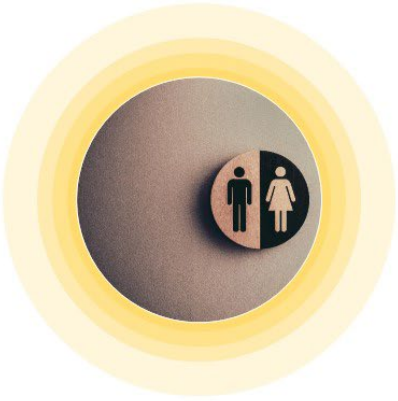
HORIZON SCANNING

Emerging issues for EU policymaking

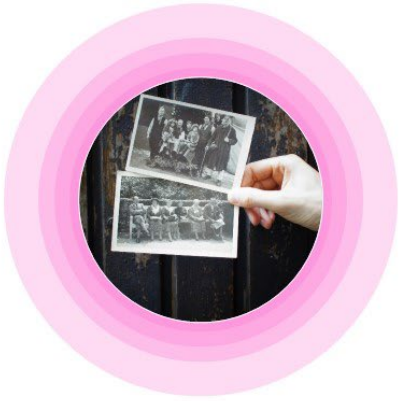
Issue 6

This is the sixth report from the ESPAS horizon scanning process which looks at "signals of change" – emerging trends and issues – that may appear marginal today but could become important for the EU in the future. From the list of 16 signals of change presented below, three emerging issues were perceived as potentially most impactful by policymakers:



YOUTH'S IDEOLOGICAL GENDER DIVIDE

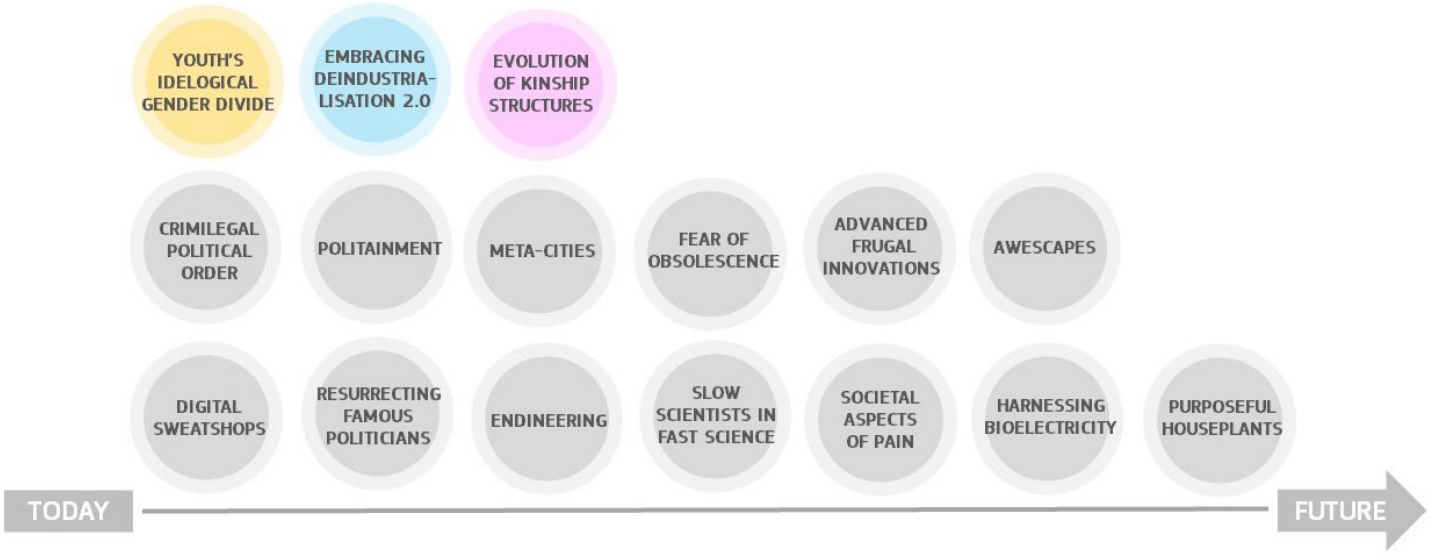
EMBRACING DEINDUSTRIALISATION 2.0



EVOLUTION OF KINSHIP STRUCTURES

The European Strategy and Policy Analysis System ESPAS network (ESPAS) launched the horizon scanning process, led by the Joint Research Centre and the European Parliamentary Research Service, in 2022. The signals of change were identified and developed via a series of workshops with participants from across the EU institutions and bodies looking at recent developments in various domains. The assessment of the most impactful signals was done through a survey followed by a prioritisation workshop, which explored the issues in more depth – a summary of this evaluation is presented on the following pages. The signals should be considered as new lenses for a different perspective on the challenges and opportunities the EU is facing now and in the coming years.

The broader set of 16 signals of change identified in recent horizon scanning sessions is presented below with brief descriptions provided at the end of the document.



Youth's ideological gender divide

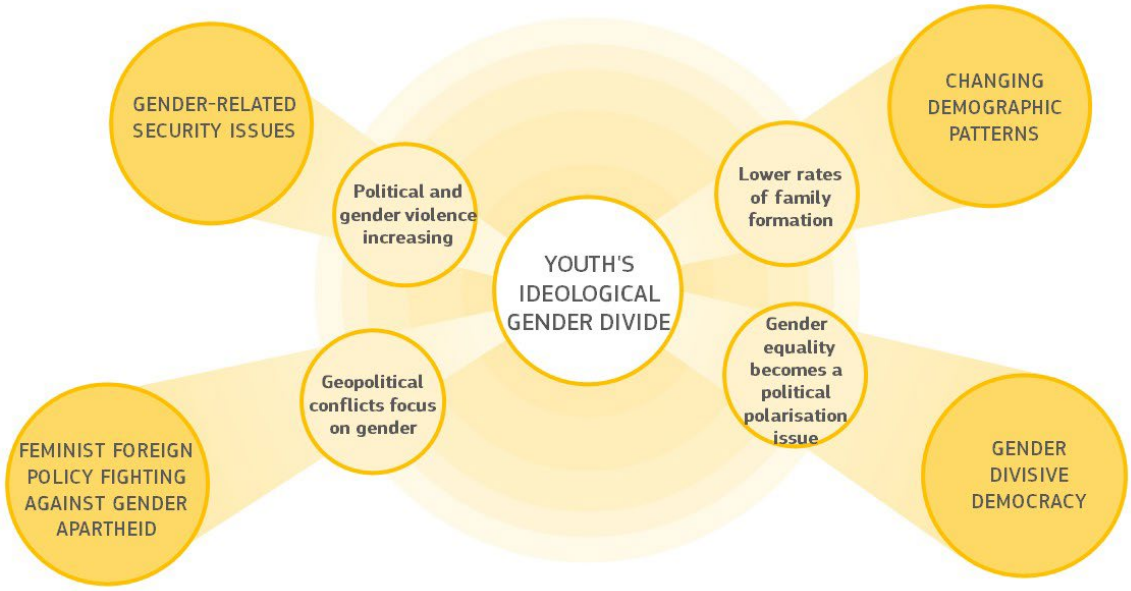
A global gender divide is emerging among young people, as young women increasingly embrace progressive views, while young men tend towards conservatism.[1] While in the past, the changes were relatively uniform across age cohorts, the differences between gender within them is increasing.[2] This ideological gap is visible across various countries and extends beyond gender-related issues with potential long-term consequences for societal cohesion, political landscapes, and cultural dynamics.

Alongside, there is an increased perception of women's rights as threatening to men.[3] 3 in 10 young men think it will be harder to be a man than a woman in 20 years' time. Men aged 16 to 29 are almost twice as likely to feel this way, and 19% think it will be *much* harder to be a man.[4] The UNDP Gender Social Norms Index (GSNI) report showed no improvement in biases against women in a decade, with almost 9 out of 10 men and women worldwide still holding such biases today.[5]

How can it change our optics?

As the political preferences diverge, so will the programs of the political parties, which are already catering to the relevant voters[6] and reinforcing the division on gender grounds. In British politics, attitudes on Brexit among the young differ greatly by gender[7]. The case of South Korea's "gender wars" reinforced by media and populist politics shows that it can become a very polarising social fault line.[8]

Futures Wheel: An indication of potential consequences



What if the EU...?

... addressed the OECD's ten norms of restrictive masculinities[9] in all the competitiveness, innovation and industrial policies to address gender fairness?

---

[1] A new global gender divide is emerging (ft.com)

[2] Langsæther, P., Knutsen C. . "Are Women More Progressive than Men? Attitudinal Gender Gaps in West European Democracies." International Political Science Review, October 6, 2024, 01925121241280069. https://doi.org/10.1177/01925121241280069.

[3] Off, Gefjon, Nicholas Charron, and Amy Alexander. "Who Perceives Women's Rights as Threatening to Men and Boys? Explaining Modern Sexism among Young Men in Europe." Frontiers in Political Science 4 (2022). https://www.frontiersin.org/journals/political-science/articles/10.3389/fpos.2022.909811.

[4] Masculinity and women's equality: study finds emerging gender divide in young people's attitudes | King's College London (kcl.ac.uk)

[5] 2023 Gender Social Norms Index (GSNI) | Human Development Reports (undp.org)

[6] Gago, A. and Carozzi, F., Who Promotes Gender-Sensitive Policies? (February 01, 2023). http://dx.doi.org/10.2139/ssrn.4966523

[7] Gender gaps in the 2019 General Election - UK in a changing Europe (ukandeu.ac.uk)

[8] Jung, Kyungja. "'Gender Wars' and Populist Politics in South Korea." Women's Studies International Forum 104 (May 1, 2024): 102915. https://doi.org/10.1016/j.wsif.2024.102915

[9] OECD (2021), Man Enough? Measuring Masculine Norms to Promote Women's Empowerment, Social Institutions and Gender Index, OECD Publishing, Paris, https://doi.org/10.1787/6ffd1936-en .

Embracing deindustrialisation 2.0

Europe's industrial foundation is being undermined by a convergence of factors, including decreased worldwide demand, substantial subsidies in Chinese and US industries, and notably, soaring energy costs. Europe lost close to a million manufacturing jobs between 2019 and 2024[10].

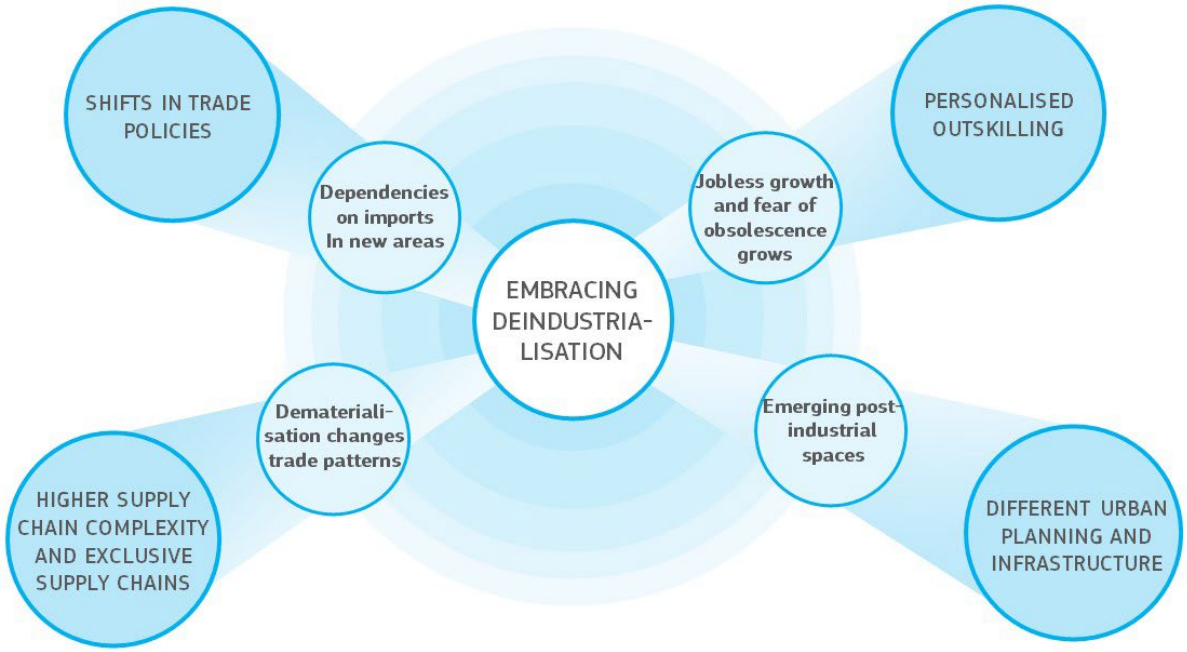
However, some experts say Europe should embrace deindustrialisation in the most energy-intensive and uncompetitive sectors.[11] Instead industrial policy would focus on the next generation of emerging industries, which are likely to grow despite current problems.[12][13]

The industries that are set to replace the uncompetitive ones – smart industry 4.0 and human-centric industry 5.0 - present a new form of manufacturing: more distributed, with modular displaceable production components, additive manufacturing and nature-based solutions; dematerialised, focused on services and in symbiosis with other sectors[14]; requiring fewer workers with human-machine collaboration.[15][16] Despite making a considerable contribution to GDP, these new industries will have a very different territorial effect with some less digitally advanced regions losing out. They will be smaller in size and scale with less employment, and will have reduced effects on landscape and resources.

How can it change our optics?

Industrial activity and manufacturing have often been associated with mass production, heavy resource use, strained labour relations and shaping our landscapes. In the future manufacturing will be increasingly decoupled from that concept of industrialisation.

Futures Wheel: An indication of potential consequences



What if the EU...?

... replaced place-based specialisation with trans-local transformation, encouraging close economic and social interrelations between geographically diverse territories and networks to adapt together to complex challenges?

[10] EU loses almost a million manufacturing jobs in just 4 years | ETUC

[11] Researchers urge Europe to 'embrace' deindustrialisation – Euractiv

[12] The future of industrial activity in Europe | Oxford Economics

[13] Calza, E., Soguero Escuer, J., Fabiani, J. and De Prato, G., Advanced Manufacturing Study. Preliminary findings on EU`s Advanced Manufacturing industry in the global landscape, Publications Office of the European Union, Luxembourg, 2024, doi:10.2760/798090, JRC137761

[14] Han F, Feng Z, Wang C, Yang N, Yang D, Shi F. Interweaving Industrial Ecology and Ecological Modernization: A Comparative Bibliometric Analysis. Sustainability. 2021; 13(17):9673. https://doi.org/10.3390/su13179673

[15] ems-future-manufacturing-system-ok.pdf (eitmanufacturing.eu)

[16] Cécile Cézanne, Edward Lorenz et Laurence Saglietto, « Exploring the economic and social impacts of Industry 4.0 », Revue d'économie industrielle, 169 | 2020, 11-35.

Evolution of kinship structures

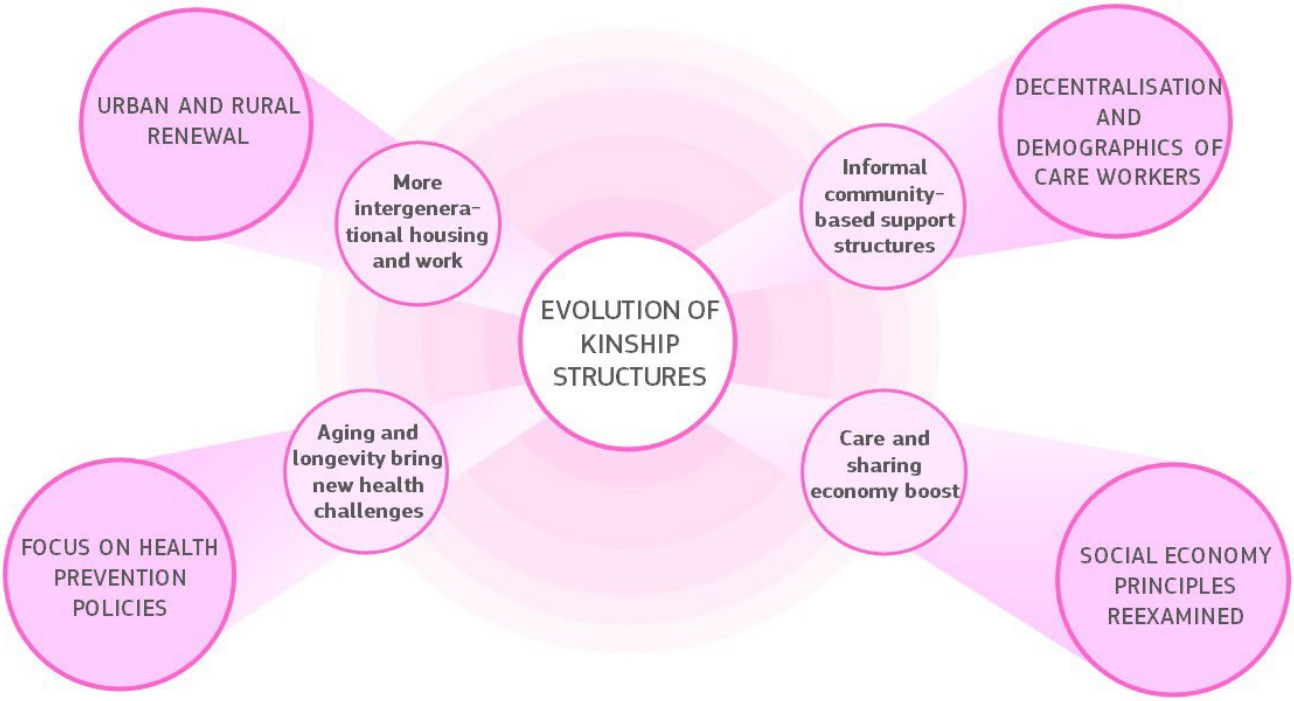
Younger generations will have more living great-grandparents and fewer cousins. In 1950, a 65-year-old woman had an average of 41 living relatives. By 2095, a woman of the same age will have an average of only 25 living relatives.[17] As societies age, the structure of family and kinship will change. With healthy longevity, grandparents and great-grandparents may play a bigger role in families, just as they may stay longer in the workforce. Internship programmes and new employment forms are arising for older workers, some of whom need to work to top up their pensions, and others who simply want to keep working.[18][19]

Some companies already offer grandparental leave, and more may need to in the future, as the cost of childcare is increasing, and fewer relatives are available to chip in.[20] However, grandparents and great-grandparents may also need care themselves. A related change can be seen in terms of home ownership. Young people are less and less able to afford to buy a house, or even to move out of the family home. The age at which 50% of a cohort in the EU have moved out of their parent's home is currently 28.[21]

How can it change our optics?

Both societal resilience and green transition depend on the social capital and strength of communities. Changing kinship structures and increasing family complexity can bring new approaches to care and mutual aid networks, knowledge sharing and support, as well as informal economy trends.

Futures Wheel: An indication of potential consequences



What if the EU...?

... family and kinship structures were treated as critical infrastructures for societal resilience and preparedness?

[17] Families Will Change Dramatically in the Years to Come | Max-Planck-Gesellschaft (mpg.de)

[18] Richmond-based Naborforce launches "golden interns" program for seniors - Axios Richmond

[19] Older people are keeping on working — by choice - DutchNews.nl

[20] Companies are trying a new family leave—for grandparents (qz.com)

[21] Homeownership declines across EU as young adults find themselves locked out of market | European Foundation for the Improvement of Living and Working Conditions (europa.eu)

Harnessing bioelectricity

There are diverse signs of the possible new applications of bio-electricity. Electric eels can release enough electricity to genetically modify small fish larvae[i]. Researchers' findings add to what we know about electroporation, a gene delivery technique. Electroporation uses an electric field to create temporary pores in the cell membrane. This lets molecules, like DNA or proteins, enter the target cell.

There is also research to develop an alternative substrate (soil) that is both eco-friendly and highly electrically conductive. The result was eSoil, a porous material made of plant-derived cellulose nanofibers mixed with a very conductive polymer known as PEDOT:PSS.[ii] It was found that when compared to the control group, the growth of the eSoil plants had been boosted by an average of 50%. The extra growth was observed in both the roots and the shoots. And unlike previous studies in which high-voltage electricity was used to boost plant growth, the eSoil only required a safer, more energy-efficient low-voltage current.

Crimilegal political order

The crimilegal order is a type of hybrid political order characterised by the blurring of the moral, normative, and social boundaries between (formal) legality-legitimacy, on the one hand, and illegality-illegitimacy and criminality-morality on the other.[iii]

In Latin America, over 13% of the population experiences a situation where criminals — paramilitary groups, vigilantes, death squads, guerrillas, drug cartels, organised crime groups, and gangs — take over the traditional role of the state and govern or co-govern a territory and a population.[iv] This includes maintaining public services, infrastructure and the justice system. A more unstable geopolitical situation, pervasive regional conflicts, and weakening of the state are likely to strengthen this trend, also in other parts of the world.

Awescapes

In a world full of stimulus people seek ways to escape and rest. Some enjoy nature and peacefulness but a growing number of people long for even more stimulating experiences. Yearning for experiences that transcend daily life, people will seek out “awescapes”: moments of jaw drops, heart swells and goosebumps.[v] Through disruptive encounters or monumental installations, companies try to bring consumers closer to those moments of wonder that energise - something of which virtual worlds offer endless alternatives. Whether numbed by pandemic isolation, burned out by grind culture, or shocked by horrors of war and climate crisis, people long for re-enchantment.

Almost half of consumers globally say they want more awe in their lives.[vi] Awe is now a cutting-edge research subject within emotional psychology, and scientists continue to uncover its benefits. These micro-moments of awe may improve emotional resilience, combat burnout and boost inspiration in everyday life. Awescapes may bring temporary relief, but will they tempt users to spend even more time in virtual reality and create stimulus overload.

Meta-cities

For the first time in history, a sizeable fraction of the workforce can participate in the economic life of a city without actually living there. A new, expanded form of city, the “Meta City”, is a web of cities that operate as a distinct unit attached to a major, often global, economic hub.[vii] The various communities that make up the Meta City may be in different time zones and non-contiguous locations, but they function together as a coherent network with a distinct structure and logic. London and New York are forerunners in this scheme but there are many potential networks emerging.

As young people are already staging protest inside virtual games, politics is also moving to virtual worlds and may form global, local or meta city-wide movements.[viii] The rise of meta-cities risks creating places that do not matter to rural areas, where, in contrast, quality jobs disappear, public services erode, and economic prospects rapidly diminish. The rural-urban divide is a significant driver of today’s culture wars.

As cities grow into Meta-cities and prepare to serve all citizens, including physical, digital and non-human parties, new forms of governance are required. A fundamental issue for democracy is to remember also those living outside the meta cities.[ix]

Advanced frugal innovations

Although frugal innovation is generally associated with reducing a solution to basic functionalities and saving on resource use and cost for bottom-of-the-pyramid markets, there is a growing interest in advanced constraint-based innovations for sustainability and resilience.[x]

Advanced frugal innovations are based on sophisticated engineering, involving research and development work as well as rigorous design principles (simple design, advanced manufacturing techniques and materials, biomimetics) and systemic optimisation that result in new-to-the-world products and services. New technologies, such as 3-D printing, mobile services and applications, cloud technologies, machine learning and artificial intelligence have high potential to facilitate such innovations.[xi]

In a world of increasing resource constraints, decreasing financial and human resources, and technological and geopolitical disruptions (GPS disruptions, broken supply chains etc.), the competitive advantage may come from advanced frugal innovations with fewer dependencies and lower maintenance.

Societal aspects of pain

The notion of pain is increasingly viewed not only as individual and personal but also as a societal issue. Socioeconomic, psychosocial, and behavioural factors, as well as social stressors (economic situation, insecurity) are strongly linked to pain. This leads to increasing calls for governments to include pain as an indicator in wellbeing debates.[xii]

In a different take, arguments are made that the modern "painless civilization" has created systems that seek "comfort and pleasure" and eliminate "pain and suffering", depriving people of joy, which is considered a fundamental source of meaning in life. We are led towards the situation of drowning in a sea of pleasure.[xiii]

Purposeful houseplants

Literal “power plants” are small leaf-shaped generators that produce electricity using wind and rain. The generators, which involve a combination of different kinds of small-scale sensors and electrodes, can be placed among the leaves of fake plants.[xiv] Fake plants could be new sources for clean self–powered energy in cities and even houses. If the energy harvesters can be integrated into the leaves of real plants the opportunities are even wider.[xv]

At the same time in biological computing the search for solutions to reduce the carbon footprint of digital infrastructure has also turned to plants by transforming them into data storage. These non-fungible plants (NFPs) with encoded digital data in their DNA may be the future of decentralised eco-data centres.[xvi] Yet another initiative has taken the role of plants even further and turned plants into equal actors in the economy. NFTrees in the metaverse are data visualisations aka digital twins of the health data of real trees. Humans can buy these NFTrees and the plant can then decide how the money is spent.[xvii]

With these new roles, plants may become central for cities or households, still serving human needs but possibly also getting their own income.

Politainment and spectacularisation of politics

Politainment, or the blending of politics and entertainment, is emerging as an effective type of political communication.[xviii] Mass and social media require the adaptation of specific media logic to politics, especially increasing spectacularisation (e.g., Ukrainian President Volodymyr Zelensky’s social media strategy). This is also an increasing feature of political activism, from using tractors in recent farmers’ protests to targeting art in climate activism.

The expansion of spectacularised politics will continue, possibly leading to greater fragmentation of society and distrust of the political system. Digital narratives will increasingly focus on interactivity and user participation in the creation of stories (augmented reality, games), with content production becoming decentralised, impacting the content diversity and the quality of political information available online.[xix]

- ## Endineering

  Designing end of product or end of service is increasingly crucial for the circular economy but also for transition approach, where phasing-out of unwanted practices is at least as important as introducing new, more sustainable ones.

  The role of an "endineer" is to consider, in the initial design of the product or service, the phasing-out and "off-boarding processes." This phasing-out has to create a satisfactory experience of removing the product/service from one's life, its disassembly/recycling and emotional engagement.[xx] As transformation requires many changes to lifestyles and processes, designing and celebrating the finales can change the consumerist attitude.

- ## Fear of obsolescence (FOBO)

  FOBO, or the Fear of Becoming Obsolete, is a growing concern among employees, particularly those with college education, as emerging technologies threaten to render their skills irrelevant. This fear leads to stress, anxiety, and decreased job satisfaction, affecting work-life balance. With the introduction of AI, FOBO is likely to exacerbate employee burnout.[xxi]

  Recognising and addressing FOBO is crucial for employee well-being and creating a positive work environment. Companies must invest in continuous learning and development to prepare employees for technological advancements and mitigate the impact of FOBO. This way they can face the future with courage, not fear, and with skills, not ignorance.[xxii]

- ## Digital sweatshops

  There is a rapid rise in Southeast Asia of a new form of crime, namely abducting people across national borders and forcing them to carry out internet scams. Myanmar, Laos, Cambodia and Thailand have become the centre of this illicit industry, in which tech-savvy workers from around the world are lured with the promise of tech jobs only to be held against their will in tightly controlled compounds by organised crime groups. They are then forced to approach potential scam victims online in attempts to rob them of their money.[xxiii]

  In Global South countries like the Philippines for instance, masses of lowly paid workers log in at packed office spaces or internet cafes to process the masses of data that American AI and big tech companies need. These practices fit into a potential new trend in which people are exploited for their tech skills instead of their labour, thus creating 'digital sweatshops'.[xxiv] Automation of manufacturing will not eliminate poor working conditions, as tech savvy workers can get exploited just as well.

- ## Slow scientists in fast science

  The slow science movement reflects the propositions of the slow movement to decelerate the pace of life, emphasising quality over quantity and rewarding and pleasurable aspects. In the context of science, it comes in response to the demands of an accelerating publishing pace.[xxv] At the same time, the pace of science is accelerating as crisis situations such as COVID-19 require very fast gathering of evidence and new technological approaches such as machine learning techniques speed up the discovery process – which can lead to improved living standards and growth and addressing societal challenges[xxvi].

  In this context the role of scientists would change to think in longer timescales and survey larger horizons, assessing and understanding quality and higher order evidence in science[xxvii] and foster teamwork and interdisciplinarity.

- ## Resurrecting famous politicians

  Deepfake technology allows the creation of realistic videos of events and situations that never happened and large language models can simulate interactions with historical figures. The combination of both can bring back past politicians into current political debates, especially in election periods.

  In recent elections in Indonesia, President Suharto, a dictator who died in 2008, made an appearance in a video supporting a candidate[xxviii]. In Indian elections, the iconic leader of the Dravida Munnetra Kazhagam (DMK) party was resurrected in several videos to support local politicians. [xxix] While not directly spreading misinformation and clearly distinguishable as fake, political leaders of the past will become much more present in everyday politics to leverage their popularity.

[i] https://www.nagoya-u.ac.jp/researchinfo/result-en/2023/12/20231207-01.html
[ii] Electrically conductive eSoil boosts plant growth via zaps to the roots
[iii] Schultze-Kraft, M. Crimilegal Orders, Governance and Armed Conflict. Crimilegal Orders, Governance and Armed Conflict, 2018. https://doi.org/10.1007/978-3-030-03442-9.
[iv] New Research Finds Nearly 80 Million Latin Americans Live Under Criminal Governance | The University of Chicago Division of the Social Sciences
[v] TrendWatching | Awe, once overlooked, is now a buzz in emotional psychology. Its benefits range from kindness to resilience. Nearly half of global... | Instagram
[vi] Customers want brands to 'make them feel alive', new Wunderman Thompson report reveals - Marketing Beat
[vii] The Rise of the Meta City
[viii] The kids are alright: why young people are protesting in virtual worlds | Dazed
[ix] revenge of the places that don't matter (and what to do about it) | Cambridge Journal of Regions, Economy and Society | Oxford Academic
[x] Barnikol, Julian, and Ingo Liefner. "The Prospects of Advanced Frugal Innovations in Different Economies." Technology in Society 71 (November 1, 2022): 102081. https://doi.org/10.1016/j.techsoc.2022.102081.
[xi] Rao, B. C., & Liefner, I. (2023). Frugal Engineering of Advanced Frugal Innovations for Global Sustainability Entrepreneurship. The Journal of Entrepreneurship, 32(2_suppl), S69-S88. https://doi.org/10.1177/09713557231201130
[xii] Governments should measure pain when assessing societal wellbeing | Nature Human Behaviour
[xiii] Painless Civilization: A Philosophical Critique of Desire
[xiv] Multisource Energy Harvester on Textile and Plants for Clean Energy Generation from Wind and Rainwater Droplets | ACS Sustainable Chemistry & Engineering
[xv] Fake Plants Could Be the Next Clean Energy Source: Research
[xvi] LSN : News : Non-Fungible Plants could be the future of decentralised eco-data centres
[xvii] Metaverse Plants Plantiverse
[xviii] Diehl, P. "Populism, Celebrity Politics, and Politainment." In Populism, Demagoguery, and Rhetoric in Historical Perspective, 315–40, 2024. https://doi.org/10.1093/oso/9780197650974.003.0014.
[xix] Gómez-García, S., Zamora, R., & Berrocal, S. (2023). New Frontiers for Political Communication in Times of Spectacularization. Media and Communication, 11(2), 109-112. https://doi.org/10.17645/mac.v11i2.7069
[xx] And End
[xxi] Face Your Fear of Becoming Obsolete
[xxii] The rise of FOBO: fear of becoming obsolete in the age of AI | World Economic Forum
[xxiii] How Myanmar Became a Global Center for Cyber Scams | Council on Foreign Relations
[xxiv] How AI development fostered a digital 'sweatshop', and why it matters for the technology's future | South China Morning Post
[xxv] the slow science manifesto – slow science in belgium
[xxvi] Accelerating science could be the most valuable use of AI - OECD.AI
[xxvii] Friedman, Daniel C. & Šešelja, Dunja (2023). Scientific Disagreements, Fast Science and Higher-Order Evidence. Philosophy of Science 90 (4):937-957.
[xxviii] AI 'resurrects' long dead dictator in murky new era of deepfake electioneering | CNN
[xxix] Indian election was awash in deepfakes – but AI was a net positive for democracy