



ClimateWorks  
FOUNDATION

# 2050 Today

June 14 – 15, 2018

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Megatrends: automation, artificial intelligence, and  
inequity

Pre-read packet

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## Background

Cutting-edge technologies—including advances in automation, artificial intelligence, and machine learning—are expected to affect future economic systems, employment, and even social cohesiveness. While the future is uncertain, we can expect that we will begin to see further changes in the political economy of our work. This parallel session will use breakout groups to crowd-source perspectives and creative thinking to hone in on the implications of these megatrends for a robust and durable philanthropic climate investment portfolio.

## Session objectives

Share findings from the pre-event workshop, encourage input from a range of regional perspectives, and explore ways to better consider and track the risks and uncertainties posed by these megatrends.

## Key Takeaways from Pre-read Materials

This pre-read from session facilitator Horacio Trujillo, which he developed with his colleague Robert Lempert, presents the concept of ‘Risk Governance as a Model for Addressing the Complexity of Decarbonization.’ We have identified this concept as particularly promising for considering how to manage the implications of megatrends such as AI, automation, and inequality on philanthropy’s efforts to address climate change and achieve net-zero emissions by mid-century.

### **The Complexity of Decarbonization**

- Decarbonization could be considered a model example of a “complex” problem, as opposed to a simple or even complicated problem.
- Recognizing this complexity and orienting our approach to addressing it is necessary to be successful in achieving global goals for decarbonization.
- Acknowledging social, economic, and technological uncertainty is essential to adequately considering the possible pathways forward for mitigating climate change.

### **IRGC Risk Governance Framework**

- IRGC's framework identifies five elements of risk governance: Risk Pre-Assessment; Risk Appraisal; Characterization and Evaluation; Risk Management; and Risk Communication.
- Management of complex risks should be characterized by flexibility for continuous improvement, regularly updated based on new information and understanding.

### **The Stages and Deficits of Risk Governance**

- To identify and avoid the most commonly occurring actual and potential challenges in risk governance, the IRGC outlines the stages in two processes which can each be addressed:
  - Understanding: Assessing Risk
  - Acting: Managing Risks
- Risk governance deficits – failures in the identification, framing, assessment, management and communication of a risk – are quite common. What is thus critical for those engaged in risk governance is to identify, understand, and appropriately work to address these deficits over time.

## **Risk Governance as a Model for Addressing the Complexity of Decarbonization**

The rise in global temperatures due to human activity is a prime example of how changing conditions in our world can portend risks with more difficult-to-comprehend consequences, uncertainties, and time scales than previously known.

Given the difficulty of comprehending the challenge, the discussion of solutions to climate change is too often characterized by simplistic narratives, such as that we can stop climate change by transitioning the production of electricity to renewable sources.

While mitigating climate change will unquestionably require a transition to low-carbon generation of electricity, decarbonization cannot be realized by a transition to even zero-carbon electricity generation without a number of other transitions, ranging from the ways in which we grow and transport our food to the ways in which we build our cities, work and commute to our jobs. These transitions are all the more necessary if we are to realize our collective goal of net-zero carbon emissions by mid-century.

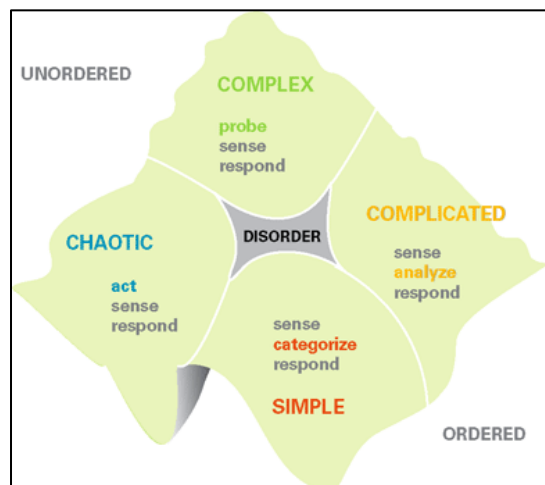
The challenge posed by simplistic narratives regarding decarbonization highlights the need to think more carefully about how to develop adequate governance of the risks associated with decarbonization pathways.

### **The Complexity of Decarbonization**

With its many inter-related factors and unknowns, decarbonization could be considered a model example of a “complex” problem, as opposed to a simple or even complicated problem (which adhere to axioms and rules, even if multiple and varied, and as such can be managed with systems and processes of their own).

Recognizing this complexity and orienting our approach to addressing it is necessary to be successful in achieving global goals for preventing the warming of the Earth to levels that would pose irreversible catastrophic risks. Contributing to the complexity of the challenge of decarbonization is the uncertainty in our understanding of the course of broader economic, social, political, and technological change in our world that provides the context for any possible pathways for decarbonization. Thus, focusing on the risks and uncertainties posed by these broader forces are necessary for a more robust long-term strategy to achieve climate stabilization.

**Figure 1: “Cynefin” Framework of Operative Contexts by Snowden and Boonei**



Acknowledging this social, economic, and technological uncertainty is essential to adequately considering the possible pathways forward for mitigating climate change and particularly for advancing deep decarbonization. Many discussions today present and rely on analysis that doesn’t adequately consider this uncertainty and the possibility of appropriately managing such uncertainty.

The greater risk may well be that by not incorporating uncertainty more explicitly into our analysis of solutions we can contribute to overconfidence that could lead us to single-mindedly pursue solutions that might not come to fruition as planned and could leave us with even worse prospects for realizing deep decarbonization by 2050.

Incorporating into our analysis of decarbonization a better understanding of uncertainty – not just regarding climate change and decarbonization, but especially of these economic, political, social, and technological changes more broadly – should encourage us to be even more confident in our ability to mitigate climate change by being more careful about thinking about the approaches needed to address this challenge.

In light of the challenge of managing complex challenges characterized by significant risk, “risk governance” has emerged as a framework for applying the principles of good governance to the identification, assessment, management and communication of risks to enable societies to benefit from social, economic, technological and other change while minimizing the negative consequences of the associated risks.

In particular, one of the most critical observations from risk governance discussions is that because traditional forms of governance (i.e. government) often adapt and evolve more slowly than social change occurs – particularly in an increasingly globalized world with rapid technological advancement – effective governance of many risks requires the engagement of stakeholders beyond government and

similarly the development of mechanisms beyond those traditionally looked to for such governance (i.e. public policy) that can be more responsive.

In this note, we present the International Risk Governance Council's (IRGC) Risk Governance Framework as a means of spurring discussion about the need and potential for new arrangements for effective governance of decarbonization. We introduce the IRGC framework as a means of facilitating discussion among stakeholders about the potential for improvement of risk governance for decarbonization. As part of this introduction, we provide an illustrative partial assessment of risk governance deficits regarding decarbonization as a means of prompting further inquiry among stakeholders.

### **IRGC Risk Governance Framework**

IRGC's framework identifies five elements of risk governance:

- Risk Pre-Assessment – early detection of the risk to provide warning and “framing” the risk in order to provide a structured definition of the problem, of how it is framed by different stakeholders, and of how it may best be handled
- Risk Appraisal – combining a scientific risk assessment (of the hazard and its potential probability) with a systematic concern assessment (of public concerns and perceptions) to provide the knowledge base for subsequent decisions
- Characterization and Evaluation – in which the scientific data and a thorough understanding of societal values affected by the risk are used to evaluate the risk as acceptable, tolerable (requiring mitigation), or intolerable (unacceptable)
- Risk Management – the actions and remedies needed to avoid, reduce, transfer, or retain the risk
- Risk Communication – how stakeholders and civil society understand the risk and participate in the risk governance process

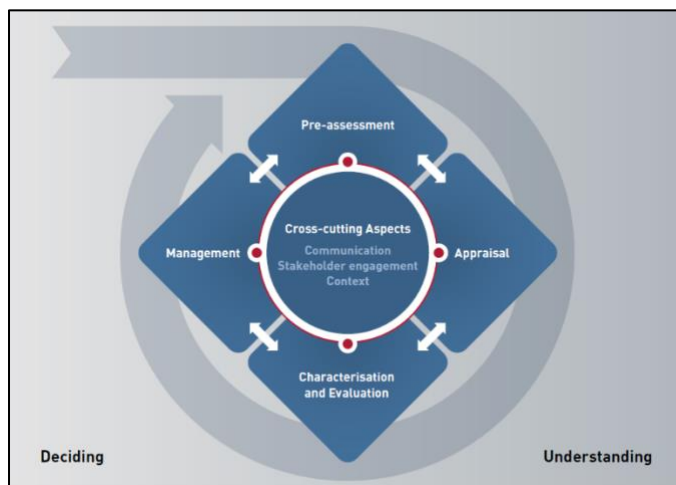
IRGC represents these five elements as related in how they contribute to “understanding” the risk governance challenge and “deciding” on governance of the challenge. Of note in this representation is that the model suggests that these elements are part of a cycle – that one can think of the process of governance moving from pre-assessment to appraisal to characterization and evaluation and then management of the challenge – but that the elements of this cycle are inter-related bi-directionally.

This representation is suggestive of the need for ongoing management of complex risks, like decarbonization, characterized by flexibility for continuous improvement, regularly updated based on new information and understanding, as opposed to an orientation toward finding linear “solutions” to resolve the problem.

Also of critical importance is the centrality of communication in both understanding the challenge and making decisions about governance of the challenge – which can similarly suggest the importance of thinking about how to communicate the need for and potential methods for pursuing decarbonization.



**Figure 2: IRGC Risk Governance Framework (Source: IRGC Website)**



When it comes to decarbonization, an assessment of these elements can suggest opportunities for improving risk governance regarding the pursuit of decarbonization by 2050. In the list below we have adapted the IRGC’s list of these elements to language referring specifically to decarbonization to illustrate their relevance to the issue:

- Risk Pre-Assessment – early detection of the risk *of not being on course to achieve decarbonization by 2050* to provide warning and “framing” the risk *of failing to decarbonize* in order to provide a structured definition of the problem, of how it is framed by different stakeholders, and of how it may best be handled.
- Risk Appraisal – combining a scientific risk assessment (*of not being on course to realize decarbonization by 2050*) with a systematic concern assessment (*of public concerns and perceptions regarding being on- or off-course to realize decarbonization by 2050*) to provide the knowledge base for subsequent decisions.
- Characterization and Evaluation – in which the scientific data and a thorough understanding of societal values affected by the risk *of not being on course to realize decarbonization by 2050* are used to evaluate the risk as acceptable, tolerable (requiring mitigation), or intolerable (unacceptable).
- Risk Management – the actions and remedies needed to avoid, reduce, transfer, or retain the risk - implementation and monitoring of deep decarbonization efforts and other social objectives, and adjustment of these efforts as we learn more.
- Risk Communication – how stakeholders and civil society understand the risk *of not being on course to realize decarbonization by 2050* and participate in the risk governance process.

### **The Stages and Deficits of Risk Governance**

To identify and avoid the most commonly occurring actual and potential challenges in risk governance, which the IRGC refers to as “deficits,” it is useful to look at all stages of the risk governance process.

The IRGC outlines the stages of the risk governance process and the relationships among them, as depicted below:

- Figure 3: Stages of the Risk Governance Process – Understanding: Assessing Risk.
- Figure 4: Stages of the Risk Governance Process – Acting: Managing Risks.

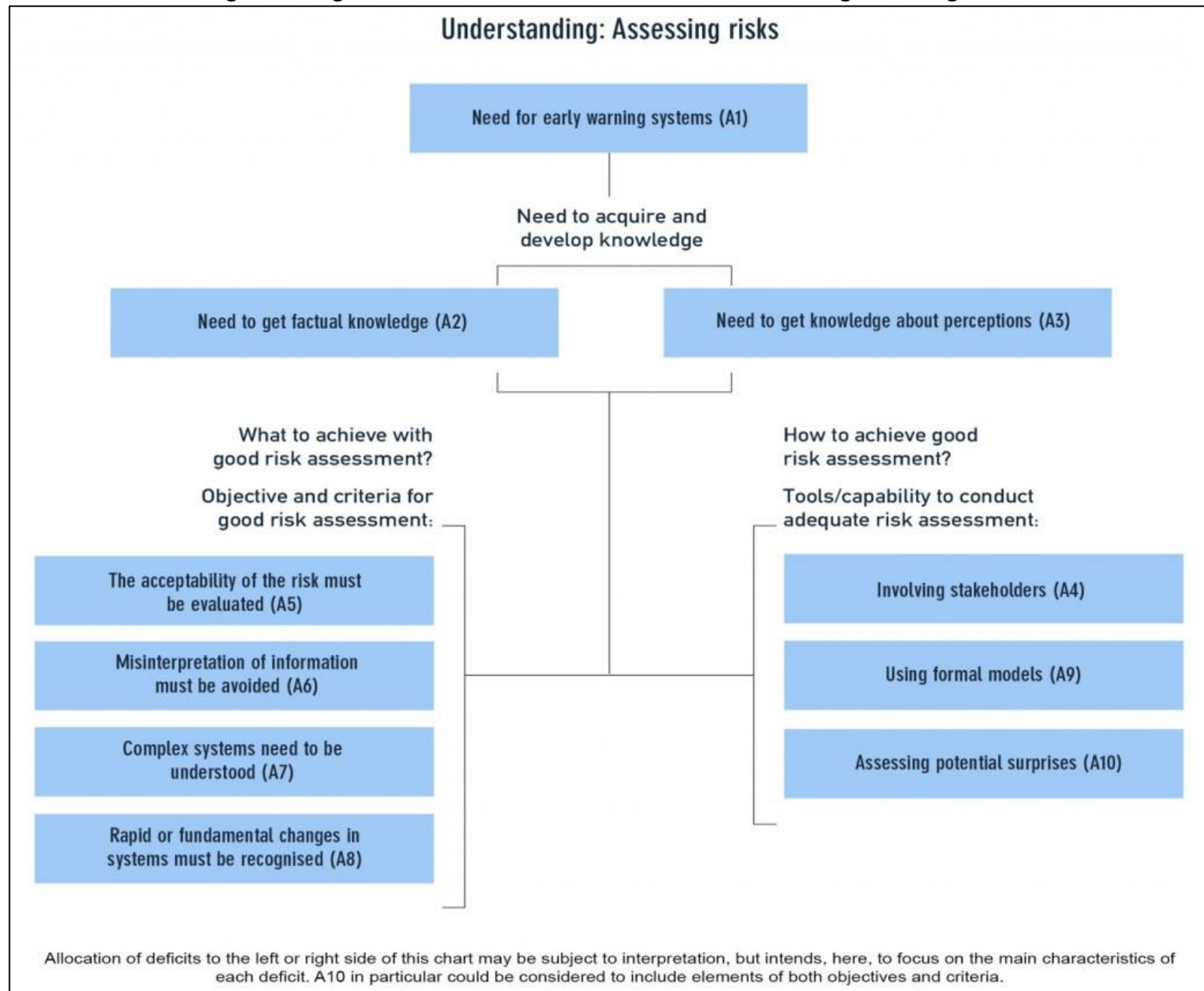
Risk governance deficits – failures in the identification, framing, assessment, management, and communication of a risk issue or of how it is being addressed – are quite common. What is thus critical for those engaged in risk governance is to identify, understand and appropriately work to address these deficits.

Among the consequences of risk governance deficits identified that are applicable to decarbonization include:

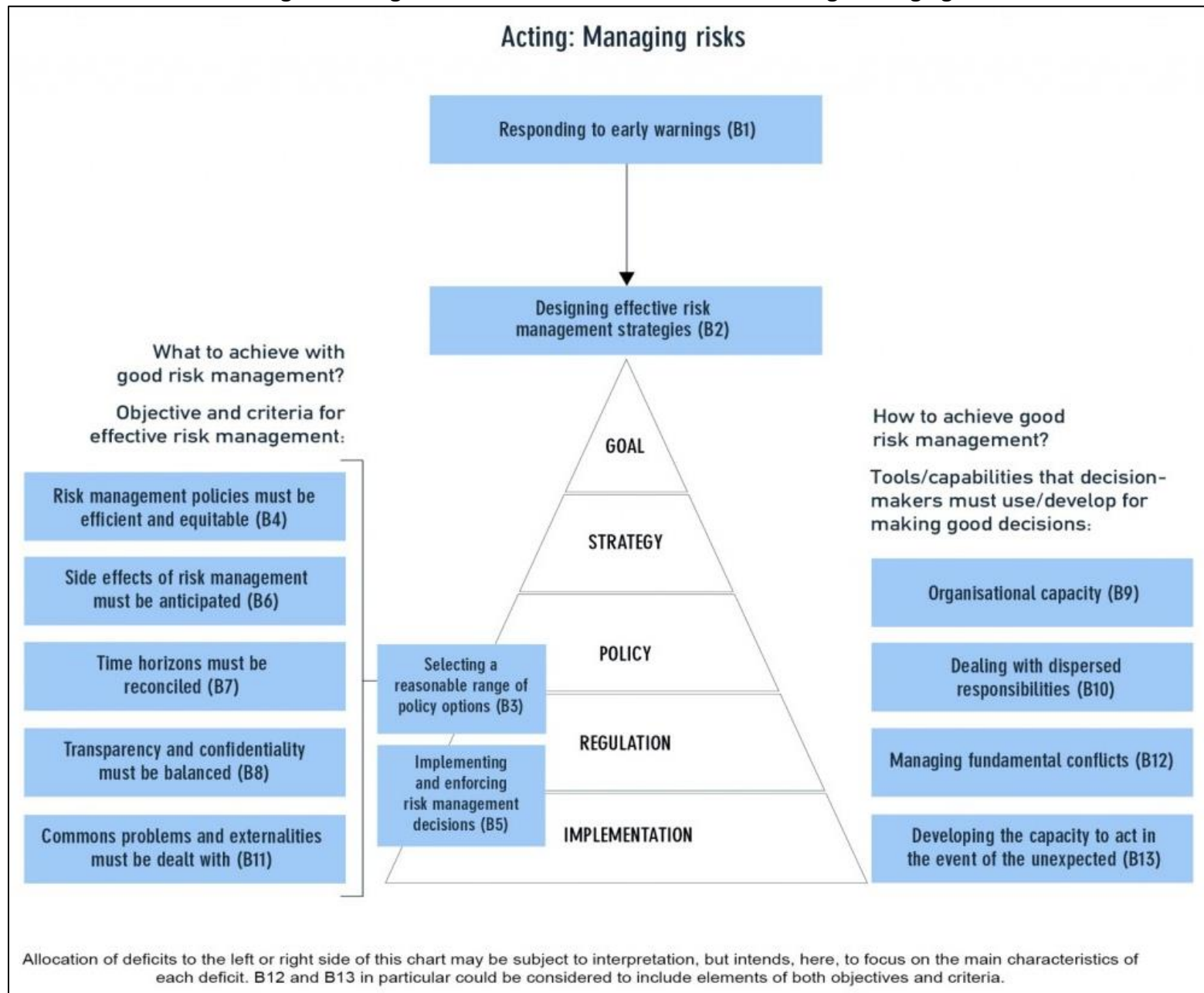
- Failure to move from ‘business as usual’ and trigger action,
- Excessive focus on high profile risks [or risk management strategies], to the neglect of higher probability but lower profile risks [or risk management strategies],
- Inequitable distribution of risks and benefits between countries, organizations and social groups, and
- Lost opportunities.



**Figure 3: Stages of the Risk Governance Process – Understanding: Assessing Risk**



**Figure 4: Stages of the Risk Governance Process – Acting: Managing Risks**



Source: IRGC Website