

Work Package 5

Scenario Development: Process Design and Research

Grant Agreement n° 822735, Research and Innovation Action



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement n° 822735. This document reflects only the author's view and the Commission is not responsible for any use that may be made of the information it contains.

TRIGGER

Trends in Global Governance and Europe's Role

Deliverable number:	
Deliverable name:	Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop
WP / WP number:	Innovative, participatory scenario development for strategic governance decisions / WP 5
Delivery due date:	31/01/2020
Actual date of submission:	31/01/2020
Dissemination level:	Draft Version
Lead beneficiary:	Fraunhofer ISI (Germany)
Contributor(s):	Fraunhofer ISI (Germany)

Changes with respect to the DoA

Not applicable

Dissemination and uptake

Confidential, only for members of the consortium (including the Commission Services)

Evidence of accomplishment

Report

Content

1. Introduction	1
The TRIGGER Scenario Development Approach	3
2. STEEP+ Factors.....	9
2.1. Social	9
2.2. Technological	19
2.3. Ecological	29
2.4. Economic.....	40
2.5. Political	47
2.6. +.....	61
3. Publication Bibliography	69
4. Annex (Additional Factors)	87
4.1. Social	87
4.2. Technological	95
4.3. Ecological	101
4.4. Economic.....	105
4.5. Political	111
4.6. +.....	117

1. Introduction

The TRIGGER project takes an affirmative approach to the ambiguity of the term global governance, as per (Hofferberth 2014) who named it a 'floating signifier' - in short, a term that allows for a plurality of definitions in a variety of contexts. We will deploy the term in the context of the scenario development portion of the TRIGGER project as "global governance relating to the development of forecasting methods to address global, complex systems" (Dator 1981; Dator et al. 2015). This approach embraces the amorphic (Zürn 2010) qualities of the term, particularly as it pertains to the development of alternative futures for global governance, a field under active research and creativity (Kahler 2018; Vesnic-Alujevic et al. 2019).

The TRIGGER project - **Trends In Global Governance and Europe's Role** - stated goal is the identification of major trends that impact the realm of global governance, and understanding the multi-valent capacities to act for the EU and its constituent nations. Trends are identified across WP1-5 of this project, with each work package focusing on different categorical spaces in which trends emerge. The European University WP1 for instance will focus on the mapping of global governance practices, regimes, processes and partnerships - in part defining the 'spheres of authority' that are critical to understanding the systemic interactions that comprise global governance (Zürn 2018). This research also has a temporal analysis component which allows us to insights into the emergence of governance institutions over time, and a spatial at the global, intercontinental, regional, and sub-regional levels. Work Package 2 examines the capacity of EU "actorness" - a measure aimed to demonstrate the influence of the EU, and its member nations individually, to influence global governance processes and outcomes. This phase of the project identifies trends in both internal EU governance, and the EU's governance interactions with the global community. Work Package 4 focuses on trends in technologies that could change how global governance occurs, but technologies that at the same time require governance themselves. The technologies selected include Artificial Intelligence (and Machine Learning), Blockchain & Open Ledgers, and Open Source projects.

For the Scenario Development, WP5 has selected a process that first requires a survey of additional global factors and issues that might not be reflected in WP 1-4. While work packages 1-3 concentrate on mapping entities and interactions that are essential to global governance and the EU's position of influence, and work package 4 examines technologies that may yet play a critical role in defining processes of governance, we use the research component of work package 5 to introduce items of interest that will almost certainly influence both *what* is governed and *how* that governance is approached. In other words, the research component of WP5 aims at populating the scenarios being developed with narrative content that is both relevant within our

contemporary context, and content that we feel will continue to be influential to global governance over an extended time horizon. Given that the end goal of WP 5 is to generate 3-5 alternative futures for global governance scenarios, and that those scenarios should be indicative of the larger worlds in which they are set, we believe that the STEEP+ factors provided in this document, along with the additional Factors, Issues, and Trends that will be introduced in our workshops, will provide the contextual detail necessary for each scenario to accomplish its task.

To better understand the goals of the scenario development process, it will be useful for readers to better grasp the historical, non-linear, development of the term 'scenario' and the definition that best aligns with the topic of Global Governance. We trace the term 'scenario' as utilized within alternative futures and foresight work, back to Herman Kahn during his employ with the RAND corporation (Schwartz 1998), and its subsequent adoption by Pierre Wack in the context of business and organizational planning (Wack 1984; Wack 1985). Even at its inception, scenarios have always relied on a narrative form to communicate images of the future (Li 2014; Miller et al. 2015), but as Jamais Casico puts it, "the best stories are about how you get from here to there, not just what there looks like" (Casico 2013). In other words, a scenario is not a static image, frozen in some future time, it is a journey into an alternative future world animated by large scale events and trends and supported by logical details grounded in sound research (Milojević und Inayatullah 2015).

But scenarios, can also be viewed as a specific tool for decision makers - "as instruments for making decisions in situations of rapid social change and complex social interaction" (Masini und Vasquez 2000). In this regard then, they must not only draw the more creative aspects of story-telling as outlined above, but must fulfil the scientific criticality upon which policy decisions are based. This requires that scenarios be grounded in statistical and social science, robust in the face of ex-post assessment, and flexible to accommodate new inputs and combinations. For this reason we have decided upon a scenario development process that incorporates both rigorous scientific research of trends shaping global governance, and the critical imaginaries of our workshop participants.

In terms of global governance then, 'scenarios' should encapsulate both the best available statistical data that can be gathered, complimenting a broad spectrum of possibilities for the development of trends going forward. In order to achieve this we have utilized a multi-stage approach to the TRIGGER scenario development process as indicated below.

The TRIGGER Scenario Development Approach

Given the complexity of governance systems, particularly at a global scale, our scenario development approach utilizes a number of methods to manage this complexity for the purposes of scenario crafting, while acknowledging the incompleteness inherent in such an undertaking. .

1.1.1. Building the Database

While our methodological approach includes multiple phases in which additional inputs from experts and non-expert citizens will be collected, the initial research phase attempts to establish a strong foundation on which scenario development workshops can be conducted. To organize this process we have chosen the STEEP+ categorical framework to shape our research regarding **Social, Technological, Ecological, Economic, and Political** variables and factors that will influence the future shape of global governance institutions and processes. The initial research results are presented in this document (Chapter 3) and are accompanied by additional inputs from our Scenario Development workshop series.

1.1.2. Describing the System

The TRIGGER project takes an affirmative approach to the ambiguity of the term global governance, as per (Hofferberth 2014) who named it a ‘floating signifier’ - in short, a term that allows for a plurality of definitions in a variety of contexts. We will deploy the term in the context of the scenario development portion of the TRIGGER project as “global governance relating to the development of forecasting methods to address global, complex systems” (Dater 1981; Dater et al. 2015). This approach embraces the amorphous (Zürn 2010) qualities of the term, particularly as it pertains to the development of alternative futures for global governance, a field under active research and creativity (Mahler 2018; Vesnic-Alujevic et al. 2019).

1.1.3. Identifying Key Factors

This document, as a complement to the work of WP4 1-4, represents the research into potential key factors that will be provided as inputs into the scenario development workshop series. We have elected to utilize the STEEP+ framework for categorizing our research findings within this document, and across the workshop activities. This indicates that our research spanned social, technological, economic, ecological, economic, political and additional fields of research. We investigated reports from the United Nations (and its host of entities), the WEF, IMF, WHO,

OECD, World Bank, and numerous public and private research institutes for reports to inform and support this research.

1.1.4. Identifying Key Actors

The research of Work Package 1 will be essential to the identification of Key actors influencing the development of both individual factors, and the overall shape of each scenario. The WP1 research team has mapped significant global governance actors according to a three tiered categorization scheme: Global Governance actors, Intercontinental Governance actors, and Regional Integration Governance actors.

1.1.5. Prioritizing Key Factors

As mentioned before, our research activity in advance of the workshop focused on further key factors that will influence the future Global Governance landscape and therefore aims at complementing WP 1-4. Selecting and Prioritizing Key Factors comprises several phases. Based on the STEEP+ Framework we identified in a first phase about 12 factors within all six Steep Categories (social, technological, economic, ecological, political and additional fields). To prove the necessary distinction between the several factors (so as not to have any overlap) and not to oversee crucial aspects within each category we carried out a small internal workshop with other Foresight and Scenario experienced Fraunhofer colleagues. After this check for redundancy and *completeness* we had a list that comprised 59 factors. Together with a brief description of every factor this list resulted in a background document for internal publication and was distributed among all participants of the planned Interactive Expert Workshop that took place from 13th to 14th November 2019 at Fiesole, Italy. The second phase of further prioritizing key factors took place at the workshop itself. Each participant were asked to select the three most important factors from each category. The following table gives an overview of the selected factors (see Table 1). Each prioritized factor will be described briefly in section 2. The non-chosen factors are listed in the Annex.

STEEP+ Category	Prioritized and Discussed Factors at the First Workshop (Fiesole 2019)
Social	<ul style="list-style-type: none"> • Demographic Change • Displacement and Migration • Trust and Society • Global Health Issues and Concerns
Technology	<ul style="list-style-type: none"> • Artificial Intelligence and Machine Learning • Climate Mitigation Technologies • Surveillance and Monitoring • Genetic Modification and Engineering
Ecology	<ul style="list-style-type: none"> • Global Warming Emissions • Food Distribution and Security • Water Security • Coordinating Global Climate Policy and Action
Economic	<ul style="list-style-type: none"> • Growth Paradigm • Multilateralism • Platform Economies
Political	<ul style="list-style-type: none"> • Rising Multipolarity • Transnational Actors • Corruption • Citizen Participation and Mobilization • Political Connections
Plus Category	<ul style="list-style-type: none"> • Hybrid Threats/Warfare • Infrastructure Gap • Mission Oriented Governance • Reflexive Governance

Table 1: Selected Key Factors by the Workshop participants

1.1.6. Examining Alternatives Development Possibilities for Each Factor

Day 1 of the Interactive Expert Workshop was dedicated to explore alternative development possibilities for each of the prioritized factors. This integral part of the scenario building process was done in a sequence of 6 breakout group sessions (for each STEEP+ Category one group session). Participants were free to join one of these discussion groups according to their interests and knowledge. Within each group session the participants discussed the previously 3-4 selected factors regarding their future dynamic, their implications for Global Governance and its status in

the year 2050. To foster out-of-the box thinking and to mobilise not only formal expertise but also tacit knowledge and imagination we applied the so called *Tetralemma* method to guide the group discussion. The general aim of this method is to generate multiple alternative and distinctive directions for the future development of a specific topic or factor. The Tetralemma method operationalize the future dynamic of one factor in four trajectories, labelled with A, B, C and D. Trajectory A assumes that the factor will continue along its present course, B assumes that the factor will diverge radically from its present course. C describes a hybrid development, in which elements of A and B are combined and the trajectory D formulates a *NOR* position, which goes for a complete alternative development that is neither A or B, nor any mix of these two trajectories. Following this approach we developed for each factor 3-4 different trajectories in every group session. A briefly overview of the discussion and results of all six group session can be found at the end of every factor description in section 2.

1.1.7. Creating Scenario Cores

Day 2 was dedicated to explore the relationships between different trajectories of key factors, find possible connections and interactions between key factors, actor groups and networks, and to classify the different developments in a matrix. The six fields of the matrix differentiates between *High* and *Low EU Actorness* and the overall global governance landscape which can be differentiated between a *fragmented, continued or a transformed Global Governance* regime. Day 2 resulted in six different rough scenario cores - one scenario core per matrix field.

More precisely, the creating of the scenario cores comprised two steps. First every STEEP+ Category group assigned their several factor trajectories to one of the six fields of the Global Governance matrix. In a second step the several factor trajectories from each field of the matrix were brought together and participants were asked to explore possible relationships and interactions between the key factors across the (STEPP+) Categories. This resulted into six different rough scenario cores, each for every field of the Global Governance framework matrix. Figure 1 shows a diagram of the matrix and an example of the assignment of the different factor trajectories to the six fields.

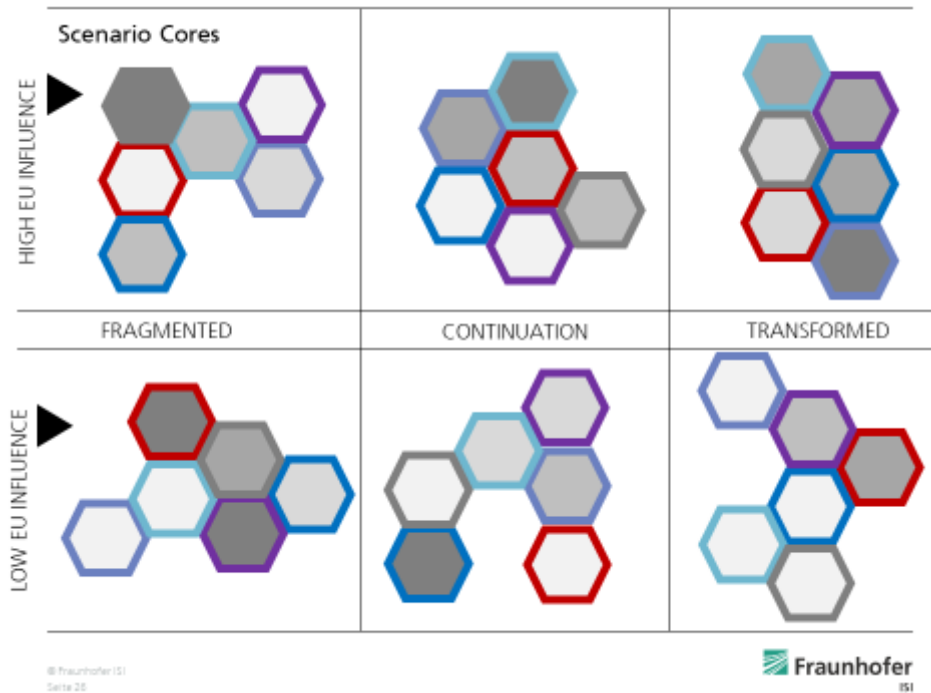


Figure 1: Diagram of the used Global Governance Matrix

1.1.8. Writing and Finalizing Scenarios

On the base of the six rough scenario cores, resulted from the first workshop and WP5.1, the team of Fraunhofer ISI with support of ISINNOVA will further outline and refine each scenario during several working steps. More precisely, finalized Scenarios at the end will provide a comprehensive narrative structure that incorporates the dynamic relationships between key factors, actor networks, global governance structures (Task 5.2) and will be specifying the situation for different actor groups (e.g. civil society, private sector, policy makers etc.) (Task 5.3).

2. STEEP+ Factors

The STEEP+ framework has been utilized for understanding the complex interactions between **social, technological, environmental, economic, and political** factors in a variety of analytical contexts and speculative activities. We utilize it in the first phase of the scenario development project to loosely categorize the major issues that are and will continue to effect Global Governance in the decades to come. The initial categorization conducted by the scenario development team is recorded in this document. This categorization will be edited by the scenario development workshop attendees during the first workshop (Fiesole, 2019).

2.1. Social

2.1.1. Demographic Change

Changes in the global population impact global governance by changing social and economic forces. These dynamics change what types of labor and services are needed, and what type of labor force is available to provide them. It requires consideration of systemic changes at the national and international level. These dynamics also empower nations with growing populations and economies to assert a stronger presence in global governance institutions - challenging incumbent powers and promoting cultural changes. By 2050, Europe is only expected to see at 2% increase in its population, and will likely see a population in which one in every four people is aged 65 years or more. The United Nations World Population Prospects notes that nations experiencing population growth, or having a more youthful population, can benefit from the “demographic dividend” by investing in education and health. In regions with ageing populations, there is a lingering concern that socio-political conservatism will take hold as older populations hold on to political power for longer.

2.1.1.1 Statistics

- The world's population is projected to grow from 7.7 billion (2019) to 8.5 billion (2030, 10% increase) and further to 9.7 billion in 2050 (26%) and to 10.9 billion in 2100 (42%). The population of sub-Saharan Africa is projected to double by 2050 (99%). By 2050, Europe is only expected to see at 2% increase in its population.
- By 2050, one in six people in the world will be over age 65 (16%), up from one in 11 in 2019 (9%). Regions where the share of the population aged 65 years or over is projected to double between 2019 and 2050 include Northern Africa and Western Asia, Central and Southern Asia, Eastern and South-Eastern Asia, and Latin America and the Caribbean. By 2050, one in four persons living in Europe and Northern America could be aged 65 or over.

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

- The potential support ratio, which compares numbers of working-age people aged 25-64 to those over age 65, is falling around the world. In Japan, this ratio is 1.8, the lowest in the world. An additional 29 countries, mostly in Europe and the Caribbean, already have potential support ratios below three. By 2050, 48 countries, mostly in Europe, Northern America, and Eastern and South-Eastern Asia, are expected to have potential support ratios below two.
- Between 2019 and 2050, populations are projected to decrease by one per cent or more in 55 countries or areas, of which 26 may see a reduction of at least ten per cent. In China, for example, the population is projected to decrease by 31.4 million, or 2.2 per cent, between 2019 and 2050.

In most of sub-Saharan Africa, and in parts of Asia, Latin America and the Caribbean, recent reductions in fertility have caused the population at working ages (25-64 years) to grow faster than at other ages, creating an opportunity for accelerated economic growth.

2.1.1.2 Subfactors

Aging Populations (Global North)

Concentrated Youth Populations (Global South)

Demographic Dividends

Aging Workforce

2.1.1.3 Additional Resources

European Commission 2018 - Future of Work:¹

Gaub 2019 - Global trends to 2030: ²

International Labour Office 2018 - World employment social outlook: ³

Office - Demographic and human capital scenarios: ⁴

Vadim Kufenko; Klaus Prettnner et. al:⁵

WEF article⁶: (only US)

Myers 2019 ⁷

AFIDEP ⁸

¹ European Commission 2018

² Gaub 2019

³ International Labour Office 2018

⁴ Office

⁵ Vadim Kufenko et al.

⁶ Kopf und Cheng 2019

⁷ Myers 2019

⁸ AFIDEP 2019

Fontaine et al.⁹

UNs' World Population Prospects 2019 (United Nations 2019)

The Ageing Report (DG ECFIN 2018)

2.1.2. Displacement and Migration

Over the last years the number of displaced persons has increased exponentially. Although this is a serious problem that effects countries worldwide, so far there is no adequate policy or governance measures that could cope with this large scale problem. One can analytically differentiate between three main reasons for displacement and migration: socio-political conflicts and persecution, natural disasters and climate change, and migration to achieve better work and life opportunities. Following the report from the IDMC¹⁰ the displacement of people is a fast growing problem impacting both destination communities, and regions of origin. In 2017 the number of people displaced due to conflict and disasters (cyclones, flood etc.) reached almost the number of 40 million worldwide. As this trend continues to increase, traditional global governance mechanisms face new stresses while migrants and refugees face conditions that threaten guaranteed human rights and treatment.

2.1.2.1 Statistics

- According to the International Migration Report in 2017 about 258 million international migrants existed in the world. 57% of them live in the 'global north' (developed countries), while 43% live in the 'global south' (developing countries).
- Overall in the last thirty years the number of international migrants constantly grow (69%).¹¹
- Between 2005 and 2017 there was an increase by 5.6 million migrants each year.
- The share of female international migrants who live in the global north is about 52%. On the opposite about 44% of international immigrants in the south are female.
- about 75% of all international migrants are in the traditional working age (between 20-64 years)¹²
- unequal distribution of international migrants: 51% of all international migrants are spread over 10 countries (USA, Germany, Saudi Arabia, Russian Federation, UK, Northern Ireland, United Arab Emirates)¹³

⁹ Gharagozloo-Pakkala und Fontaine 2019

¹⁰ International Displacement Monitoring Centre (IDMC) 2018

¹¹ United Nations Department of Economic and Social Affairs 2017

¹² United Nations Department of Economic and Social Affairs 2017

¹³ United Nations Department of Economic and Social Affairs 2017

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

- Unequal distribution of international migrants: 33% of the international migrants live in seven of the world's wealthiest countries. These countries have only 16% of the world's population.¹⁴
- Migration due to environmental change take place mostly in non OECD countries. 97% of global disaster displacement from rapid onset hazards between 2008-2013 had happened in low and middle income countries¹⁵

2.1.2.2 Subfactors

Refugees from Conflict or Persecution

Climate Refugees

Migration for Work and Opportunities

2.1.2.3 Additional Resources

2.1.3. Trust and Society

Trust in governing institutions and mechanisms is an essential component for the fulfilment of the social contract. Various studies have produced correlative evidence that trust is inter-connected with educational levels, income inequality, productivity in a workforce, and other social, political, and economic areas. According to the annual Edelman Trust Barometer (ETB) (Edelman 2019) there is a stable amount of distrust by the general population with regard to NGOs, businesses, governments and media. Overall, the ETB reports an increasing trust inequality between the two groups (informed public vs. general population) registering a difference of 13% in 2017 rising to a 16% gap between the informed and the general public in 2018. In the US, the Knight Foundation has tracked growing distrust of established media sources over the past few years, correlating cleanly with the increasing influence of the internet based news media. As media is often considered the 'fourth estate' within democratic societies, lack of trust in information and its sources can have dramatic repercussions for social governance.

2.1.3.1 Statistics

- Edelman Trust Barometer:
 - Trust in a better future: 49% general public, 63% informed public
 - Belief in the system is very low: 46% of general public confirm that the system is "failing me", 39% of the informed public is saying that the system is "failing me".
 - **Average trust level regarding the EU: 52% (+3%)**
 - **Average trust level regarding the UN: 59% (+2%)**

¹⁴ Martin und Widgren 1996

¹⁵ World Bank 2018a

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

- Long-run data from the US, where the General Social Survey (GSS) has been gathering information about trust attitudes since 1972, suggests that people trust each other less today than 40 years ago. This decline in interpersonal trust in the US has been coupled with a long-run reduction in public trust in government
- On average across OECD countries and sub-national entities that participated in the Survey of Adult Skills (PIAAC) (2012), adults with higher qualifications were more likely to report desirable social outcomes, including good or excellent health, participation in volunteer activities, interpersonal trust, and political efficacy (i.e. having a say in government).

2.1.3.2 Subfactors

Loss of Trust in Media

Loss of Trust in Government

E-Government to Foster Transparency

2.1.3.3 Additional Resources

United Nations 2018 - E-Government Survey 2018

Knight Foundation Report 2019¹⁶

Vosoughi, Roy et al. 2017 - The Spread of True and False News: ¹⁷

2.1.4. Global Health Issues and Concerns

In the last decades, significant improvements on health were achieved as lower child and mother mortality and reduction of communicable diseases (spread from one person to another like Ebola, Zika, Tuberculosis, etc.). On the other hand, non-communicable diseases are on the rise (strokes, most heart diseases, most cancers, diabetes, chronic kidney disease, osteoarthritis, osteoporosis, Alzheimer's disease, etc.). Lowering the damage caused by those non-communicable diseases requires global cooperation. In addition, there are new psycho-social diseases that seem to correlate with other socio-technological trends (for example social isolation, depression, etc. building with increased urbanization and social media usage). The spatial distribution of the problem and involved stakeholders requires joint action by the people who raise

¹⁶ Knight Foundation 2018

¹⁷ Vosoughi et al. 2017

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

funds and by those who spend it. Therefore, the G-20 called for global finance and health ministries to collaborate in pushing toward universal health coverage in Japan in 2019.

2.1.4.1 5 Statistics

- The proportion of the population that suffer catastrophic health expenditures (>10% or >25% of total household expenditures or income) is higher in middle-income countries than in low- or high-income countries.
- Nine of the health-related SDG indicators have explicit targets for 2030, but only two of those indicators are on track to meet 2030 targets; that is, those for under-5 mortality rate and neonatal mortality rate. Moreover, it is estimated that on current trends 51 countries will miss the target for under-5 mortality, and more than 60 countries will miss the target for neonatal mortality in 2030.
- The incidence rate of TB was 1.7 higher in men than in women globally in 2017. In 2016, the probability of a man aged 30 years dying from an NCD before 70 years of age was 1.44 times higher than for a woman aged 30 years. Globally in 2016, suicide mortality rates were 1.75 times higher for men than for women.
- Since 2009, average health spending as a share of GDP has remained relatively stable across the OECD at around 8.8%, as growth in health spending has remained in line with overall economic growth since the economic crisis.
- Demographic characteristics as indicators for Social Isolation : 25% of the US live alone, 50% of US adults is unmarried, 40% of marriage got divorced, the majority of US youth does not participate in any social group, smaller household size, increased rates of childlessness, social network becomes less diverse.

2.1.4.2 Subfactors

Healthcare as related to the SDGs

Social-Psychological Conditions

Universal Health Coverage

2.1.4.3 Additional Resources

CGDEV article¹⁸

¹⁸ Ahmed und Savedoff 2019

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

Social Isolation WEF article¹⁹

Cigna-study 2018²⁰:

University of Pennsylvania study 2018²¹:

BBC survey 2018²²:

U.S. scientists work on medication to treat loneliness-effect on body/brain²³

Survey of Japanese government²⁴:

¹⁹ Hutt 2019

²⁰ Cigna 2018

²¹ Berger 2018

²² Hammond 2018

²³ Entis 2019

²⁴ Japan Times 2016

2.1.5. Social Factor Trajectories from the Workshop

The following section gives an overview of the results from the working group session that discussed the former prioritized social factors and their possible future trajectories. Each factor trajectory is assigned to one of the several Global Governance Archetypes (see also Figure 2).

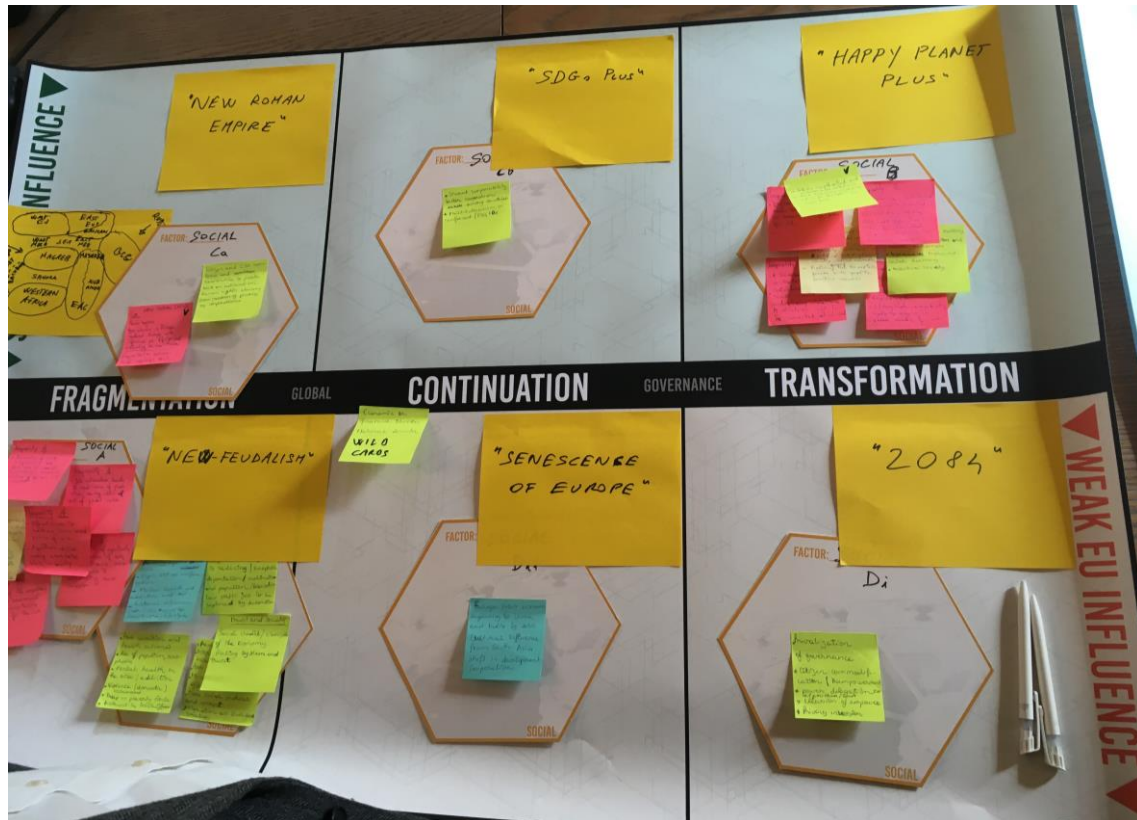


Figure 2: Social Scenario Cores for the different Global Governance Archetypes

1) Weak EU Actorness in a fragmented Global Governance Regime

Title: **New Feudalism Scenario**

- Inequality of opportunities and outcomes is a driving factor framing health, education outcomes and political unrest. It is rising within countries, persistent between countries, and drives nationalism.
- Possible breakdown of political equilibria.
- Poor nutrition and health outcomes
- Rise of populism, xenophobia
- Mental health problems on the rise; addiction
- Increased domestic violence
- Poverty traps
- Distrust in institutions/government
- Reduced room for asylum seeking/refugees
- Polarization of society (jobs, political parties, have and have not)
- Polarization of life expectancy along social classes

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

- Bigger cost of welfare system
- Low skill jobs being replaced by automation
- Reduced social mobility
- Increased intergenerational poverty (parents have less to leave to the sons)
- Poor housing conditions
- Minorities more affected
- Migration is a livelihood strategy, as the standard of living goes below a minimum standard to remain in the place of origin
- Trust & Society: social credit (peer evaluation/rating systems); uberization of the economy
- Different lifestyles, nutrition habits, culture
- Different access to healthcare; income-based provision of care
- Algorithmic decision making exacerbates biases in society
- Job automation leads to repatriation of production, leaving Less Developed Countries (LDCs) out of Global Value Chains (GVCs)
- Economics of scale in agriculture and food lead to market concentration: hundreds of millions of farmers out of market
- Increase of healthy life expectancy and human enhancement leads to “immortality” prospects, only for the reach
- Inequality of opportunities, personalization of care, accurately and dynamically tailored advertising leads to deterioration of social cohesion
-

2) Strong EU Actorness in a fragmented Global Governance Regime

Title: **Happy Planet Plus**

- Inequality of opportunities and outcomes are addressed
- Inequality within countries is reduced, and political unrest and nationalism boils down
- Increased social mobility
- Improved education and health outcomes
- Improved social harmony
- Inclusive society
- End of economies of scale allows more distributed governance and local empowerment
- Widespread connectivity enables access to global markets for all
- Digital and carbon taxation reduce the fiscal pressure of labour, creating jobs for all
- A universal declaration on digital rights protects individuals from social credit scoring and privacy violations; it introduces rights to be connected and educated
- Climate justice is recognised, countries suffering from climate change are given access to key technologies at zero/(FRAND ?) cost

3) Weak EU Actorness in a continued Global Governance Regime

Title: **Senescence of Europe**

- Europe loses economic hegemony to China and India by 2050
- Growing/predominant cultural influence from South Asia
- Shift in development cooperation/aid (reading suggestion the book “Aid at the edge of chaos”)

4) Strong EU Actorness in a continued Global Governance Regime

Title: **SDGs plus**

- Shared responsibility, with an evolution from “shareholders” to “stakeholders” capitalism model
- Better cooperation between countries
- Multilateralism is reinforced, with the inclusion of NGOs and International Organization in global negotiations

5) Weak EU Actorness in a transformed Global Governance Regime

Title: **2084 Scenario**

- Shared responsibility, with an evolution from “shareholders” to “stakeholders” capitalism model
- Better cooperation between countries
- Multilateralism is reinforced, with the inclusion of NGOs and International Organization in global negotiations

6) Strong EU Actorness in a transformed Global Governance Regime

Title: **Happy Planet Plus**

- Inequality of opportunities and outcomes are addressed
- Inequality within countries is reduced, and political unrest and nationalism boils down
- Increased social mobility
- Improved education and health outcomes
- Improved social harmony
- Inclusive society
- End of economies of scale allows more distributed governance and local empowerment
- Widespread connectivity enables access to global markets for all
- Digital and carbon taxation reduce the fiscal pressure of labour, creating jobs for all
- A universal declaration on digital rights protects individuals from social credit scoring and privacy violations; it introduces rights to be connected and educated
- Climate justice is recognised, countries suffering from climate change are given access to key technologies at zero/(FRAND ?) cost

2.2. Technological

2.2.1. Artificial Intelligence and Machine Learning

Today Artificial Intelligence and Machine Learning is regarded as one of the most important technologies that will shape nearly every part of our lives: how we work, how we live and how society is governed. As a key technology it will become a key driver for different societal sectors like politics, economy, and security.²⁵ For each of these sectors there are numerous application possibilities that have caused an ongoing public discussion in many European Countries about the benefits and risk of AI based technologies. Right now there is also a competition for the leadership of AI between China, the USA and Europe. As AI is Data driven, questions about the regulation of access to (private) data are in focus of ethical debate in Europe.

2.2.1.1 *Statistics*

2.2.1.2 *Subfactors*

Governing Private Sector data actors (Amazon, Google, Facebook, etc.)

Regulating the access and the usage of data

Using data driven algorithmic decision tools for governance

2.2.1.3 *Additional sources*

AI: Study on Governance²⁶

WEF article²⁷

Machine Learning models²⁸

Article on establishing AI through E-Governance²⁹

Ethical governance and robotics/AI³⁰

²⁵ Artificial Intelligence: A Study on Governance, Policies, and Regulations

²⁶ Artificial Intelligence: A Study on Governance, Policies, and Regulations

²⁷ Routley 2019

²⁸ Bonafilia et al. 2019

²⁹ Gupta 2019

³⁰ Winfield und Jirotko 2018

2.2.2. Climate Mitigation Technologies

Geoengineering as a mode of slowing or even reversing the rate of climate change continues to be a topic of great relevance to conversations regarding the shape of global governance. Just as the impacts of climate change are both unpredictable, and unevenly distributed, various aspects of the geoengineering are similarly shrouded by uncertainties. The field itself raises many questions regarding whether or not it should be seen as a viable option for climate mitigation - how reliable are the results in achieving the established goals (if there are any!)? Which methods can and should be deployed? For how long? By whom? Who bears responsibility for unexpected results? What recourse, if any, is there for nations or actors who would vote against such measures? These, and many other questions, make a compelling case for Geoengineering technologies to be seen as a potent source of global governance alterations in the future.

2.2.2.1 *Statistics*

2.2.2.2 *Subfactors*

Solar Radiation Management

Industrial Carbon Capture and Sequestration

Natural System Alteration for Carbon Capture and Sequestration

2.2.2.3 *Additional Sources:*

(Macnaghten und Owen 2011)

(Pasztor, 2017)

(Talberg et al. 2018a)

(Talberg et al. 2018b)

(Lenton et al. 2019)

(Jinnah 2019)

2.2.3. Surveillance and Monitoring

Many urban areas already stand as proof of the proliferation of surveillance technologies as a mode of modern policing and governance. Even as technologies arise that may ultimately debase the strength of the recorded image/sound as evidence in criminal cases, there remain a strong incentives for both private and public entities to adopt surveillance technologies. Even individuals

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

may choose to participate in what is called the Surveillance society - a more participatory approach to collecting audio and video evidence of events.

At the same time that we are deploying surveillance at the human level, sophisticated technologies are being deployed to monitor and surveill earth systems. Annual advancements in satellite technologies, terrestrial based sensor arrays, and computing power to process and analyse collected data are radically shifting our capacity to gather information about our planet and its dynamics. In efforts to battle climate change, preserve biodiversity, and make human systems more efficient and less harmful to ecological systems, these technologies have much to offer. At the same time, the capacity to deploy such systems, and the access to the data they generate, is in need of governance to avoid abuses.

2.2.3.1 *Statistics*

2.2.3.2 *Subfactors*

Cybernetic Global Monitoring Systems

Smart Cities

Open Government Data

Voice Technologies and Trust

2.2.3.3 *Additional Resources*

World Bank paper³¹

The Global Superorganism (Heylighen 2007)

Smart Earth: Meta-Review and implications for environmental governance. (Environmental monitoring systems and technologies) (Bakker und Ritts 2018)

World Bank report³²

(Be rends et al. 2017).

(Yelenic 2019)

WEF article³³

³¹ Jelenic 2019

³² World Bank 2018b

³³ Henzi et al. 2019

2.2.4. Genetic Modification and Engineering

Genetic Modification and Engineering technologies have been rapidly expanding the human capacity to study and manipulate genetic code in plants, animals, and humans. In some industries, like healthcare, many experts imagine a new world of possible treatments and capabilities that such technologies enable. In other industries, like agriculture, genetic modifications have already been exploited to such an extent that new global issues concerning intellectual property rights and its enforcement are strong social, political, and economic levers. And lastly, such knowledge and experimentation has developed synthetic organisms - life forms engineered from the bottom up to express genetic codes and function within an environment. The majority of these technologies remain indirectly addressed by global governing mechanisms, though their continuous development will pressure organizational and procedural address.

2.2.4.1 *Statistics*

- Some concerns have arisen out of the significant market concentration in the seed industry. In 1998, 60 percent of the world market for seeds was controlled by just 35 companies. In 2019, consolidation in the market has continued such that 4 major companies now control 60% of global proprietary seed sales.

2.2.4.2 *Subfactors*

Transgenic Crops

Genetic Modification for Human Health and Enhancement

Synthetic Biology

2.2.4.3 *Additional Resources*

Howard 2018

The Above Text all comes from (UNFAO 2019).

Additional Resources ISAAA Policy Briefs (ISAAA 2017, 2018)

2.2.5. Technological Factor Trajectories from the Workshop

The following section gives an overview of the results from the working group session that discussed the former prioritized technological factors and their possible future trajectories. Each factor trajectory is assigned to one of the several Global Governance Archetypes (see Figure 3).

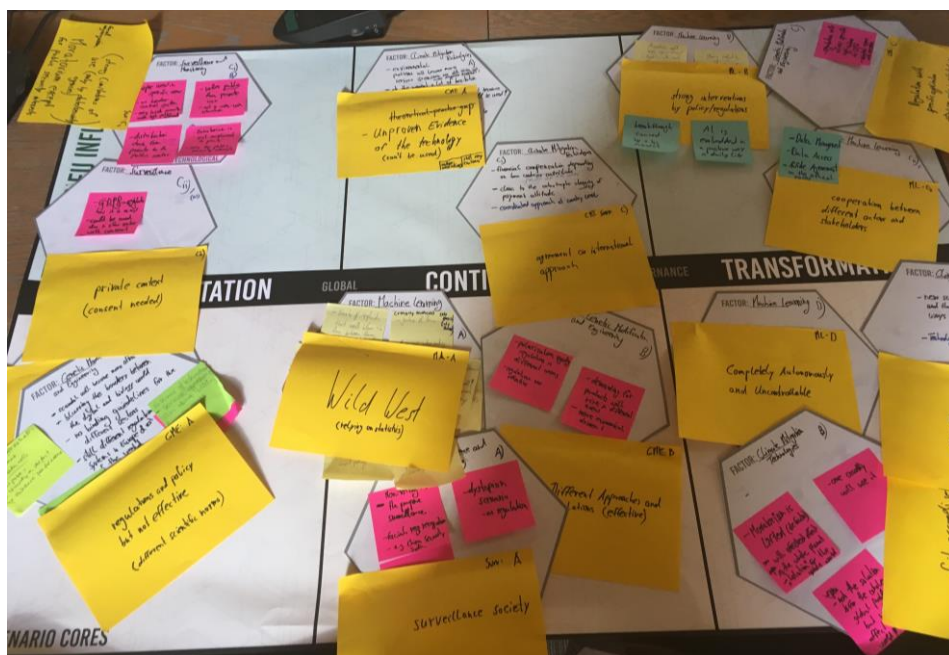


Figure 3: Technological Scenario Cores for the different Global Governance Archetypes

1) Weak EU Actorness in a fragmented Global Governance Regime

Factor: **Genetic Modification and Engineering**

Headline: **Regulations and Policy exist, but not effective (different scientific norms)**

Notes:

- GME scandals will happen more often
- Blurring the border between artificial and biological world
- No binding guidelines for the different sectors (remedy/deflect vs. enhance performance, not only used for humans)
- within Europe trend to influence genome editing
- Still different regulations systems in EU, and other parts of the world
- No real regulation on genome editing

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

- Some 'self user' groups are spearheading personal technologies
- Europe is a bit behind
- General apprehension about editing human genes persists

2) Strong EU Actorness in a fragmented Global Governance Regime

Factor: **Surveillance and Monitoring**

Headline: **consent needed for private use**

Notes:

- surveillance technologies can also be used in other sectors but only if affected people have given their consent

Factor: **Surveillance and Monitoring**

Headline: **Moratorium (for facial recognition) except for public security interests**

Notes:

- Moratorium is put in place for such surveillance technologies (except their use for public security concerns)
- used in specific areas (as border control system), only used for security issues with high public interests
- distribution chain (concerning the data collections) from private to the public sector

3) Weak EU Actorness in a continued Global Governance Regime

Factor: **Artificial Intelligence and Machine Learning**

Headline: **Wild West (relying on statistics)**

Notes:

- Variety of applications that will blur the line between Human, Nature, and Artificial => Hybrids
- simple acceptance of AI results, regarded as objective and true => no questioning
- AI will not be questioned anymore
- No strong regulation of Data control, ownership, or management on a global level
- European, American, and Chinese regulations will follow their own guidelines

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

- A Wild West of ML governance - Useless and Harmful regulations
- Transformation of policy making => Trend against evidence based policy
- Rough tendencies: justice of laws (laws and judge based justice will continue)
- AI used as a support technology across different fields: in the justice sector, the medical sector etc.

Factor: **Surveillance and Monitoring**

Headline: **Surveillance Society**

Notes:

- Monitoring for the purpose of state surveillance
- Facial recognition, and other biometrics are used (China Security State as contemporary example)
- Dystopian Scenario
- 50 years of no Coordinated Regulation (globally)
- no binding rules (globally)

Factor: **Genetic Modification and Engineering**

Headline: **Different approaches and regulations (effective)**

Notes:

- Polarization regarding regulation in different areas
- Regulations are effective
- Demand for products will rise in different areas
- More economically driven

4) Strong EU Actorness in a continued Global Governance Regime

Factor: **Climate Mitigation Technologies**

Headline: **Unproven Evidence of the Technology; Theory-Practice Gap**

Notes:

- Environmental problems will become more serious; emissions are still rising and crossing dangerous thresholds
- contemporary hesitation of CMT persists broadly

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

- Moratoriums are suspended given the critical state of climate change
- Spatial distribution will delegate how/where SRM is used, depending on how strong these areas are effected by climate change. Different areas require different technologies.

Factor: **Climate Mitigation Technologies**

Headline: **Agreement on International Approach**

Notes:

- Financial Compensation depending on pollution levels of the country
- payment attitude of the nation states changes as climate catastrophe comes nearer
- international coordinated approach between political actors / nation states

5) Weak EU Actorness in a transformed Global Governance Regime

Factor: **Climate Mitigation Technologies**

Headline: **new scientific breakthrough**

Notes:

- new scientific breakthrough that brings new application, which enables to fight climate change without the current risks of Climate Mitigation Technologies
- Technology without risks

Factor: **Climate Mitigation Technologies**

Headline: **accomplished facts are set by single political actor/nation state**

Notes:

- Moratorium is lifted (de-facto)
- one political actor (nation state) will use it, but it will have non-intended effects on other regions
- "solution" will affect the whole planet (not every world region in an equal positive way)

Factor: **Machine Learning / Artificial Intelligence**

Headline: **Separation of Public and Private Use**

Notes:

- Data management: No supply chain between political actors and digital platforms
- Governments struggles to utilize ML/AI outputs
- Private Actors are able to act on ML/AI information

6) Strong EU actorness in a transformed Global Governance Regime

Factor: **Artificial Intelligence and Machine Learning**

Headline: **ML/AI faces strong interventions and regulations by policies on a global governance level**

- AI is embedded in positive way in daily life
- Policy breakthroughs are caused by a big scandal.
- Accidents (for example human genetic modification in China on twins) bring the AI/ML topic in the focus of regulation
- Strong regulation implemented through policies, which addresses different topics:
 - data management
 - Data Access
 - Wide agreement on ethical values
- Political interventions regarding the Big Platforms at a global scale
- User attitude towards their given data is super aware.
- in addition: effective protection of users so that they cannot be *lazy* anymore (realised through paternalistic policies)
- There is high cooperation between different actors and stakeholders for using and developing ML
- Different driving forces for each actor but high cooperation persists by engaging different stakeholders through participatory governance

Factor: **Genetic Modification and Engineering**

Headline: **Regulations for specific application**

Raw Post-its:

- Regulation will allow specific application of GME technologies
- Specific Regulations vary between different regions of the world
- Only some areas will be allowed to utilize GMEs at all.

Factor: **Climate Mitigation Technologies**

Headline: **CMT's are used, but under strict conditions**

Raw Post-Its:

- Completely binding guidelines
- Global political approach
- CMT's are needed due to serious climate changes

2.3. Ecological

2.3.1. Global Warming Emissions

Human caused carbon dioxide is responsible for the increase in global temperature because of the greenhouse effect. To fulfil the Paris Agreement and stay below a 2°C increase above pre-industrial levels, radical transformation is crucial. The need for change covers transportation, building, food consumption, mobility and the use of internet and communication technology (ICT). ICT is currently recognized more as a solution of climate problems than as a driver, but the share of ICT greenhouse emission could increase from ~1% in 2007 to ~14% of 2016 level in 2040, which would account for more than half of the relative contribution of the transportation industry to total emissions in 2016. Policies must combine both restrictions on critical routines and incentives for alternatives. A restrictive carbon pricing system incorporates climate change costs where they are generated and thereby aims on the 'cost by cause principle'. Spatially allocating the cause of emissions to address the cost is a complex challenge. Large amounts of carbon emissions are caused far away from the consumption, leading to an opaque global system of imported and exported emissions. Negative emissions support the achievement of the UN 2030 Agenda. The implementation of large-scale portfolios of technologies (NET) are credited a big potential for world climate stabilization.

2.3.1.1 Statistics

- between 1990 and 2017, greenhouse gas emissions in the EU-28 dropped by 22%
- In 2015 the EU-28 imported 1317 Mt CO₂ from the rest of the world due to consumption (mainly from China and Russia) while exporting only 424 Mt CO₂ from production. (Fezzigna et al. 2019)
- average emissions from a new passenger cars in the EU-28 have dropped from 172.1 g CO₂/km in 2000 to 120.4 g CO₂/km in 2018 (European Environment Agency 2019)
- Price of carbon should grow with 3.75% per year plus inflation to incentivize mitigation to alternative technologies efficiently. (Gollier 2019)
- In 2016, the long-term WHO air quality guidelines for particulate matter in the air was exceeded at 68 % of the stations located in 39 European countries

2.3.1.2 Subfactors

Carbon Pricing Frameworks

Negative and Imported Emissions

Emissions Gap

2.3.1.3 Additional References

2.3.2. Food Distribution and Security

Worldwide nutrition patterns are very unequal, showing both increased obesity and recently increased hunger rates. The inequality in global nutrition is correlated to economic inequalities. Roughly one third of annual global food production becomes waste. Overproduction and aesthetic-focused quality standards are the major reasons for food waste at retailers with fresh fruit and vegetables having the highest waste rates. Food waste is preventable, especially in industrialized countries, and local initiatives to save food have increased membership in recent years. The UN set a global goal to cut food waste in half by 2030. Grassroot movements as e.g. the foodsharing platform (www.foodsharing.de) are growing, and the scandalization of food waste made some countries (e.g. France) establish laws prohibiting retailers from throwing away unsold, edible food, and requiring them to donate it appropriately. Collective action is required to improve food distribution on global, national, regional and local level. Statistics

- approximately 1.3 billion tonnes of food becomes waste each year (FAO 2013)
- 821 million people were undernourished in 2017 (UN 2019)
- up to 2/3 of food waste in industrialized countries is preventable
- poor nutrition causes 45% of global deaths in children under five, 3.1 million each year

2.3.2.1 Subfactors

Food Security

Nutrition Inequality

Industrial Agriculture

2.3.2.2 Additional Resources

2.3.3. Water security

No other resource is as necessary for life as water. Therefore, water security is a globally prioritized issue, defined as a basic human right by the UN. In Goal 6 of SDGs, the term *security* is conceptualized as a function of *availability*, *accessibility to services*, *safety and quality*, and *management*. Good water management is critical for global sustainable development, and the 21st century has experienced huge progress in water services, especially in Latin America and the Caribbean. But the access to water services on global level continues very unequal, confronting billions of world citizens with a lack of even basic water services. Increasingly, society must manage effectively too little and too polluted waters. Many countries are stuck in an

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

investment backlog in infrastructure and difficulties to maintain and operate existing assets, which hinders from sustaining universal coverage of drinking water and sanitation services. In this context, scholars are not sure about if delivery of water services is more effectively brought by private or state actors.

2.3.3.1 *Statistics*

- the return on investment in water and sanitation in developing countries has been estimated at US \$5 to US \$28 per dollar invested. (UNESCO 2015)
- global population using safely managed sanitation services increased from 28 per cent in 2000 to 45 per cent in 2017 (UN 2019)
- In 2017 still 785 million people lacked even a basic drinking water service and 701 million people practiced open defecation. (UN 2019)
- The UN estimates that 60% of the world's countries are unlikely to reach the target of full implementation of integrated water resources management by 2030. (UN 2019)
- In 2017, 60 per cent of people worldwide had access to basic handwashing facility with soap and water at home (UN 2019)

2.3.3.2 *Subfactors*

Irregular Climate

Water Pollution

Water Privatization

2.3.3.3 *Additional Resources*

2.3.4. Coordinating Global Climate Policy and Action

The United Nations Framework Convention on Climate Change (UNFCCC) organizes the Conference of Parties (COP) meeting series, to establish international agreements with regard to global warming and other aspects of climate change. The Paris Agreement, has been both lauded as the most successful international policy on climate change to date, and criticised by prominent scientists for being 'unrealistic', 'vague', 'non-binding', and void of action oriented commitments. The Intergovernmental Panel on Climate Change (IPCC) is the institution advising the United Nations on the state of knowledge and science of climate change and its social and economic impacts. In its most recent published special reports it has focused on the rate of global warming in relation to CO₂ and other emissions, the role of Land in relegating global warming, and the changing state of the ocean and Earth's cryosphere. Recently, localized climate action initiatives have been pointed to as sources of necessary and potent activity in combating climate change, though they are often uncoordinated by any formal or legally binding global institutions or policies.

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

2.3.4.1 Statistics

- Limiting global warming to 1.5 C will require reaching 'net zero' by 2050. (IPCC, SR15, 2018)
- Together, the G-20 countries account for 78 percent of the globe's emissions. Seven of these nations, and the EU when calculated collectively, is not on track to achieve its Paris Agreement goals.
- The Paris Agreement, concluding COP21, was adopted by all 195 UNFCCC member states and the EU, with the stated goal of keeping global warming well below 2C by reducing carbon output.
- Arctic June snow cover extent on land declined by $13.4 \pm 5.4\%$ per decade from 1967 to 2018, a total loss of approximately 2.5 million km².
- Between 1979 and 2018, Arctic sea ice extent has very likely decreased for all months of the year. September sea ice reductions are very likely $12.8 \pm 2.3\%$ per decade. These sea ice changes in September are likely unprecedented for at least 1000 years.

2.3.4.2 Subfactors

UNFCCC and COP series

IPCC and Climate Science

Local Climate Action

2.3.4.3 Additional Resources

WEF article³⁴

³⁴ Jackson und Coninck 2019

2.3.5. Ecological Factor Trajectories from the Workshop

The following section gives an overview of the results from the working group session that discussed the former prioritized ecological factors and their possible future trajectories. Each factor trajectory is assigned to one of the several Global Governance Archetypes (see Figure 4)



Figure 4: Ecological Scenario Cores for the different Global Governance Archetypes

1) Weak EU Actorhood in a fragmented Global Governance Regime:

Factor: Water Security (1)

Headline: Droughts and Water-Refugees

Raw Post-its:

- Access to water decreases
- Water related diseases are increasing, because of global warming
- Water availability is catastrophically worse in certain regions (India, Central Africa, Spain, etc.)
- Migration increases given water shortages.

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

Factor: Water Security (2)

Headline: War over Water

Raw Post-its:

- Water Scarcity leads to increased conflicts
- Sanitation issues increase, leading to disease are more likely
- Migration grows due to a) water availability), and increases again because b) War over Water

Factor: Coordinating Global Climate Policy and Action

Headline: Climate Policies in Conflict; Catastrophe

Raw Post-its:

- Despite some actors commitments to fulfil the Paris Agreement, emissions levels keep rising globally, potentially leading to irreversibly exceeding tipping points.
- Lack of commitment of both society and governments
- Climate scepticism prevails
- no significant technological developments
- Global population growth
- Lack of funding for sustainable innovations

2) Weak EU Actorness in a continued Global Governance Regime:

Factor: **Coordination Global Policy**

Headline: **Environment Policy Fail**

Notes:

- environmental policies are not integrated into trade, security policies
- No sanctioning of states
- States consider environment as a domestic and not global common good
- Goals are set but implementation is not efficient

Factor: **Global Warming Emissions**

Headline: **GHG Emission Reduction Not Enough (despite efforts)**

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

Notes:

- GHG Emissions drops slightly, but not significantly enough to meet the 2C target
- Technological innovations reduce emissions (and rebound effects can be compensated)
- Consumption patterns remains largely the same
- climate awareness continues to rise in some regions, while in others climate scepticism remains strong.

Factor: **Extreme Weather**

Headline: **adapted North - devastated south**

3) Strong EU actorness in a continued Global Governance Regime

Factor: **Coordination Global Policy**

Headline: **Green G-15: Environmental club on Global Level**

Notes:

- Sufficiently big group of countries unite and set consent about:
 - Price on Carbon
 - Monitoring and Performance
 - Effectively prioritization at global level

Factor: Water Security

Headline: Efficient water Technologies in place

Raw Post-its:

- Water Recycling
- Water Efficient Agriculture (link to technology)

Factor: **Food Distribution & Security**

Headline: **Sustainable, High tech food, supported by demand shifts**

Notes:

- Eating Insects is more popularly accepted in Western nations

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

- More conscious consumption of meat
- Less food waste
- Bigger Urban farms
- Efficient agricultural production

Factor: **Food Distribution & Security**

Headline: **Policy Failure and Food Disparities**

Notes:

- EU creates external food disparities through policy (extension of present phenomena)
- EU has strong influence directed inward at member states.
- Increased populations leads to less land availability and less food, consequently greater hunger
- Food waste continues to increase
- Increasing consumption of meat and dairy in some regions.

Factor: **Extreme weather**

Headline: **Adaptation Funds for Global South**

Notes:

- North does not adapt because of other priorities
- Situation in Global south is devastating, that funds are provided for adaptation

4) Weak EU Actorness in a transformed Global Governance Regime

Factor: **Coordinating Global Policy**

Headline: „**Brown**“ **Governance without Government (AI or Companies take over)**

Notes:

- AI Prioritizes Economic Growth
- Sustainability takes a secondary importance

Factor: **Coordinating Global Policies**

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

Headline: „**Green**“ **Governance without Government (AI or Companies take over)**

Notes:

- Governance by AI which prioritizes Environmental Protection
- Economic Growth takes a secondary importance.

Factor: **Food Distribution & Security**

Headline: **Food Demand Shifts to Sustainability**

Notes:

- Increasing vegetarian and vegan movements
- No 'Food waste'
- Demand Shift to Sustainability

Factor: **Global Warming Emissions**

Headline: **Zero Emissions results from transformation to DeGrowth**

Notes:

- New Ideology, Economic, and Social systems
- Degrowth Strategy
- Abandoning Capitalism
- Zero-Emissions

5) Strong EU Actorness in a transformed Global Governance Regime:

Factor: **Coordinating Global Climate Policy and Action**

Headline: **Effective and Integrated Environmental Policies**

Notes:

- environmental policies are integrated
- There is consensus that this is important and a global priority issue.
- Global Prices on Carbon are established.
- There is an international court on environmental with sanctioning powers
- Reporting and other observational systems to monitor country performance

Factor: **Coordinating Global Climate Policy and Action**

Headline: **Paris Agreement Implemented**

Notes:

- Economic growth has become less (or none) important for the development of policy goals.
- Significant GHG emissions reductions because of carbon capture and additional geo-engineering.
- More ambitious climate goals are set (emissions targets for example) and appropriate measures are implemented globally. This allows nations to meet targets set forth in the Paris Agreement and most importantly - stay within the 2-degree target for global warming.
- More sustainable consumption patterns are adopted
- Increased climate awareness on a global scale
- Innovations emerge that significantly reduce emissions.

Factor: **Food Distribution and Security**

Headline: **Food production is detached from nature (including water)**

Notes:

- High use of GMOs
- Artificial food production (like invitro meat) becomes industrial scale norm

Factor: **Coordinating Global Climate Policy and Action**

Headline: **Policies countering the Environment**

Notes:

- Populists movement gain power (reflected internationally)
- Environmental climate policy coordination does not happen
- Climate scepticism gets more powerful
- Other issues are crowding out environmental concerns (war, financial crisis, migration)

Factor: **Water Security**

Headline: **Water is managed as a Global Common good**

Notes:

- Water is accepted as a common good
- This calls for new governance regimes
- Changes in consumption patterns
- New adapted technologies allow for better management, nudged usage behaviour, etc.

2.4. Economic

2.4.1. Growth Paradigm

The current economic system is constructed around the illusive promise of greatest possible growth. But the model is not scalable to the entire world, as growth is naturally limited by physical resources. Since 1972, the influential Club of Rome has been pointing out the finiteness of an economic paradigm that predicts infinite growth. Almost half a century after this report, the importance and urgency of implementing a new, more sustainable system is being recognized. Signals like a slowing GDP growth, decreasing interests, trade war and a rather de-globalizing tendency indicate a starting recession. The conclusion, that the current system is failing, is putting a massive challenge to humanity. Different possible solutions are being discussed. If growth as a measure for prosperity fails in the future, wealth indicators need to be redefined. If sufficient economies are the new model for success, new potential measures for well-being describes indiredistribution and equality.

2.4.1.1 *Statistics*

- IMF projections for global growth:
Advanced Economies 2019: 3.2% 2020:3.5%; Emerging Market and Developing Economies 2019: 4.1% 2020: 4.7%
- Growth is projected to improve between 2019 and 2020, but: almost 70% of increase is uncertain as it relies on emerging markets and developing economies.
- Business hold off investments and global trade growth slowed to 0.5% (year-on-year) in first quarter of 2019.
- Global trade growth slowed to 0.5% (year-on-year) in first quarter of 2019

2.4.1.2 *Subfactors*

Global Recession

Slow Growth

De-Growth Movement

2.4.1.3 *Additional Resources*

IMF projections for global growth³⁵

WEF article³⁶

³⁵ IMF 2019b

³⁶ Gopinath 2019

2.4.2. Multilateralism

Multilateral agreements - defined as the practice of coordinating national policies in groups of three or more states (Keohane, 1990) - has been a defining feature of modern global governance efforts. These arrangements began as an antithetical movement against unilateralism - encouraging both small and large powers to band together towards the accomplishment of a common goal. This movement has encouraged the growth of regional international organizations (ASEAN, African Union, etc.) as it enables participants to present a united front against contenders. Multilateralism is effective in negotiating trade deals and setting standards for economic exchange, development plans, and taxation across a region or co-signatories. The growing openness and interconnectedness of international economies, was established on a bedrock of multilateral agreements emerging from the post-WWII international community. Many believe they have been unable to respond with sufficient speed or efficacy to the challenges posed by globalization, and consequently see multilateral processes as opaque and slow.

2.4.2.1 Statistics

2.4.2.2 Subfactors

Trade Agreements and Wars

Increasing and Expanding Regional Organizations

Currency Valuation Disputes

2.4.2.3 Additional Resources

Trade is not a weapon. Let's not use it as one (WEF)³⁷

What we need is more (and better) multilateralism, not less (WEF)³⁸

(Angel, 2019)

2.4.3. Platform Economies

Digital companies and products have changed the way humans interact. Due to internet and communication technologies, people connect with each other and access any information everywhere at any time. Digital companies are the biggest and highest valued companies on the planet, often without delivering physical products or services. In the digitalized 21st century, data are both, a currency and an asset. The unprecedented availability of information and

³⁷ Brende 2019

³⁸ Gurría 2019

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

communication has brought massive advantages in human cohabitation, but also imposes complex challenges. Collective interpretation in social media leads to extreme reception of events, resulting in 'shitstorms' and 'candystorms'. Platforms are abused to spread fake news and influence on global policies. The regulation of algorithms and network is provoking controversial global debates, as platform companies are acting worldwide and cannot be allocated at a certain place. This makes it also difficult for single states to bind them into governance structures, like taxation rules or data protection standards etc., and to restrict their political and economic power.

2.4.3.1 Statistics

2.4.3.2 Subfactors

Digital Companies

Digital Products

Network Effects

2.4.3.3 Additional Resources

2.4.4. Economic Factor Trajectories from the Workshop

The following section gives an overview of the results from the working group session that discussed the former prioritized economic factors and their possible future trajectories. Each factor trajectory is assigned to one of the several Global Governance Archetypes (see Figure 5)



Figure 5: Economic Scenario Cores for the different Global Governance Archetypes

1) Weak EU Actorness in a fragmented Global Governance Regime:

Factor: **Multilateralism**

Headline: **Reactive Regional Cooperation**

Notes:

- Crisis Triggered Cooperation for Specific Regions

2) Strong EU Actorness in a fragmented Global Governance Regime:

Factor: **Multilateralism**

Notes:

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

- Breakdown of Multilateralism
- Global governance Institutions exist but are not effective

3) Weak EU Actorness in a continued Global Governance Regime:

Factor: **Growth Paradigm**

Headline: **Regional Paradigms**

Notes:

- Sub-national level/ local economic paradigms grow in strength

Factor: **Platform Economies**

Headline: **No Regulations**

Notes:

- No regulations
- Few Monopolistic Players with high/relevant (market) positions

4) Strong EU Actorness in a continued Global Governance Regime:

Factor: **Growth Paradigm**

Headline: **Green Growth**

Notes:

- Focus on Sustainability for green growth

5) Weak EU Actorness in a transformed Global Governance Regime:

Factor: **Growth Paradigm**

Headline: **Fully Automated Luxury Space Communism**

Notes:

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

- Sufficiency is Producing as much as you need

6) Strong EU Actorness in a transformed Global Governance Regime:

Factor: **Platform Economies**

Headline: **Platform Ecosystems**

Notes:

- “Democratic Platforms”
- Value Sharing
- Regulation

Factor: **Growth Paradigm**

Headline: **Use of the Happiness Index**

- redefining ways of measuring growth
- Comprehensive Adjustments (Like the SDGs at a global scale)

Factor: **Growth Paradigm**

Headline: **focuses on human wellbeing**

- city budgets for addressing inequality

Factor: **Multilateralism**

Notes:

Multilateralism re-enforcement

Factor: **Platform Economy**

Headline: **ensuring social responsibility of platforms**

- Monopolies exist, but regulation focus on social responsibility

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

Factor: **Platform Economy**

Notes:

- World without frictions, no need for intermediaries

Factor: **Platform Economy**

Notes:

- regulation is ensuring competition between platforms

2.5. Political

2.5.1. Rising Multipolarity

Multipolarity signifies the distribution of power among a greater number of countries and other organizations, and enables greater balance and legitimation within modes of global governance. Whereas rules regarding trade, political action, and security were formerly crafted by a small set of powerful actors, the rise of the BRICS nations, the increasing importance of consensus through global institutions, and the creation of new entities for funding and regulating, have together shifted the location of power. This phenomenon has simultaneously created new types of international friction, multiplied governance complexity, and altered the risk landscape. Outdated governing mechanisms and decision-making processes may not be capable of adapting to the redistribution of power alongside the increasing rate of socio-technological change of our era. As established and emergent power centres continue to interface on issues that demand global governance, new modes of practice will be required.³⁹

2.5.1.1 *Statistics*

2.5.1.2 *Subfactors*

Emerging Power Blocs

Regional Associations and Organizations

Trade Agreements

2.5.1.3 *Additional Sources*

Article in IMF-report⁴⁰ Toward a Multipolar System

WEF-article⁴¹ a multipolar world brings back the national champions.

Credit-Suisse-report⁴² getting over Globalization

Article⁴³ Brazil: Geopolitical Challenges in a Multipolar World

World Bank -report⁴⁴ Multipolarity: The New Global Economy

Decline of Hegemony:

³⁹ WEF 2019d

⁴⁰ IMF 2019a

⁴¹ Hechler Fayd'herbe 2019

⁴² Credit Suisse Group AG 2017

⁴³ Pereira 2017

⁴⁴ World Bank 2011

After the Empire - A discourse on the (Todd 2003)

China References:

(Hart und Johnson 2019)

2.5.2. Transnational Actors

In many regards, sovereign countries are still the central components of the world's global governance systems, but the emergence of numerous transnational and non-state actors continues to exert an influence on the spectrum of international relations. With some new actors able to organize quickly and adapt more nimbly thanks to advances in communication technologies and new modes of operation, challenges to traditional power centres can originate in relatively small scale organizations. Connecting across borders, networks of small actors can rapidly become a powerful voice with regard to international issues like climate change, natural resource depletion, and refugee movements. Transnational groups include NGOs, philanthropic organizations, corporations and trade association, and networks of local governments or officials (like city mayors, etc.), and some of these actors have become very influential with regard to various global governance issues. However, while some exert this influence for more humanitarian pursuits, many multinational corporate actors and NGOs have vastly greater resources to mobilize than small or medium sized nations in pursuit of shaping policy decisions - calling into question some long held beliefs on how power manifests and is utilized in global governance. Finally, transnational groups have also emerged in organized crime, terrorist activities, and as covert military operants, exerting tremendous influence over state-level governance apparatuses, and exploiting weak and corrupt entities.

2.5.2.1 Statistics

2.5.2.2 Subfactors

Multinational Entities

Regional Associations and Organizations

Geopolitical Forces

Additional Resources

WEF article ⁴⁵

Report⁴⁶ Multi-Stakeholder Governance. A corporate push for a new form of global governance

⁴⁵ WEF 2019e

⁴⁶ Gleckman 2016

Book⁴⁷ The Oxford Handbook of Global Policy and Transnational Administration

Article⁴⁸ Transnational delegation in global environmental governance: When do non-state actors govern?

Article⁴⁹ Producing Global Governance in the Global Factory. Markets, Politics, and Regulation

2.5.3. Corruption

Corruption of governing bodies and individuals remains a potent force with regard to the shaping of perceptions across the socio-political spectrum. It can erode the public trust and the power of the social contract - fueling civil unrest and its various manifestations. A destabilized nation or region, in return, demands resources and responses from global governing actors - both of which can set precedence and expectations for governing decisions going forward. Political corruption, can also undermine the necessary sense of security that internal and external investors hold - leading to capital exodus by internal sources, and a hesitation, if not outright refusal, to invest by external capital sources. According to the United Nations, "corruption is a serious impediment to the rule of law and sustainable development. The UN's Convention against Corruption (A/Res/58/4), run through the UNDOC, and remains the only legally-binding universal anti-corruption instrument, overseen by the Conference of States Parties (COSP) and its implementation review mechanism. As of 2018, there are 186 state parties, and this framework covers Prevention, Asset Recovery, International Cooperation, Justice Sector Integrity, Education, Private Sector, Economic Fraud, and Identity Related Crime, among other more specific issue areas. Corruption is addressed under SDGs 16 and 17 which focus on the development of good governance and social justice along with human rights and the rule of law.

2.5.3.1 Statistics

- 40% of global exports come from nations with 'Little or No Enforcement'
- The OECD Anti-Bribery Convention is a key instrument for curbing global corruption because the 44 signatory countries are responsible for approximately 65 per cent of world exports¹ and more than 75 per cent of total foreign direct investment outflows.
- 57% of European citizens believed that their country's government was entirely or to a large extent controlled by a few big interests.
- As of 2015, in the EU only Austria had a mandatory code of conduct for lobbyists, and the EU's overall 'integrity' score for lobbyists was 33%.

⁴⁷ Stone und Moloney 2019

⁴⁸ Green 2018

⁴⁹ Haufler 2018

2.5.3.2 Subfactors

Development Agreements and Financial Leverage

Administrative Bribery

Whistle Blowing and Transparency

Technological Solutions to Corruption

2.5.3.3 Additional Resources

Corruption in Africa (WEF)⁵⁰

Transparency International 2019 Corruption Perceptions Index ⁵¹

2.5.4 Citizen Participation and Mobilization

Political ambitions, especially when aiming on global effect, are lacking in efficiency because of failing local participation. Mobilizing the communities must take place not only in global institutions, but also (or even more) on local level. This refers to bottom-up participation and activity, through joint effort of local authorities, local businesses and the local population. To achieve the 2030 agenda, the UN first declared a "billions to trillions" politics for global development in 2015, referring to an upscale in projects for global development. Financing the SDGs requires a shift away from "project funding" towards "financing". Mobilizing private capital, from domestic and international sources, needs to complement the efficient allocation of public funds. This supply of finances must meet a continuous supply of projects that help countries meet their sustainable development objectives. Projects embedded in a local development agenda can contribute to improvements in access to and quality of local socioeconomic infrastructure, and can make the communication between the population and local authorities more effective.

2.5.4.1 Statistics

- Official development assistance (ODA) fell down to USD 149 billion in 2018, down by 2.7% in real terms from 2017; and humanitarian aid fell by 8%.

2.5.4.2 Subfactors

Activist Protections

Communication Media and Social Organization

Emergent Communities

⁵⁰ Marais 2019

⁵¹ Transparency International

2.5.4.3 Additional Resources

World Bank paper⁵²

2.5.5. Political Connections

Politics and economy are frequently criticized for tight relatedness. In a plutocratic system, society is ruled by people of great wealth and income. Firms pay premium to political related persons during times of prosperity, so they obtain bailout during financial distress. When firms are politically connected, they have higher levels of leverage, are less profitable, have lower marginal productivity of capital, and do not invest more in comparison than their unconnected peers. Political connections can enable privileged access to credits, generating distortion in the allocation of capital. Connected firms which benefit from easier credit tend to be less productive. For the least efficient and least profitable firms, credit constraints are reduced disproportionately more. Economy must pay for the hidden costs caused by declined quality of banking services from politically motivated intervention. Therefore, political connection leads to economical welfare losses.

2.5.5.1 Statistics

2.5.5.2 Subfactors

Regulated Meritocracy

Nepotism

Systemic Corruption

2.5.5.3 Additional Resources

World Bank paper⁵³

⁵² Shulga et al. 2019

⁵³ Bussolo et al. 2019

2.5.6. Political Factor Trajectories from the Workshop

The following section gives an overview of the results from the working group session that discussed the former prioritized political factors and their possible future trajectories. Each factor trajectory is assigned to one of the several Global Governance Archetypes (see Figure 6)

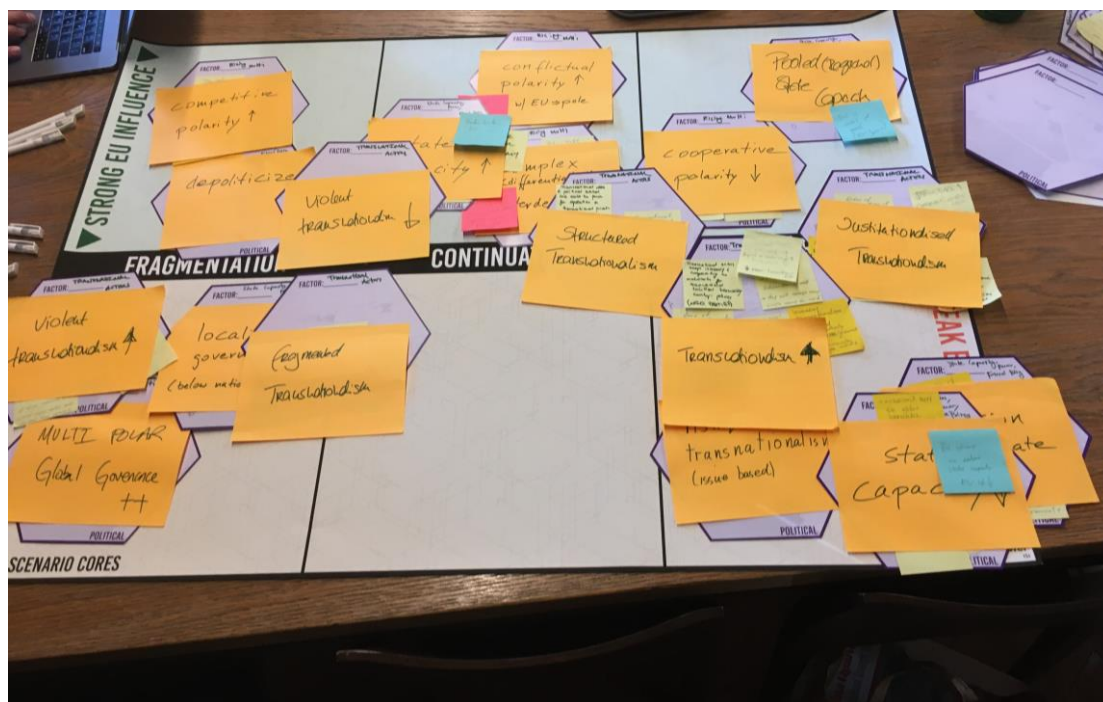


Figure 6: Political Scenario Cores for the different Global Governance Archetypes

1) Weak EU Actorness in fragmented Global Governance Regime:

Factor: **Transnational Actors**

Headline: **Violent Transnationalism Increases**

Notes:

- Independent Private military companies ,rule' much of the world
- Terrorist organizations proliferate and exercise substantial power
- Destabilizing elements not linked to the state
- Intentional destabilization by private security forces
- Private militaries and terrorist organization will support select politicians and will create powerful networks. Radical policy makers will lead these networks.

Factor: **Transnational Actors**

Headline: **Fragmented Transnationalism**

Notes:

- Relevant on single policy areas that only combine antagonist ideas and solve societal issues (Climate Change and Renewables)

Factor: Political Connections and Corruption

Headline: **Corruption and Political Favoritism: Level: low, Variance: high**

Notes:

- Cognitive Dissonance remains
- Governance legitimacy decreases
- Shallow forms of Scrutiny increase
- Capture remains stable
- These issues are extended to „the other“ - other peoples problems.
- Solutions are found, but remain one-size fits all. don't work in all contexts
- Corruption is stigmatized and scrutinized
- Corruption adapts new ways to operate (more subtle)
- Corruption persists in a few, important places, while decreasing overall.
- Some EU countries become more transparent, while other do not.
- Transnational organizations work with weaker countries

Factor: Political Connections and Corruption

Headline: **Corruption/Political Favoritism: Level: moderate, Variance: high**

Notes:

- Legitimacy of government has decreased
- Accountability has decreased
- Capture (of governing institutions by external powers) has increased
- Populist politicians comes to power
- Accountability decreases
- Geographic, cultural, and political variance persists
- Responses stay fragmented/national/limited
- Factor remains widespread at a mostly low/moderate level
- Great variance across countries

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

- fluctuations without clear trends
- Creation and Endurance of powerful elites
- Agenda is dictated by non-democratically accountable leaders

Factor: **Political Connections and Corruption**

Headline: **Corruption and Political Favoritism: Level: High, Variance: Low (widespread)**

Notes:

- Corruption as Modus Operandi
- Breakdown of rule of law
- Corruption increases, widespread
- decreases in social capital and legitimacy
- Corruption as the new normal
- Companies take place of governments and become profit oriented.

2) Strong EU Actorness in a fragmented Global Governance Regime:

Factor: Rising Multipolarity

Trajectory X:

Headline: Competitive Polarity Increases

Raw Post-its:

- The Role of „Third“ countries grows (Georgia, Ukraine)
- High Competition amongst stabilized Poles (3)
 - Political / Military EU/US(North America)
 - Africa (Union grows in strength and coherence).
 - BRICS formalize relations and cohesive strategy.

Factor: **State Capacities, Power**

Headline: **depoliticized**

Notes:

- civil engagement decreases
- efficient state

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

- depolitication
- state capacity can be abused, legitimacy of the state decreases, state capacity increases

Factor: **Political Connections and Corruption**

Headline: **Bottom up resistance to corruption (Localized)**

Notes:

- Faith leaders unite to promote anti-corruption in societies
- Preferability of corruption decreases
- Transparency increases
- People follow old rules defined in main religions
- Fighting against corruption and 'the old way of doing politics' becomes the primary message of political parties.
- Local Mobilization

3) Strong EU Actorness in a fragmented Global Governance Regime:

Factor: **Rising Multipolarity**

Headline: **Conflictual Polarity Increases with the EU as a major Pole**

Notes:

- EU builds its military strength
- Alliances become more uncertain
- Likelihood of conflict increases
- Global Governance is made impossible
- Possibility of conflicts arise
- Countries close themselves.
- Fragmentation of governance
- increased conflict between regions where countries remain interdependent
- greater difficulty in public goods provision
- Blockage/ collapse of global governance
- conflict increases around geopolitics
- coalitions are built around certain issues.

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

- Rise in understanding of EU's role as a collective, single power (excluding those outside of EU).

Factor: **Transnational Actors**

Headline: **Structured Transnationalism**

Notes:

- Transnational NGOs and Political parties are able to push for representation as transnational private actors
- Transnational organizations become more influential with regard to national policies

Factor: **Multipolarity**

Headline: **Complex (differentiated) Interdependence**

Notes:

- policy fragmentation is current EU state
- Poly-nodal conditions leads to:
- Geopolitical positioning of a Strong EU coupling with Africa
- Policy networks define partner-based governance
- Political mobilization of the non-aligned

4) Weak EU Actorness in a transformed Global Governance Regime

Factor: **Transnational Actors**

Headline: **Rising Transnationalism (Issue Based)**

Notes:

- Multipolar cooperation: new actors arise to solve global challenges (ie. AI, climate change)

Factor: **Transnational Actors**

Headline: **Transnationalism increases**

Notes:

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

- Transnational actors increase and cooperate to advocate for transnational solutions, harmonizing country policies (NGOs, political parties)
- Transnational increase power, increase effects on social change, and impact ecologies
- Growing role of transnationals
- Transnational entities become more active and independent
- They manage many different crises around the world.
- Weakened political authority of states
- Increased cross-cutting issues, cleavages (breaking up other international groups), but reduced conflict (more negotiations).
- „envoyness“ of issues
- Issue related cooperation
- economics become more powerful than social or environmental issues
- Make global level governance difficult to mobilize
- Transnational actors are highly independent in writing policy.

Factor: State Power, Capacity, and Fiscal Policy

Headline: State Capacity Decreases; EU Influence decreases

Notes:

- EU reliance on member states capacities create situation that EU influence will diminish
- Increased need for global intervention (development aid, potentially peace keeping)
- Intra-state and border conflicts rise
- Number of failed states increases
- Populist, corrupt, and irresponsible governments are common
- Governmental public sector ability to implement policies, and enforce laws, decreases.

Factor: **Citizen Participation and Mobilization**

Headline: **New modes of citizen participation (i.e. virtual) within the State**

- overlapping 'group' citizenships
- hybrid or virtual citizenships
- e-citizenships expanded (with attachment to services)
- a redefinition of citizenship including virtual or global citizenship.

Factor: **Citizen Participation and Mobilization**

Headline: **Detached Citizen Participation (Weakens state institutions)**

Notes:

- Participation in state governance structures declines dramatically
- weakens state power and efficacy

5) Strong EU Actorness in a transformed Global Governance Regime

Factor: **Transnational Actors**

Headline: **Institutionalized Transnationalism**

- Global Structures increase, while regulations become common and enforceable
- Decision-making becomes more coherent
- There is a transformation of civic engagement with regard to decision making.
- Global transnational political parties evolve or emerge to push for global solutions at the national level.
- Transformed civic engagement patterns
 - Influence political participation structures
 - form lasting transnational interest groups
- Rules for transnational interactions with intergovernmental organizations are introduced worldwide.
- consociationalism - Systemic entrenchment with political system actors.
- transnational actors increased powers delegitimize national policies and force self-regulation by transnational actors (corporations in particular).

Factor: **Citizen Participation and Mobilization**

Headline: **Institutionalized citizen participation increasing**

- Citizen participation within governance and government structures increases and leads to a strengthening of those institutions.
- Higher representativeness
- Increased consensus
- More citizen juries and participatory bodies lead to better solution finding for political issues.
- Missing state capacities lead to a rise in citizen participation.
- Powerful mobilizations via technologies etc.

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

- Dramatic shift in the political cultural open up the opportunity for citizen participation to increase.
- Local authorities become increasingly responsible to local populations, their effectiveness is measured at the national level, but reported to international platform communities.

Factor: **Citizen Participation and Mobilization**

Headline: **New Modes of Participation Outside the State**

Notes:

- Global Cloud Nations
- Global participatory, and maybe deliberative, Democracy
- Exclusive, formal global citizenship

Factor: **Political Connections and Corruption**

Headline: **Global Institutions Reduce Corruption**

Notes:

- Responses on a global level are reinforced (more rules, more investment)
 - Level of corruption is reduced
 - Greater transparency
 - Increased Scrutiny
 - increased participatory politics
 - Eradicated poverty
 - Auditing
 - Transnational financial activities are closely monitored.
 - emergent new trend to measure and discover corruption and connectivity.
 - Public mentality changes
 - corruption becomes unacceptable
 - Only rare cases of misusing connections.
 - We regulate corruption, we empower a new political class
 - Invest on global education and social capital
 - Legitimacy of government goes up
 - Corruption is stigmatized dramatically in both public and private.
- a few countries of high corruption left over

Factor: **Political Connections and Corruption**

Headline: **Corruption and Political Favoritism: Level: Low; Variance: Low**

Notes:

- Average levels of corruption move lower
- Convergence on decreased level of corruption and political favoritism
- Introduction of formal rules, excluding high corruption
- courts are independent
- Real interiorization of anti-corruption messages and mentalities
- transparency increases
- Scrutiny increases
- Laws are reinforced

Factor: **Rising Multipolarity**

Headline: **Highly Cooperative with Decreasing Polarity**

- Europe becomes a political and military power
- More uniformity and order within global governance
- interdependencies increase
- Strengthening of global governance as the “fora of the good”
- Increased Equity in global governance

Factor: **State Capacities, Power, and fiscal Policy**

Headline: **Pooled (Regional) State Capacities (EU as a role model)**

- Increasing number of regional confederations to deliver state functions together
- Debt/GDP ratio as power/quality instrument ?

Factor: **Transnational Actors**

Headline: **Violent Transnationalism Decreasing**

Notes:

- Transnational terrorist organizations do not exist (no need for them anymore)

2.6. +

The plus (+) section of the STEEP categorization will be used to accommodate factors that do not fit cleanly within the standard STEEP framework. For the TRIGGER scenario development process, we use this to address trends in governing institutions which crosses over between social and political concerns, and is relevant for this research. We also consider topics that are more security focused and are currently being addressed by international governing institutions.

2.6.1. Hybrid Threats/Warfare

While the term itself remains a hotly debated topic this trend remains a viable topic shaping global governance as a defining feature of state and non-state actors' sophisticated use of technology to pursue political agendas through military means. Numerous working definitions have been put forward including: The term "hybrid war" points to situations in which the use of conventional military force is supported by irregular and cyber warfare tactics and coupled with non-linear conflict. The range of methods and activities is wide, including: influencing information; logistical weaknesses like energy supply pipelines; economic and trade-related blackmail; undermining international institutions by rendering rules ineffective; terrorism or increasing insecurity.

2.6.1.1 *Statistics*

2.6.1.2 *Subfactors*

A.I. Integration (e.g. Deep fakes)

Asymmetric Strategies

Urban and Guerilla Tactics

2.6.1.3 *Additional Sources*

(Wither 2016)

(Stowell, 2018)

(Hybrid CoE, 2019)

2.6.2. Infrastructure gap

Infrastructure is historically interpreted as the entirety of fix costs required for development and plays an important role in economy. To provide infrastructure for the projected global investment for 2040, USD 15 trillion are missing. Barriers are found in corruption, bureaucracy and under-

skilled labour. On global level, infrastructure systems suffer from a low level of tech innovation, as investable project pipelines are missing even as seemingly necessary private investment requires such instruments.⁵⁴ This has increased the need for the global community to provide foreign capital to developing and post-crisis regions for infrastructure development. Infrastructure is amongst the least digitalized systems in the global economy. The reason for this sluggish innovation often lays in the failure of integrating new technology better into infrastructure development. Important solutions can make infrastructure more connected, prosperous and sustainable. A key for this development is enabling technological advancement with investable project pipelines.

2.6.2.1 Statistics

- Infrastructure financing needs have been estimated at US\$90 trillion to the year 2030, with an annual financing gap in developing countries of up to US\$1.5 trillion.
- \$15 trillion: predicted gap between projected investment and amount needed to provide adequate global infrastructure by 2030.
- Belt and Road Initiative (BRI) investment projects are estimated to add over USD 1 trillion of outward funding for foreign infrastructure over the 10-year period from 2017.
- To date, more than sixty countries - accounting for two-thirds of the world's population - have signed on to BRI projects or indicated an interest in doing so.

2.6.2.2 Subfactors

Infrastructure (Transport, Energy, Digital) in Developing Nations

China's Belt and Road Initiative

Infrastructure Standards and Regulations

2.6.2.3 Additional Resources

Infrastructure's important role for economy ⁵⁵

\$15 trillion: predicted gap between projected investment and amount needed to provide adequate global infrastructure by 2040⁵⁶

World Bank report⁵⁷

⁵⁴ Global Infrastructure Outlook 2019⁹

⁵⁵ George et al. 2019

⁵⁶ Global Infrastructure Outlook 2019⁹

⁵⁷ World Bank 2019

2.6.3. Mission Oriented Governance

Mission oriented governance refers to a relatively new mode of setting national and international agendas to pursue specific goals. As a concept it is fundamentally associated with large scale public investments with regard to achieving one or more medium-to-long-term, high-risk, high-reward 'missions'. The NASA Lunar Landing program is often pointed towards as an example of a Mission-Oriented governance project, as it relied on large investments, spread across multiple actors, working in parallel, to achieve a particular goal, and resulted in numerous technical spin-offs along the way. This mode of governance is highly dependent on the specificity of the prioritized goals and timeframes for achievement. The SDGs have been simultaneously lauded for their movement to set global goals, and criticised for the ambiguity and lack of specified monitoring apparatuses. The EU's newest research framework program will also test this mode of governance structure, and its applicability to international cooperation on innovation and research.

2.6.3.1 *Statistics*

2.6.3.2 *Subfactors*

Goal Setting and Prioritization

National and International Innovation Funds

Intellectual Property for International Projects

2.6.3.3 *Additional Resources*

2.6.4. Reflexive Governance

Reflexive Governance is a mode of decision making that involves stakeholders taking part in dialogues that encourage learning and viewing issues from perspectives of others. As defined by Jessop "[reflexive] governance [...] has a substantive, procedural rationality that is concerned with solving specific co-ordination problems on the basis of a commitment to a continuing dialogue to establish grounds for negotiated consent, resource sharing, and concerted action [...] procedures are concerned to identify mutually beneficial joint projects from a wide range of possible projects, to redefine them as the relevant actors attempt to pursue them in an often turbulent environment, and monitor how far these projects are being achieved." (Jessop 2002) This is in contrast to 'negotiations as means to compromise' or the exchange coordination as well as imperative coordination typical of hierarchies. It relies on "substantive, continuing [...] procedures [...] concerned to identify mutually beneficial joint projects." (Jessop 2002)

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

2.6.4.1 *Statistics*

2.6.4.2 *Subfactors*

Local Participation

Public Private Partnerships

Citizen-centred Innovation

2.6.4.3 *Additional Sources:*

(Beck et al. 2014)

(Jessop 2002)

(Richert 2019)

(van der Meer et al. 2005)

(Bhuta et al. 2018)

(Scott 2010)

(Scott 2018)

(Marsden 2013)

(Bornemann et al. 2018)

2.6.5. Plus Factor Trajectories from the Workshop

The following section gives an overview of the results from the working group session that discussed the former prioritized *Plus* factors and their possible future trajectories. Each factor trajectory is assigned to one of the several Global Governance Archetypes (see



Figure 7: Plus Category Scenario Cores for the different Global Governance Archetypes

1) Weak EU Actorness in a fragmented Global Governance Regime:

Factor: **Infrastructure Gap**

Headline: **Infrastructure Neglect**

Notes:

- Enlarged Gap
- Legacy Infrastructure - Old, inferior, deteriorating or unused
- Gap between international potential and existing obstacles increases

Factor: **Infrastructure Gap**

Headline: **Hot Spots**

Notes:

- Compounding Inequality are increasing returns to the „winners“

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

- Some areas remain at the cutting edge of infrastructure advancements

Factor: **Hybrid Threats / Warfare**

Headline: **Persistent Status Quo**

Notes:

- Financed by States
- Targets are Unclear
- Not (officially) attributed to countries/nations

Factor: **Mission oriented policy / Reflexive Governance**

Notes:

- all policies are mission oriented
- complete direct democracy

2) Strong EU Actorness in a fragmented Global Governance Regime:

Factor: **Infrastructure**

Headline: **Mobility and Information**

Notes:

- Inter-European High Speed Rail
- „5G“ + EU (in 2050 this would be like 10G)

Factor: **Mission oriented Policy / Reflexive Governance**

Headline: **Mission-oriented & reflexive governance**

Notes:

- more feasible and actionable policies (to achieve that policy action has to be more decentralized)

3) Weak EU Actorness in a continued Global Governance Regime

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

Factor: **Hybrid Threats**

Headline: **Periphery Large Scale Events**

Notes:

- The (EU) Periphery remains embattled with Hybrid Threats
- Large scale events occur, raising awareness and encouraging core to strengthen defenses

Factor: **Mission oriented Policy / reflexive Governance**

Headline: **reactive approach**

Raw Post-Its:

- No involvement - top down approach

4) Strong EU Actorness in a continued Global Governance Regime

Factor: **Hybrid Threats / Warfare**

Headline: **Multiple, low-level events in the center**

Notes:

- in the center of Europe, multiple low level events

Factor: **Infrastructure**

Notes:

- 5G EU

Factor: **Hybrid Threat / Warfare**

Headline: **Attribution to a Private Entity**

Notes:

- Attribution to non-state Actors

5) Weak EU Actorness in a transformed Global Governance Regime:

Factor: **Hybrid Threats / Warfare**

Headline: **Institutionalization, Attribution, & Codification**

Notes:

- Financed by States
- Definitions are Developed
- Cyber attacks are attributed to countries
- Codification of the hybrid warfare ecosystem

6) Strong EU Actorness in a transformed Global Governance Regime:

Factor: **Infrastructure Gaps**

Headline: **Expanded and Evolving Infrastructure**

Notes:

- Globally infrastructure systems are expanded
- The infrastructure gaps are closed
- Infrastructure evolves according to needs
- Infrastructure maintenance is continuous

Factor: **Mission oriented Policy + reflexive governance (taken from 'Extra Trajectories')**

- respect of the agency of the stakeholders involved as first step toward mission oriented

Factor: **Infrastructure Gap**

- Continental Energy grid (centralized)

Factor: **Mission-oriented, Reflective Governance:**

- Expansion of Mission Orientation + Reflexive Governance supranationally and sub-nationally
- regional consultations
- EU citizen initiatives leads to further expansion of Mission Orientation
- This combine with a comprehensive change away from the growth paradigm

3. Publication Bibliography

Abshagen, Marie-Luise; Cavazzini, Anna; Graen, Laura; Obenland, Wolfgang (2017): Hijacking the SDGs? The Private Sector and the Sustainable Development Goals. Hg. v. Ellen Köhrer. Bröt für die Welt. Berlin.

Adelman, Sam; Lewis, Bridget (2018): Rights-Based Approaches to Climate Change. In: *Transnational Environmental Law* 7 (1), S. 9–15.

AFIDEP (Hg.) (2019): REGIONAL ANALYSIS OF YOUTH DEMOGRAPHICS. Online verfügbar unter <https://www.afidep.org/our-work/population-change-sustainable-development/current-programmes/regional-analysis-youth-demographics/>, zuletzt geprüft am 17.09.2019.

Agius, Emanuel (1994): Thinking about future generations: Institute for the Integrated Study of Future Generations.

Agius, Emanuel; Busuttil, Salvino; Kim, Tae-Chng; Yazaki, Katsuhiko (Hg.) (1997): Future Generations & International Law. London: Earthscan Publications Ltd. Online verfügbar unter <http://home.um.edu.mt/fgp/Pub3.html>, zuletzt geprüft am 16.02.2011.

Agius, Emanuel; Chircop, Lionel (Hg.) (1998): Caring for Future Generations. Jewish, Christian, and Islamic Perspectives. USA: Adamantine Press on 21st Century Studies. Online verfügbar unter <http://home.um.edu.mt/fgp/Pub5.html>, zuletzt geprüft am 16.02.2011.

Agius, Emmanuel (1986): The Rights of Future Generations. In Search of an Intergenerational Ethical Theory. Leuven: Faculty of Theology, Catholic University of Leuven.

Ahmed, Masood; Savedoff, William (2019): Better Together. Finance and Health Ministers Can Deliver a Win-Win for their Countries. Hg. v. Center for Global Development. Online verfügbar unter <https://www.cgdev.org/blog/better-together-finance-and-health-ministers-can-deliver-win-win-their-countries>, zuletzt geprüft am 24.09.2019.

Akgiray, Vedat (2019): The Potential for Blockchain Technology in Corporate Governance (OECD Corporate Governance Working Papers, 21). Online verfügbar unter <https://www.oecd-ilibrary.org/docserver/ef4eba4c-en.pdf?expires=1569316802&id=id&accname=guest&checksum=2498E10C833DB37C379A491B0F7DC72D>, zuletzt geprüft am 24.09.2019.

Artificial Intelligence: A Study on Governance, Policies, and Regulations, zuletzt geprüft am 29.10.2019.

Atzori, Marcella (2015): Blockchain Technology and Decentralized Governance. Is the State Still Necessary? In: *SSRN Electronic Journal*. DOI: 10.2139/ssrn.2709713.

- Auerbach, Alan J.; Gokhale, Jagadeesh; Kotlikoff, Laurence J. (1991): Generational Accounts. A Meaningful Alternative to Deficit Accounting. In: *Tax Policy and the Economy* 5, S. 55–110. Online verfügbar unter <http://www.jstor.org.eres.library.manoa.hawaii.edu/stable/20061801>, zuletzt geprüft am 16.02.2011.
- Auerbach, Alan J.; Kotlikoff, Laurence J.; Leibfritz, Willi (1999): Generational accounting around the world: University of Chicago Press.
- Auerbach, Bruce Edward (1995): Unto the thousandth generation. Conceptualizing intergenerational justice: P. Lang.
- Azose, Jonathan J.; Raftery, Adrian E. (2019): Estimation of emigration, return migration, and transit migration between all pairs of countries. In: *Proceedings of the National Academy of Sciences of the United States of America* 116 (1), S. 116–122. DOI: 10.1073/pnas.1722334116.
- Bae, You-Jin; Won Choi, Seung; Jeong Kim, Min; Kim, Seongjun (2019): Leveraging ICT Platforms to Foster Citizen Engagement For Enhanced Public Accountability. The Korean Experience. Hg. v. World Bank (Learning Note, 2). Online verfügbar unter <https://openknowledge.worldbank.org/bitstream/handle/10986/31837/Leveraging-ICT-Platforms-to-Foster-Citizen-Engagement-For-Enhanced-Public-Accountability-The-Korean-Experience.pdf?sequence=1&isAllowed=y>, zuletzt geprüft am 24.09.2019.
- Bakker, Karen; Ritts, Max (2018): Smart Earth. A meta-review and implications for environmental governance. In: *Global Environmental Change* 52, S. 201–211. DOI: 10.1016/j.gloenvcha.2018.07.011.
- Ballard, Jamie (2019): Millennials are the lonliest generation. Hg. v. YouGov. Online verfügbar unter <https://today.yougov.com/topics/lifestyle/articles-reports/2019/07/30/loneliness-friendship-new-friends-poll-survey>, zuletzt aktualisiert am 30.07.2019, zuletzt geprüft am 17.09.2019.
- Bandman, Bertram (1982): Do Future Generations Have the Right to Breathe Clean Air? A Note. In: *Political Theory* 10 (1), S. 95–102. Online verfügbar unter <http://www.jstor.org.eres.library.manoa.hawaii.edu/stable/190857>, zuletzt geprüft am 16.02.2011.
- Banerjee, Mandrita; Lee, Junghee; Choo, Kim-Kwang Raymond (2018): A blockchain future for internet of things security. A position paper. In: *Digital Communications and Networks* 4 (3), S. 149–160. DOI: 10.1016/j.dcan.2017.10.006.
- Beck, Silke; Borie, Maud; Chilvers, Jason; Esguerra, Alejandro; Heubach, Katja; Hulme, Mike et al. (2014): Towards a reflexive turn in the governance of global environmental expertise. The cases of the IPCC and the IPBES. In: *GAIA-Ecological Perspectives for Science and Society* 23 (2), S. 80–87.

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

Berger, Michele W. (2018): Social media use increases depression and loneliness. Hg. v. Penn Today. Online verfügbar unter <https://penntoday.upenn.edu/news/social-media-use-increases-depression-and-loneliness>, zuletzt aktualisiert am 09.11.2018, zuletzt geprüft am 17.09.2019.

Bezold, C. (1975): Congress and the Future. In: *The Futurist* 9 (3), S. 132–142.

Bezold, C. (2001): Anticipatory Democracy Revisited. In: *Democracy and Futures*.

Bezold, Clem; Renfro, William (1978): Citizens and Legislatures Foresight. In: Anticipatory Democracy: People in the Politics of the Future. 1st. Toronto Canada: Random House, S. 114–133.

Bezold, Clement; Juech, Claudia; Michelson, Evan; Fuerth, Leon S. (2009): Foresight and anticipatory governance. In: *Foresight* 11 (4), S. 14–32. Online verfügbar unter <http://www.emeraldinsight.com/doi/pdf/10.1108/14636680910982412>, zuletzt geprüft am 19.04.2015.

Bhuta, Nehal; Malito, Debora Valentina; Umbach, Gaby (2018): Introduction. Of Numbers and Narratives—Indicators in Global Governance and the Rise of a Reflexive Indicator Culture. In: The Palgrave Handbook of Indicators in Global Governance: Springer, S. 1–29.

Bickham, Stephen (1981): Future generations and contemporary ethical theory. In: *The Journal of Value Inquiry* 15 (2), S. 169–177. DOI: 10.1007/BF00147114.

Biermann, F.; Abbott, K.; Andresen, S.; Bäckstrand, K.; Bernstein, S.; Betsill, M. M. et al. (2012): Navigating the Anthropocene. Improving Earth System Governance. In: *Science* 335 (6074), S. 1306. DOI: 10.1126/science.1217255.

Blyth, Mark (2017): Globalization in an Era of Discontent. Populism, Prosperity and Policy in Contested Times. Hg. v. OECD. Online verfügbar unter https://www.oecd.org/naec/Mark_Blyth_28_March_2017.pdf, zuletzt geprüft am 09/11/19.

Bonafilia, Derrick; Gill, James; Kirsanov, Danil; Sundram, Jason (2019): Mapping for humanitarian aid and development with weakly and semi-supervised learning. Hg. v. facebook Artificial Intelligence. Online verfügbar unter <https://ai.facebook.com/blog/mapping-the-world-to-help-aid-workers-with-weakly-semi-supervised-learning>, zuletzt aktualisiert am 09.04.2019, zuletzt geprüft am 17.09.2019.

Bornemann, Basil; Sohre, Annika; Burger, Paul (2018): Future governance of individual energy consumption behavior change—A framework for reflexive designs. In: *Energy research & social science* 35, S. 140–151.

Brende, Borge (2019): Trade is not a weapon. Let's not use it as one. Hg. v. WEF. Online verfügbar unter <https://www.weforum.org/agenda/2019/02/trade-is-not-a-weapon-lets-not-use-it-as-one/>, zuletzt aktualisiert am 18.02.2019, zuletzt geprüft am 17.09.2019.

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

Bussolo, Maurizio; Nicola, Francesca de; Panizza, Ugo; Varghese, Richard (2019): Political Connections and Financial Constraints. Evidence from Transition Countries. Hg. v. World Bank (Policy Research Working Paper, 8956). Online verfügbar unter <https://openknowledge.worldbank.org/bitstream/handle/10986/32208/WPS8956.pdf?sequence=4&isAllowed=y>, zuletzt geprüft am 24.09.2019.

Caney, Simon (2018): Justice and Future Generations. In: *Annual Review of Political Science* 21, S. 475–493.

Casico, Jamais (2013): Humanity Plus Talk, "Bad Futurism". IFTF. Online verfügbar unter http://www.openthefuture.com/2013/02/humanity_plus_talk_bad_futuris.html, zuletzt geprüft am 08.10.2019.

Cerna, Lucie; Hynes, William (2018): A pluralistic approach to public policy. The case of the OECD's New Approaches to Economic Challenges initiative. In: *International Journal of Pluralism and Economics Education* 9 (4), S. 376–390. Online verfügbar unter https://www.luciecerna.com/uploads/5/1/2/5/5125288/ijpee090403_hynes_198283.pdf, zuletzt geprüft am 09/11/19.

Challies, Edward; Newig, Jens; Lenschow, Andrea (2019): Governance for sustainability in telecoupled systems. In: *Telecoupling*: Springer, S. 177–197.

Chaplin, G.; Paige, G. D. (1970): Hawaii 2000; Continuing Experiment in Anticipatory Democracy. Continuing Experiment in Anticipatory Democracy. In:

Cigna (Hg.) (2018): Cigna U.S. Loneliness Index. Survey of 20,000 Americans Examining Behaviors Driving Loneliness in the United States. Online verfügbar unter <https://www.cigna.com/assets/docs/newsroom/loneliness-survey-2018-full-report.pdf>, zuletzt geprüft am 17.09.2019.

Ciplet, David; Roberts, J. Timmons (2017): Climate change and the transition to neoliberal environmental governance. In: *Global Environmental Change* 46, S. 148–156.

Coen, David; Pegram, Tom (2018): Towards a Third Generation of Global Governance Scholarship. In: *Glob Policy* 9 (1), S. 107–113. DOI: 10.1111/1758-5899.12527.

Cook, John; Oreskes, Naomi; Doran, Peter T.; Anderegg, William R. L.; Verheggen, Bart; Maibach, Ed W. et al. (2016): Consensus on consensus. A synthesis of consensus estimates on human-caused global warming. In: *Environ. Res. Lett.* 11 (4), S. 48002. DOI: 10.1088/1748-9326/11/4/048002.

Credit Suisse Group AG (2017): Getting Over Globalization. Online verfügbar unter <https://www.credit-suisse.com/media/assets/corporate/docs/about-us/research/publications/csri-getting-over-globalization.pdf>, zuletzt geprüft am 11.09.2019.

Crnkovic, Ivica; Chaudron, Michel; Chechik, Marsha; Harman, Mark (Hg.) (2018): Proceedings of the 40th International Conference on Software Engineering - ICSE '18. the 40th International Conference. Gothenburg, Sweden. New York, New York, USA: ACM Press. Online verfügbar unter <https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=8453179>, zuletzt geprüft am 25.09.2019.

Dahle, Kjell (1998): Toward governance for future generations. How do we change course? In: *Futures* 30 (4), S. 277–292. DOI: 10.1016/S0016-3287(98)00036-6.

Dator, James (1981): Beyond the nation state: Three images of global governance. In: *Futurist* 15 (6), S. 24–25.

Dator, James A.; Sweeney, John A.; Yee, Aubrey M. (2015): Alternative Futures at the Mānoa School. In: *Mutative Media*: Springer, S. 133–151.

Dator, Jim (1998): What Futures for Governance? Online verfügbar unter <http://www.futures.hawaii.edu/dator/governance/futgoven.html>, zuletzt geprüft am 30.06.2010.

Dator, Jim (2009): *Futures Generations Bibliography*. Honolulu: HRCFS.

Delattre, Edwin (1972): Rights, Responsibilities, and Future Persons. In: *Ethics* 82 (3), S. 254–258. Online verfügbar unter <http://www.jstor.org/eres.library.manoa.hawaii.edu/stable/2380203>, zuletzt geprüft am 16.02.2011.

De-Shalit, Avner (1992): Environmental policies and justice between generations. In: *European Journal of Political Research* 21 (3), S. 307–316. DOI: 10.1111/j.1475-6765.1992.tb00300.x.

Desjardins, Jeff (2019): Mapped: The world's oldest democracies. WEF. Online verfügbar unter <https://www.weforum.org/agenda/2019/08/countries-are-the-worlds-oldest-democracies/>, zuletzt aktualisiert am 08.08.2019, zuletzt geprüft am 17.09.2019.

DG ECFIN (2018): The 2018 Ageing Report. Economic & budgetary projections for the 28 EU Member States (2016-2070). Luxembourg: Publications Office (European economy. Institutional paper, 079, May 2018).

Di Tella, Rafale; Rodrik, Dani (2019a): Labor Market Shocks and the Demand for Trade Protection. Evidence from Online Surveys. Online verfügbar unter https://drodrik.scholar.harvard.edu/files/dani-rodrik/files/protectionism_and_labor_market_shocks_jan_16_2019.pdf, zuletzt geprüft am 19.09.2019.

Di Tella, Rafale; Rodrik, Dani (2019b): The reason behind the global surge in protectionism. Hg. v. WEF. Online verfügbar unter <https://www.weforum.org/agenda/2019/07/the-protectionist-instinct-how-labour-market-shocks-shape-the-demand-for-trade-protection/>, zuletzt aktualisiert am 02.07.2019, zuletzt geprüft am 17.09.2019.

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

Dixon, Tim (2019): Here's how we solve the global crisis of tribalism and democratic decay. Hg. v. WEF. Online verfügbar unter <https://www.weforum.org/agenda/2019/01/can-globalization-tackle-tribalism-and-democratic-decay/>, zuletzt geprüft am 09/11/19.

Durant, Sarah M.; Brito, José C. (2019): Stop military conflicts from trashing environment. In: *Nature* 571 (7766), S. 478. DOI: 10.1038/d41586-019-02248-6.

Edelman (Hg.) (2019): Edelman Trust Barometer. Global Report. Online verfügbar unter https://www.edelman.com/sites/g/files/aatuss191/files/2019-03/2019_Edelman_Trust_Barometer_Global_Report.pdf?utm_source=website&utm_medium=global_report&utm_campaign=downloads, zuletzt geprüft am 22.05.2019.

English, Jane (1977): Justice between generations. In: *Philosophical Studies* 31 (2), S. 91–104. DOI: 10.1007/BF01857179.

Entis, Laura (2019): Scientists are working on a pill for loneliness. In: *The Guardian*, 26.01.2019. Online verfügbar unter <https://www.theguardian.com/us-news/2019/jan/26/pill-for-loneliness-psychology-science-medicine>, zuletzt geprüft am 17.09.2019.

European Commission (Hg.) (2017a): Special Eurobarometer 468. Attitudes of European citizens towards the environment. Online verfügbar unter <http://ec.europa.eu/commfrontoffice/publicopinion/index.cfm/ResultDoc/download/DocumentKy/81259>, zuletzt geprüft am 29.05.2019.

European Commission (Hg.) (2017b): The Digital Skills Gap in Europe. Digital Single Market. Online verfügbar unter http://ec.europa.eu/newsroom/dae/document.cfm?doc_id=47880, zuletzt geprüft am 15.07.2019.

European Commission (2018): Future of Work, Future of Society. Hg. v. European Group on Ethics in Science and New Technologies. European Commission. Luxembourg. Online verfügbar unter https://ec.europa.eu/info/publications/future-work-future-society_en, zuletzt geprüft am 13.05.2019.

European Commission (2019): Education and Training. European Policy Cooperation (ET2020 framework). European Commission. Online verfügbar unter https://ec.europa.eu/education/policies/european-policy-cooperation/et2020-framework_en, zuletzt geprüft am 05.06.2019.

European Parliament (16.05.2018): Blockchain technology: "We aspire to make the EU the leading player". Online verfügbar unter <http://www.europarl.europa.eu/news/en/headlines/economy/20180514STO03406/blockchain-technology-we-aspire-to-make-eu-leading-player>, zuletzt geprüft am 29.05.2019.

Eurostat (Hg.) (2018a): File:Share of employed persons with an ICT education by sex, educational attainment level and age, 2007 and 2017 (%). Online verfügbar unter

[https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Share_of_employed_persons_with_an_ICT_education_by_sex,_educational_attainment_level_and_age,_2007_and_2017_\(%25\)_ICT18.png](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Share_of_employed_persons_with_an_ICT_education_by_sex,_educational_attainment_level_and_age,_2007_and_2017_(%25)_ICT18.png), zuletzt aktualisiert am 10.09.2018, zuletzt geprüft am 19.06.2019.

Eurostat (Hg.) (2018b): Individuals who have basic or above basic overall digital skills by sex. % of individuals aged 16-74. Online verfügbar unter https://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=tepsr_sp410&plugin=1, zuletzt geprüft am 31.07.2019.

Fang, Kai; Heijungs, Reinout; Snoo, Geert R. de (2015): Understanding the complementary linkages between environmental footprints and planetary boundaries in a footprint–boundary environmental sustainability assessment framework. In: *Ecological Economics* 114, S. 218–226.

Future Generations, Institute for the Integrated Study of (Hg.) (1994): Why future generations now. Kyoto: Future Generations Alliance Foundation.

Gatmaytan, D. B. (1996): The Illusion of Intergenerational Equity. Oposa v. Factoran as Pyrrhic Victory. In: *Envtl. L. Rev* 293, S. 324.

Gaub, Florence (2019): Global trends to 2030. Challenges and choices for Europe. [Place of publication not given]: European Strategy and Policy Analysis System.

George, Anita; Kaldany, Rashad-Rudolf; Losavio, Joseph (2019): The world is facing a \$15 trillion infrastructure gap by 2040. Here's how to bridge it. Hg. v. WEF. Online verfügbar unter <https://www.weforum.org/agenda/2019/04/infrastructure-gap-heres-how-to-solve-it/>, zuletzt aktualisiert am 11.04.2019, zuletzt geprüft am 17.09.2019.

Gharagozloo-Pakkala, Leila; Fontaine, Manuel (2019): Africa in 2050: young & optimistic ... with a caveat. Hg. v. UNICEF. Online verfügbar unter https://www.unicef.org/esaro/Op-Ed_Gen2030Africa_unicef.pdf, zuletzt geprüft am 17.09.2019.

Gleckman, Harris (2016): Multi-Stakeholder Governance. A corporate push for a new form of global governance (State of Power). Online verfügbar unter <https://www.tni.org/files/publication-downloads/state-of-power-2016-chapter5.pdf>, zuletzt geprüft am 09/11/19.

Global Infrastructure Outlook (Hg.) (2019): Forecasting infrastructure investment needs and gaps. Compare forecasts globally, or across. Online verfügbar unter https://outlook.gihub.org/?utm_source=GIHub+Homepage&utm_medium=Project+tile&utm_campaign=Outlook+GIHub+Tile, zuletzt geprüft am 18.09.2019.

Gopinath, Gita (2019): The world is looking at slow growth - but it doesn't have to be this way. Hg. v. WEF. Online verfügbar unter <https://www.weforum.org/agenda/2019/07/global-growth-calls-for-new-policies/>, zuletzt aktualisiert am 25.07.2019, zuletzt geprüft am 17.09.2019.

- Gosseries, Axel (2008): On Future Generations' Future Rights*. In: *Journal of Political Philosophy* 16 (4), S. 446–474. DOI: 10.1111/j.1467-9760.2008.00323.x.
- Gould, David Michael (2018): Critical Connections. Promoting Economic Growth and Resilience in Europe and Central Asia: The World Bank.
- Goulder, L. H.; Stavins, R. N. (2002): Discounting. An eye on the future. In: *Nature* 419 (6908), S. 673–674.
- Green, Jessica F. (2018): Transnational delegation in global environmental governance. When do non-state actors govern? In: *Regulation & Governance* 12 (2), S. 263–276. DOI: 10.1111/rego.12141.
- Gündling, Lothar (1990): Our Responsibility to Future Generations. In: *The American Journal of International Law* 84 (1), S. 207–212. DOI: 10.2307/2203021.
- Gupta, Aarti; van Asselt, Harro; van der Ven, Hamish; Balboa, Cristina M.; Widerberg, Oscar; Pattberg, Philipp et al. (2019): Global Environmental Governance and the Accountability Trap: MIT Press.
- Gupta, Mahima (2019): Artificial Intelligence: Issues & Challenges. In: *Research Review Journals* 04 (01), S. 35–37. Online verfügbar unter https://rrjournals.com/wp-content/uploads/2019/01/35-37_RRIJM190401008.pdf, zuletzt geprüft am 25.09.2019.
- Gurría, Angel (2019): What we need is more (and better) multilateralism, not less. Hg. v. WEF. Online verfügbar unter <https://www.weforum.org/agenda/2019/01/now-is-not-the-time-to-give-up-on-multilateralism/>, zuletzt aktualisiert am 23.01.2019, zuletzt geprüft am 17.09.2019.
- Hammond, Claudia (2018): The surprising truth about loneliness. Hg. v. BBC. Online verfügbar unter <http://www.bbc.com/future/story/20180928-the-surprising-truth-about-loneliness>, zuletzt aktualisiert am 01.10.2018, zuletzt geprüft am 17.09.2019.
- Hart, Melanie; Johnson, Baline (2019): Mapping China's Global Governance Ambitions. Center for American Progress. Online verfügbar unter <https://www.americanprogress.org/issues/security/reports/2019/02/28/466768/mapping-chinas-global-governance-ambitions/>, zuletzt geprüft am 20.05.2019.
- Haufler, Virginia (2018): Producing Global Governance in the Global Factory. Markets, Politics, and Regulation. In: *Glob Policy* 9 (1), S. 114–120. DOI: 10.1111/1758-5899.12525.
- Hausmann, Ricardo; O'Brien, Tim; Santos, Miguel Angel; Grisanti, Ana; Kasoolu, Semiray; Taniparti, Nikita et al. (2019): Jordan: The Elements of a Growth Strategy. Hg. v. Center for International Development. Harvard University (CID Working Paper, 346). Online verfügbar unter <https://growthlab.cid.harvard.edu/files/growthlab/files/2019-02-28-cid-wp-346-jordan-growth-strategy-revised.pdf>, zuletzt geprüft am 19.09.2019.

- Häyhä, Tiina; Lucas, Paul L.; van Vuuren, Detlef P.; Cornell, Sarah E.; Hoff, Holger (2016): From Planetary Boundaries to national fair shares of the global safe operating space—How can the scales be bridged? In: *Global Environmental Change* 40, S. 60–72.
- Hechler Fayd'herbe, Nannette (2019): A multipolar world brings back the national champions. Hg. v. WEF. Online verfügbar unter <https://www.weforum.org/agenda/2019/01/a-multipolar-world-brings-back-the-national-champions/>, zuletzt geprüft am 9/11/19.
- Henzi, Robb; Stepanovich, Amie; Lynch, Jennifer (2019): Voice tech and the question of trust. Hg. v. WEF, zuletzt aktualisiert am <https://www.weforum.org/agenda/2019/08/voice-tech-trust/>.
- Heylighen, Francis (2007): The Global Superorganism. An evolutionary-cybernetic model of the emerging network society. In: *Social Evolution & History* 6 (1).
- Higgott, Richard; Proud, Virginia (2019): Populist-Nationalism and Foreign Policy. Cultural Diplomacy, International Interaction and Resilience. ifa. Online verfügbar unter https://www.ifa.de/wp-content/uploads/2019/05/ifa_study_Higgott_Proud_Populist-Nationalism.pdf, zuletzt geprüft am 09/11/19.
- Hoff, Holger; Nykvist, Björn; Carson, Marcus (2014): "Living well, within the limits of our planet"? Measuring Europe's growing external footprint: Stockholm Environment Institute.
- Hofferberth, Matthias (2014): Mapping the Meanings of Global Governance. A Conceptual Reconstruction of a Floating Signifier. In: *Millennium* 43 (2), S. 598–617. DOI: 10.1177/0305829814561539.
- Holt-Lunstad, Julianne (2017): The Potential Public Health Relevance of Social Isolation and Loneliness. Prevalence, Epidemiology, and Risk Factors. In: *Public Policy & Aging Report* 27 (4), S. 127–130. DOI: 10.1093/ppar/prx030.
- Hubin, D. Clayton (1976): Justice and Future Generations. In: *Philosophy and Public Affairs* 6 (1), S. 70–83. Online verfügbar unter <http://www.jstor.org/eres.library.manoa.hawaii.edu/stable/2265063>, zuletzt geprüft am 16.02.2011.
- Hutt, Rosamond (2019): The millennial friendship crisis. Hg. v. WEF. Online verfügbar unter <https://www.weforum.org/agenda/2019/08/the-millennial-friendship-crisis/>, zuletzt aktualisiert am 14.08.2019, zuletzt geprüft am 17.09.2019.
- IMF (2019a): The IMF at 75. In: *IMF Finance and Development* 56 (2). Online verfügbar unter <https://www.imf.org/external/pubs/ft/fandd/2019/06/pdf/fd0619.pdf>, zuletzt geprüft am 11.09.2019.
- IMF (Hg.) (2019b): World Economic Outlook, July 2019. Online verfügbar unter <https://www.imf.org/en/Publications/WEO/Issues/2019/07/18/WEUpdateJuly2019>, zuletzt geprüft am 17.09.2019.

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

International Displacement Monitoring Centre (IDMC) (2018): 30.6 Million People Displaced Inside Their Country In 2017. Online verfügbar unter http://www.internal-displacement.org/global-report/grid2018/downloads/press_releases/2018-GRID-press-release-global-EN.pdf, zuletzt geprüft am 23.05.2019.

International Labour Office (2018): World employment social outlook. Trends 2018. Geneva: International Labour Office. Online verfügbar unter https://www.ilo.org/global/research/global-reports/weso/2018/WCMS_615594/lang--en/index.htm, zuletzt geprüft am 16.05.2019.

Jackson, David; Coninck, Sophie de (2019): How supporting climate action on a local level can transform the world. Hg. v. WEF. Online verfügbar unter <https://www.weforum.org/agenda/2019/09/local-climate-change-adaptation-good-governance-authorities-undp/>, zuletzt geprüft am 24.09.2019.

Japan Times (Hg.) (2016): Japan home to 541,000 young recluses, survey finds. Online verfügbar unter <https://www.japantimes.co.jp/news/2016/09/07/national/japan-home-541000-young-recluses-survey-finds/#.XYCafi4zZaR>, zuletzt aktualisiert am 07.09.2016, zuletzt geprüft am 17.09.2019.

Jelenic, Michael Christopher (2019): From Theory to Practice. Open Government Data, Accountability and Service Delivery. Hg. v. World Bank (Policy Research Working Paper, 8873). Online verfügbar unter <https://openknowledge.worldbank.org/bitstream/handle/10986/31800/WPS8873.pdf?sequence=4&isAllowed=y>, zuletzt geprüft am 24.09.2019.

Jessop, Bob (2002): Governance and meta-governance in the face of complexity. On the roles of requisite variety, reflexive observation, and romantic irony in participatory governance. In: *Participatory Governance in Multi-Level Context*: Springer, S. 33–58.

Jinnah, Sikina (2019): Building a Governance Foundation for Solar Geoengineering Deployment. In: *Governance of the Deployment of Solar Geoengineering*, S. 143.

Jones, Mark (2019): These 13 charts show what the world really thinks about Globalization 4.0. WEF. Online verfügbar unter <https://www.weforum.org/agenda/2019/01/these-13-charts-show-what-the-world-really-thinks-about-globalization-4-0/>, zuletzt geprüft am 09/11/19.

Kahler, Miles (2018): Global Governance. Three Futures. In: *International Studies Review* 20 (2), S. 239–246. DOI: 10.1093/isr/viy035.

Kavka, Gregory S. (1982): The Paradox of Future Individuals. In: *Philosophy and Public Affairs* 11 (2), S. 93–112. Online verfügbar unter <http://www.jstor.org.eres.library.manoa.hawaii.edu/stable/2264924>, zuletzt geprüft am 16.02.2011.

Khan, Muhammad Azhar; Khan, Muhammad Zahir; Zaman, Khalid; Hassan, Umar; Umar, Sobia (2014): Global estimates of growth–inequality–poverty (GIP) triangle. Evidence from World Bank’s classification countries. In: *Quality & Quantity* 48 (5), S. 2631–2646. DOI: 10.1007/s11135-013-9912-7.

Kim, T’ae-ch’ang; Kim, Tae-Chang; Harrison, Ross (1999): Self and future generations. An intercultural conversation: White Horse Press.

Knight Foundation (Hg.) (2018): American views. Trust, media and democracy. Online verfügbar unter <https://knightfoundation.org/reports/american-views-trust-media-and-democracy>, zuletzt geprüft am 23.05.2019.

Kopf, Dan; Cheng, Michelle (2019): The number of US workers over 75 will double over the next 10 years. Hg. v. WEF. Online verfügbar unter <https://www.weforum.org/agenda/2019/09/workers-over-75-double-next-decade/>, zuletzt geprüft am 24.09.2019.

Kouicem, Djamel Eddine; Bouabdallah, Abdelmadjid; Lakhlef, Hicham (2018): Internet of things security. A top-down survey. In: *Computer Networks* 141, S. 199–221. DOI: 10.1016/j.comnet.2018.03.012.

Kuosa, Tuomo (2011): Practising Strategic Foresight in Government. The Cases of Finland, Singapore, and the European Union: S. Rajaratnam School of International Studies.

Lenton, Andrew; Boyd, Philip W.; Thatcher, Marcus; Emmerson, Kathryn M. (2019): Foresight must guide geoengineering research and development. In: *Nature Climate Change* 9 (5), S. 342.

Lewis, Bridget (2018): The rights of future generations within the post-Paris climate regime. In: *Transnational Environmental Law* 7 (1), S. 69–87.

Li, Zhan (2014): Narrative rhetorics in scenario work. Sensemaking and translation. In: *Journal of Futures Studies* 18 (3), S. 77–94.

Lyons, Tom (2018): Blockchain Innovation in Europe. A thematic report prepared by THE EUROPEAN UNION BLOCKCHAIN OBSERVATORY & FORUM. Hg. v. EU Blockchain Observatory and Forum. European Commission. Online verfügbar unter https://www.eublockchainforum.eu/sites/default/files/reports/20180727_report_innovation_in_europe_light.pdf, zuletzt geprüft am 21.05.2019.

Macnaghten, Phil; Owen, Richard (2011): Good governance for geoengineering. In: *Nature* 479 (7373), S. 293. DOI: 10.1038/479293a.

Maniatis, Paraschos (2016): Investigating factors influencing consumer decision-making while choosing green products. In: *Journal of Cleaner Production* 132, S. 215–228. DOI: 10.1016/j.jclepro.2015.02.067.

Marais, Petrus (2019): Africa must use tech to chase corruption out of the shadows. WEF. Online verfügbar unter <https://www.weforum.org/agenda/2019/08/africa-must-use-tech-to-chase-corruption-out-of-the-shadows>, zuletzt aktualisiert am 26.08.2019, zuletzt geprüft am 17.09.2019.

Marcelo Cabrol: The Future of Work. Regional Perspectives. Unter Mitarbeit von Kapil Kapoor, Carmen Pagés, Alexia Latortue und Yasuyuki Sawada. AFRICAN DEVELOPMENT BANK GROUP; ASIAN DEVELOPMENT BANK; EUROPEAN BANK FOR RECONSTRUCTION AND DEVELOPMENT; Inter-American Development Bank. Washington DC. Online verfügbar unter <https://publications.iadb.org/en/future-work-regional-perspectives>, zuletzt geprüft am 13.05.2019.

Marsden, Terry (2013): From post-productionism to reflexive governance. Contested transitions in securing more sustainable food futures. In: *Journal of Rural Studies* 29, S. 123–134.

Martin, P.; Widgren, J. (1996): International migration. A global challenge. In: *Population bulletin* 51 (1), S. 1–48.

Masini, Eleonora Barbieri; Vasquez, Javier Medina (2000): Scenarios as seen from a human and social perspective. In: *Technological Forecasting and Social Change* 65 (1), S. 49–66.

Meadows, Donella; Jorgen, Randers; Dennis, L. Meadows (2004): Limits to Growth. The 30-year update. In: *Chelsea: Chelsea Green Publishing Company*.

Miller, Clark A.; O'Leary, Jason; Graffy, Elisabeth; Stechel, Ellen B.; Dirks, Gary (2015): Narrative futures and the governance of energy transitions. In: *Futures* 70, S. 65–74.

Milojević, Ivana; Inayatullah, Sohail (2015): Narrative foresight. In: *Futures* 73, S. 151–162.

Morgan, Steve (2017): Cybersecurity Jobs Report. 2017 Edition. A Special Report from the Editors at Cybersecurity Ventures. Hg. v. Herjavec Group, zuletzt geprüft am 23.05.2019.

Munir, Hussan; Linåker, Johan; Wnuk, Krzysztof; Runeson, Per; Regnell, Björn (2018): Open innovation using open source tools. A case study at Sony Mobile. In: *Empir Software Eng* 23 (1), S. 186–223. DOI: 10.1007/s10664-017-9511-7.

Myers, Joe (2019): 19 of the world's 20 youngest countries are in Africa. Hg. v. WEF. Online verfügbar unter <https://www.weforum.org/agenda/2019/08/youngest-populations-africa/>, zuletzt aktualisiert am 30.08.2019, zuletzt geprüft am 19.07.2019.

Neffke, Frank (2017): Coworker complementarity. Hg. v. Center for International Development. Harvard University (CID Working Paper, 79). Online verfügbar unter https://growthlab.cid.harvard.edu/files/growthlab/files/rfw79_neffke.pdf, zuletzt geprüft am 19.09.2019.

O'Neill, Daniel W.; Fanning, Andrew L.; Lamb, William F.; Steinberger, Julia K. (2018): A good life for all within planetary boundaries. In: *Nat Sustain* 1 (2), S. 88–95. DOI: 10.1038/s41893-018-0021-4.

OECD (2017): Fixing Globalization. Time to make it work for all. Online verfügbar unter <https://www.oecd-ilibrary.org/docserver/9789264275096-en.pdf?expires=1568204235&id=id&accname=ocid49022016&checksum=F32A1C56A6552E26E15AAB3065C8CF39>, zuletzt geprüft am 09/11/19.

OECD (2018): A Broken Social Elevator? How to promote social mobility. OECD Publishing (CORE Policy Brief), zuletzt geprüft am 10.10.2019.

Office, Publications: Demographic and human capital scenarios for the 21st century.

Payne, Christian; Finlay, Lorraine (2019): International law cannot keep up with cyber-criminals. Hg. v. WEF. Online verfügbar unter <https://www.weforum.org/agenda/2019/02/why-international-law-is-failing-to-keep-pace-with-technology-in-preventing-cyber-attacks/>, zuletzt aktualisiert am 25.02.2019, zuletzt geprüft am 17.09.2019.

Pazarbasioglu, Ceyla (2019): The world's poor are falling behind – we need bold action to help them catch up. Hg. v. WEF. Online verfügbar unter <https://www.weforum.org/agenda/2019/06/global-poor-economic-action/>, zuletzt aktualisiert am 28.06.2019, zuletzt geprüft am 17.09.2019.

Pereira, Anthony W. (2017): Brazil: Geopolitical Challenges in a Multipolar World. In: *Rising Powers Quarterly* 2 (2). Online verfügbar unter <http://risingpowersproject.com/wp-content/uploads/2017/07/Rising-Powers-Quarterly-Volume-2-Issue-2.pdf>, zuletzt geprüft am 11.09.2019.

Phiri, Joseph; Guven-Uslu, Pinar (2018): Institutional pluralism, two publics theory and performance reporting practices in Zambia's health sector. In: *J Acc in Emerging Economies* 8 (1), S. 141–162. DOI: 10.1108/jaee-07-2017-0074.

Piketty, Thomas; Goldhammer, Arthur (2014): Capital in the twenty-first century. Cambridge Massachusetts: The Belknap Press of Harvard University Press.

Rajan, Raghuram G. (2019): The Third Pillar. How markets and the state leave the community behind: Random House. Online verfügbar unter <https://www.penguinrandomhouse.com/books/566369/the-third-pillar-by-raghuram-rajn/9780525558316/>, zuletzt geprüft am 17.09.2019.

Richert, Jörn (2019): Luhmann, Latour and global petroleum governance. In: *European Journal of Social Theory* 22 (2), S. 231–249.

Rodrik, Dani (2019): How unmanaged globalisation is damaging communities. Hg. v. WEF. Online verfügbar unter <https://www.weforum.org/agenda/2018/11/unmanaged-globalisation->

damaging-local-communities-heres-how/, zuletzt aktualisiert am 29.11.2018, zuletzt geprüft am 17.09.2019.

Routley, Nick (2019): Facebook is building new maps to track population density across the world. Hg. v. WEF. Online verfügbar unter <https://www.weforum.org/agenda/2019/08/facebook-using-machine-learning-to-map-world-population/>, zuletzt aktualisiert am 07.08.2019, zuletzt geprüft am 17.09.2019.

Schwartz, Peter (1998): The art of the long view. Planning for the future in an uncertain world / Peter Schwartz. Chichester: Wiley.

Scott, Colin (2010): Reflexive governance, regulation and meta-regulation. Control or learning? In: De Schutter, O. and Lenoble, J.(eds.). Reflexive Governance: Redefining the Public Interest in a Pluralistic World: Hart Publishing, S. 43–66.

Scott, Colin (2018): Integrating Regulatory Governance and Better Regulation as Reflexive Governance. In: Garben, S., Govaere, I.(eds.). The EU Better Regulation Agenda A Critical Assessment: Hart Publishing.

Shulga, Ivan; Shilov, Lev; Sukhova, Anna; Pojarski, Peter (2019): Can Local Participatory Programs Enhance Public Confidence. Insights from the Local Initiatives Support Program in Russia. Hg. v. World Bank (Social protection & jobs, 1931). Online verfügbar unter <https://openknowledge.worldbank.org/bitstream/handle/10986/31810/Can-local-participatory-programs-enhance-public-confidence-insights-from-the-local-initiatives-support-program-in-Russia.pdf?sequence=1&isAllowed=y>, zuletzt geprüft am 24.09.2019.

Stevens, Tim (2017): Cyberweapons. An emerging global governance architecture. In: *Palgrave Commun.* 3, S. 16102. DOI: 10.1057/palcomms.2016.102.

Stone, Diane; Moloney, Kim (2019): The Oxford Handbook of Global Policy and Transnational Administration: Oxford University Press.

Talberg, Anita; Christoff, Peter; Thomas, Sebastian; Karoly, David (2018a): Geoengineering governance-by-default. An earth system governance perspective. In: *Int Environ Agreements* 18 (2), S. 229–253. DOI: 10.1007/s10784-017-9374-9.

Talberg, Anita; Thomas, Sebastian; Christoff, Peter; Karoly, David (2018b): How geoengineering scenarios frame assumptions and create expectations. In: *Sustain Sci* 13 (4), S. 1093–1104. DOI: 10.1007/s11625-018-0527-8.

Tamburri, Damian A.; Palomba, Fabio; Serebrenik, Alexander; Zaidman, Andy (2019): Discovering community patterns in open-source. A systematic approach and its evaluation. In: *Empir Software Eng* 24 (3), S. 1369–1417. DOI: 10.1007/s10664-018-9659-9.

Tang, Ben; Shuster, Elad; Seaman, Chad; Cashdollar, Larry; Zioni, Moshe; Bellas, Gabriel (2017): [state of the internet]/security. Volume 5, Issue 1. DDoS and Application Attacks. Hg. v.

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

Akamai. Online verfügbar unter <https://blogs.akamai.com/2019/01/state-of-the-internet-volume-5-issue-1.html>, zuletzt geprüft am 20.05.2019.

Todd, Emmanuel (2003): After the empire. The breakdown of the American order / Emmanuel Todd ; foreword by Micheal Lind ; translated by C. Jon Delogu. New York, Chichester: Columbia University Press (European perspectives).

Transparency International: Corruption Perceptions Index 2018. Transparency International. Online verfügbar unter <https://www.transparency.org/research/cpi>, zuletzt geprüft am 17.09.2019.

UNESCO (1997): Declaration on the Responsibilities of the Present Generations Towards Future Generations. Online verfügbar unter www.unesco.org/cpp/uk/declarations/generations.pdf, zuletzt geprüft am 16.02.2011.

UNESCO (2018): Migration, displacement and education. Building bridges, not walls. First edition. Paris: Unesco (Global education monitoring report, 2019).

UNESCO. General Conference, 29th 1997 (1997): Records of the General Conference, 29th session, Paris, 21 October to 12 November 1997, v. 1. Resolutions.

United Nations (2019): World population prospects. New York. Online verfügbar unter https://population.un.org/wpp/Publications/Files/WPP2019_Highlights.pdf, zuletzt geprüft am 17.09.2019.

United Nations Department of Economic and Social Affairs (Hg.) (2017): International Migration Report 2017. Online verfügbar unter <https://www.un.org/en/development/desa/population/migration/publications/migrationreport/docs/MigrationReport2017.pdf>, zuletzt geprüft am 19.06.2019.

United Nations, Department of Economic and Social Affairs, Population Division: World Urbanization Prospects The 2018 Revision, zuletzt geprüft am 27.10.2019.

United Nations, General Assembly (2013): Intergenerational solidarity and the needs of future generations. A/68/322. Fundstelle: <https://undocs.org/A/68/322>. Online verfügbar unter <https://undocs.org/A/68/322>, zuletzt geprüft am 16.10.2019.

Urton-Washington, James (2019): A new estimate suggests global migration is much higher than we thought. Hg. v. WEF. Online verfügbar unter <https://www.weforum.org/agenda/2019/01/a-new-estimate-suggests-global-migration-is-much-higher-than-we-thought/>, zuletzt aktualisiert am 08.01.2019, zuletzt geprüft am 17.09.2019.

Vadim Kufenko; Klaus Prettnner; Alfonso Sousa-Poza: The economics of ageing and inequality_ Introduction to the special issue.

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

van der Meer, Marc; Visser, Jelle; Wilthagen, Ton (2005): Adaptive and reflexive governance. The limits of organized decentralization. In: *European Journal of Industrial Relations* 11 (3), S. 347–365.

Vervoort, Joost; Gupta, Aarti (2018): Anticipating climate futures in a 1.5 C era. The link between foresight and governance. In: *Current Opinion in Environmental Sustainability* 31, S. 104–111.

Vesnic-Alujevic, Lucia; Stoermer, Eckhard; Rudkin, Jennifer-Ellen; Scapolo, Fabiana; Kimbell, Lucy (2019): The future of government 2030+. A citizen centric perspective on new government models. Luxembourg: Publications Office of the European Union (EUR, 29664). Online verfügbar unter http://publications.jrc.ec.europa.eu/repository/bitstream/JRC115008/futurgov_web_lq_v2.pdf, zuletzt geprüft am 15.10.2019.

Vosoughi, Soroush; Roy, Deb; Aral, Sinan (2017): The Spread of True and False News Online. In: *Science* (Vol. 359 Issue 6380), S. 1146–1151, zuletzt geprüft am 21.05.2019.

Wack, Pierre (1985): X scenarios. Uncharted waters ahead. In: *Harvard Business Review* September–October.

Wack, Pierre A. (1984): Scenarios. The gentle art of re-perceiving: one thing or two learned while developing planning scenarios for Royal Dutch/Shell: Division of Research, Harvard Business School.

WEF (Hg.) (2019a): Global Governance. Anti-Globalism. Online verfügbar unter <https://intelligence.weforum.org/topics/a1Gb0000000LHN2EAO?tab=publications>, zuletzt geprüft am 11/09/19.

WEF (Hg.) (2019b): Global Governance. Deepening Interdependence. Online verfügbar unter <https://intelligence.weforum.org/topics/a1Gb0000000LHN2EAO?tab=publications>, zuletzt geprüft am 09/11/19.

WEF (Hg.) (2019c): Global Governance. Institutional Pluralism. Online verfügbar unter <https://intelligence.weforum.org/topics/a1Gb0000000LHN2EAO?tab=publications>, zuletzt geprüft am 09/11/19.

WEF (Hg.) (2019d): Global Governance. Rising Multipolarity. Online verfügbar unter <https://intelligence.weforum.org/topics/a1Gb0000000LHN2EAO?tab=publications>, zuletzt geprüft am 09/11/19.

WEF (Hg.) (2019e): Global Governance. Transnational Actors. Online verfügbar unter <https://intelligence.weforum.org/topics/a1Gb0000000LHN2EAO?tab=publications>, zuletzt geprüft am 09/11/19.

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

Winfield, Alan F. T.; Jirotko, Marina (2018): Ethical governance is essential to building trust in robotics and artificial intelligence systems. In: *Philosophical transactions. Series A, Mathematical, physical, and engineering sciences* 376 (2133). DOI: 10.1098/rsta.2018.0085.

World Bank (Hg.) (2011): Multipolarity. The New Global Economy (Global Development Horizons 2011). Online verfügbar unter https://siteresources.worldbank.org/INTGDH/Resources/GDH_CompleteReport2011.pdf, zuletzt geprüft am 09/11/19.

World Bank (Hg.) (2018a): Groundswell Preparing for Internal Climate Migration. Online verfügbar unter https://openknowledge.worldbank.org/bitstream/handle/10986/29461/WBG_ClimateChange_Final.pdf, zuletzt geprüft am 23.05.2019.

World Bank (Hg.) (2018b): Top 10 Quick-Win Smart City Services for Cairo Governorate. Estimated Budgets and Actions. Final Policy Note. Korea Local Information Research & Development. Online verfügbar unter <https://openknowledge.worldbank.org/bitstream/handle/10986/31287/top-10-quick-win-smart-city-services-for-cairo-governorate-estimated-budgets-and-actions.pdf?sequence=1&isAllowed=y>, zuletzt geprüft am 24.09.2019.

World Bank (2018c): World Development Report 2018. Learning to Realize Education's Promise. Washington, D. C: World Bank Publications. Online verfügbar unter <https://ebookcentral.proquest.com/lib/gbv/detail.action?docID=5124231>, zuletzt geprüft am 13.05.2019.

World Bank (2019): Governing infrastructure regulators in fragile environments. Principles and implementation manual. Unter Mitarbeit von International Bank for Reconstruction and Development. Washington, DC: World Bank Group (International development in practice). Online verfügbar unter <https://openknowledge.worldbank.org/bitstream/handle/10986/32052/9781464814341.pdf?sequence=4&isAllowed=y>, zuletzt geprüft am 24.09.2019.

World Bank Group (2015): FROM BILLIONS TO TRILLIONS. TRANSFORMING DEVELOPMENT FINANCE. Unter Mitarbeit von African Development Bank, Asian Development Bank, European Bank for Reconstruction and Development, European Investment Bank, Inter-American Development Bank, International Monetary Fund. World Bank Group (DC2015-0002). Online verfügbar unter [https://siteresources.worldbank.org/DEVCOMMINT/Documentation/23659446/DC2015-0002\(E\)FinancingforDevelopment.pdf](https://siteresources.worldbank.org/DEVCOMMINT/Documentation/23659446/DC2015-0002(E)FinancingforDevelopment.pdf), zuletzt geprüft am 29.10.2019.

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

Yeginsu, Ceylan (2018): U.K. Appoints a Minister for Loneliness. In: *The New York Times* 2018, 17.01.2018. Online verfügbar unter <https://www.nytimes.com/2018/01/17/world/europe/uk-britain-loneliness.html>, zuletzt geprüft am 17.09.2019.

Yuhyun Park (2018): The Future of Education and Skills. Education 2030. OECD. Paris. Online verfügbar unter [https://www.oecd.org/education/2030/E2030%20Position%20Paper%20\(05.04.2018\).pdf](https://www.oecd.org/education/2030/E2030%20Position%20Paper%20(05.04.2018).pdf), zuletzt geprüft am 13.05.2019.

Zürn, Michael (2010): Global governance as multi-level governance. In: *Handbook on multi-level governance*. Cheltenham, Edward Elgar. *Smart governance for health and well-being: the evidence*.

Zürn, Michael (2018): A theory of global governance. Authority, legitimacy, and contestation: Oxford University Press.

4. Annex (Additional Factors)

4.1. Social

4.1.1. Equality: Gender, Race, Sexual Identity

Social equality is one of the main sources of legitimation for democratic societies but an increasing level of inequalities endangers democratic institutions and the social cohesion within societies. Many of the SDGs are related to issues of Gender equality, particularly with regard to economic earnings, autonomy for life decisions (marriage, children, education, career), and protection from exploitation, to name a few. Racial discrimination has also been addressed by multiple entities within the United Nations, with the ICESCR (International Covenant on Economic, Social and Cultural Rights) guarantees equality and non-discrimination in relation to all economic, social, and cultural rights, including the right to education. Rising populism and nationalism might be traced to rising social inequalities, as populist parties and politicians affect the stability of governments and, in the long-term, could impact systems of international relations. Given that this political trend of polarisation and populism is ongoing, the topic of social equality becomes important for questions of Global Governance in several respects.

4.1.1.1 Statistics

- In 2018, a total of 39 per cent of all countries had in place an institution that was fully compliant with the internationally agreed standard, seven countries more than was the case in 2015. If growth continues at the same rate, by 2030 only a little over one half (54 per cent) of all countries worldwide will have compliant national human rights institutions.
- Children born to parents who did not complete secondary school have only a 15% chance of making it to university, compared to a 63% chance for children whose parents attended university.
- Recent data from 106 countries show that 18 per cent of ever-partnered women and girls aged 15 to 49 have experienced physical and/or sexual partner violence in the previous 12 months. The prevalence is highest in least developed countries, at 24 per cent.
- Women continue to be underrepresented at all levels of political leadership. As at 1 January 2019, women's representation in national Parliaments ranged from 0 to 61.3 per cent, with the average standing at 24.2 per cent, an increase from 19 per cent in 2010.

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

- The vast majority (70 per cent) of detected victims of human trafficking were women and girls, most of whom were trafficked for sexual exploitation.

4.1.1.2 Subfactors

The Gender Pay Gap

Denial of Social Justice and Equality as driving force for Displacement and Immigration

Right-wing populism and the Denial of equal rights

Social polarization and Marginalization

4.1.1.3 Additional Resources

UN ILO - Pay Gap Report

4.1.2. Urbanization

Urbanization is regarded as "one of the four demographic mega-trends, with the growth of the global population, population ageing, and international migration"⁵⁸ and will remain as the main factor of the spatial distribution of world's population. Right now already more than the half of the world's population's life in cities⁵⁹ (World Urbanization Prospects: 2018 Revision). This phenomena will continue and will effect even those areas and countries stronger (Africa, Asia) which are at the moment still mostly rural. As especially low-income and lower-middle-income countries face the most rapid urbanization it is crucial for global governance to find solutions that will ensure sustainable developments.

To manage the challenges and to secure the benefits of urbanization (economic growth etc.) the United Nations report recommends also the usage of new technology like Big Data, satellite imagery and georeferencing as a standard practice of Data collection.

4.1.2.1 Statistics

- While in 1950 30% of the world's population lived in cities, it is expected that in 2050 68% will be urban. In 2018 55% of the world's population are urban.
- About 50% of the world's urban population live in small towns (population less than 500.000) , 8% of the world's urban population live in Megacity (~ 10 million inhabitants)
- Today there are more large cities in the global south than in developed countries
- In the recent 30 years the number of large cities (> 300.000) increased about 1.8 per cent per year

⁵⁸ United Nations, Department of Economic and Social Affairs, Population Division

⁵⁹ United Nations, Department of Economic and Social Affairs, Population Division

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

- Urbanization is even stronger in the Global South / in lower-middle income countries; it is expected that the urban population of these countries will be 50-60 per cent by 2050.
- The global urban population is projected to grow by 2.5 billion urban dwellers between 2018 and 2050, with nearly 90 per cent of the increase concentrated in Asia and Africa

4.1.2.2 Subfactors

Rise in the Number of Urban Settlements

Increasing Land Area of Cities

Population Size of Urban Settlements

Changes in Rural and Urban Areas

4.1.2.3 Additional Resources

4.1.3. Growth Inequality

Economic growth, and the benefits attributed to it, is unevenly distributed at a global scale, and yet this model drives policy across international and regional governing bodies. Despite its critics, research has shown that the Poverty-Inequality-Growth Triangle - a model for understanding how these three factors interact with, and often reinforce one another - holds true in a number of countries (Khan et al. 2014). This essentially calls for development strategies to account for both growth and distribution and echoes, in part, the work by Thomas Piketty ⁶⁰ who has even called for global progressive taxation - a direct tie to potential global governance issues. This also includes unequal distribution of the benefits of economic growth within nations and societies. Even as some economies grow, the generated wealth does not necessarily mean better quality of life standards for the entirety of a population. This also has global governance challenges, as it can feed into anti-globalization sentiment and perpetuates social ills, eroding trust in governance.

4.1.3.1 Statistics

- In more than half of the 92 countries with comparable data during the period 2011–2016, the bottom 40 per cent of the population experienced a growth rate that was higher than the overall national average. However, the bottom 40 per cent received less than 25 per cent of the overall income or consumption.
- In 2017, total receipts by developing countries from donors of the Development Assistance Committee of the Organization for Economic Cooperation and Development,

⁶⁰ Piketty und Goldhammer 2014

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

multilateral agencies and other key providers were \$414 billion, of which \$163 billion were official development assistance (ODA).

- Almost 50% of low-income countries don't have access to the sea
- Between 2001, and 2019, 32 low-income countries attained middle-income status
- In remaining low-income countries, poverty rates are greater than 40%

4.1.3.2 Subfactors

Global Progressive Taxation

Growing share of middle classes in BRICS states

Declining of social mobility in western states

Increasing social compartmentalisation and spatial polarisation (e.g. gated communities)

4.1.3.3 Additional Resources

WEF article ⁶¹

4.1.4. Social Mobility

Absolute social mobility deals with levels of socio-economic improvement or deterioration (this can be at the national or regional level), whereas relative social mobility deals with individuals' position on a social ladder as gauged by rank, wealth metrics, and opportunities to advance or maintain their current position. Allowances in relative social mobility can enable social contentment, increases in productivity and innovation, and political stability, all of which create the conditions for prosperity. However, limited social mobility can lead to unrest and instability, and stagnation. This becomes linked to global governance through its ties to inequality (and related policies therein), its relationship to globalization (and anti-globalization), and via its impact on national and regional socio-political stability.

4.1.4.1 Statistics

- low interclass mobility
- different chances to keep/gain social status / social privileges: 40% of the members of the top earnings quartile can inherit it to the next generation⁶²
- inheritance of educational opportunities: 63% of the children with highly educated parents can gain a tertiary degree, while 42% of children with low-educated parents do not finish high school

⁶¹ Pazarbasioglu 2019

⁶² OECD 2018

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

4.1.4.2 Subfactors

Domestic Social Mobility

Migration for Social Mobility

Refeudalisation of modern societies

4.1.4.3 Additional Resources

WEF article⁶³

(Rajan) ⁶⁴

WEF article⁶⁵: A new estimate suggests global migration is much higher than we thought

Azose and Reaferty ⁶⁶

Urton and Washington"⁶⁷

A Broken Social Elevator? (OECD 2018)

4.1.5. Education Gap

Despite huge leaps in education accessibility and attendance across the world, there remain regions and demographic categories in which attaining basic education skills remains a challenge. While addressing these challenges is addressed in the SDGs (SDG 4 (directly), 5, 8, and others (indirectly)), educational accessibility does not in itself ensure that students will be given the skills and capacities necessary for them to find meaningful work or livelihoods that allow social mobility in future years. These disparities are relevant in examining differences between high-income and low-income nations and completion rates of different educational tiers. This trend impacts global governance on a long-term scale, as intergenerational dynamics (social and economic mobility) often hinge on education and skills. Technological advances have presented both opportunities and challenges, but various components of educational systems environment, teacher capacities, etc. have not been able to advance in step. This is particularly potent difference in developing nations as they attempt to address gaps in both basic, and technological, literacy simultaneously.

4.1.5.1 Statistics

- In 1970 the gross primary enrolment rate was 68 percent in Sub-Saharan Africa and 47 percent in South Asia. By 2010, that rate was above 100 percent in both regions.

⁶³ Urton-Washington 2019

⁶⁴ Rajan 2019

⁶⁵ Rodrik 2019

⁶⁶ Azose und Raftery 2019

⁶⁷ Urton-Washington 2019

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

- The years of schooling completed by the average adult in the developing world more than tripled between 1950 and 2010 - from 2.0 to 7.2 years. (World Bank Report 2018c)
- By 2008 the average low-income country was enrolling students in primary school at nearly the same rate as the average high-income country. Despite these gains, there is a large stock of uneducated adults - 322 million in South Asia alone.
- In 2014 an estimated 61 million primary school-age children and 202 million secondary school-age youth - with a disproportionate share from poor households - were out of school.(cite 20 in world bank) Only about a quarter of the poorest children in low-income countries - compared with three quarters in the richest - complete primary school. (World Bank Report 2018c)
- there is a lacking of digital skills within the European population: 44% do not have basic digital skills
- Eurostat results show that between 2007 and 2017 the percentage of women in IcT jobs was decreasing, from 23,8 % in 2007 to 16,3 % in 2017. Considering the fact that 55% of all woman in Europe have basic or above basic digital skills, means that there is a potential that isn't used.
- according to the different levels of basic digital skills (ranging from Luxembourg 86% to Bulgaria with 26%) between European States there is also a different percentage level of IcT workforce between the European States

4.1.5.2 Subfactors

Digital Literacy and Skills

Returns on State Investment in Education

Gender education gap / lower rates of women in STEM disciplines

4.1.5.3 Additional Sources:

UNESCO (UNESCO 2018)

(World Bank 2018c):

EC - The Digital Skills Gap (2017):⁶⁸

(European Commission 2017b)

(European Commission 2019)

⁶⁸ European Commission 2017b

Eurostat results^{69 70},

(World Bank 2018c)

(Yuhyun Park 2018)

the "Future of Work"⁷¹

4.1.6. Environmental Consciousness

In some areas of the world, social values and beliefs have been reinvested in the health and maintenance of natural ecological systems. These are most noticeable at the individual level, where environmental consciousness can guide personal choices with regard to lifestyle, consumer behaviour, and political alignment. However, with the awareness raising that has accompanied our understanding of climate change, whole societies and political system are also becoming systemically more environmentally conscious in their own policies and behaviours. Institutionally, environmental consciousness can manifest as divestment strategies, 'green' policies for procurment, and environmental protection amendments (including granting personhood, and legal rights to natural ecosystems or even trees). The SDGs and COP agreements are active measure taken by the global governance community to address environmental issues, and such attention has raised the general awareness of human choice and activity as impacting our local and global ecologies.

4.1.6.1 Statistics

- According to some estimates, as of 2019, 1136 institutions have committed to divesting nearly \$11.5 Trillion from the fossil fuel industry.
- There is a wide shared consensus (about 90-100%) among climate scientists that climate change is caused by humans. ⁷²
- According to the Special Eurobarometer 468 (2016): Climate change and air pollution are considered as the most important environmental issues by European Citizen, and the most effective ways of tackling environmental problems are regarded as: investing in research and development of find technological solutions (35%), heavier fines for breaches of environmental legislation (34%), ensuring better enforcement of legislation (31%), introducing stricter environmental legislation (30%)

⁶⁹ Eurostat 2018a

⁷⁰ Eurostat 2018b

⁷¹ Marcelo Cabrol

⁷² Cook et al. 2016

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

4.1.6.2 Subfactors

Citizen Perceptions of Environmental Impacts of Behaviours

Corporate Governance towards the Environment

Public Governance Innovations with respect to Environment

4.1.6.3 Additional Resources

Maneates (2016)⁷³,

Special Eurobarometer 468 Results⁷⁴:

Fossil Free Indexes (2019)

4.1.7. Cultural Pluralism

Migration and Urbanization have been leading engines in the development of cultural pluralistic societies around the world. Policies and protections thus play an important role in shaping the role and status of immigrants, while economic and social forces often influence their decisions on joining and maintaining community. Cultural plurality is affected by changes in the state of global geo-political, economic, and security, but this phenomenon further influences global governance mechanisms as localized practices create new policy conditions. As migration continues to change the complex identity of locales in the EU and around the world, it will continue to be an important trend from a global governance perspective. The Universal Declaration on Cultural Diversity, adopted by UNESCO in 2001, is an important document in reaffirming the UN's position to Cultural Pluralism.

4.1.7.1 Statistics

- According to the International Migration Report in 2017 about 258 million international migrants existed in the world, accompanied by 744 million domestic immigrants. In all creating nearly 1 billion cultural ambassadors to new areas and locations.
- The EU received approximately 581,000 applications for asylum in 2018 - nearly 80% of total applicants were between the ages of 0-34 years.

⁷³ Maniatis 2016

⁷⁴ European Commission 2017a

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

- If current trends continue, by 2050 the number of Muslims will nearly equal the number of Christians around the world at approximately 30% of the total global population for each, and in Europe, Muslims will make up 10% of the overall population.

4.1.7.2 Subfactors

Religious Plurality and Cosmological Diversity

Migration and Displacement

Integration, Adaptation, and Co-existence

4.1.7.3 Additional Resources

4.2. Technological

4.2.1. Open Source Codes

Open source software and open standards can simultaneously enhance and restrain the capacity to translate research into innovation and competitiveness. They can enable transnational collaboration on projects, and help ensure interoperability across systems. However, if standards become too rigid in periods of rapid technological change, they could potentially stifle innovative techniques and approaches. For some, these standards are seen as productive of socially desirable outcomes in terms of co-development, transparency, and crowdsourced security and stability. At the same time, desirability is always a question of perspective, as OSS/OS also produce dissatisfied individuals and communities that must be taken into account. There are numerous codebase libraries, and open software projects that can be pointed to as providing both significant benefits to communities, and demonstrate the capacity for open projects to internally evolve. Open standards operate in a similar fashion - defining specifications of components that can be used on a royalty free basis (usually) to promote wider adoption and future development. The World Wide Web consortium (W3C) is often pointed to as an organization whose open standard works have facilitated the development and spread of the Internet. In some regards, OSS and open standards can be viewed as additive to resilience capacities by enabling decision makers to adjust regulations and enforcement, based on up to date information. The EU has promoted the adoption and use of OSS/OS to achieve technical interoperability across its member nations more quickly, and to foster economic growth of the EU bloc.

4.2.1.1 Statistics

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

4.2.1.2 Subfactors

Royalty Free Standard Essential Patents

Governmental Incentives for OSS/OS Development and Adoption

Fair, Reasonable, and Non-discriminatory (FRAND) Licenses

4.2.1.3 Additional Resources

Article on barriers when entering open-source software (sociotechnical perspective)⁷⁵

Paper on community regulatory aspects behind open-source work⁷⁶

Paper on triggers for the adoption of Open Innovation in Software Engineering and its affects⁷⁷

4.2.2. Blockchain

The potential of blockchain technology and distributed ledgers have received a lot of attention in the public discussion in recent years. Since the advent of the first widely known use case of blockchain technology in 2008, the concepts in the field have gone through a number of evolutionary phases. Multiple public and private research and development initiatives, as well as combinations of the two, have been established in Europe, just as in the United States and China. From a global governance standpoint, the key implication is that blockchain technology has enabled a new kind of a computational cyberspace for rethinking how to organize human collaboration. As a technology platform, it has enabled novel ways of creating, managing and maintaining alternate systems for social constructs such as of voting rights, property rights, and legal agreements of various kinds (Reijers, Brolcháin, and Haynes 2016). Its decentralized structure and its new forms of transparency represent alternative ways of governance and can challenge traditional political mechanism and processes like State authority, citizenship and democracy.⁷⁸ Europe is seeking to increase its influence by promoting research and development in Blockchain/DLT that might embedded certain value systems, governance arrangements, or regulatory frameworks within instances of this technology.

4.2.2.1 Statistics

⁷⁵ Crnkovic et al. 2018

⁷⁶ Tamburri et al. 2019

⁷⁷ Munir et al. 2018

⁷⁸ Atzori 2015

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

4.2.2.2 Subfactors

Dual-Sided Global Governance

Rethinking the Organization of Human Collaboration

Financial Technologies and Instruments

Infrastructure Demands and Constraints

European General Data Protection Regulation (GDPR)

4.2.2.3 Additional Sources:

OECD-report⁷⁹

The Potential for Blockchain Technologies in Corporate Governance (Akgiray 2019)

Blockchain for IoT security (Banerjee et al. 2018)

EU as aspiring leader in blockchain (European Parliament 16.05.2018)

Blockchain Innovation in Europe (Lyons 2018)

4.2.3. Cybersecurity

The continuing trend of digitalization has been accompanied in parallel with the growth and diversification of cyber security risks. Cyber-attacks can be categorized along many different spectrums, for example: sharply focused to broad-ranging targeted attack surfaces, initiated by state and non-state actors, and conducted by expert individuals and or large teams. Attacks can utilize any number of cyber toolkits, either available for purchase on the darknet, or developed by the attacking team. These attacks can be carried out in furtive isolation, or can be a larger part of hybrid warfare campaigns, as social activism, or in the competitive business arena. With regard to global governance, The United Nations has pass numerous resolutions with respect to Cybersecurity and IC, and currently organizes both an GGE (Group of Governmental Experts) (Resolution A.C.1/73/L.37) and a OWEG (Open-Ended Work Group) (Resolution A/C.1/73/L.37) to study existing and novel cyber norms, and research the applicability of existing international law. Cybersecurity attacks can be difficult to trace to their origins without significant resources.

4.2.3.1 Statistics

⁷⁹ Akgiray 2019

4.2.3.2 Subfactors

Intra-state Cyber Attacks

Non-State Actors: Espionage, Ransomware, Data Exploitation

Deep fakes and Media Manipulation

4.2.3.3 Additional Resources

Cyber Threat⁸⁰

Australia 2019: network of the country's major political parties had been hacked

2016: Australian National University hacked

2016: malware attack on Bureau of Meteorology

(Stevens 2017)

(Denning, 2000, 2001; Sofaer and Goodman, 2000).

(Brown, 2006; Geers, 2010; Meyer, 2011; Arimatsu, 2012; Maybaum and Tölle, 2016)

(Denning, 2000, 2001; Prunckun, 2008)

(Schmitt, 2013)...

(NATO 2014: article 72)

Indeed, according to CISCO, by 2020, more than 20-50 billion of IoT objects will be connected to Internet.

Internet of Things Security (Kouicem et al. 2018)

Cybersecurity Jobs Report (Morgan 2017)

State of Internet Security (Tang et al. 2017)

4.2.4. Autonomous Machines

Vehicles that can essentially operate with little to zero human oversight are quickly becoming a reality across multiple fields of study. For military purposes, air, sea and land-based machines have been developed and deployed to carry out complex tasks including autonomous submarines, border patrol armaments, and airborne drones of various capacities. Accompanying these developments, commercial vehicles for the transportation of people and goods are also

⁸⁰ Payne und Finlay 2019

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

seeing rapid development. Here we see autonomous shipping boats, self-driving semi-trucks, and autonomous personal mobility options being tested in real world settings. Lastly, autonomous machines that can rapidly assess certain conditions and are granted the authority to execute decisions with minimal human oversight are already at work in various contexts: market trading, and predictive policing being two of the most well-known.

Each of these systems will put increasing pressure on global institutions to create standards and regulations concerning their utility across various contexts. Together, they represent an emergent technological development that can shape global governance both internally and externally.

4.2.4.1 *Statistics*

4.2.4.2 *Subfactors*

Drone Swarms

Autonomous Security Systems

Self-Operating Commercial Vehicles

4.2.4.3 *Additional Resources*

4.2.5. ICT platforms for citizen engagement

Declining political interest and participation pose serious risks to democracy and human cohabitation. Internet and communication technologies (ICT) are introducing transformational and facilitating powers to society, provoking a paradigm shift in politics. Governments remain responsible for public services and can now use technological advances in e-government to fulfil them. The increasing digitalization offers potential to get citizens and governments in a closer relationship, but also carries risks. As virtuality is vulnerable to serious distortion, citizen participation in government works best not replacing but providing assistance to public auditing. South Korea for example could increase its citizens' willingness to participate in politics by realizing the support of both online and off-line participation methods.

4.2.5.1 *Statistics*

4.2.5.2 Subfactors

E-Governance for Participation

Localized Currencies and Citizenship

Social Scoring Systems

4.2.5.3 Additional Sources:

World Bank report⁸¹

4.2.6. Future of the Internet

The publicly accessible Internet is approaching its 30th anniversary, and can be pointed to as a primary technology of change over those decades. It has shaped all types of information collection, distribution, and storage, radically reshaped daily life, and has been a point of international contestation and collaboration. However, it must be noted that here in 2020, only half of the world's population has been 'online' with nearly 4 billion people as yet unconnected. As new populations engage with the ecology of hardware and software technologies that compose the Internet, it will continue to evolve. At the same time, we have already seen nations moving to establish and maintain 'internet sovereignty' through various technologies and institutions. Seeking to control access to information and communication capabilities that the Internet offers, these nations deploy various modes of limiting and monitoring how their populations utilize the internet. And finally, there has emerged a trend that privately held Internet services are incentivised to establish 'walled gardens' - pockets of Internet activity that are groomed for specific purposes, and that algorithmically create information 'bubbles' according to individual users' preferences (stated or otherwise indicated).

4.2.6.1 Statistics

4.2.6.2 Subfactors

Nationalized Internets

Private 'Walled Gardens'

Competing Standards and Policies

4.2.6.3 Additional Resources

⁸¹ Bae et al. 2019

4.3. Ecological

4.3.1. Environmental Damage

Apart from emissions, there are numerous additional types of environmental damage that may either be addressed via global governance, or whose impacts will effect global governance decisions in the future. One such area is the long term environmental and human health impacts of toxic and dangerous waste generated during war or by military policing actions (depleted uranium, chemical munitions disposal, etc.). Additional direct and indirect environmental impacts from human activities (agriculture, development, transport, industry) include top soil erosion and exhaustion, ocean acidification, irreversible salinization, pollution of water tables, loss of biodiversity, etc. Deforestation for increasing agriculture land and other types of development, disrupts and destroys unique ecosystems and their untold wealth of information and simultaneously degrades our environments natural capacity to regulate CO₂ and generate oxygen. Environmental damage significantly impact our capability to co-inhabit this planet with one another and the millions of other life forms present here, and as such both changes, and can be changed by global governing mechanisms. The global response to the destruction of the ozone layer by CFCs, shows that global regulation can and does have an impact on environmental issues.

4.3.1.1 Statistics

- The global maritime traffic is expected to increase by 240–1,209% from 2019 to 2050. (Sardain et al. 2019)
- Generating 3cm of top-soil takes 1000 years, and if current rates of degradation continue, world's top soil could be eliminated in 60 years. (UNFAO, 2017)
- Up to 385,000 t of conventional and chemical munitions were sunk in the Baltic Sea after World War 2 and are responsible for the release of toxic mercury to sediments. (Beldowski et al. 2019)
- Afghan citizens had 100 times more uranium in their urine than the normal world range, after having inhaled contaminated dust from the bombings in 2002. (Durakovic & Usar 2005)
- Of the roughly 275 M tons of plastic waste produced each year, almost 8M tons become ocean-based plastic waste. (Jambeck et al. 2015)

4.3.1.2 Subfactors

Long-term Damage Military Actions and Waste

Earth and Waterway Pollution

Unregulated Ocean and Space Waste

4.3.1.3 Additional Resources

Environmental Damage from Military Action.⁸²

Vietnam Defoliation (Stellman et al. 2003)

Unexploded Landmine Ordinance (CARE 2013)

Munition Sunk in Ocean (Beldowski et al. 2019)

Depleted Uranium and Birth defects (Al-Sabbak et al. 2012)

Uranium Poisoning (Durakovic & Usar 2005)

4.3.2. Biodiversity

The existence and well-being of humans is only possible thanks to nature and nature's contribution, but with the massive growth of human population, especially over the last 50 years, nature across the globe has been altered by multiple human drivers. This unprecedented, intense use of the planet has been resulting in a decline of the majority of indicators regarding ecosystems and biodiversity. Global species richness is threatened by human activities as land and sea use, pollution, climate change and the invasion of alien species. Large and mammal species are more likely to extinct than smaller organisms, and in the 21st century, an increasing number of species are in danger of extinction. As socio-political systems continue to privilege economic targets over biological assets, achieving SDGs related to biodiversity preservation remain increasingly difficult. The loss of species and genetically richness strains the resilience of agricultural systems, posing a serious risk to global food production.

4.3.2.1 Statistics

- Crop output valued at between \$235 billion and \$577 billion is put in danger by the loss of pollinators globally and annually (IPBES 2019)
- The cumulative records of alien species have increased by 40 per cent since 1980 (IPBES 2019)
- 60 billion tons of renewable and non-renewable resources are extracted each year (IPBES 2019)
- One million species are facing extinction globally in 2019, more than ever before (IPBES 2019)
- The current extinction rate is tens to hundreds of times higher than averaged over the past 10 million years. (IPBES 2019)

⁸² Durant und Brito 2019

4.3.2.2 Subfactors

Land and sea Use Regulations

Ecological Systems Resilience

Value Perception and Accounting

4.3.2.3 Additional Resources

IPEBS 2019

4.3.3. Planetary Boundaries or Carrying Capacity

The concept of planetary boundaries, or ‘carrying capacity’, points to the finite character of planet earth as a natural restraint to humanity. This view positions itself in contrast to the growth-based economic system, and calls for various actions that could position human systems as more symbiotic with the Earth systems and resources. There is an ongoing debate concerning how to best measure and monitor the various systems and resources the Earth consists of, and the impacts of human activity. In 1972, the Club of Rome published the milestone report “The Limits to Growth”, arguing that due to the finiteness of resources, the globe would experience tipping points and following declines in industrial output per capita, food per capita, services per capita and population during the next 100 years. Now, almost 50 years later, the required turnaround in collective human behaviour has not happened yet. Collective decision-making, aiming at the solution of societal problems or to open societal opportunities, is facilitated by technology. With the use of internet and communication technology, the environment can be monitored in real time. This facilitates real-time regulation, enhanced predictive management and citizen sensing. As humanity reaches and crosses limitations/tipping points, global resources per capita are monitored and controlled. By this, technology can help giving the scarcity of resources a price or index, and operationalize the distribution of finite physical and social matter.

4.3.3.1 Statistics

4.3.3.2 Subfactors

Unequal Global Consumption Patterns

Complex Global System Relationships and Tipping Points

Market Power and Temporal Discounting

4.3.3.3 Additional Resources

(Challies et al. 2019)

(Bakker und Ritts 2018)

(Häyhä et al. 2016)

(Fang et al. 2015)

(O'Neill et al. 2018)

(Meadows et al. 2004)

(Hoff et al. 2014)

4.3.4. E-waste

Digitalization is currently seen as a key driver for future economic growth and therefore politically supported on global level. But the rise of internet and communication technology causes the world's fastest growing waste stream. The United Nations call it a tsunami of e-waste, which not only jeopardizes the environment, but also wastes massive amounts of high valued resources. To find a compromise between digitalization and sustainable development, electronics need a circular vision. Lawmakers, industrials, entrepreneurs and consumers need to protect their environment and conserve resources which humanity is just starting to understand their value in full.

4.3.4.1 Statistics

- In 2018, 48.5 million tonnes of e-waste were generated, equal to all commercial aircraft ever built, or to 4500 Eiffel towers (WEF 2019). It is on track to reach 120 million tonnes per year by 2050.
- One ton of mobile phones contains 100 times more gold than one ton of gold ore (WEF 2019)
- E-waste was worth 55 Billion € of raw material in 2017, which is more than the GDP of most countries. (WEF2019)
- only 20% of e-waste is formally recycled, the rest is often incinerated or dumped in landfill. (ITU2017)

4.3.4.2 Subfactors

E- Waste as resource

Regulations concerning E-waste disposal and treatment

Circular Digital Vision

4.3.4.3 Additional Resources

4.3.5. Extreme Weather, Environmental Disaster, and Emergency Response

While there is still a contentious debate about the connection between climate change and “increase” in extreme weather events or natural disasters, what is less contentious is that these events are impacting human societies at a greater cost. Insurances are already monitoring significant increases in damage caused by extreme climate, and they are taking precaution to be prepared for worse worst-case-scenarios regarding weather and climate events. Droughts, floods and other environmental disasters are estimated to force millions of people to seek refuge in other places during the coming century, largely in Africa and Asia. Since the 1951 Refugee Convention, the refugee term has not been changed. Despite approved connections between forced migration and climate change, climate refugees are hence not being recognized by any global treaty. Considering the estimated rise of climate refugees, the global community is facing the need to transform current institutions, organizations, funding mechanisms, hard and soft laws and society to collectively adapt to this new situation.

4.3.5.1 Statistics

- In 2018, 17.2 million new displacements associated with disasters in 148 countries and territories were recorded ([IDMC](#)) and 764,000 people in Somalia, Afghanistan and several other countries were displaced following drought ([IOM](#))

4.3.5.2 Subfactors

Managing Unequal Climate Vulnerability

Crisis Aid and Relief Funds

Climate Refugees

4.3.5.3 Additional Resources

4.4. Economic

4.4.1. Energy Supply and Distribution

Global energy systems remain fundamental to all modes of economic production, and as such remains the intense focus of numerous activities related to its governance. The United Nations commitment to the Paris Agreement of limiting global warming to 2C is compelling the global

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

community to accelerate efforts to decarbonize all economic sectors - and seriously consider deep systemic transformations of energy. However, with no less than 21 UN programmes and agencies participating in energy related work (UN Energy) the energy sector and its complex stakeholder relationships continue to multiply, and global demand for energy continues to increase. The International Energy Agency (the autonomous OECD body) also advises on energy policy for its 30 member countries, along with China, India, and other major energy markets who are associate countries. In the IEA *World Energy Outlook* report (2018), 3 alternative scenarios were developed regarding energy sector development through the year 2040.

4.4.1.1 Statistics

- Global energy demand projections show an increasing trend, with annual consumption predicted to reach around 778 Etta Joule by 2035
- More than 80% of current primary energy consumption is obtained from fossil fuels.
- The global petroleum daily consumption has increased from 80 million barrels in 2000 to 98 million barrels in 2017
- The IEA projects that to achieve sustainable development, the energy sector will need approximately \$68 trillion by 2040.

4.4.1.2 Subfactors

Decarbonizing the global economy

Renewable and Nuclear energy

Intelligent Grids and Energy distribution

4.4.1.3 Additional Resources

4.4.2. Shadow Economy

We use the term Shadow Economy in reference to economic activity that is often unaccounted for in traditional GDP calculations, yet remain important engines of activity. Beyond the economy to the political order, informal or underground economy plays an important role for citizen's activities in many places across the world. Informal labour, unofficial lending and debt, opaque instruments, nepotism and illicit economies (organized crime, drugs, arms, and darknet) add an estimated value of 5 to 30 percent of global GDP to the world production. The illegal and unregulated part of social life reduces tax revenue and availability of public goods and services, lowers tax morale and tax compliance, it generates higher costs for control, and lowers economic growth rates.

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

4.4.2.1 *Statistics*

- Informal employment, which has an impact on the adequacy of earnings, occupational safety and health and working conditions, remains pervasive: in three quarters of countries with data on the subject, more than half of all persons employed in non-agriculture sectors are in informal employment.
- Approximately 1.7 billion people globally without bank account

4.4.2.2 *Subfactors*

Informal Economies

Unofficial Lending, Debt, and Instability

Illicit Economies (Organized Crime, Drugs, Arms, Darknet)

4.4.2.3 *Additional Resources*

4.4.3. Trade & Finance

The world has not recovered from the "Great Trade Collapse" after the 2008 finance crisis yet, but recent world development is rather characterized by distortion than recovery. Nevertheless, the crisis had unequal strong effects on different countries. While some countries could relatively fast recover, other still struggle with its aftermath. Well functioning trade finance markets are essential for the global trading system with both, centralized and decentralized financial trade markets, offering distinct advantages and challenges. Historically, global financial trade market highly centralized in the 19th century. The regulation at the London stock market was highly criticized, as it led to high rents for (only) UK financial institutions. Today's decentralized structure is less feasible and offers many advantages, but the liberty can result in excess. Firms depend on local credit conditions which pushes back governance.

4.4.3.1 *Statistics*

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

4.4.3.2 Subfactors

Opaque Financial Instruments

Regulating International Finance

Financialization of Development

4.4.3.3 Additional Resources

4.4.4. Corporate Taxation

Paying taxes and by this contributing to public goods and services is a corporate social responsibility on individual and organizational level. Hyper-mobile, globalized companies in the 21st century, are able to offshore to tax havens and by this avoid social redistribution apparatus in the favour of maximized revenue. Financial transparency is nowadays an important part of best practice conduction. Cooperation in favour of public benefits is important in a still unequal world, and uncovered free riding can generate sustainable damage on the individual or organizational reputation. Political cooperation on global level can reduce free riding by collectively converging towards a more equal tax system and closing down tax havens.

4.4.4.1 Statistics

4.4.4.2 Subfactors

Tax havens and Loopholes

Global Progressive Taxation

National Sovereignty and Finance

4.4.4.3 Additional Resources

4.4.5. Labor and Skills

The world of labor is changing dramatically. Globalization and mobility have led to intense competition for skilled workers and the fourth industrial revolution is increasing the demand for computing experts while replacing unskilled workplaces with machines. In unequal global labor competition, less developed political unities spend rare capital on workforce development to then lose the work force to more competitive places, leading to the devastating 'Braindrain' phenomenon. Add to this the increasing rate of automatization through software and robotization, and the uncertainty regarding future economic development's relationship to labor becomes

almost palpable. However, numerous studies point towards the differentiated skills required for job completion, the human capacity to individually synthesize these skills, and the forces of skill harmonization that enable collaboration across teams as reasons that dramatic shifts in the labor landscape are still far off.

4.4.5.1 *Statistics*

4.4.5.2 *Subfactors*

Automatization and Skills

Ageing Workforces

Unionization and Worker Rights

4.4.5.3 *Additional Resources*

Immigration and work study in Jordan (Hausmann et al.)⁸³

Complementaries between workers with different skills (Nefke)⁸⁴

4.4.6. Lobbyism and Corporate Influence

Policymakers depend on advocacy groups for political support and expertise. On the other hand, organizations like companies and NGOs realize their respective strategies by influencing their institutional environment. Through this, lobbyism works as a connection mechanism of policymakers with their voters. The underlying intention is crucial for the output of these often unexposed relations. On one hand, social and environmental problems can effectively be transported to decision-makers increasing the visibility of pervasive problem areas with large supportive constituencies. On the other hand, these relations can be abused for personal or institutional gain leading to plutocracy-like conditions if regulations and enforcement are not established.

4.4.6.1 *Statistics*

- In 2016, estimated 30,000 lobbyists lived in Brussels, which counted on roughly 180,000 inhabitants. (Transparency International EU 2016)
- As of April 2018, 855 ISDS cases had been brought;²¹⁵ in contrast, in the mid-1990's, there were fewer than 10 known investor-state arbitrations. ISDS have become a type of marketplace with hedge fund investors, for example, in 2014, the hedge fund

⁸³ Hausmann et al. 2019

⁸⁴ Nefke 2017

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

Tenor Capital Management successfully bet that Venezuela would lose an ISDS case, and received a 35 percent cut of a US\$ 1.4 billion award.

4.4.6.2 *Subfactors*

International Investment Agreements (IIAs), and Investor-State Dispute Settlements (ISDS)

Campaign Funding Regulations

Legal Policies on Lobbying

Limits on Corporate Political Influence

4.4.6.3 *Additional Resources*

4.4.7. Economic Leverage

Digitalization and mobility have increased the speed of change in the global economy. Growth and degrowth are less predictable and can lead to both fast revenue and fast loss. The increasing volatility is generally interpreted as a decrease of stability. Trade wars and sanctions put increasing uncertainty on any planning. Experiencing populist parties on the rise, the level of unpredictability is increasing. Manifold economically relevant trigger events are immediately monitored across the globe, such as political decisions, statements or the occurrence of natural events. Traditional global institutions, which symbolically stand for major achievements of the last century, are in danger as main members are leaving them. Smoothing the velocity of happenings and perception is a main challenge to ensure a stable and resilient world economy.

4.4.7.1 *Statistics*

In 2017, aid-for-trade commitments increased to \$58 billion and more than doubled when compared to the 2002–2005 baseline, when they represented \$23.1 billion.

4.4.7.2 *Subfactors*

Weaponized Trade

Sanctions and Policing

4.4.7.3 *Additional Resources*

4.5. Political

4.5.1. Institutional Pluralism

An increasingly complex landscape of governing institutions, grown from deepening interdependence between nations and across regions, has destabilized traditional forms of diplomacy and the power of intergovernmental organizations. Preferential trade agreements between power blocs allows actors to secure economic cooperation outside of singular institutions like the WTO, while new financial instruments embolden central banks to increase their liquidity without the primal necessity of the IMF. Meanwhile private-sector actors, like companies and NGOs, find themselves increasingly empowered to establish standards and resolve disputes that play a functional role in the global economy. With states and international organizations able to pursue shared governance goals with private sector allies, and with domestic level officials able to better network and collaborate with their peers across national borders, global governance is evolving into a much more nuanced and open playing field. However, this redistribution of power has not necessarily led to a more equitable and fair system of decision-making, and while some modes of governance have been moved further from traditional governing mechanisms, others, like security, remain firmly entrenched in traditional state-craft. With increasing overlap and contestation between governing forces, the proliferation of institutes exerting influence over global issues has led to both increased fragmentation alongside the emergence of new innovative and adaptable governance paradigms.

4.5.1.1 *Statistics*

4.5.1.2 *Subfactors*

Rising Powers of Regional Organizations

Coordinating a Variegated Policy Landscape

Governance Innovations

4.5.1.3 *Additional Resources*

Article from Cerna/Hynes⁸⁵: A pluralistic approach to public policy: the case of the OECD's New Approaches to Economic Challenges initiative

WEF-article⁸⁶: Pathways to solve the global crisis of tribalism and democratic decay

Report⁸⁷ about Institutional pluralism, two publics theory and performance reporting practices in Zambia's health sector

⁸⁵ Cerna und Hynes 2018

⁸⁶ Dixon 2019

⁸⁷ Phiri und Guven-Uslu 2018

4.5.2. Deepening Interdependence

Globalization has increased the interconnectivity between actors once separated by borders, languages, and vast distances. Tied together by economic and social forces, and enabled to communicate through new technologies, diverse localities are being driven to depend on one another for support in addressing global scale issues: resource exploitation, health risks, and climate action among others. As these organizations become increasingly affected by activities of dislocated agents, they tend to form stronger dependencies with one another for consolidating and utilizing new modes governance force. Corporations develop business models that can operate multinationally with high efficiency - paving the way for other organizations to operate similarly at a global scale. The result are robust networks and systems, created to be adaptive and reflexive to their environment, operating very effectively outside of traditional governance models. As these former outsider groups continue to build and diversify their power bases, new issues come to the fore of global governance, for example, quality healthcare, environmental safeguards, and privacy. Interdependence of entities creates shared problem areas, and unifies diverse stakeholder groups, even as those problem become increasingly complex themselves.

4.5.2.1 *Statistics*

4.5.2.2 *Subfactors*

Global Value Chains and Systems

Inter-bank Liquidity

Multi-faceted Organizational Policies

4.5.2.3 *Additional Resources*

WEF article ⁸⁸

Article⁸⁹: Towards a Third Generation of Global Governance Scholarship

Report⁹⁰ about Critical Connections. Promoting Economic Growth and Resilience in Europe and Central Asia.

⁸⁸ WEF 2019b

⁸⁹ Coen und Pegram 2018

⁹⁰ Gould 2018

4.5.3. Anti-Globalism

Nationalism and the accompanying populist politics that have been increasing as a global phenomenon over the past decade, are calling the very idea of global governance itself into question. Many see these trends as rooted in a more general anti-globalization response rooted in social and economic upheaval within communities that have been deeply impacted by the past decades of global changes. Populism often express itself as a generalized scepticism of individuals, institutions, or governments that are perceived as acting in an 'elitist' manner at the expense of a dislocated citizenry. These movements find appeal in those portions of a society that feel threatened by, and vulnerable to, socio-economic change: changing job markets, cultural pluralism, different local demographics, and dynamic social status, etc. Populist movements can further more centre their opposition on any and all actors seen as benefitting from increased globalization, and on the prioritized goals that these global institutions and actors support. This can explain the populist backlash against topics like climate change and some of the SDGs, and their support of national agenda setting with less international cooperation or collaboration. This further destabilizes the type of global governance that would be necessary to facilitate change within these communities, and in a vicious cycle, creates the conditions for stronger local repercussions to global change.

4.5.3.1 Statistics

4.5.3.2 3 Sub Factors

Changing Labor Markets

New Wealth and Income Distribution

Quality of Life Perceptions

4.5.3.3 Additional Resources

WEF Article⁹¹

Article⁹²: Globalization in an Era of Discontent: Populism, Prosperity and Policy in Contested Times

OECD-Report⁹³: Fixing Globalization. Time to make it work for all

⁹¹ WEF 2019a

⁹² Blyth 2017

⁹³ OECD 2017

ifa-Report⁹⁴: Populist-Nationalism and Foreign Policy Cultural Diplomacy, International Interaction and Resilience

Article⁹⁵: Thirteen charts show what the world really thinks about Globalization 4.0

4.5.4. Human Rights

Formal agreements regarding Human Rights have been critical drivers of international relations since the inception of the United Nations, including the Universal Declaration of Human Rights of 1948 (A/RES/217 A). The UN currently has 10 governing bodies dedicated to monitoring and enforcing the Human Rights treaties. Human Rights remain a key shaper of global governance institutions, actions, and policies in the present - shaping an understanding of development (SDGs), legal treatment of refugees, and international responses to a host of issues including conflict, illicit economies, human health, and many others. The EU has been a strong supporter of Universal Human Rights over the years, and the EU's influence as Human Rights advocate has facilitated their legitimization and extensions.

4.5.4.1 Statistics

- United Nations has 10 dedicated bodies to Human Rights: The Committee on Economic, Social and Cultural Rights (CESCR), The Committee on the Elimination of Discrimination Against Women (CEDAW), Committee against Torture (CAT), The Committee on the Elimination of Racial Discrimination (CERD), Committee on the Rights of the Child (CRC), The Human Rights Committee (HRCtee), Committee on Migrant Workers (CMW), The Subcommittee on Prevention of Torture (SPT), Committee on Enforced Disappearances (CED), Committee on the Rights of Persons with Disabilities (CRPD).
- Lost productivity from domestic violence has cost countries between 1 to 2 percent of GDP, and excluding persons with disabilities from the workforce can cost economies up to 6.9 percent GDP.
- Without urgent global and national climate action, Sub-Saharan Africa, South Asia and Latin America could see more than 140 million people being forcibly displaced within their countries' borders by the year 2050.
- According to the organization *Front Line Defenders*, 312 defenders in 27 countries were murdered while fighting for their community's rights in 2017.
- A recent survey of 152 major companies found that 77 percent of respondents that conducted (explicit, full) Human Rights Due Diligence (HRDD) identified actual or potential human rights impacts in their operations through the process, and 72 per cent identified adverse impacts linked to the activities of their third-party relationships.

⁹⁴ Higgott und Proud 2019

⁹⁵ Jones 2019

-

4.5.4.2 Subfactors

Human Rights Due Diligence (HRDD)

Civic Space and Protection

Access to Justice

4.5.4.3 Additional Resources

4.5.5. Coexistence of Different Political Systems

The challenge of social organization has led to many different governance systems to emerge including many forms of monarchy, democracy, and authoritarian regimes. The co-existence of different political systems has been anything but peaceful, despite the oft quoted saying the 'Democratic states do not go to war.' The Polity Project classifies national governments with scores ranging from -10 to +10 across three categories: democracy, anocracy, and autocracy - and has created data stretching back nearly two hundred years. This data tracks the rise of democracy and anocracy, and the subsequent decline in autocratic states, particularly from the 1970s to the present. While Democracy may still be difficult to define, it can be identified by some common traits (voting, rule of law, etc.), and importantly its continued trend upward makes it the most widely practiced form of governance globally.

4.5.5.1 Statistics

4.5.5.2 Subfactors

Anocratic Systems

Military Controlled Democracies

Liberal Economic Systems

Increase in Democratic states

4.5.5.3 Additional Resources

Polity Database

Democratic Growth ⁹⁶

⁹⁶ Desjardins 2019

4.5.6. State Power and Policy

Recently, the globe is experiencing a surge in protectionism. US tariffs on worldwide imports (especially China), have had important ripple effects across the global economy. Meanwhile, the "China Shock" refers to increasing imports from China that have led to a rise in unemployment and lowered wages in many local markets. While, trade protection results in inefficient domestic production and narrows the range of imports, trade shocks can create conditions that give rise to and politically enable nationalist groups that appeal to the disenfranchised. Nationalist groups, and their political rise in many western democracies, has fuelled a surge in populist rhetoric that garners political support and can result in isolationist policy.

4.5.6.1 Statistics

4.5.6.2 Subfactors

Protectionism

Nationalism

Isolationism

4.5.6.3 Additional Resources

Global surge in protectionism ⁹⁷

DiTella and Rodrik Survey regarding job loss and policy ⁹⁸

4.5.7. Financial Constraints

The Sustainable Development Goals have forced a difficult conversation to be made more open - who will pay for the achievement of these, and future, goals? While the UN itself is funded primarily by nation states, with some donations made from private organizations (like the Gates Foundation) - these funds are for the direct operations of the UN, not for funding development projects. To work towards the SDGs and other national and international priorities, institutions have begun promoting private investment as a mode of financing. This can be achieved through a number of different financial instruments, with those difference having a large impact over the long term. While some argue for direct investment into projects, others would deploy a variety of new bonds to build funding. In pursuing large investment pools, like pensions and hedge funds, projects aimed at addressing Environmental, Social, and Governance issues will have to play by new rules of transparency, and accountability.

⁹⁷ Di Tella und Rodrik 2019b

⁹⁸ Di Tella und Rodrik 2019a

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

4.5.7.1 Statistics

- SDG implementation might need an annual investment of 5 to 7 trillion US dollars with developing countries alone supposedly facing an annual gap of 2.5 trillion US dollars
- Institutional investors like pension funds alone hold assets to the staggering amount of around 41.3 trillion US Dollars.
- A 2017 KPMG study found that four in ten of the world's largest companies already reference the SDGs in their corporate reporting. Of those, most are located in Germany (83%), France (63%) and the UK (60%), followed by Japan (46%) and the USA (31%).

4.5.7.2 Subfactors

Billions to Trillions Campaign (World Bank Group 2015)

Impacting Investment for ESG (Environmental, Social, Governance)

Bonds (Traditional, Niche (Green, SDG, other)) and Regulation (Abshagen et al. 2017)

4.5.7.3 Additional Resources

4.6. +

The plus (+) section of the STEEP categorization will be used to accommodate factors that do not fit cleanly within the standard STEEP framework. For the TRIGGER scenario development process, we use this to address trends in governing institutions which crosses over between social and political concerns, and is relevant for this research. We also consider topics that are more security focused and are currently being addressed by international governing institutions.

4.6.1. Intellectual Property Law

Global Intellectual Property (IP), and the rights and regulations that pertain to this issue, continues to be an arena of intense global production and contestation. IP remains an important engine of economic development, and an important metric for gauging innovation and creativity within both developing and established economies. The World Intellectual Property Organization (WIPO), a specialized U.N. agency, remains the defacto global governance institution with regard to IPR, overseeing a number of conventions, treaties, and agreements relating to IP management and regulation. This work is also supported by portions of the WTO TRIPS agreement, and the EU's Directive on Copyright in the Digital Single Market. Other non-UN initiatives such as Anti-Counterfeiting Trade Agreement (ACTA) seek to establish additional governing bodies for establishing international standards for IPR and its enforcement.

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

4.6.1.1 Statistics

- Filing activity in China grew by 11.6% for patents, 28.3% for trademarks and 12.7% for industrial designs.
- The IP office of China now accounts for 46.4% of patent filings and more than half of global trademark (51.4%) and industrial design (54%) filing activity.
- Globally in 2018, patent filings around the world exceeded 3.3 million, representing a 5.2% growth on 2017 figures. Trademark filing activity totalled 14.3 million, up 15.5% on 2017. Applications for utility models grew by 21.8% to reach 2.1 million applications.

4.6.1.2 Subfactors

Technology Transfer

Economic Development and IP

Biological Intellectual Property

4.6.1.3 Additional Resources

4.6.2. Security, Territory and Conflict

Conflicts over territory can take many different forms, but remain a tremendous source of uncertainty and destabilization in terms of global governance. Contemporary territories in dispute include the Arctic Circle, The South China Sea, various zones in the Middle East and Africa, and even extra-terrestrial objects (Moon, Mars, Asteroids, etc.). The consequences of these disputes can effect economies and trade relationships around the world, both now and in the future, as resources, shipping routes, and political stability and regional partnerships can be destabilized. Global governance has thus far relied upon existing conventions as established at the United Nations in approaching territorial claims, access, and exploitation in contested regions - UNCLOS III, for example, being a primary source for these negotiations. However, the UN has no direct operational role in UNCLOS, and relies on other international organizations International Maritime Organization, International Seabed Authority (ISA) in this regard. The 'Moon Treaty,' based loosely on UNCLOS, is considered failed as it remains unratified by most major space faring nations. Armed conflict and formal war are generally governed by the Geneva Conventions and Protocols, Convention regarding conventional, biological and chemical weapons, and others.

4.6.2.1 Statistics

4.6.2.2 Subfactors

- Celestial Bodies and Militarized Space
- The Arctic Circle
- Non-State Actors

4.6.2.3 Additional Sources

4.6.3. Nuclear Proliferation/Disarmament

Nuclear Proliferation remains a critical arena of global governance, and a topic still surrounded by uncertainty in terms of future trajectories. From United Nations Security Council resolution 255 (1968) to the present, nuclear proliferation has remained a potent driver of international relationships, from peaceful treaties offering mutual protection, to sanctions and additional measures against nations seen to be working towards nuclear armament. Currently, draft resolutions to establish a nuclear free Middle East, ban nuclear weapon testing, prohibition of use of nuclear weapons, and the elimination of all nuclear weapons, among many others, have also been passed (2018). With regard to many of these draft resolutions the EU position can be summarized in the following: “The representative of the European Union reaffirmed its support for the establishment of a zone free of nuclear weapons and all other weapons of mass destruction in the Middle East. It considers the 1995 resolution valid until its goals and objectives are achieved and strongly supports the outcome of the 2010 Non-Proliferation Treaty Review Conference. Dialogue and confidence building among stakeholders are the only sustainable ways to agree on arrangements for a meaningful conference to be attended by all States of the Middle East. The European Union stands ready to assist in the process leading to the establishment of such a zone. He called upon all States in the region to abide by the Non-Proliferation Treaty, Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction, Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction, and to sign and ratify the Comprehensive Nuclear-Test-Ban Treaty, subscribe to The Hague Code of Conduct against Ballistic Missile Proliferation and to conclude comprehensive safeguards agreements with the International Atomic Energy Agency (IAEA).” ([GA/DIS/3615](#))

4.6.3.1 Statistics

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

4.6.3.2 Subfactors

Expanded Nuclear Powers (Iran, N. Korea)

Advances in Nuclear Weapons

Non-state Threats

Nuclear Waste Management

4.6.3.3 Additional Resources

4.6.4. Future-oriented Governance

There is a marked trend in the formal integration of future-oriented processes and institutions at both national and international levels of governance. Emerging from a long history of theoretical and conceptual work, this trend in practical governance can be observed in international accords regarding the rights of future generations and our contemporary responsibilities to them (UNESCO 1997), national level future-oriented institutions and networks (Singapore, Dubai, Finland, (Kuosa 2011)), and remains a topic of debate for operational praxis (accounting standards, legal judgements, and long-term agenda setting). In terms of global governance, this trend remains a site of contestation as it threatens the calculus of power and accountability that shapes national and international strategies. And yet, as complex, global, 'long-lag' problems emerge from research, future-oriented governance offers a necessary approach to addressing these issues.

4.6.4.1 Statistics

4.6.4.2 Subfactors

Future Generations: Rights and Responsibilities

Generational Accounting

Future Oriented Governing Institutions

4.6.4.3 Additional Resources

Future Generations and Rights:

(Agius 1994) (Agius et al. 1997)(Agius 1986)(Bandman 1982)(Bickham 1981)(Dahle 1998)(Dator 2009)(Delattre 1972)(De-Shalit 1992)(Future Generations 1994) (Gatmaytan 1996) (Gosseries 2008) (Gündling 1990) (Hubin 1976) (Kavka 1982) (Kim et al. 1999)and many others discuss the arguments for and against the consideration of future generations within governance decision

D5.1 Report Key Factors and Trends for Scenarios - Results of Fiesole Workshop

making. As can be seen this topic has long been under debate and has been analyzed from a international law perspective. While there is no unifying, and legally binding legislation regarding 'future generations' it is notable that such language is included in the 1997 UNESCO declarations (UNESCO. General Conference 1997) and in subsequent United Nations Documentation (United Nations, General Assembly 2013).

Generational Accounting:

(Auerbach et al. 1991; Auerbach et al. 1999; Auerbach 1995) (Goulder und Stavins 2002)

Future-Oriented Institutions:

(Bezold 1975)(Bezold 2001)(Bezold und Renfro 1978)(Bezold et al. 2009)(Chaplin und Paige 1970)(Dator 1998)

Future Generations Commissioner for Wales: The Commissioner's role is to be the guardian of future generations. This means helping public bodies and those who make policy in Wales to think about the long-term impact their decisions have. **Well-being of Future Generations (Wales) Act** 2015 requires public bodies in Wales to think about the long-term impact of their decisions, to work better with people, communities and each other, and to prevent persistent problems such as poverty, health inequalities and climate change.

The **Committee for the Future** is an established, **standing committee in the Parliament of Finland**. The Committee consists of 17 Members of the Finnish Parliament. The Committee serves as a Think Tank for futures, science and technology policy in Finland. The counterpart cabinet member is the Prime Minister. The Committee was established in 1993.(Kuosa 2011)



**INSTITUTION EURASIAN INSTITUTE
OF INTERNATIONAL RELATIONS**

