing 3D content. AI performs statistical analysis and extracts information from the signal.
- AI categorises texts, retrieves and analyses content, and provides recommendations and intelligent assistant services. Categorising texts generates summaries from full texts. AI can recognise audio and objects to analyse the media. Images are retrieved based on points, lines, shapes and colours. Music is retrieved based on features from the sound.
- Learning systems can assess what people look online, for how long, and overall online behaviour and preferences. This allows to target ads and to inform how and when to show ads. Analysing content also allows recommending music or movies. Intelligent assistants analyse information to answer queries related to news or weather, recommend songs, movies or directions, or manage schedules and emails.



Use of AI by creative industries > Advertising

- AI increases efficiency of gathering, analysing, and sorting vast amounts of data.
- Some marketeers use data to spot trends and make advertising decisions. For example, an artificial intelligence platform generates multiple ads automatically based on the marketeer's specific goals. The algorithms conduct tests and chooses those deemed most effective.
- This called for extensive investment in expanding computing power to train more intricate AI models on larger datasets. This generated numerous ad variations, evaluate their resonance with audiences, and saturate the market with the variants demonstrating the best performance. Reports from advertisers note that this platform enhances the performance of advertising campaigns (Financial Times, 2023).

Use of AI by creative industries > Architecture

- AI addresses aesthetics, building regulations, structural efficiency, socioeconomic context, and cultural environment, from planning and design to construction and maintenance.
- AI can feed research and planning to support topology optimisation and urban planning considering regulatory compliance, solar radiation predictions, etc (As and Basu, 2021).
- AI reviews prior architectural knowledge to help design choices. This can cover data on behaviour of users, historical and aesthetic solutions for a given socio-economic and cultural context, notions of heritage and relationships with the territory. Data analytics enables smart building for sustainability.
- AI can assist ideation of architectural design by providing out-of-the-box scenarios that stimulate architects' creativity. At the design iteration stage, AI can improve accuracy, increase efficiency, and tailor solutions to a client.
- AI can facilitate production by relying on robot fabrication. AI supports maintenance by analysing video feeds and detecting weaknesses requiring preventive or corrective maintenance.

Use of AI by creative industries > Arts and crafts

- In the crafts industry, algorithms can assist design. People transition to design, maintenance, and programming as machines gradually take over routine tasks. This enhances efficiency, allowing machines to handle repetitive and challenging tasks (Eskak and Salma, 2021). People can also do digital crafting using generative AI.
- AI can facilitate virtual art galleries and exhibitions in the arts. Artists leverage AI to craft immersive digital showcases that are accessible globally.
- Some most innovative AI -based art projects are in Africa. A Nigerian artist employs AI in a multimedia installation that generates images and sounds based on visitor movements. A Kenyan artist combines similar algorithms with traditional painting techniques to create unique digital portraits exploring identity and representation in contemporary African art (Faster Capital, 2023).

Use of AI by creative industries >

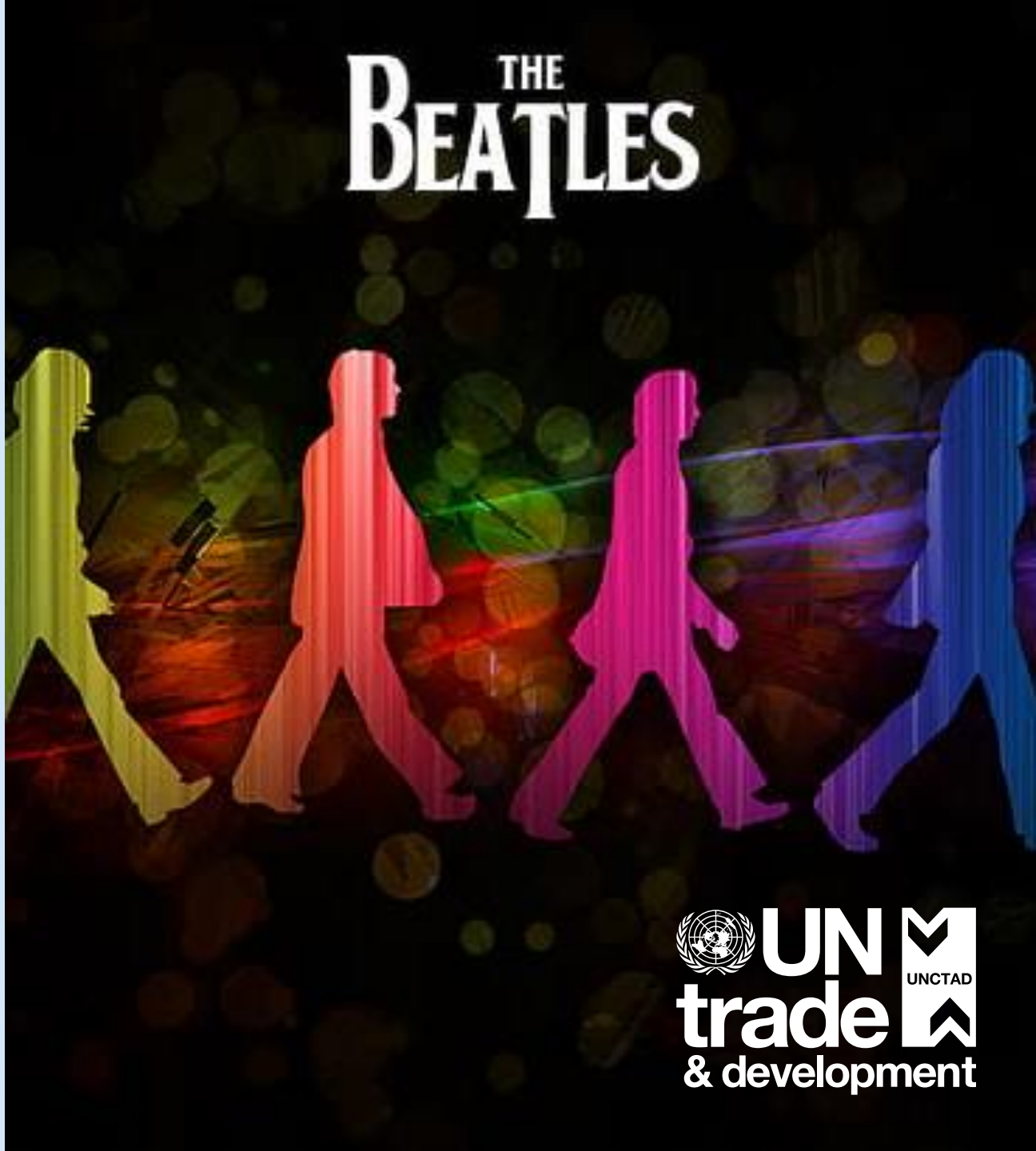
Film industry

- AI can create and analyse screenplays in pre-production, analyse data and audience preferences, and create more realistic special effects (Anantrasirichai and Bull, 2022). Machine learning tools can arrange video clips, helping editors to find specific camera angles and dialogue scenes. AI assists in restoring old prints (Wired, 2023).
- AI can process screenplays as inputs and generates analytics about commercial viability and recommendation to greenlight or reject. These analytics can include character's likeability, emotions by scene, measurements of gender equality, potential audience, predictions of gender and age breakdown of target audience, predictions of audience satisfaction ratings, financial forecasts, return on investment and information on which territories the screenplay is likely to find a receptive audience (NECSUS, 2020).
- AI can affect movie jobs (e.g., writers). An animation studio has recently cut jobs for 4%. A premium cable network and streaming service, is undergoing a 10% reduction in its workforce (The New York Times, 2023).

Use of AI by creative industries >

Music industry

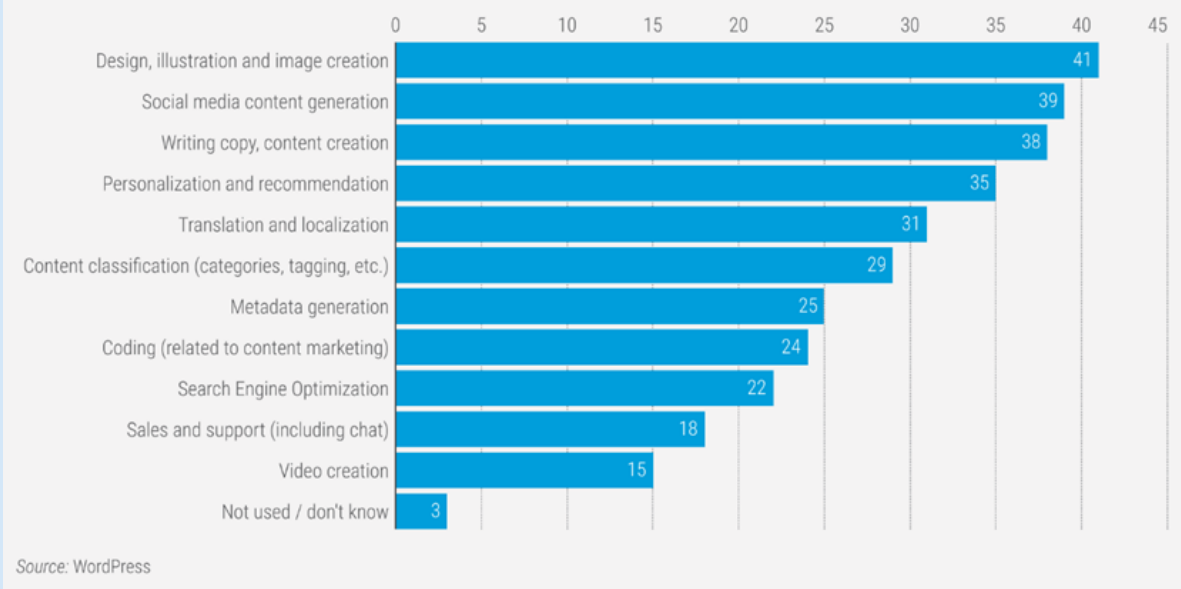
- AI can generate music using databases of existing tracks (Arts Computing Office Newsletter, 2021), and provide platform users with personalised recommendations. This may help artists to produce music beyond known genres and options for consumers to personalise content.
- In 2016, a computer science laboratory music team released the first full song generated by AI, made to sound like a The Beatles song (Arts Computing Office Newsletter, 2021).
- AI dissembles songs into malleable components. This allowed Paul McCartney to recover an old The Beatles recording and make the final The Beatles song without synthetically creating new material.
- AI brings challenges on copyright. AI synthesises voices of existing singers. In some cases, this is used by songwriters who want to show what a specific artist would sound like on a track before it is recorded. In other cases, the public creates AI-generated music, raising concerns about ownership. Clear policies on the unauthorised use of artists' work have yet to be established (The Korea Herald, 2023).



Use of AI by creative industries > News and media industry (1/2)

- AI helps process efficiency with automated summaries, conversion between text and speech, image recognition, tagging, subtitles, and transcriptions (Newman, 2023).
- AI helps engagement by recommending, automating web pages, optimising headlines and finding best time to post (Newman, 2023). AI can generate financial reports (FADEL, 2023) and traffic or property sales stories (Media Voices, 2023).
- AI can suggest article topics and sources. AI can analyse data to identify newsworthy stories. AI detected news potential by identifying that a football team had won for the first time in 40 matches. A story can be customised generating several stories, each using specific data for an area of a country (Media Voices, 2023).
- AI assists in creating illustrative art (Newman, 2023), generating social media content, personalising and recommending, and translating (WordPress, 2023) (Figure).
- The journalist remains responsible for checking, clarifying, and adding value to the automated story, for example by adding empathy, insight, judgement, or customisation. Curation is by people (Newman, 2023).

Figure. Use cases of artificial intelligence by news teams, 2023 (percentage)



Use of AI by creative industries > News and media industry (2/2)

- Deepfakes are computer-generated audio or video creating the illusion of individuals saying or doing things they never did (MIT Open Documentary Lab, 2021). Deepfakes exploited the vulnerability of image media to manipulation, making it hard to distinguish between fact and fiction.
- The deepfake video project “In Event of Moon Disaster” highlighted this issue by presenting an alternate history of the Apollo 11 mission. The project won an Emmy for Outstanding Interactive Media in the documentary category. People need media literacy skills to understand and assess media (MIT, 2021). Other efforts should include transparency, digital watermarking and moral guidelines (Newman, 2023).
- AI can create asymmetry of benefits and costs in the industry. Some may gain efficiency to focus on higher value-added tasks, but others may lose jobs.
- Some firms rely on AI solutions provided by big platforms. This increases dependence of some news and media firms on technology firms (Columbia Journalism Review, 2024).

Use of AI by creative industries > Performing arts

- AI can intervene throughout the whole process.
- AI can support text research by analysing vast amounts of literature, translating texts, and suggesting scripts, narratives, choreographies and characters.
- AI can support the production process by drafting grant applications and project proposals and increasing cost efficiency in the production process.
- AI can help creating interactive environments that respond to actors' movements or changes in the storyline, creating an immersive experience for performers and audiences. Performers can interact with automatically generated visuals, augmented reality or sound that respond in real-time, customising the performance.
- Some artists use AI to analyse reactions from the audience to improve engagement.

Use of AI by creative industries > Video game industry

- AI can improve design, interactivity, and decision-making in the video game industry.
- Video games increasingly strive to offer more realistic and immersive experiences, often integrating 3D visualisation, augmented reality and virtual reality methods. AI algorithms have been trained to design and develop interactive storylines that respond to player choices.
- AI can also generate content in-game, which refers to the automatic and random generation of content such as levels, environments, and rules. This builds personalised and fresh experiences, giving individual players a sense of autonomy and uniqueness in their gameplay experiences (Anantrasirichai and Bull, 2022).

Challenges and risks >

Quality

- AI content quality relies on algorithm's performance and on the database used. AI can be fed with some data rather than others and prioritise some patterns and not others. This can reduce cultural diversity.
- People consume images, music, videos and news through platforms whose algorithms' criteria to recommend content are not transparent or auditable. They may be conditioned to platforms' commercial interests (European Parliament, 2020). Preferences of most people to consume content of known references may privilege recommendations of established rather than new artists (Maekan, 2022).
- Quality concerns can disproportionately affect people in developing countries. Most AI was trained with data from people of developed countries. Outputs may not serve interests of people in developing countries.
- AI is often trained for preferences by people in developed countries and in English, putting at a disadvantage people from developing countries which are not English speakers (Foreign Affairs, 2023).

Challenges and risks >

Appropriation

- Moral dimension discusses whether building on work from others is acceptable. Economic dimension discusses if adequate compensation is provided for authors of appropriated work.
- Moral analysis should be similar between code-based and people-based art. AI trains with databases and involves appropriation. But appropriation is inevitable in art creation as all artists have influences and aesthetic references. Appropriation is formally acknowledged as an artistic form (Karakaidou, 2019).
- Economic compensation is needed for the time and talent put into people-based art. It is also key when discussing AI centralised governance by some tech giants. Many artists feeding the algorithms' databases have insufficient negotiation power to claim appropriate compensation from giant gatekeepers.
- This has a development dimension, as many people in developing countries have less chances to claim appropriate compensation and possibly lower negotiation power to advocate changes in this current AI paradigm.

Challenges and risks >

Copyrights

- Copyrights protecting creators are designed for analogue world. Policymakers and regulators need to discuss issues as royalties for artists on streaming platforms, reselling of e-books, and platform liability for unauthorised uploaded content (UNCTAD, 2022b).
- In the United Kingdom of Great Britain and Northern Ireland, regulations define the author of a computer-generated artwork as the person undertaking the arrangements to create the work. In Germany, regulations do not protect AI artwork. In these regulatory frameworks, AI cannot be an author, although this barrier is continuously challenged (European Parliament, 2020).
- Due to copyright concerns, stock image services have prohibited posting and selling AI images (Dataconomy, 2022).
- Development challenges also exist on IPRs related to AI as some developing countries face regulatory gaps in this area. While this is an issue that exists in several areas, the gaps may be particularly acute regarding the regulation of new technology.

Challenges and risks >

Consumer protection

- Consumers provide personal and payment data to AI platforms. Many countries do not have national laws regulating e-transactions and online consumer protection (UNCTAD, 2021).
- Consumers may be exposed to quality issues as reduced cultural diversity (European Commission, 2022). Audio/video manipulation increased with AI (e.g., deepfakes or text manipulation creating fake news/spam) (Anantrasirichai and Bull, 2022). Personal data use for deepfakes challenges consumer protection, privacy and moral issues.
- Regulations should consider data became a business resource. Appropriate, authorised, acknowledged, and economically compensated data use should ensure privacy and consumer protection while allowing firms to build on data for competitiveness.
- Many people in developing countries may have less recourse to challenge AI issues of personal data or content manipulation. AI may perform worse than advertised and some developing countries need better ways to report issues and appeal decisions (Foreign Affairs, 2023).

Challenges and risks >

Jobs

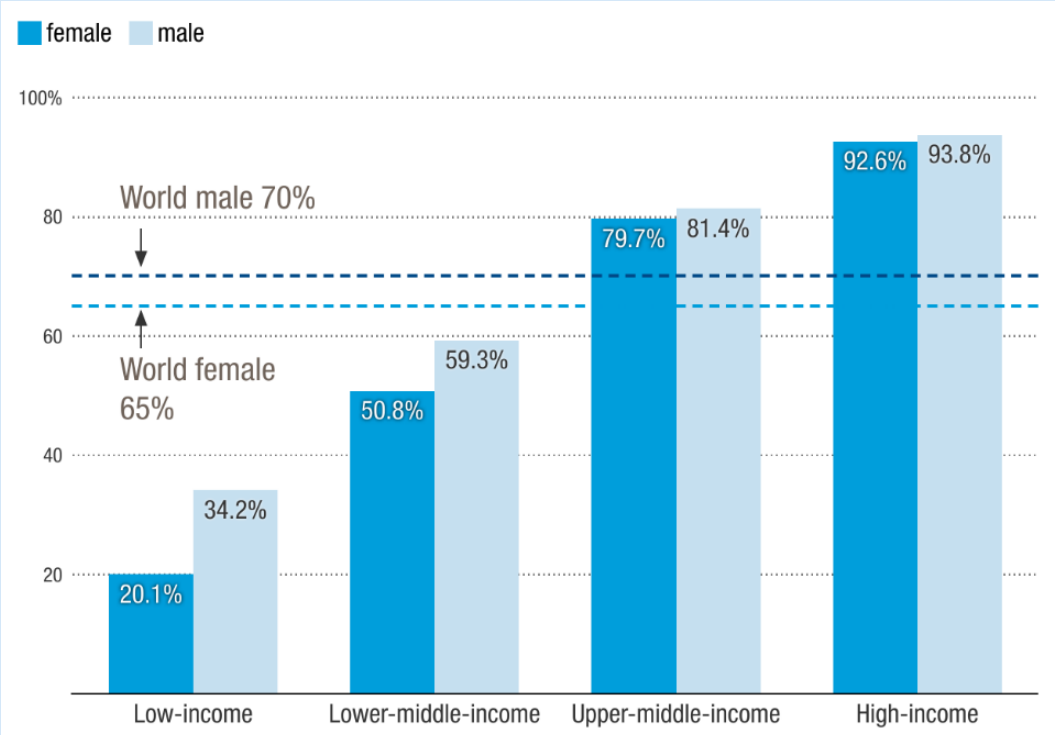
- ILO points to job decrease in automated activities and job increase in automation development. AI shifts competition to higher-skilled jobs (International Labour Organization, 2023). Some AI excel in cognitive tasks like analysing texts, drafting documents, and retrieving information (e.g., journalists).
- An analysis of the Survey of Adult Skills (PIAAC) data indicates that the high risk of automation of activities within the OECD stands at 14% for the overall job market and a lower 10% for creative and culture-related jobs (OECD, 2022). Ongoing digitalisation may generate increased demand for creative skills.
- The future of creative economy is identifying professionals who can use AI and manage change. AI developers may not understand creative work, and creative professionals may not be AI experts. Creative firms lack in-house capabilities and are dependent on tech companies (European Commission, 2022).

Challenges and risks >

Development asymmetries (1/2)

- Developed countries, along with China and India, dominate the "Global AI Index", measuring talent, infrastructure and R&D capabilities (Tortoise, 2022). The first Latin American country is Brazil (39th place) and the first African country is South Africa (55th). This widens the digital divide between developed and developing countries (International Finance Corporation, 2019).
- In 2023, different development levels showed an Internet usage gap. High-income countries had 93% of people using the Internet, while low-income countries had 27% (International Telecommunication Union, 2023) (Figure).
- Women used the Internet less than men at all development levels. This gender gap was 1 percentage point in high-income countries and 14 percentage points in low-income countries. People in rural areas use the Internet less than in urban areas. This gap was 7 percentage points in high-income countries and 30 percentage points in low-income countries (International Telecommunication Union, 2023).

Figure. Individuals using the Internet by gender, 2023 (percentage)



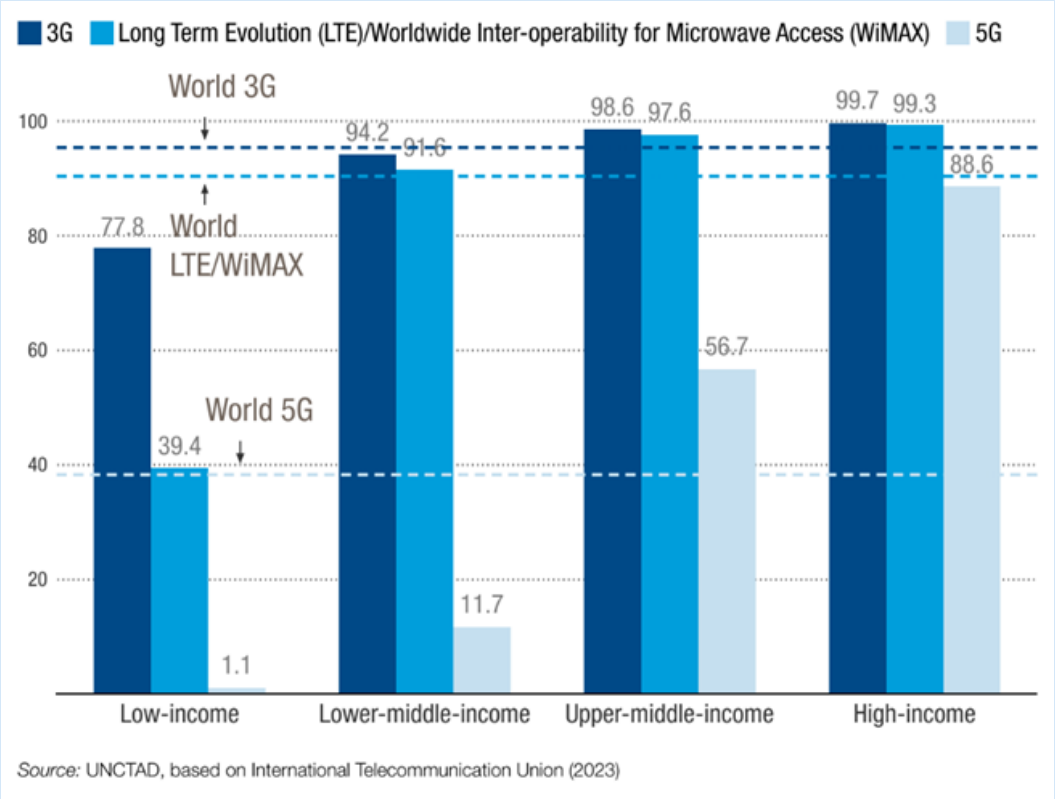
Source: UNCTAD, based on International Telecommunication Union (2023)

Challenges and risks >

Development asymmetries (2/2)

- In 2023, many regions reached over 80% of 3G mobile network coverage. LTE or WiMAX mobile networks were implemented later but increased faster and reached similar coverages. The more recent 5G mobile network is still facing imbalances, confirming the infrastructure dimension of the digital divide.
- Countries with higher income have higher coverage of mobile networks. This is valid for all technologies, but the asymmetry is higher in the more recent and advanced 5G mobile network. Countries with high income had 89% of people covered by 5G mobile networks, while countries with low income had only 1% (Figure).
- Some developing countries also face challenges on digital recordkeeping systems that are necessary to use the potential of AI (Foreign Affairs, 2023).

Figure. Population covered by mobile network by technology and level of income, 2023 (percentage)



Source: UNCTAD, based on International Telecommunication Union (2023)

Policy considerations >

UN Trade and Development survey on the creative economy

- Digitalisation and AI may be a game changer for several creative industries. Policymakers need to monitor technological developments and update policy and regulatory frameworks to seize opportunities and mitigate risks for the creative economy.
- 14 of 36 countries participating in UN Trade and Development survey reported specific initiatives on digitalisation and AI for creative industries. 9 countries had more general policies enabling e-commerce and building digital skills.
- The Gambia launched the Digital Economy Master Plan 2023 to build on technology to benefit creative industries. Addressed issues as copyright.
- Mauritius used augmented reality in the Dodo Expedition AR app, offering a novel way to engage with the extinct Dodo bird at the Natural History Museum. The Mauritius Expo Virtual Platform also represents a digital space for local artists to showcase their work.

Policy considerations >

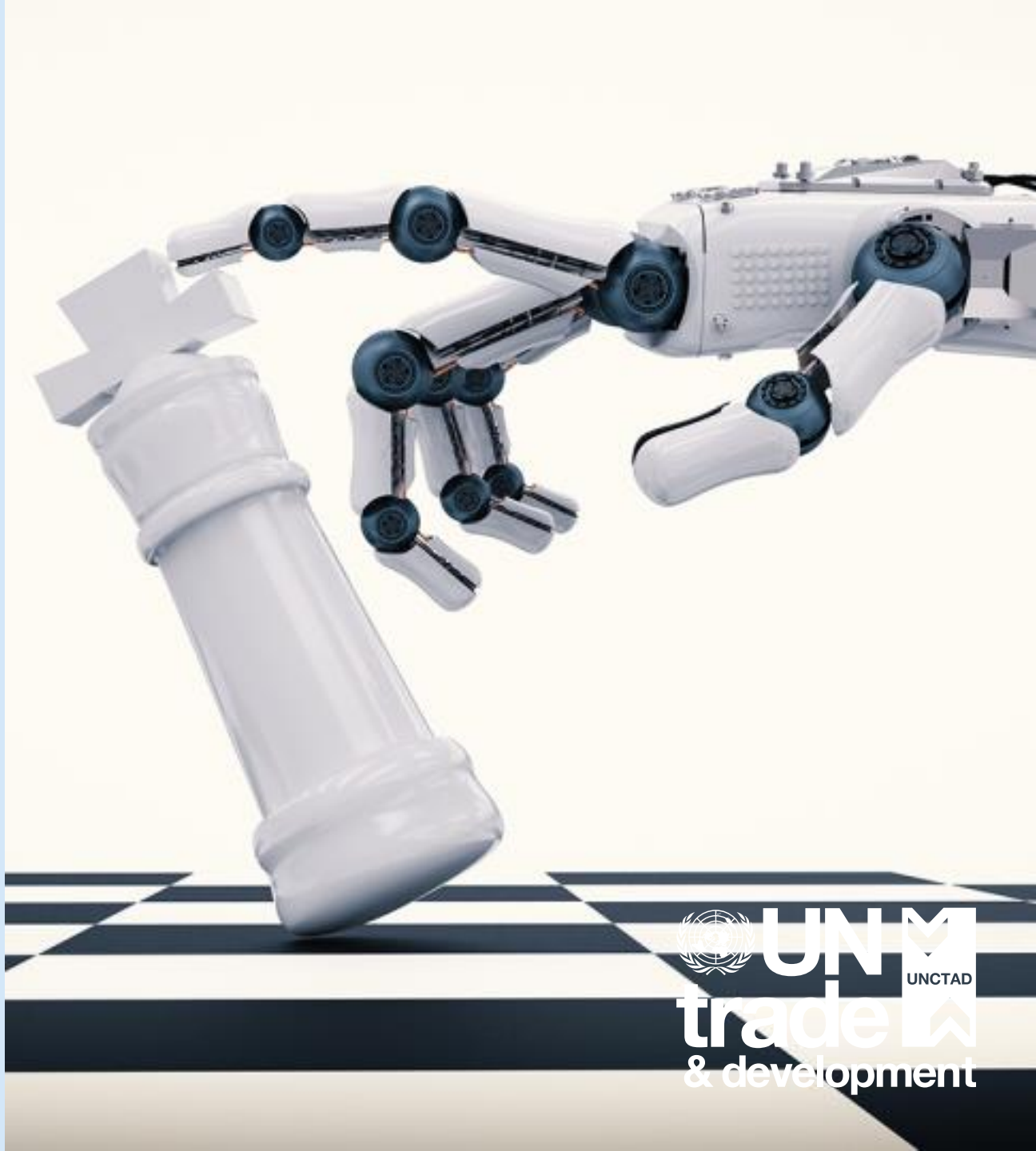
Quality and consumer welfare

- Quality and consumer welfare are promoted with people supervising AI results in creative industries, (human curators). Technology and people collaboration is the best scenario to develop content.
- Algorithm transparency is needed to ascertain which patterns are prioritised and that commercial interests do not unduly condition the algorithm. This includes preserving cultural diversity and ensuring there is no cultural appropriation.
- Regulations should cover this and, in general, online consumer protection. Deepfake regulation should ensure use of data in an appropriate, authorised, acknowledged, and economically compensated way for privacy and consumer protection while allowing firms to build on data for competitiveness.
- International cooperation is key for regulations.
- Managing deepfakes calls for media literacy to assess and understand media and could include requirements on transparency, digital watermarking, and moral guidelines.

Policy considerations >

Intellectual property rights (1/2)

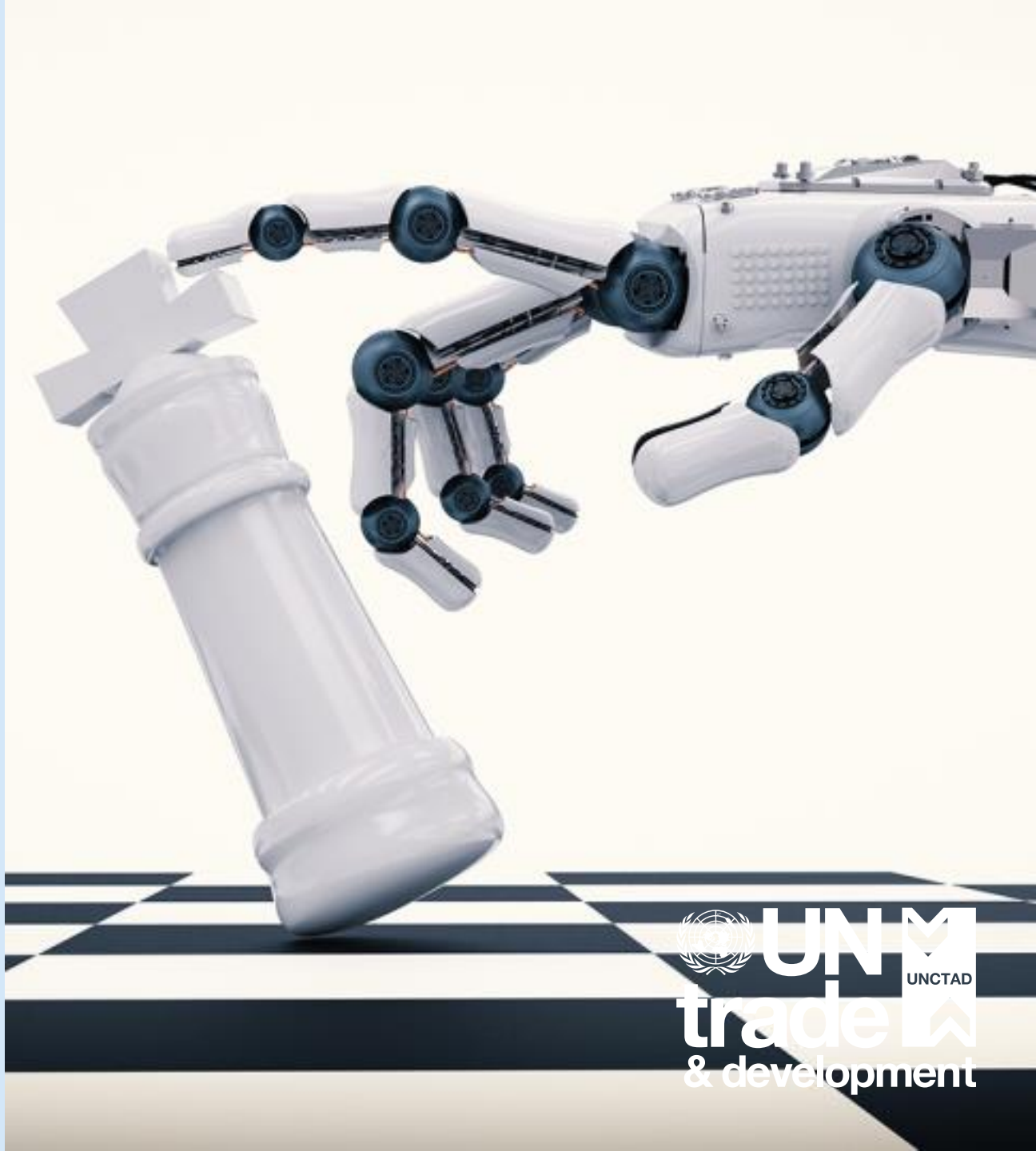
- IPR policies need to address new issues as online distribution and user-generated content. AI raises questions about ownership, accountability, and transparency. Policymakers must collaborate with industry, legal and tech specialists to adapt regulations.
- Policy gaps in protecting copyrights due to the ease of access, copying and redistributing content. Need to balance rights of creators, consumers, and platforms.
- Angola faces challenging informality and creators' reduced negotiation capacity. Policymakers could consider improving IPR literacy and a whole-of-society approach to consultations on IPR regulations. A national IPR strategy can consolidate IPR rules and improve clarity.
- Digital video piracy has revenue losses from US$40 to US$97 for the global film industry. Losses range from US$40 to US$95 billion for the global TV industry (Global Innovation Policy Center, 2019).
- The Indian entertainment sector has annual revenue loss of US$2.8 billion due to digital piracy (The Times of India, 2022). Piracy of movies and TV is an even bigger issue in Africa (Reuters, 2009).



Policy considerations >

Intellectual property rights (2/2)

- US Digital Millennium Copyright Act (DMCA) (1998) raises penalties for copyright infringement on the Internet. The law criminalises producing and disseminating technology, devices or services to circumvent measures that control access to copyrighted works. The law criminalises circumventing access control, whether or not copyright is infringed.
- Challenges on copyright are higher with AI. The European Union and the United States say authorship should be only of natural persons. AI role is confined as a tool of the legal framework, not as a co-author.
- Regulations in Latin America have similar approaches, recognising only natural persons as authors. This is found in Argentina (Art. 16), Chile (Art. 5), Colombia (Art. 8), Honduras (Art. 9), and Mexico (Art. 4). Provisions do not address economic compensation for co-creation work as AI is not a co-author.
- Protecting/compensating works by natural persons needs determining participation levels. This is difficult with some creations. Investors can face uncertainties if AI is freely accessible, as property rights would be ineffective (Santamaría Hernández, 2021).



Policy considerations >

Governance and policy frameworks

- Clear and transparent regulation for AI protect artists' rights, uphold moral and commercial responsibilities, provide effective guidelines, balance innovation with responsibility.
- International cooperation can help designing AI regulations, recognising that R&D and technological applications of AI to creative industries are resource-intensive and benefit from scale in knowledge, talent, computing capacity and data.
- International cooperation can lead to standards with International Organization for Standardization (ISO), International Electrotechnical Commission (IEC), and Institute of Electrical and Electronics Engineers (IEEE) (Brookings, 2021). Developing countries should be involved in shaping AI standards that should consider skill, digital and infrastructure gaps, data protection, and other development issues.
- International cooperation should build trust by producing commonly agreed principles to develop and use AI (Brookings, 2021). These principles should allow countries to use AI for social and economic development, including industrial policy initiatives. The principles should pursue regulatory convergence, reducing unjustified trade restrictions for AI.

Policy considerations >

Jobs and skills

- Roles of creative industry actors change as emerging technologies such as AI become increasingly embedded in creative value chains. An effect is the increasing demand for new digital skills.
- This shift causes job gains and losses. Support is needed for those in vulnerable situations. This includes education and training, contract protection, and social support. The debate on socialising the benefits of AI deserves merit, including more discussion on universalising income decoupled from work.
- Strategies to develop skills are relevant for development aspirations. Skill building should include an interdisciplinary approach and a continuous learning dimension. For example, creative economy professionals should learn to use AI and to manage change to prepare these people to seize the benefits of AI in their work, while preparing them for AI job gains and losses.

Policy considerations >

Development asymmetries

- Policies should consider digital divides and aim to close the digital, knowledge, physical and digital infrastructure gap between genders, urban versus rural areas, and regions with differing developmental levels.
- This should consider asymmetries in access to the Internet, mobile networks, and other forms of telecommunications.
- Policymakers also need to promote affordable digital tools and access to new payment technologies for creative industries in all countries, particularly developing countries.

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