

How to Explore Futures? PART 2

Prof Sirkka Heinonen

Finland Futures Research Centre (FFRC), University of Turku

Futures Studies and Future of Sustainable Energy System

DEEM Training 4 September 2019

University of Yangon (YU), Yangon, Myanmar



METHODS APPLICATION WORKSHOP FOR IMMERSING IN SCENARIOS

The Four Generic Alternative Futures

by Jim Dator, Hawaii University (2009)

1. Continued Growth



2. Collapse



3. Disciplined Society



4. Transformation



What Is Neo-Carbon Energy Project?

How to reach a 100% renewable energy system by 2050?



Prof Christian Breyer, LUT

One of the Tekes strategy research openings (2014-2017), in cooperation with the

- Technical Research Centre of Finland VTT
- Lappeenranta University of Technology LUT
- Finland Futures Research Centre FFRC (S.Heinonen)

Jerome Glenn,
Director of the
Millennium Project



Dr Pasi Vainikka,
VTT, Project Coordinator

- Horizon scanning/weak signals
- Futures Cliniques
- Transformational Scenarios on Neo-Carbon Energy Futures 2050
- Pioneer analysis
- Discontinuities & Black Swans
Business, government and NGOs

**Millennium Project
& Club of Rome**

Prof Sirkka Heinonen
FFRC, Future of
Energy Innovations
Dr José Cordeiro,
MP, Singularity
University;



Dr Karlheinz Steinmüller
(Z_Punkt
/Millennium
Project)



Global Internet of Energy:
<http://neocarbonenergy.fi/internetofenergy/#>



VISION OF ENERGY IN A NEOCARBONIZED WORLD



SOLAR AND WIND

Solar and wind power are the engines of the future energy system.



NEOCARBONIZATION

All energy consuming sectors will be electrified by solar and wind: transportation, heating, cooling, electricity, industry, food and water production.



ENERGY STORAGE

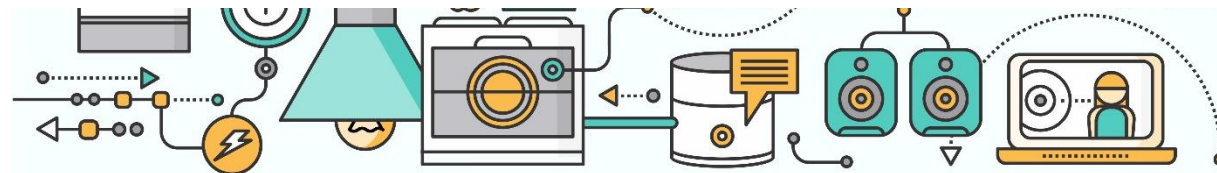
Energy from solar and wind will be stored in various forms.



POWER TO PEOPLE

The transition of the energy system also induces transformation in the ownership basis in energy sector and energy business.

In the neo-carbon world, everything is produced **emissions-free** with solar, wind, and other renewables. Energy stored in batteries, smart grids, and **synthetic hydrocarbons**. Synthetic processes **replace** fossil-fuel based processes.



In the 20th century, infrastructure was centralized.

In the 21st century decentralization proceeds and drives **peer-to-peer** society.

Societal/cultural aspects of energy also matter

Energy is not only a technological and ecological issue, but has implications for the whole society – its power relations, politics, culture, values, economy and production

Teaching Material for Futures Cliniques

- **A book on Electrification in Peer-to-peer Society**
 - A new Narrative for Sustainable Futures
(Heinonen & Karjalainen 2018)
CONTACT: sirkka.Heinonen@utu.fi
- **Forthcoming in English in November 2019** – book with four scenarios + lecture material+ instructions for futures workshops
- **Scenario thinking and bold construction of futures imaginaries** – needed to highlight different alternatives and to make futures visible!
- Immersing into futures via emancipatory futures education (Heinonen & Kurki 2011) & via visualised narratives

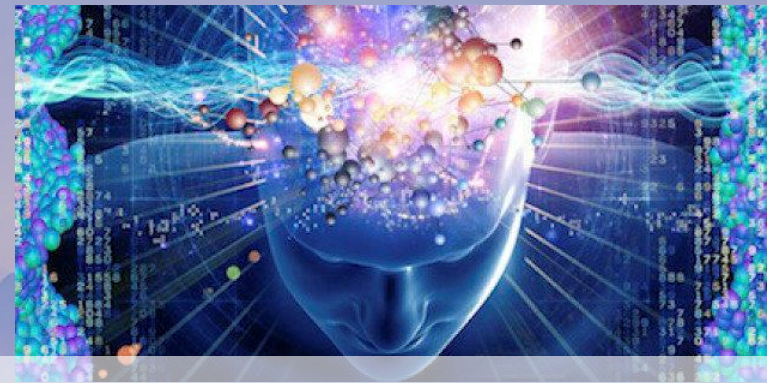




**1. RADICAL
STARTUPS**



**2. VALUE-DRIVEN
TECHEMOTHS**



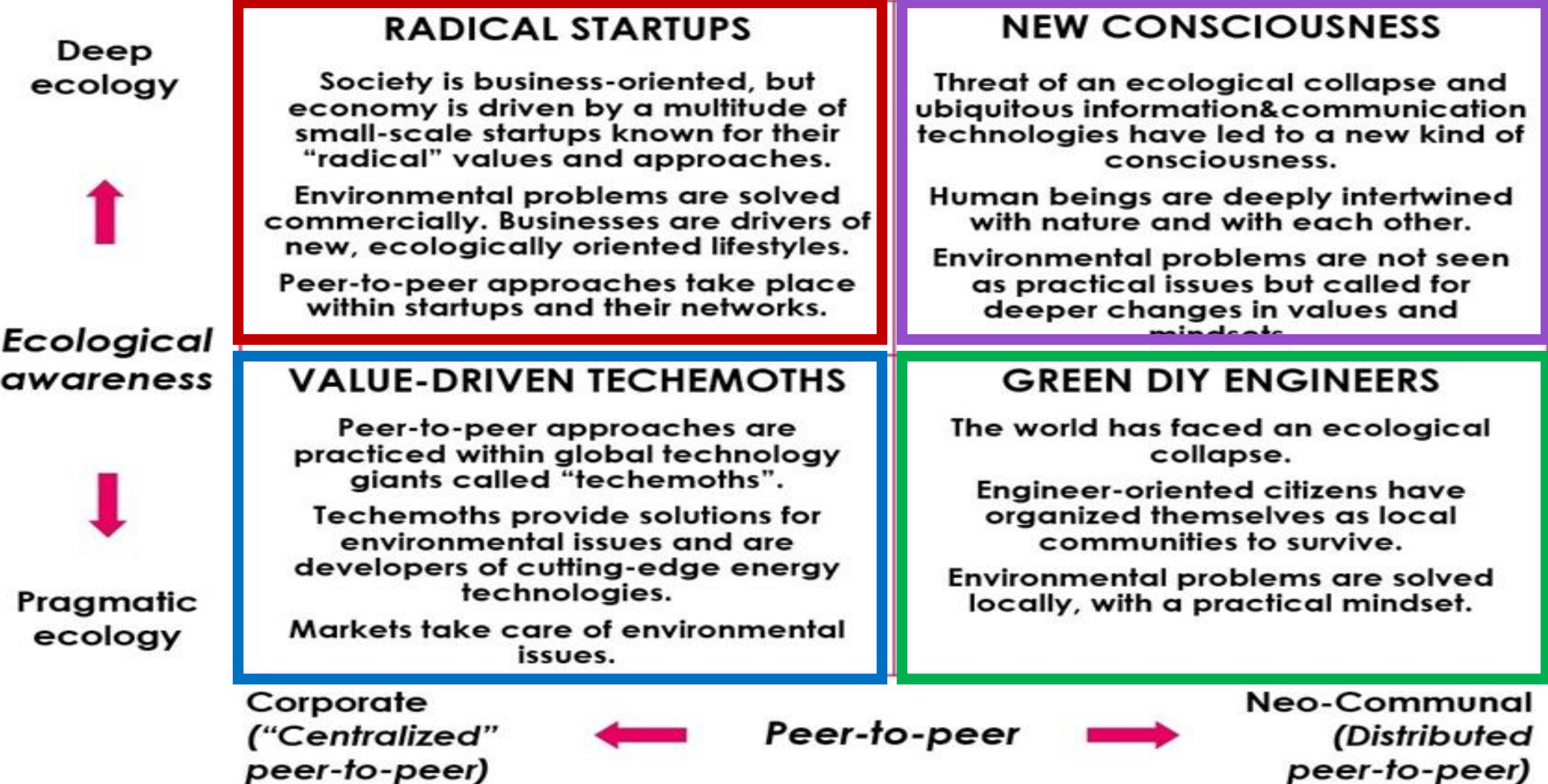
4. NEW CONSCIOUSNESS

**FOUR TRANSFORMATIONAL
SCENARIOS 2050** (Heinonen et al. 2017)

3. GREEN DIY ENGINEERS



FOUR TRANSFORMATIONAL SCENARIOS 2050



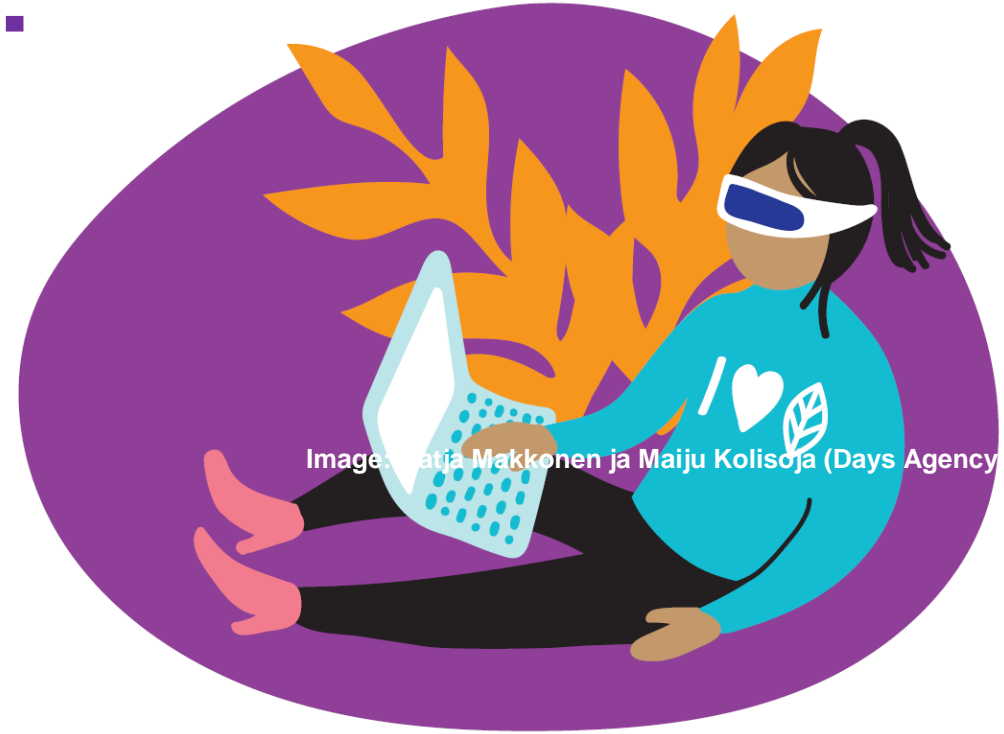
SCENARIO: RADICAL STARTUPS 2050

- **Future energy innovations** are driven from the grassroots by bottom-up solutions that drive change
- **Startups are radical** by their aims and ambition, and serve to create products and services that meet societal and ecological needs
- **Working culture** within the small companies is inspiring and drives the constant cultivation of new ideas



RADICAL STARTUPS: ENERGY IMPLICATIONS

- New renewable **energy innovations** will emerge at an increasing pace
- Grassroots innovation and enthusiasm are harnessed for **solving energy and climate related problems**
- Creation and scaling-up of new **economic opportunities** and a "new economy"



SCENARIO: VALUE-DRIVEN TECHEMOTHS

- Future energy systems are driven by **large companies**
- With their resources, they invest in the opportunity of future energy revolution and **harness its gains**
- Energy revolution is recognized as a **market opportunity**

VALUE-DRIVEN TECHEMOTHS: ENERGY IMPLICATIONS

- Large companies provide **new energy infrastructure**
- They also provide **new energy services** to the market that meet customers' unmet needs
- But, because of societal inequalities, those outside the companies are worse off and everyone cannot enjoy the novel energy solutions



Image: Katja Makkonen ja Maiju Kolisoja (Days Agency)

SCENARIO: GREEN DIY ENGINEERS

- Impacts of **climate change turn out more severe** than predicted, leading to a loss of livelihoods.
- Communities are **forced and left to survive** by themselves. A "survivalist" ethos prevails.
- **Lone-wolf inventors** "tinker and experiment" and come up with energy solutions suitable to serve a world of sustainability

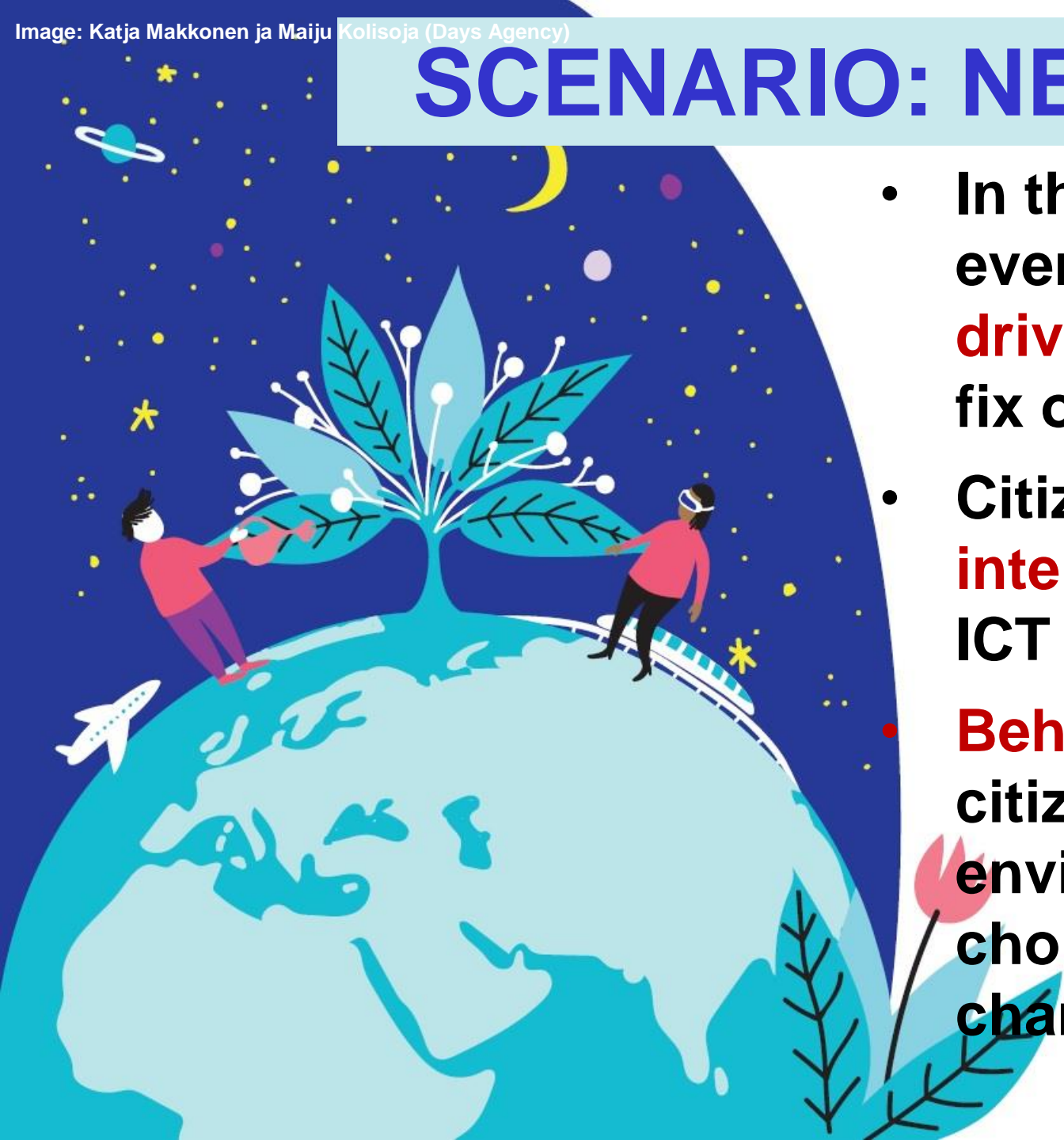


GREEN DIY ENGINEERS: ENERGY IMPLICATIONS

- Local, **tailor-made solutions** on a community-level (micro-grids, off-grid solutions)
- Energy related **experimentation** drives new ideas
- **Energy self-sufficiency** is imperative



SCENARIO: NEW CONSCIOUSNESS



- In the future, it was understood that even **technological and market-driven solutions are not enough** to fix our current problems
- Citizens are increasingly **interconnected** through mobile and ICT technologies
- **Behaviour and value change** of citizens made them aware of the environmental impacts of their choices. This pushed fundamental change

NEW CONSCIOUSNESS: ENERGY IMPLICATIONS

- Global supergrid emerges, **everyone is connected** to the grid
- Even **wireless energy** transmission is there
- **Energy** is harnessed from everywhere and everything, but **its abundance** is highly valued



Image: Katja Makkonen ja
Maiju Kolisoja (Days Agency)

CHOOSE YOUR SCENARIO!

Radical Startups



Society is organised around startups, which serve social and cultural goals besides economic ones.

Value-Driven Techemoths



Large technology companies, with a peer-to-peer ethos, have become “states within states”.

Do-It-Yourself Engineers



Citizens have organised as local communities to survive and ecological collapse.

New Consciousness



Shared identities replace individualism. Robotisation and AI have enabled a self-actualizing economy.

Which one intrigues you most? Doesn't have to be your favourite, but somehow interesting for you to elaborate on.

REFLECTIONS



WHICH OF THESE FOUR TRANSFORMATIVE SCENARIOS would you like to test and elaborate on?

Could it be possible in Myanmar?
What implications for Myanmar?
Can you identify pioneers?
Opportunities/threats?.....

Actors/Pioneers

All levels: government, companies, academia, citizens, NGOs...

FUTURES TABLE/MATRIX

PESTEC

Future of
MYANMAR
2050 **PESTEC**

WRITE HERE NAME OF THE CHOSEN SCENARIO
Give examples of some opportunities, threats, implications, actors/pioneers? Innovations?....Any ideas?...

P = Political

E = Economic

S = Social

T = Technology

E = Environment

C = Cultural/Citi-

End of Methods Application Session -> Thank You!

Professor Sirkka Heinonen

Finland Futures Research Centre (FFRC), University of Turku

sirkka.heinonen@utu.fi

Photo: Sirkka Heinonen



References and further reading

- Dator, Jim (2009). Alternative Futures at the Manoa School. *Journal of Futures Studies* 14 (2), 1-18.
- Fox, S. (2014) Third Wave of Do-It-Yourself (DIY): Potential for prosumption, innovation, and entrepreneurship by local populations in regions without industrial manufacturing infrastructure. *Technology in Society* 39: 18–30. <https://doi.org/10.1016/j.techsoc.2014.07.001>
- Glenn, Jerome – Florescu, Elizabeth & the Millennium Project Team (2018) State of the Future 19.1. Millennium Project. Washington D.C. <http://www.millennium-project.org/state-of-the-future-version-19-1/>
- Heinonen, Sirkka (2017) Pioneer analysis and international cultural changes. Application of positrend and negatrend analysis in the identification of cultural change. In: Heinonen, S., Kuusi, O & Salminen, H. (eds): How do we explore futures? ACTA FUTURA FENNICA nro 10, Helsinki, p. 241-251.
- Heinonen, Sirkka & Karjalainen, Joni (2018). *Electrification in Peer-to-Peer Society*. TUTU-Publications 1/2018, Finland Futures Research Centre, Turku. 2. edition. In Finnish (forthcoming in English) https://www.utu.fi/fi/yksikot/ffrc/julkaisut/tutu-julkaisut/Documents/Tutu_1-2018.pdf

- Heinonen, S. & Karjalainen, J. (2019) Pioneer Analysis as a Futures Research Method for Analysing Transformations. In Poli, R. & Valerio, M. (eds.) *Anticipation, Agency and Complexity*. Anticipation Science 4, Springer Books, p. 61-77. DOI: 10.1007/978-3-030-03623-2
- Heinonen, Sirkka, Ruotsalainen, Juho & Karjalainen, Joni (2017a) Transformational Energy Futures 2050. Neo-Carbon Energy Societal Scenarios. FFRC eBOOK 10/2017. Finland Futures Research Centre, University of Turku. 69 s. ISBN 978-952-249-495-5, ISSN 1797-1322. http://www.utu.fi/fi/yksikot/ffrc/julkaisut/e-tutu/Documents/eBook_10-2017.pdf
- Heinonen, Sirkka et al. (2017b) Final Neo-Carbon Energy Countdown – Ready for Renewables. FFRC eBOOK 11/2017. Finland Futures Research Centre, University of Turku. 40 s. ISBN 978-952-249-496-2, ISSN 1797-1322. http://www.utu.fi/fi/yksikot/ffrc/julkaisut/e-tutu/Documents/eBook_11-2017.pdf
- Heinonen, S., Karjalainen, J., Ruotsalainen, J. & Steinmüller, K. (2017c). Surprise as the New Normal – Implications for Energy Security. *European Journal of Futures Research* 5: 12. <https://doi.org/10.1007/s40309-017-0117-5>
- Karjalainen, Joni & Heinonen, Sirkka (2018) The Pioneers of Renewable Energy are Around the World – What Can We Learn from Them? *Journal of Futures Studies* 22 (4): 83-100. DOI:10.6531/JFS.201806.22(4).0006 <http://jfsdigital.org/wp-content/uploads/2018/06/06n-Glocal-Insights-Karjalainen-Heinonen.pdf>

- Heinonen, Sirkka & Kurki, Sofi (2011). Transmedial Futuring in Creative Foresight Space. In: Wagner, Cynthia G. (ed.) *Moving from Vision to Action*. Essays published in conjunction with the World Future Society's annual meeting. World Future Society, Bethesda Maryland, pp. 119-128.
- Lang, Merja, Karjalainen, Joni & Heinonen, Sirkka (2016) *Glocal Insights to Neo-Carbon Energy and Its Forerunners*. NEO-CARBON ENERGY WP1 Working Paper 4/2016. Finland Futures Research Centre, ISBN 978-952-249-429-0. www.utu.fi/fi/yksikot/ffrc/tutkimus/hankkeet/Documents/NeoCarbon-WP1-4-2016.pdf
- Poli, R. & Valerio, M. (eds.) *Anticipation, Agency and Complexity*. Anticipation Science 4, Springer Books.
- Ruotsalainen, Juho – Karjalainen, Joni – Child, Michael & Heinonen, Sirkka (2017) Culture, values, lifestyles, and power in energy futures: A critical peer-to-peer vision for renewable energy. *Energy Research & Social Science* 34: 231–239. <https://doi.org/10.1016/j.erss.2017.08.001>
- Taleb, Nassim (2007) *The Black Swan*.

ON SCENARIOS – PLEASE SEE

Heinonen, Sirkka (2018). Scenarios as Stairways to Resilient Futures. Blog text at FFRC 27th April. <https://ffrc.wordpress.com/tag/resilience/>