FUTUURI



WHAT ARE THE FUTURES OF NATURAL RESOURCES?

24th Futures Conference focused on the futures of sustainable management of natural resources. The event was organised in collaboration with the Natural Resources Institute of Finland (Luke). 'Futures of Natural Resources' started with an online day on 4 June and then continued fully onsite during 13–14 June in Turku, Finland. We were happy to host 300 participants from 40 different countries, representing all the continents of the world with around 210 visitors onsite and additional 90 participants online.

How can we maintain a good quality of life on earth when we are facing increasing pressures on natural resources? Can technology reduce the current wasteful use of natural resources and how? What kinds of new approaches, through political and ecological economics could be brought to the management of natural resources in the future? With these and other essential questions in mind, we created a cross-disciplinary platform where participants could meet, share and discuss issues concerning futures of our earth. Quite a demanding task one could say!

The three conference days consisted of keynote lectures, parallel sessions and participatory workshops. In the beginning of the first day, we had the pleasure of hearing an excellent introduction to the theme from Dr. **Juha Hiedanpää** (Luke). During the online and onsite days, the audience heard from a group of high-level keynote speakers, who all focused on the issues at hand from different viewpoints.

Our warm thanks and gratitude to all the distinguished keynotes: Dr. **Gianluca Brunori** (University of Pisa, Italy), Dr. **Katriina Soini** (Luke), Dr. **Mariana Bozesan** (AQAL Capital GmbH & AQAL Foundation, Germany), Dr. **Åsa Svenfelt** (Centre for Local Government Studies, Linköping University, Sweden) and Dr. **Rafael Popper** (Warsaw University of Technology, Poland & University of Turku),

This Futuuri special issue includes articles that provide insights into the keynote speeches.

At this point, we would like to thank warmly our excellent master's student **Lahara Ranaweera** for her invaluable work helping us to organise the event smoothly.

Special thanks also go to all the writers in this issue for their contribution and of course to our whole conference team: Scientific Board and all the session chairs and moderators. Not to mention the always fruitful collaboration with the staff of the Natural Resources Institute of Finland. Thank you all for your hard work and good spirits!

We hope that those of you who joined the conference enjoyed your visit to our beautiful city of Turku or your participation virtually.

The theme for the next Futures Conference will be *'Futures of Technologies'*. This time the event will be organised onsite in Turku, Finland. You can find more information about the event in this Futuuri issue on page 11. ●

We hope to see you all in June 2025 in Turku, Finland!

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ONLINE DAY

KEYNOTE SPEECH

TEXT Samira Yaghouti

Food System Transformation in Times of Permacrisis

Professor Gianluca Brunori, a distinguished scholar from the University of Pisa specialising in Food Policy and Bioeconomy, delivered a comprehensive speech focusing on the imperative need to transform global food systems. He emphasised that traditional approaches are no longer sustainable, citing the critical transgression of planetary boundaries such as climate change and biodiversity loss.

Professor Gianluca Brunori advocated for a systemic shift in addressing these challenges, arguing that food systems are complex networks involving interconnected activities, actors, rules, and natural resources. He underscored the importance of understanding feedback mechanisms within these systems to anticipate and mitigate crises effectively.

Strategic Pathways for Food System Transformation

The speech highlighted three strategic pathways outlined by the European Commission to guide the transformation of food systems:

1. Ensuring equitable access to nutritious and sustainable food for all.
2. Promoting circularity to minimise waste and enhance resource efficiency in food production and consumption.
3. Restoring and enhancing diversity in food, farming practices, and social systems to bolster resilience and sustainability.

Fostering Resilience Across Sectors

Brunori discussed the systemic impact of recent global crises such as the COVID-19 pandemic and climate-related disasters, emphasising their destabilising effects on food systems. He stressed the need for proactive crisis management and transition strategies to build resilience and mitigate risks across sectors.

Need for Research and Collaboration

Brunori emphasised the pivotal role of research in providing evidence-based solutions and understanding trade-offs associated with food system transformation. He highlighted the importance of inclusive stakeholder engagement and collaboration to navigate complex socio-economic and political dynamics.

In conclusion, Professor Brunori called for renewed consensus-building through informed deliberation to overcome societal polarisation on food system issues. He urged researchers and policymakers to prioritise equitable solutions that address diverse stakeholder interests while advancing sustainable development goals. ●



GIANLUCA BRUNORI

Full Professor, Department of Agriculture, Food and Environment, University of Pisa, Italy

Dr. Gianluca Brunori is Full Professor at the University of Pisa, where he teaches food policy and bioeconomy. His research activity regards innovation in agriculture and rural areas, sustainability of food systems, role of small farming in rural development and in food security.

He is coordinator of the project CODECS, on the costs and benefits of digitalisation in agriculture, and has been coordinator of the project DESIRA, on the socio-economic impact of digitalisation in agriculture and rural areas.

Dr. Brunori is editor in chief of the journal Agriculture and Food Economics. He has been Chair of the Expert Panel of EU SCAR foresight exercises. He is also Chair of the Scientific Advisory Board of the Joint Programming Initiative "Agriculture, Food Security and Climate Change" (FACCE).

VIRTUAL WORKSHOP

TEXT Janna Jokela

More than Human Future – Creating Non-Human Narratives

How to imagine more than human futures? During the virtual day of the Futures Conference, participants had the possibility to attend a pilot workshop for a game built around non-human narratives. The game is being developed by **Anne Stenros** and **Minna Takala** from Creative Catalyst Oy, who also facilitated the workshop.

The workshop began with an introduction to more than human futures. According to the facilitators, non-human personas are essential when imagining future narratives for planetary well-being. The creation of non-human narratives is about life-centred design: giving voice to the vulnerable, mainly non-human actors, as well as applying natures patterns and intelligence to challenges.

Dragons to the Rescue!

The framework for the game comes from Japanese philosophy, namely that of Godai. It is based on the idea of five elements and the features they represent. The elements incorporated into the game were *Earth* (strength), *Water* (adaptability), *Fire* (passion), *Wind* (freedom) and *Void* (creativity), plus *Awareness* (wisdom) as the sixth element.

The Godai elements formed the basis for the non-human personas in the game. However, the facilitators emphasised that we also need to rethink the role of humans in the future and therefore, the non-human personas are accompanied by nature smart human personas. In addition, the game includes power animals in the form of dragons, that can help in critical crises to overcome challenges with their superpowers.

Storytelling on Imaginary Planets

In the game, the year is 2050. Participants were divided into smaller groups and sent to different planets, named after the Godai elements. Each planet was facing a different ecological challenge, ranging from biodiversity loss to habitat destruction and water crisis. On each planet, there were two non-human personas, two human personas, and one dragon as characters the participants could choose from.

The exercise was carried out as a group discussion. The participants took turns to jointly tell a story, from the point of view of their respective personas. The story started in the year 2024 and then moved on towards 2050, discussing how that planet`s specific challenge was confronted.

The narratives created by the groups were interesting and diverse. The non-human personas were active stakeholders in all of the narratives, promoting nature smart behaviour with the support of the power animals, dragons. There were some conflicts between the human and non-human personas, but in the end, solutions were found, and challenges solved.

Reflecting on Non-Human Perspectives

The exercise was all about changing one`s perspective to that of the imaginary personas, which many participants found difficult. While some questioned what can be learned from this kind of exercise, others felt it elicited discussion and helped to challenge and understand different points of view. The facilitators emphasised that this pilot workshop was still a very preliminary experiment but proposed it to be a good tool for changing mindsets and allowing different interpretations. In the end, reflecting on the perspective of a tree or a bumble bee was more important than the created narrative itself. ●

TEXT Mikkel Stein Knudsen

Unlocking a Thrivable Future for Humanity – Optimism, Sustainability and Prosperity

Do not underestimate the capacity of humanity. The most important natural resource in the world is you. Dr. Marianna Bozesan struck an optimistic note during her keynote at the Futures Conference, as she presented her thoughts on Unlocking a Thrivable Future for Humanity.

The Power of Exponential Thinking

Humanity is facing grand challenges, and there is a rapid need to upscale solutions that would allow the implementation of the Sustainable Development Goals – with the implementation within planetary boundaries – as soon as possible. Dr. Bozesan described this as her 'moonshot': The investment turnaround enabling this to happen by 2050. This is, in her view, ultimately a difficult, but not insurmountable challenge – paraphrasing President **Kennedy's** words about moon travel, a turnaround we choose not because it is easy, but because it is hard.

Believing this possible, she exclaimed great faith in two separate entities that otherwise often get a more cynical treatment in conferences dedicated to sustainability: Humanity and technology. Human civilisation has before proven itself able to make the impossible possible, humanity has created great abundance, and human ingenuity is the ultimate force behind such stunning achievements as the invention of the written word, the building of the Chinese Wall, and, indeed, modern space travel. In other words: Human ingenuity has delivered incredible things before, it will do so again. At the same time, we are living in a great convergence of technologies – it is not just one technology, but the convergence of multiple technologies that matters – that allows for scalable and thrivable solutions. To understand this technological promise, Dr. Bozesan repeatedly stressed, it is necessary to grasp the enormous power of exponentials. Without exponential thinking people miss the growth potential of disruptive technologies, exemplified with the growth of the internet, smartphones, and, lately, AI. One reason why not just ordinary people but also major business incumbents often miss these emerging technologies is due to a deceptively slow growth before the exponential growth takes off. Understanding that we have the existing technologies that would allow us to unlock most of the SDGs, and that these technologies can potentially take off exponentially, also provide the understanding that we, society, can achieve the necessary turnaround within a surprisingly short time.

A Kosmocentric, Integral Worldview

As an investor, academic, and author, Dr. Bozesan has made the case for an integral worldview. This is an idea of a developmental path of leadership of consciousness from the egocentric focus on 'Me' via the ethnocentric focus on 'Us' to the worldcentric focus on 'All of Us' before finally reaching the kosmocentric focus on 'All of It'. Here, the commitment is not only beyond narrow identity groups, but also beyond speciest and anthropocentric thinking – it is a commitment to the flourishing of all life everywhere. Getting to this worldview involves a consciousness journey invoking both multiple intelligences and something resembling spirituality. Eventually, the realisation is that humanity is part of a holon, a complex universe. This understanding should then, in turn, guide investment decisions that are then made with higher environmental and social impact, leading the needed investment turnaround.

Pioneers at the Forefront

Another major undercurrent in the presentation was the idea that it is always pioneers that chart new courses. The world is not changed by the incumbents who always tend to miss the weak signals of emerging discontinuities, but by the so-called 'Crazy Ones' (as famously celebrated by the iconic 1990s Apple television advertisement which Dr. Bozesan played at the end of her presentation). Thinking different, daring to try new things, daring to be visionary and believe – these are things that should be encouraged, nurtured even. But with ingenious pioneers setting the scene for optimistic improvements, supported by the great convergence of technological opportunities, and with the possibility of exponential take-off of solutions, we should worry less and instead be very optimistic about the future of humanity. This was the powerful, main message Dr. Marianna Bozesan left us with after the Futures Conference tour-de-force keynote. ●

MARIANA BOZESAN

Co-Founder & General Manager, AQAL Capital GmbH; President AQAL Foundation, Germany

Dr. Mariana Bozesan is a serial entrepreneur, with a decades-long track record in tech, and the Co-founder and General Manager of AQAL Capital GmbH focusing on so-called integral investing. As she explained, integral investing integrates both the ambition of high financial returns (the target of traditional investing) with the ambition of a high environmental, social, governance, cultural and happiness impact (the target of traditional philanthropy).

Dr. Bozesan is also the recipient of the Golden Angelina Award, as Europe's Female Angel Investor of 2019 and became the Best European Early stage Investor of the Year 2016 awarded by EBAN, the European Business Angel Network. She is full member of the Club of Rome, Fellow of the World Academy of Art and Science, and has authored several books including 'Integral Investing: From Profit to Prosperity, a report to the Club of Rome and WAAS'.



Roundtable Discussion on Futures of Work, AI, and Narratives with Mariana Bozesan & Jerome Glenn, hosted by Sirkka Heinonen & Markku Wilenius: ty.fi/roundtable

TEXT Siyada Witoon

Cultural Pathways for Sustainable Use of Natural Resources

In her keynote speech, Dr. Katriina Soini remarked that our worldviews, mental models, and research have been profoundly shaped by the ideas of Enlightenment, economic liberalism, and Protestant ethics that have contributed to the problems that we currently face. Fortunately, a broad consensus has emerged that radical and rapid change is necessary to transition towards more sustainable futures.

At the Natural Resources Institute Finland (Luke), over 1,300 researchers and staff are working across Finland to address complex challenges related to the use and management of natural resources. Luke's mission is to develop sustainable futures and enhance well-being through the responsible use of renewable natural resources. The institute is embracing the urgent call for a paradigm shift and transformation.

Culture in Sustainability Transformation

Sustainability transformation has been on the global agenda for over a decade. Initially, sustainability was framed around three pillars: ecological, economic, and social. Dr. Soini emphasised that these pillars alone are insufficient to drive the required change. The need for a shift in mindset, paradigms, and the power to change has led to the emergence of culture as the fourth pillar.

Culture can be supportive and self-promoting as another pillar in sustainable development. Culture can assume a mediating role to balance all the three existing pillars and regulate the way they can be achieved. Culture can also be a foundation or a driver for transformation. It is a means to change the mindset, which is essentially needed for a radical and rapid change.

Everything is Connected

Soini referred to a recent global sustainability report that highlights the need for a dual strategy where, on the one hand, decline or phase out the dominant unsustainable system and, on the other hand, support the rise of sustainable systems. This can be carried out in three phases: the first involves visioning and deliberating common goals; the second accelerates various interventions; and the final phase focuses on stabilising. These reforms need to be institutionalised and become deeply rooted in society. In the end, no person or entity exists in isolation, but always in a relationship. The world is interconnected, and functions as a complex system that constantly evolves to improve socio-ecological dimensions, making relationality essential.

Nourishing Sustainability in Cultures

Dr. Soini revealed three key aspects that are gaining traction across environmental science, social sciences, and humanities in the ongoing discussion on sustainability science and relational thinking:

First is ***the more-than-human thinking***. It emphasises that humans and nature are intrinsically linked. Humans are part of nature and co-create with, innovate, and co-evolve together with nature. Dr. Soini shared a project in which she was involved called Co-evolvers, which applies this thinking to the design and implementation of nature-based solutions.

Second is ***the ethics of care***. It takes place in a relationship that involves both the ones who care and who or what is being cared for. In these studies, care means to engage with the world in a practical, effective, embodied, and ethical manner. Care is extended from the perspective of human relations to look after biophysical elements of living beings and ecosystem functions. Concerning natural resources, this suggests a shift from a managing and controlling attitude to better acknowledging the interdependencies and reciprocity in our relations with nature. For example, it is about how we can recreate our relations with soil and water but also with other people, especially the most vulnerable ones in the communities.

Third is ***the history of language***. Language matters as it is a central part of how we relate to nature and other people through conceptualising and communicating in words. Language not only facilitates and guides our behaviours and actions but also how we perceive the world. Therefore, we may need to renew and rethink the language and concepts that we use. Dr. Soini suggested rethinking terms like "sustainability," which, though once powerful, may no longer adequately express the actions needed. Instead, terms like "regenerative farming" and "planetary building" could offer clearer expressions of interconnectedness between human well-being and nature. However, caution is necessary to avoid confusion when introducing new concepts, and a solid framework based on literature should guide this process.

A New Way of Thinking

In conclusion, Dr. Soini discussed how the relational approach might provide tools for shifting the mindset and the way of thinking about natural resources. It could provide new perspectives for understanding complex challenges and navigating the crises we face, ultimately promoting transformation. Yet, there are still methodological challenges that need to be explored and addressed to fully realise its potential. ●

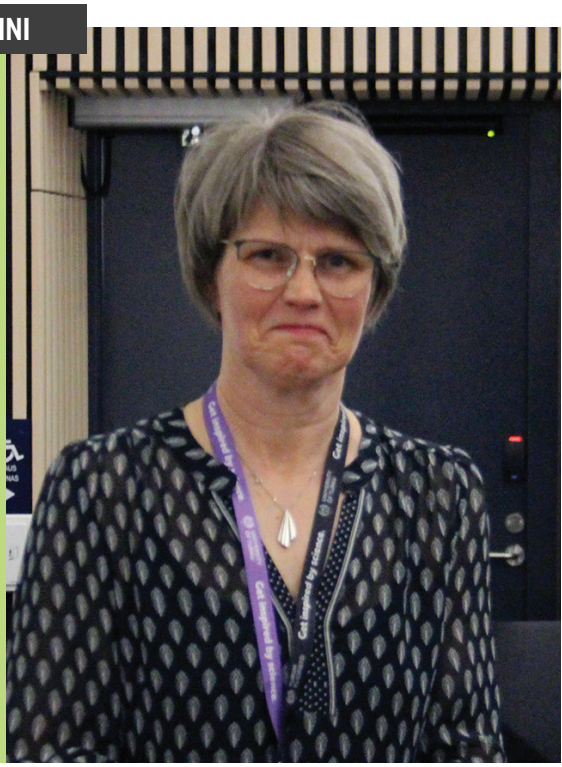
KATRIINA SOINI

Research Manager, Principal Research Scientist, Adjunct Professor

Natural Resources Institute Finland (Luke)

Dr. Soini has a background in Human Geography. For many years, her research has been centered on sustainability transition and transformation, employing inter- and transdisciplinary approaches and methodologies, particularly within the realm of natural resource management and governance.

She has consistently advocated for the inclusion of cultural aspects in sustainability, including learning and education. Soini spearheaded and chaired the COST Action Investigating Cultural Sustainability. Presently, she leads the research project on Sense of water and co-leads COEVOLVERS -project. She also serves as a member Finnish Sustainable Development Expert panel.



TEXT Riikka Armanto

Transformations to Sustainability: Insights from the Futures Research

Transformative Power of Culture

Katriina Siivonen and **Amanda Halme** (Finland Futures Research Centre) started the session by describing the crucially transformative power of culture. Culture is always subject to change, and ethical choices made in everyday life give diverse and heterogenous directions to cultural changes. To build up sustainability that reaches the worldview level of people, their mindsets, values and habits, we should take care of the transformative power of interactive, interconnected and changing processes of culture and nature. Siivonen and Halme presented Heritage Futures Workshops as methodology that is designed for this purpose to co-create transformative actions and skills by the means of experiental understanding of cultural changes and voluntary participation. What they critically emphasised is that the conception of sustainability transformation is based on defining culture as a one global process, that is composed of diverse human habits of acting and being in the world.

Transformative Skills and Transition Efficacy in Strengthening Futures Agency

The discussion was continued by **Teppo Hujala's** (University of Eastern Finland) conceptualisation of transformative skills and futures agency that are needed to enhance our capabilities to create better futures with complexity. Transformative skills include being open to reflection, feeling compassion and empathy, seeking perspectives, making sense, empowering and engaging. Transition efficacy reinforces the courage to apply transformative skills and strengthens futures agency that stems from the concepts of futures consciousness, futures awareness and futures literacy. Transformation skills enable understanding systemic complexities and flows of time. They help for perceiving one's own role within the systems and give courage to accelerate the leverage point of change when needed. Hujala underlined that for enhancing transformative skills it is important to transcend disciplinary boundaries and ways of knowing, provide safe and encouraging experimenting space and activate both mind and body.

Framing Regenerative Anticipatory Assumptions in Futures Literacy

In line with these insights of transformative skills, **Beatrize Carneiro** (Universidade Federal do Rio de Janeiro and Museu do Amanhã, Brazil) framed regenerative anticipatory assumptions in futures literacy by describing meaningful ways through which self-reform and repair could be understood. Regeneration, the capacity to self-reform, and anticipation, the ability of systems to have predictive models of themselves, have deep linkages in phenomena like stem cells, exaptation and autopoiesis. As Carneiro explains, the triple alienation of modern human has caused the Earth to be fractured, of which degraded ecosystems and social inequalities are the symptoms. The question is how we can anticipate regenerative futures for planetary wellbeing. Carneiro presents Futures Literacy Labs as a means of regenerative anticipation by challenging underlying anticipatory assumptions and reframing how futures can be thought of. From their FLL case study in Brazil, they were amazed how smoothly participants were able to arrive at holistic futures re-framings of health.

Guardians of the Earth – Exploring Sustainable Futures Enabled by Cutting-Edge Space Technology and AI

The last part of the session dived into transformative scenarios for space technologies. With multimedia piece by **Kirsi Melvola-Georgakarakos** (Laurea University of Applied Sciences, Finland), the process of transformative scenario workshop producing new innovations through tangible stories and simulation with LEGO® SERIOUS PLAY® was presented. Transformative and constructive methods for futures creativity enable groups to immerse with the imagined futures and characters, dig up silent knowledges of the participants and visualise possibilities. However, as Melvola-Georgakarakos shared, it was surprising how the produced futures imaginaries of space technology product that they perceived as very far out and creative, afterwards resulted systemically and technologically applicable already within near futures. ●

Sustainable Land-Use and City Planning

TEXT Ana Jones-Wilenius

Smart City Wheel: a Holistic Analytical Framework on Exploring Urban Futures

The session opened up with **Tolga Karayel** (FFRC), who dived into the 'Smart City Digital Twins (SCDTs) project and the feasibility of deploying SCDTs initiatives in Finland. He introduced the Smart City Wheel, a benchmarking tool that was used in the project to assess the maturity level of cities in six domains: economy, environment, government, living, mobility, and people. The results showed a trend towards a lack of human centricity in SCDTs design. Tolga emphasised that the planners should benchmark case-specific approaches and avoid "copy-and-paste" solutions that aim at transferring them directly. "The needs, the vision, and the near future should all be connected for better results when planning smart cities for resilient urban futures" – he concluded.

Gaining Time in Nature: Recognising Nature's Contributions to Human Sense of Time

The second intervention came from **Ricardo Correia** (Univ. of Turku) who talked about the intersection between nature and our perception of time. Explaining his research on the psychological effects of nature, he introduced the key dimensions of our sense of time and suggested that nature experiences are events that influence and change our perception of time duration. Ricardo's basic premise is that the amount of attention that one can dedicate to time passage could influence how one feels about it and ultimately influence temporal judgment and behavior. His research explores how our perception of time duration extends while we are in nature environments, a stark comparison when measured against its opposite, built environment. What remains to be further explored, are the characteristics of the diverse natural and built environments in which the whole of society continues, interchangeably, to grow and evolve in time.

Systemic Transformation Challenging Time Concepts of Strategic Land-use Planning

How does land-use planning meet transformation? It was the question posed by **Janne Oittinen** and **Nele Korhonen** (Aalto University) when introducing the insights gained from three cases of Finnish master planning. The cases looked at the direct and indirect impacts of land-use planning considered far-reaching in time and space. The presenters explained the different time scopes in land-used planning ranging from 20 to 30 years, and argued that these time spans are relatively short when considering the age and impacts of the built environment and the needs of future generations. Three basic shapes of time in future research were introduced: linear, cyclical, and spiral, and applied the multilevel perspective (MLP) approach to transitions in the context of urban food systems. The researchers concluded by suggesting that incorporating different time concepts in the planning process enhance the exploration of alternative futures and far better prepare the built environment for systemic transformation.

Beyond the Cubicle: a Glimpse into the Future Landscape of Sustainable Workspaces

The session ended with a presentation by **Nele Korhonen** and **Lassi Tähtinen** (Aalto University). They drew attention to the future potential of coworking spaces in today's hybrid work environments and introduced two comparative case studies from Sydney and Gold Coast, Australia, as pioneer contexts in real estate hybrid development where diverse ownership models and mixed-use workplaces are being incorporated. The research identified a growing trend towards flexible planning, calling attention to collaboration and wellbeing as key enablers in the planning process for the examples of co-working spaces observed. In general, the sense was that the future sustainability of co-working spaces needs rethinking from the side of real estate owners and space managers to effectively address the purpose, location, and target audience. From a perspective of natural resources, Nele and Lassi explained that attention should be given to the type of long-term strategies the building sector needs to adopt when transitioning from old building models to new buildings. The questions that remained open for further exploration are: What probable or possible futures are there for physical working environments? Can flexible spaces contribute to reducing the need for new construction? and, very importantly; Will we need to construct new buildings in the future? ●

TEXT Samaneh Ebrahimabadi & Sirkka Heinonen

Special Millennium Project Session:

Deconstructing Paradoxes of Work via Causal Layered Analysis (CLA)

During the Conference Professor Emerita **Sirkka Heinonen** and Adjunct Professor **Osmo Kuusi** from the Helsinki Node of the Millennium Project (MP) conducted a Special MP Session for the T-winning Spaces 2035 project. The organising team consisted also of **Paula Pättikangas**, **Amos Taylor**, **Mikkel Stein Knudsen, Riku Viitamäki**, **Juho Ruotsalainen** and **Samaneh Ebrahimabadi**, from the FFRC, as well as **Lassi Tähtinen** and **Nele Korhonen** from Aalto University. The Finnish Society for Futures Studies was also one of the organisers, represented by its acting Secretary General **Riika Räisänen**.

Implications of ANI Evolving into AGI

As an introduction to this foresight exercise, a keynote was given by **Jerome Glenn**, CEO of the Millennium Project highlighting the implications of ANI (Artificial Narrow Intelligence) evolving into AGI (Artificial General Intelligence), based on a recent MP Study.

Glenn also presented some paradoxes as tailor-made for this session. These included the paradox that AI-driven automation could cause unemployment, yet also free us to create new forms of meaningful work and a self-actualisation economy, as outlined in Scenario 3 of the World/Technology 2050 report. Another paradox was that future advancements in artificial intelligence could either save civilisation or pose an existential threat to it. Moreover, there was the paradox that the high costs of AI production may be offset by the significant cost savings it provides to users. Lastly, future AI capabilities could vastly concentrate power in the hands of a few, or conversely, lead to a more globally decentralised distribution of power and decision-making.

Futures Provocation as Powerful Tool

Then Sirkka Heinonen presented her futures provocation, which is one of the key elements in running a futures clinique. The aim of a futures provocation is meant to stimulate and open up futures thinking boldly and widely, both creatively and critically. Through these introductions, the workshop participants were invited to critically ponder some of the paradoxes representing the current paradigm of work. A futures window showing visual weak signals was simultaneously screened in the background.

Paradoxes can be used as promising tools for exploring non-explicit socio-cultural and techno-economic developments as well as for deconstructing assumptions. This is because paradoxes may point to ruptures and emerging disruptions that will shape the new paradigm of work. The workshop participants were invited to delve deeper into the paradoxes and deconstruct them utilising the Causal Layered Analysis (CLA) method in small interactive groups. They were encouraged to think of new and radical ways to construct the meaning of work.

Paradoxes to Reveal a New Paradigm

Elaborations took place in five tables, with about six persons plus the moderator at each table, displaying a large pre-structured worksheet. Each group engaged in moderated discussion and was given one paradox to work on, as well as a related litany as an example and starting point for discussion and elaboration. Each small group deconstructed their paradox using CLA, then transformed the metaphor level, and through that process created a new narrative (brief like a haiku or pitch for a movie) as the final step.

The five Paradoxes (chosen from the T-winning Spaces project's literature review, interviews, and Delphi results) given to the groups to reveal a New Paradigm were the following:

1. Paradox of Green & Digital. Digital work expected to reduce environmental impacts but it also generates environmental harm. Digital is invisible, so how to get people to understand environmental effects of this technology?

2. Paradox of Work/Life Balance. Work takes on qualities of leisure and hobbies, while leisure adopts characteristics of work. How you associate place with work or leisure, affects your wellbeing?

3. Paradox of Back to Basics. The more we spend time in the digital world, the more we appreciate physical contact and analogue solutions. Digital life harbours danger for mental health, if they are totally bound by digital, they need a possibility for escape. These basics are related to places (slow, simple, silent, as long as the basic needs are provided (safety, shelter, food), true satisfaction is from interaction with family and friends, not from material goods.

4. Paradox of Control. The work becomes more creative and autonomous, while also workers are increasingly being surveilled through digital means for control and efficiency. This is due to lack of trust and leaders' self-legitimacy. Leaders' insecurity leads to stricter control though digital means in lieu of trust. Surveillance for efficiency takes place at the expense of creativity.

5. Paradox of the Automation of Work and Artificial Intelligence (AI). Automation and AI both replace and intensify human work. Instead of flourishing for human capacity there can be a loss of attention span and mass unemployment. Previous replacement of heavy and unhealthy work is a positive outcome, but very soon automation and AI has taken away skilled creative work. Opposing trends: some lose their jobs, while others' abilities enhanced. AI creates poetry and paints pictures while humans are left with menial jobs.

New Narratives Created

While the groups were discussing and filling out the CLA worksheet with post-it-pads, Jerome Glenn and Sirkka Heinonen circulated visiting and briefly intervening in each group. At the end of the session, the groups presented their result in a nutshell to all participants: the paradox they had worked on, the old metaphor they started with, the transformed metaphor they created, and the new narrative. After each group's presentations, Jerome Glenn provided some additional points and feedback on their results.

All in all, this session provided a methodological experiment on a novel technique 'paradox probing' via CLA and a high-level hands-on immersion in co-creative futures thinking. ●



Participants at the Millennium Project Special Session. Photo: Samaneh Ebrahimabadi.

TEXT Lahara Ranaweera

Futures Beyond Consumption?

In a thought-provoking keynote on the futures of sustainable consumption, Dr. Åsa Svenfelt explored alternative futures beyond consumption and the critical aspects of just transitions to sustainable societies. Her presentation offered fresh perspectives on the pathways to a more sustainable and equitable future.

Economic Growth versus Consumption

The keynote began by highlighting the unsustainable patterns of global consumption, which have long been tied to economic growth. Svenfelt referred to a stark illustration showing the close correlation between global GDP growth, CO_2 emissions, and material use since the 1970s. Despite slight reductions in recent years, particularly in emissions, these changes remain insufficient to meet global sustainability goals.

Global Inequities in Resource Use and Social Outcomes

Dr. Svenfelt emphasised the profound disparities in resource use among countries and the challenges in achieving social thresholds within ecological limits. She referred to **Kate Raworth's** 'Doughnut Economics' framework, which balances the inner boundary signifying the minimum level of resource use necessary to meet basic human needs, and the outer boundary representing the maximum level of resource use that can be sustained without exceeding planetary limits.

Svenfelt remarked that high-income nations that exploit the most resources tend to enjoy better social outcomes while lower-income nations that remain within ecological boundaries struggle to provide a good quality of life. This disparity highlights the deep-rooted systemic issues in the current global framework, necessitating affluent nations to reduce consumption while improving conditions for those in low-income countries.

Futures Beyond GDP Growth

A major focus of the keynote was exploring alternative futures that do not rely on GDP growth and increasing consumption. Svenfelt shared insights from the 'Beyond GDP Growth: Scenarios for sustainable building and planning' research program that developed four scenarios for sustainable futures: *Collaborative Economy*, *Local Self-Sufficiency*, *Automation for Quality of Life*, and *Circular Economy in the Welfare State*. These scenarios envision a world where economic growth is secondary to well-being, resource efficiency, and equitable distribution. These scenarios are not meant to be definitive solutions but tools for discussion and analysis. They all imply considerable and equitable downscaling, such as less meat consumption, less flying, less new buildings, no fossil fuels, and a shift in values thus moving away from materialism towards a more sustainable way of life. Svenfelt noted that these changes are possible but raise questions about desirability and society's readiness to embrace such drastic shifts.

Decolonising Futures through Envisioning Together

One of the key messages of the speech was the importance of including diverse perspectives in discussions about sustainable consumption. Svenfelt stressed that current sustainability conversations are often confined to a "sustainability bubble," dominated by well-educated, urban, and affluent individuals. The 'Mistra Sustainable Consumption – from niche to mainstream' research programme sought to broaden this dialogue by integrating "recognitional justice" into its approach, ensuring that voices often excluded from sustainability conversations were heard. The research results revealed that emissions from consumption could be reduced by up to 40% through adjustments within existing systems without requiring new technology or infrastructure investments. The workshops conducted during the programme also revealed different visions of sustainable consumption, including perspectives from marginalised groups. One group of young women, for example, envisioned a hopeful future where knowledge, peace, and health were central to sustainable consumption – a perspective that might not emerge from traditional sustainability discourse: *"with the end of weapons, the earth becomes a green paradise of peace, health, and knowledge of sustainable consumption."*

Will Everything Be Fine? A Call for New Narratives

Dr. Svenfelt stressed the importance of rest, reminding us that we must pause 'if we want to remain human'. She brought in an example of a 'Farewell Bureau' which helps people disconnect from the pressures of consumerism and emphasises the emotional and cultural dimensions of the transition to sustainability. Dr. Svenfelt called for new stories that break away from growth-centric models, foster inclusive dialogue, and rethink our relationship with consumption.

Her keynote was a powerful reminder that the future of our planet depends on our willingness to embrace collective imagination and commitment to equitable, sustainable ways of living. ●



ÅSA SVENFELT

Associate Professor

Centre for Local Government Studies (CKS), Linköping University, Sweden

Åsa Svenfelt is Associate Professor in Urban and Regional planning at Linköping University, and Docent in Sustainability with specialisation in Futures studies at KTH Royal Institute of Technology.

Dr, Svenfelt's research concerns long-term planning for sustainable consumption and just transitions to sustainable societies. She explores what strategies, solutions and changes may be needed to achieve sustainable societies. Presently, the research focuses on projects on sustainable consumption linked to the research program Mistra Sustainable Consumption.

TEXT Martyn Richards

Co-Creating a Futures Literacy Game Concept

Exercising Futures Literacy through Game Design

Games have been integral to human culture, offering ways to explore risk, imagine alternative realities, and assume different roles. Recently, there has been increased interest in using games to develop Futures Literacy (FL), an approach that encourages diverse and critical thinking about futures to inform present decisions. The Futures Literacy for Business Renewal (FuLiBRe) research group at the University of Turku's Finland Futures Research Centre is investigating FL's application in business sustainability.

Understanding Futures Literacy

Futures Literacy is the ability to imagine and critically engage with multiple futures. It suggests that by broadening the ways we imagine futures, individuals and organisations can better adapt to complex and rapidly changing environments. FL emphasises balancing novel changes with the heritage of the past and involves a process of experimentation, reflection, and learning. This approach enables a nuanced understanding of knowledge beyond technical expertise.

However, a significant challenge in promoting FL is its accessibility, particularly due to the need to switch between technical and figurative language. This can be a barrier for diverse groups, including non-native speakers and marginalised communities. The research group suggests that games could provide a common medium to discuss FL in a more approachable way.

Games in Futures Literacy

To explore the role of games in FL, Doctoral Researcher **Martyn Richards** led the first FuLiBRe pilot workshop at the Futures Conference 2024. The workshop, titled "Co-creating Futures Literacy Games," involved 20 participants, including scientists, researchers, and game designers.

Participants were divided into three groups and tasked with creating a game within 90 minutes using predefined categories such as themes, mechanics, genres, and anticipatory systems. The goal was to design games that engaged players while addressing sustainability through the lens of FL.

Workshop Outcomes

- Group 1 developed a game focused on ocean resource management, using hidden information and technology trees. The live-action role-play format allowed players to experience the consequences of their decisions in real-time, fostering an understanding of sustainability challenges.
- Group 2 designed a game centered on intergenerational equity, with mechanics encouraging players to balance resources for current and future generations, promoting long-term thinking.
- Group 3 created a cooperative role-playing game emphasising teamwork and adaptability. By incorporating chaotic elements and asymmetric rules, the game simulated the unpredictable nature of innovation, requiring strategic adjustments.

Despite differing focuses, all games shared themes of collaboration, problem-solving, and diverse perspectives. They required participants to adapt strategies based on evolving conditions, aligning with FL principles by encouraging flexible thinking about future possibilities.

Analysis and Reflections

The workshop's analysis indicated a modest increase in participants' understanding of FL and sustainability innovation. There was a weak positive correlation between the workshop's perceived usefulness and the development of FL, suggesting that the novelty and collaborative nature of the workshop were influential. Participant feedback was positive, but further study is needed to better understand the learning mechanisms in such workshops.





Conclusions

The "Co-creating Futures Literacy Games" workshop provided initial insights into using game design as a tool to understand complex futures. By combining creative thinking with practical application, the workshop introduced a novel way to engage participants with FL and explore its applications.

The FuLiBRe project will refine this model and explore its use with different groups, aiming to develop new design principles that could enhance collaborative futures experiences. While the findings are promising, ongoing research will continue to evolve the thesis as new insights emerge. ●







"Insightful workshop sessions and much opportunity to networking with futurists and researchers."

" Interesting sessions and plenty of opportunities for hands-on learning of methods."

"Intresting topics, however, I missed panel discussions and debates over controversial questions."

TEXT Samaneh Ebrahimabadi

Our World of Futures Studies as a Mosaic

The book *Our World of Futures Studies as a Mosaic* comprises contributions from a diverse group of authors examining futures studies from various geographical and institutional viewpoints. The goal is to inspire the field and set benchmarks by highlighting successful practices and case studies from countries like Finland, Denmark, Morocco, South Africa, Singapore, Italy, Germany, Australia and New Zealand, and Latin America. The book also features a chapter on global networks such as the Millennium Project, UNESCO, and the Club of Rome.

Key Themes

At the launch event, some of the book's authors presented key messages from their individual chapters. They also shared their hopes for the future growth of futures studies in the particular regions and contexts they addressed.

As one of the three co-editors of the book, **Tero Villman** accentuated the importance of recognising the richness and diversity within the field of futures studies. By truly understanding and appreciating this variety, we can learn from it. **Laura Pouru-Mikkola** stressed that futures studies are more crucial now than ever due to the numerous serious global crises we are facing. She called for new worldviews and transformative approaches to address the pervasive uncertainty and anxiety in society, advocating for futures literacy to enhance long-term decision-making and empower individuals as active future-makers. **Sirkka Heinonen** pointed out that this book is unique in its mosaic nature as it explores manifold approaches, contexts, and futures cultures of different countries, regions, and international organisations.

Markku Wilenius described the book as a platform where people can create different futures through futures literacy in action. He stressed that future-building requires active engagement and movement. **Mikkel Stein Knudsen** noted that foresight is used as a mechanism to bring together different stakeholders to negotiate shared compromises and interests, emphasising its role in transitional literature. **Manal Mouhsine** shared insights from her research on anticipation in Morocco, while **Tuomo Kuosa** discussed his experiences with foresight practices in Singapore, both contributing valuable regional perspectives to the book.

Global Futures Networks

Nicolas Balcom Raleigh discussed how their chapter on UNESCO and futures literacy examines the activities of a specific network, its distinctive approach, and contributions to foresight practices. He hopes that recognising the world as filled with anticipatory systems and processes will encourage diverse and inclusive engagement with the future.

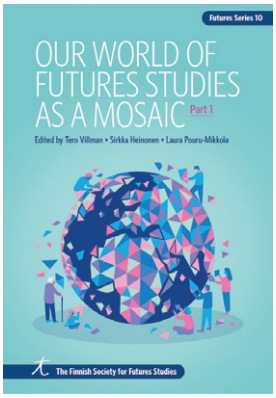
Jerome C. Glenn highlighted their efforts in the Millennium Project to create nodes around the world, involving diverse participants from businesses, universities, NGOs, and international organisations. He sees nodes richer than networks as they cut across hierarchies and bring together varied perspectives, enhancing collective knowledge and collaboration.

The book can be used by anyone interested in learning about the field of futures studies in different countries and regions in the world and its contextualised diversity. **Jennifer Gidley**, President of the World Futures Studies Federation (2009–2017) endorses the book:

"Our World of Futures Studies as a Mosaic is a remarkable book in both its breadth and its depth. A range of expert authors offer in-depth coverage of futures studies and foresight from Europe to Africa, from Asia/Pacific to Latin America. I thoroughly recommend it to anyone wanting first-hand knowledge of the global futures studies field."

Villman, Tero – Heinonen, Sirkka & Pouru-Mikkola, Laura (eds) (2024) *Our World of Futures Studies as a Mosaic. Part 1.* Futures Series 10, The Finnish Society for Futures Studies, Helsinki.

The book is openly accessible in digital format: bit.ly/worldasmosaic















"It was my first time attending an event on futures research – I hope to do one again."

"Very well organized conference with excellent keynotes and programme."

" I networked with amazing professionals and forged relationships that could potentially translate to research and collaboration."

TEXT Siyada Witoon

Green Horizons: Navigating Sustainable Futures with Forest-Based Bioeconomy Roadmaps

As a final keynote speaker at the Futures Conference 2024 Dr. Rafael Popper delivered an insightful keynote address on the significance and potential of the forest-based bioeconomy, exploring the roadmap towards sustainable futures.

Global Outlook

Dr. Rafael Popper noted that the forest bioeconomy is growing in importance and intertwined with different agendas in the national economies and innovation policies. The key drivers affecting its future are comprehensive policy developments, an enhanced understanding of bioeconomy, shared societal goals, supply chain resilience, and the need for global cooperation.

The role of science also brings a better change to the bioeconomy, as diverse technological approaches are being implemented along with artificial intelligence to boost biomass production, identify biomass gaps, and create regional strategies and synergies.

Nevertheless, scaling-up and commercialisation, the know-how to handle innovation and strategic solutions, sub-national development opportunities, political processes and investments, and governance and management frameworks for sustainable innovations remain challenges to bioeconomy development. A comprehensive perspective is therefore essential when developing a bioeconomy strategy, as it must align with a broad range of national and transnational programs.

Finland and Uruguay Cases

Finland is a leading country in bioeconomy representing 1/3 of the forest sector. Dr. Popper noted that the economic contribution of bioeconomy stood at €26 billion in 2019 and is targeted to reach €50 billion by 2035. This ambitious goal signals significant investments and efforts to overcome future challenges, even within Finland's well-organised and functioning system.

Drawing parallels between Finland and Uruguay in terms of population size and bioeconomy potential, Dr. Popper discussed his team's collaboration with Uruguayan stakeholders to shape the country's bioeconomy strategy. Their project aimed at developing a long-term vision for Uruguay by 2050 driving the country towards productive transformation. They anticipated opportunity pathways, identified needs and gaps, developed a shared vision(s) with many stakeholders, created a holistic roadmap, and boosted global collaboration through the SMART (Scoping, Mobilising, Anticipating, Recommending, and Transforming) foresight process.

The first phase involved a large kickoff conference that brought together local players and international companies to scope the critical issues and focus areas, from forest management to mechanical wood processing, fibre-based biomaterial processing, biorefining for chemicals and energy products, and bioenergy. In the next phase, multi-actor workshops were held mobilising all key players in the bioeconomy ecosystem, including unions that play a crucial role in Uruguay. Expert panels helped map barriers, drivers, opportunities, and threats from technological, economic, environmental, political, and regulatory aspects.

Through collaboration with local stakeholders, the team anticipated desirable futures, assessed value networks, and identified the research, innovation, and regulatory needs. This process led to the identification of 15 opportunity pathways for creating a shared vision. Popper explained how strategic recommendations and actions were developed within the bioeconomy roadmap, aiming to transform paradigms and achieve new visions by 2050. Each pathway includes macro, meso, and micro-level recommendations specifying responsibilities. Notably, the co-created vision gained real momentum, with actions remaining in place even after a government change, as stakeholders continue to feel a sense of ownership and commitment.

Key Insights

The results of the roadmap development were quantified across four dimensions: context, people, process, and impact: 35% related to the context of how to manage the momentum, how to implement foresight activities, and how to handle resources practically; 23% related to the people dimension in terms of what competencies and skills are needed and the change of attitude; 25% related to process; and 17% related to impact dimensions. Importantly, 25% of the recommendations were identified as requiring immediate action if the vision for 2050 is to be realised, with half targeted for implementation by 2025.

Despite the promising outlook, challenges persist, particularly Uruguay's reliance on multinational enterprises dominating its economy. Popper emphasised the need for local strategies to diversify the bioeconomy and strengthen collaboration. Critical to this shift is the commercialisation of new intellectual property and innovations in the bioeconomy and the creation of spinoffs. Dr. Popper concluded that achieving sustainable bioeconomy growth requires fostering knowledge valorisation, knowledge co-creation, and knowledge sharing, all driven by strategic foresight. ●

RAFAEL POPPER

Adjunct Professor in Warsaw University of Technology (Poland) and in University of Turku (Finland)

Rafael Popper brings over two decades of expertise in international business, foresight, entrepreneurship, and sustainable innovation management. His career spans roles as a principal scientist, entrepreneur, lecturer, researcher, and innovation policy consultant, collaborating with a wide range of organisations worldwide, including the European Commission, European Innovation Council, EU agencies (ENISA, ETF, EFSA, CEDEFOP), United Nations bodies (UNIDO, UNDP, ECLAC), and international organisations like the Gulf Cooperation Council.

Recognised with two Emerald Literati Awards and an Economics Award, Dr. Popper is also known for establishing breakthrough solutions, such as the Centre for Foresight and Internationalisation (CFI) in Poland. His influential publications and 200+ international speaking engagements, including at The Royal Society in the UK and the European Parliament, showcase his commitment to advancing knowledge and innovation.



FUTURES OF TECHNOLOGIES

– Mutual Shaping of Socio-Technical Transformations

10–12 June 2025 | Logomo | Turku, Finland

The forthcoming Futures Conference focuses on the futures of technologies, its development as well as its importance, role and risks as a driver of social change. What are the effects of social and environmental changes on technological development? The conference will focus on question like how can organizations and societies proactively manage the dual role of technology both as a solution and a source of new societal dilemmas; how can AI and other technologies contribute in advancing the scientific discipline and innovative approaches to technology within futures studies and foresight; how to perceive and rethink the linkages between novel technologies and policy-making; and how to reconstruct innovation policies in an era of pervasive technological changes.

The Futures Conference 2025 will be organised in collaboration with VTT Technical Research Centre of Finland Ltd. during 10–12 June in Turku, Finland.

The program will consist of keynote lectures, parallel sessions and participatory workshops. We will aim to generate multidisciplinary, stimulating and critical discussions that promote networking between people interested in futures issues from different backgrounds and perspectives.

We invite interested contributors from universities, research institutes, companies, governmental and non-governmental organisations to submit their abstracts no later than 31 January 2025. Call for papers and submission form are open on the conference website: futuresconference2025.com.

Important dates to remember

Call for papers available: **October 2024**

Abstract submission starts: **October 2024**

Deadline for the abstracts: **31 January 2025**

Notification of acceptance: **3 March 2025**

Read more about the previous Futures Conferences at

futuresconference.fi

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NEW ADJUNCT PROFESSOR IN FUTURES RESEARCH

Dr. **Marileena Mäkelä** has been appointed as a Adjunct Professor to the University of Turku with the expertise field on futures research, specifically sustainable business.

Marileena has graduated from our FUTU doctoral studies in 2020 with her thesis *'The past, present and future of environmental reporting in the Finnish forest industry'*. She currently works as a Associate Professor in Jyväskylä University School of Business and Economics (JSBE) in Corporate Environmental Management. Her research focuses on sustainable communication, employees and sustainability, circular economy, biodiversity and business, and futures images. She also teaches futures studies at the Finland Futures Adacemy. ●



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Read more: http://ty.fi/fs-masters

Finland Futures Research Centre is a department at the Turku School of Economics, University of Turku. The FFRC specialises in futures research and foresight. It refines visionary knowledge regarding alternative futures and the challenges and possibilities included in them. The FFRC has offices in Turku, Helsinki and Tampere, and employs around 50 experts.

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