Climate change: narrow illusions, broad risks.

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Abstract – Sector by sector projections of abundance and safety create an illusion overshadowing the overall unsustainability and the fact that a man-induced unbalance in nature could trigger an unbalance in human society that will re-impact nature and paralyze human response, initiating a potentially global, catastrophic cycle. What risks might we have to face? This article discusses the conception of a standard analysis approach to harness the complexity of global warming.

Keywords – climate change, systemic instability, adaptation, matrix of complexity

1. The broad picture

Sector by sector, projections give an illusion of abundance. The fossil energy industry – to give just one example - is fed up of predictions about the imminent “peak” of oil output: new technologies, new sources, new locations, new market perspectives, make it clear that we still have a good way ahead. The same can be said about agriculture against growing populations and shrinking lands, manufacturing against market crisis and pollution, and so on.

But then, if we consider every single segment in the context of the limits of our home planet, the outcome changes: there is no free lunch. It is true that technology can greatly improve the ratio between invested capital and production benefits, and this opens the sector by sector perspective of abundance and sustainability. But ever growing improvements, encouraging in each sector, are not enough to compensate the overall erosion of our planet’s resources. Different sectors are competing among them also for sustainability resources and the overall result - to put it in the terms of the ecological footprint – is that today humanity uses the equivalent of 1.5 planets to provide the resources we use and absorb our waste and it now takes the Earth one year and six months to regenerate what we use in a year.

In practice, this means that yes! Oil output - for instance - will still be there for a while. But even oil industry should be concerned if its emissions favor global and trans-sector dynamics that erode livelihoods as a whole and can lead to social instability even in their extraction areas, making their abstract abundance just unattainable in the real world.

Environmental erosion has many faces, but one is particularly threatening and clear in its implications. Already in its groundbreaking Report of 2006, The Economics of Climate Change¹, Sir Nicholas Stern pointed out that a moderate and bearable investment in mitigation now would prevent a much heavier investment in adaptation to climate change in the future. This conclusion – with few criticisms – is now widely accepted. Nonetheless, it is a fact: greenhouse gases emissions, on a global scale, are on the rise. Therefore, irrationally, we opted for a bigger effort in the future to escape a lesser one now. It is only human, if each decision is taken based on a sector by sector illusion of abundance. The accent, thus, is on adaptation – we chose to give up mitigation - a strategy which is obviously overlapping on risk management in a way that should concern also private stakeholders. But, what do we have to adapt to? Or - in other words, but it means exactly the same - what kind of risks do we have to prepare for as societies, industries, and individuals?

2. Mankind and the ecosystem

With global warming, more and more extreme weather events await us: almost everyone agrees. But, to what extent do they represent a risk? What chains of consequences do they set in motion? And what about non-extreme but progressive, wide impact, changes in climate patterns? And what if, as some models suggest, the whole climate system is heading to a general abrupt shift - a global and permanent extreme weather event - in case we reach some tipping points? And, should we consider the fact that the impact of climate change on human society could come through other natural modifications caused by climate change, like ocean acidification and depletion, increase of areas of incidence of diseases, or pre-

Figure 1: Example 1: UN Secretary-General’s report on “Climate Change and its Possible Security Implications”, September 2009 (A/64/350), page 6.

Historic viruses frozen in permafrost waking up? Finally and most importantly, what will be the behaviors that the shifting climate paradigm will induce in human society? Strengthen its determination to mitigate and adapt, or foster conflicts and divisions that will paralyze mankind and leave it incapable of reacting in a united, effective, and coherent way?

Climate evolution – localized or general, abrupt or progressive – puts in motion cycles of consequences that oblige us to rethink the amplitude of two concepts: disaster and risk. Diminishing agricultural yields, for instance, cause migrations, pressure on urban areas, tensions for land and water, possibly violence, affect the capability of families to educate their children or to invest in the growth of their economic activity, and so on. The ever faster melting of the Arctic modifies maritime routes, opens a race for natural resources, destroys the life and culture of native Inuit populations, etc. Examples could be multiplied indefinitely, and even what we labeled “Arab Springs” have been in part caused by climate change.

Do these dimensions – that go well beyond immediate damages to infrastructures or assets – imply risks? Are these dynamics a disaster? In our instinctive and classical way, these phenomena belong to other areas of planning and management. But, indeed, the risks management community cannot ignore them. And, summing them up, they are the key systemic risk mankind is facing, because a disorderly transition to a new climate paradigm brings about all the ingredients of mankind division and conflict: if the financial crisis of 1929 was enough to divide nations and ultimately bring them to World War II, what about a rapid melting of the Himalaya glaciers? A scenario in which the huge areas regularly irrigated by rivers born in the Asian chain swiftly become lands in which extreme droughts follow disastrous floods – glaciers act as reservoirs of water that regulate constant output – means that hundreds of millions of people will be deprived of their livelihoods: if the same socio-economic dynamics that led to the last world war are triggered, in a region where four States – China, India, Pakistan and Russia – have nuclear bombs, we have the ingredients of World War III. An unbalance in nature, caused by mankind, this way could trigger an unbalance in human society that will re-impact nature and paralyze rational human response, initiating a potentially global, growing, catastrophic cycle. We have to understand this complexity and prepare for it. Above all, while we still have time, maybe in this light we understand what “adaptation” will really mean: possibly coping with a world of States’ failure, violence, famine, diseases, disorder, lack of services, and much more; and maybe finally we decide to seriously invest on mitigation, to escape from a horizon where risk management becomes number one priority for every individual and organization.

3. Beyond illusions: Gaia’s Matrix

With some historical exceptions – that at times brought to the collapse of entire civilizations – mankind was able to build a growingly complex society taking for granted a stable and unchanging ecosystem. Since we kick-started a trend of growing modifications, this reflects on all aspects of human life, inducing changes that cumulate, interact, and have to be monitored and managed. Awareness of such complexity dates back to the 1980s and emerged clearly in the logics of the first Global Environment Outlook, released by UNDP in 1997. Since then, various at-
tempts to build a prism of interpretation and integrative management have been launched, many of them focused on risks. Figure 1 and 2 show two examples.

Many more analysis of this kind exist and, notably, the latest editions of the Global Risk Report do place climate change within a framework of influences among various worldwide risks. Each contribution is extremely valuable where it highlights different nexus and perspectives and explores segments of this complexity. Nonetheless, the time is ripe to attempt to extract from them a standard predictive tool, simple enough to be practical but comprehensive enough to portray the complexity. Repercussions and interferences among various dynamics and different sectors can be described in terms of a matrix, reflecting two aspects of globality: geographical worldwide interconnectedness and global systemic interconnectedness. Indeed, tackling climate change and its consequences is not a task that can be conceived in a national – nor “private” - perspective so that, on a global scale, the aim of the matrix is to establish a relationship among different orders of factors. The problem is how complex should it be and which factors should it take into account. A long examination of the approaches undertaken so far suggests that a good balance between simplicity and the need to cover relevant sectors is assured by investigating cyclical repercussions among environment, peace and stability, development, and human rights. In this light, if our immediate goal is to assess likely impacts of global warming on human society, we could conceive and be guided by a unilateral matrix:

![Unilateral Matrix](image)

This provides a guideline to assess immediate impacts of environmental modifications on the most relevant aspects of mankind’s organization. Yet it is not enough: we are not only victims of a change that we have caused ourselves, we are also actors of its future developments and this fact emerges, while its implications become predictable, if the matrix becomes dynamic and multilateral:
This is not an easy tool to maneuver and we are far from being able to use it as a rigorous quantitative tool. Still, it gives the perspective of the interconnectedness of the planet and prevents illusions frequently created by analysis and forecasts run sector by sector. The proposal is therefore to policymakers, but also to actors of different industries, to develop this broader approach in evaluating risks and assets for the future in their own field of activity; one that confronts us with a forgotten reality: we are part of the ecosystem, embedded in a web of reciprocal relations with it, not above nature as we proudly thought. We may feel rich and strong in our own nation, industry, or family; but in the planetary cycle, please, do not feel safe too soon.

Citation