THE WORLD AFTER COVID-19:
## How to improve resilience during the crisis?

The Coronavirus crisis revealed how important resilience is for countries and global systems. In this document we outline concrete means for building resilience against multifaceted uncertainties that the pandemic has triggered in the global system. The approach is based on the analysis of low probability and high impact shocks using a method developed by the Global X-Network, a multi-disciplinary network of international researchers.

The members the Global X-Network use foresight tools, like extreme scenario planning, to help governments and companies identify practical strategies and tactics to build resiliency. Being resilient means not only absorbing future shocks and X-Events but being able to adapt and grow stronger. The attached Resilience Assessment is a high-level overview of the Global X-Network process for building resilience in a post-coronavirus world. If you would like to learn how we can help your organization, please contact us.

The method we have used is designed for long-term planning in environments dominated by uncertainty. The ultimate goal of this foresight exercise is to support governments and organizations in their decision making right now, in the middle of the crisis. The optimization challenge we address is to find the best solution to both meet the requirements of the current crisis and to prepare decision-makers for surprises and extreme events in such a way that they not only survive but benefit from uncertainty.

The method we apply is a specific, uncertainty-focused scenario process that consists of four steps:

1. We have defined a set of uncertainties that were assessed by a group of experts in our Global X-Network.
2. We have developed detailed descriptions of extreme scenarios that may arise from these uncertainties.
3. The extreme scenarios are used to generate success strategies for specific governments and organizations to allow them to survive and benefit during the extreme scenarios.
4. A concrete portfolio of actions is then developed to support the implementation of the success strategies.
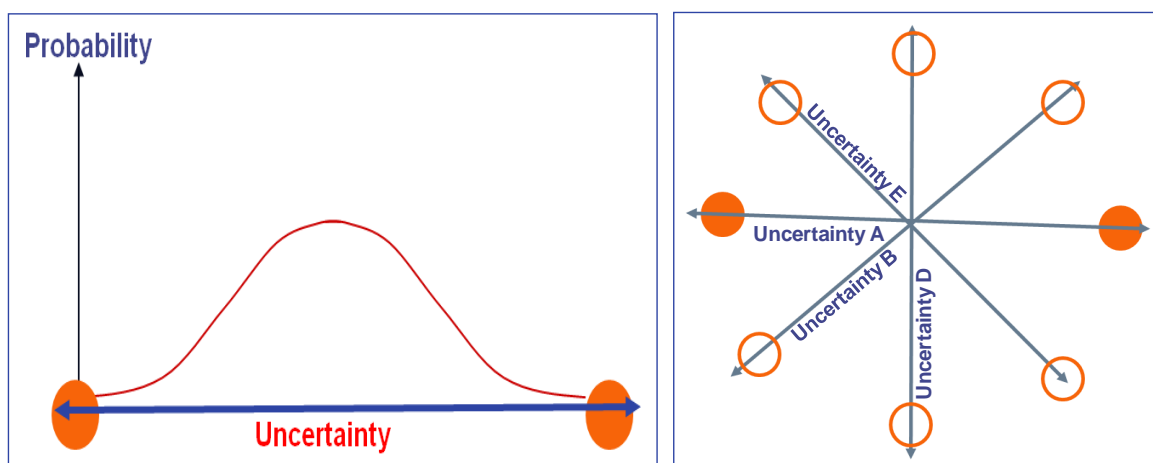
Figure 1- Each of the uncertainties is stretched to extreme ends, where the probability of the event is low, but the impact is high. When we combine all the uncertainties onto the same graph, we have defined the space of uncertainty. This is the area where governments and organizations should identify success strategies to develop the resiliency required for the extreme scenarios.

Definition of uncertainties

The process of defining key uncertainties requires an expert contribution. For this purpose, we collected a broad set of potential early signs of change (Weick 2001, Ilmola and Kuusi 2013, Ilmola and Rovenskaya 2016) and then asked experts to assess their relevance to the theme of "Stability of Global Order". The uncertainties were defined by analyzing the material with a high standard deviation. Meaning, material where some experts thought the sign of change was very relevant, while others did not see its potential value at all.

As an outcome we defined four dimensions of uncertainty worthy of further investigation:

1. Development of economic and financial systems
2. Reaction of the governance system of a country
3. Development of the global order
4. Development of the socio-ecological system

Development of extreme scenarios

In the next phase, we stretched these uncertainties and described both of the extreme outcomes of the uncertainty (see Figure 1). For example, if a key uncertainty is "development of the global order", then we studied both "the collapse of global order" and a well-functioning "strong global coordination" as the extreme scenarios. It is essential to note that it is very likely that <u>none</u> of the extreme scenarios will happen. The extremes are hypothetical and have only an instrumental value (Sircar, et al. 2013). The reality will be something between these extreme alternatives.

Overview of the extreme scenarios

Economy & Finance

Scenario 1 – There is a prolonged recession (12+ months) with high levels of unemployment that fractures the global supply chain. Many countries don't have sufficient resources to bailout banks or large firms and their central banks struggle to manage under high levels of government debt. The production paradigm is changing towards digital and automation technologies. The economic and trade balance between countries is changing. Individual and country-level income gaps increase.

Scenario 2 – There is a deep recession that is short, however it's long enough to alter people's future behaviour. Consumption of digital services increases while physical goods decreases, resulting in some level of prolonged unemployment. Currencies move to a digital format. Remote work leads to a trend towards de-urbanisation.

State Governance

Scenario 3 – There is an increase in authoritarianism and people have accepted the controls implemented during the pandemic. High unemployment and lack of availability of necessities leads to an increase in centralized control of the economy and the society. Leaders retain all the power and opposition is suppressed.

Scenario 4 – There is a trend towards a "citizen state" in countries where governments worked in solidarity with citizens to manage the coronavirus crisis. Localised and distributed decision-making is supported by technology. The transition to a post-coronavirus state is smooth.

Global Order

Scenario 5 – Protectionism increases as countries compete for scarce resources and financing while being wary of foreign governments. Border controls are strict to limit the possibility of triggering additional waves of coronavirus. Old and new global powers try to (re)establish themselves while certain regimes use the crisis to crush dissent.

Scenario 6 – The pandemic is defeated by global coordination and cooperation. This encourages the strengthening of global organizations (eg. UN, WHO, etc) as well as more transparency, democracy, and science-based meritocracy. A new global order and governance system is put in place that has "world government" powers over international issues and future threats.

Socio-Ecological

Scenario 7 – Short-term interests are the priority. Trust in institutions has been eroded by fake news and conspiracy theories. A scarcity mentality leads to fear, hoarding, unrest, and crime. There is a transition to a technocratic city-state form of government where "public" spaces and entities become private in the hands of the wealthy.

Scenario 8 – Nature and social health are the priorities. After the pandemic lockdowns are lifted, people have a renewed appreciation for social/mental wellbeing and nature. A new value system leads to an ecological transformation of the economy and society with an increased focus on agriculture, local production, and climate protection.

What are the implications to your country's or organization's resilience requirements?

Scenario planning has been accused of being too theoretical and too far from concrete reality (Courtney 2003, Samet 2011) and mostly looking only at the risks and threats, not the success factors (Blackett report 2012). In this method we make the leap from hypothetical scenarios to concrete actions.

To find the optimal set of actions we ask participants to assess the value of the selected actions in *all the extreme scenario environments.* The analysis matrix is large and it contains a significant number of action combinations. For the computation of the most efficient actions portfolio, we used Robust Portfolio Modeling.

Robust Portfolio Modeling (RPM) is a decision support methodology used for analyzing multiple criteria portfolio problems (Morton, et al. 2012). Based on combinatorial optimization techniques, the RPM identifies feasible and efficient portfolios of options. Feasible options are those that satisfy relevant portfolio constraints regarding limited resources. By efficiency we mean the situation where no other feasible portfolio offers more benefit. The chosen approach uses multi-objective zero-one linear programming (see detailed description in Liesio and Salo 2012, pp.163-169).
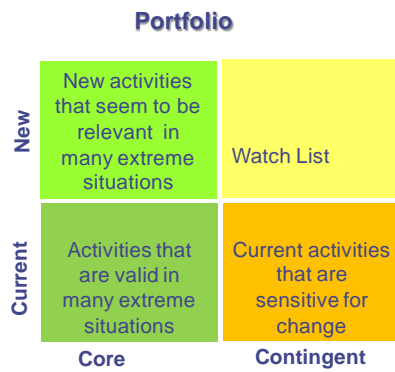
Portfolio

Figure 2 - The RPM method is used to identify those portfolios that i) satisfy the relevant constraints (e.g., the feasibility or fit with current strategy), and ii) optimally help to build success across the possible extreme futures, (i.e., build resilience)

Based on the identification of efficient portfolios, the options can be classified into:
1. Core options included in all efficient portfolios (Current core activities & New core activities shown in green in Figure 2)
2. Contingent options (current activities and the issues to include on the follow up list) that are included in some but not all efficient portfolios
3. Exterior options included in none of the efficient portfolios (Liesio, et al. 2008) and thus excluded from our portfolio.