From Economic Efficiency to Systemic Resilience – A New Development Story

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The post-World War II development story to date

The world has seen tremendous growth in material output and consumption over the last 70 years, and with it, comfort and wealth for billions. This "Great Acceleration" has seen more than a tenfold increase in global GDP since 1950, during which time, the world population grew just over threefold. This masks even more spectacular per capita income growth in some countries that have gone through exceptionally rapid economic development, such as South Korea (which has seen average incomes increase by more than 30 times). It also masks huge inequalities in the growth story. For example, many countries in sub-Saharan Africa, including the Democratic Republic of Congo, Sierra Leone, as well as others across the world, including Afghanistan and Haiti, have actually seen their average per-capita incomes decrease over this period[2].

The development discourse has thus been one of finding solutions to absent or faltering growth in emerging economies, so that they can achieve education, security, disease and mortality reduction and life expectancy levels that approach those of the most advanced economies. This is a laudable aim and understandable in the context of a planet of plentiful resources, a stable, benign environment, and a multilateral pact to seek peaceful solutions to conflict and geo-political tensions. It draws from theories and models of growth and development that focus on ever-greater efficiency in converting input of natural capital and resources (such as land and fossil fuel-derived energy), manufactured capital (such as infrastructure and technologies) and human labour into output, through increasingly efficient and innovative use of this involvement.

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Our current world of compounding, cascading risks

But this pact - to achieve universally high standards of material wealth and ever-greater output – has largely ignored, or at least downplayed, the possibility of accelerating, interconnected risks. These risks are now becoming undeniable, as they materialize through crises, often at global scales that leave no one unaffected. They have arisen from many different drivers whose pace has intensified over the period in which the Great Acceleration has played out: the plundering of environmental resources, with consequences for global heating, land, water and air pollution, harming people and decimating species, as well as the spread of zoonotic diseases as societies clear land to occupy new areas. In addition, the invention of new technologies has the power to do immense good and enhance productivity, but may also cause immense harm if left unregulated. Furthermore, a poisoning of the well of societal and political discourse has come from a loss in shared sense-making across communities and nations. At the same time, inequality, both within and between countries, has proven to be a continuing blight on this era of rapid average global development, making societies more vulnerable to discontent, dissent and a lack of social cohesion and solidarity. Together, these risks cast a dark shadow over ongoing efforts to drive economic growth and development going forward.

Not only are individual risks greater than before, but owing to their shared roots, they have the potential to materialize into crises simultaneously or in close succession and exacerbate each-other. We see this today, with widespread conflicts across the world, economic hardships for the poorest as a result of an ongoing cost-of-living crisis, and the impact of extreme weather whose scale and intensity is demonstrably greater as a result of a warming climate. Moreover, we live in a globalized, interconnected world to a greater extent than ever before, based on transport and information networks and supply chains designed primarily for efficiency and cost optimization, with relatively little resilience or redundancy built into them. This means risks that materialize into crises can rapidly spread across systems and scales, exacerbating risks in other regions and systems in a cascading way. Cyber risks and misinformation can spread at the speed of information networks, diseases at the speed of air travel, and supply chain shocks at the speed of freight transport.

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2 https://ourworldindata.org/economic-growth-since-1950

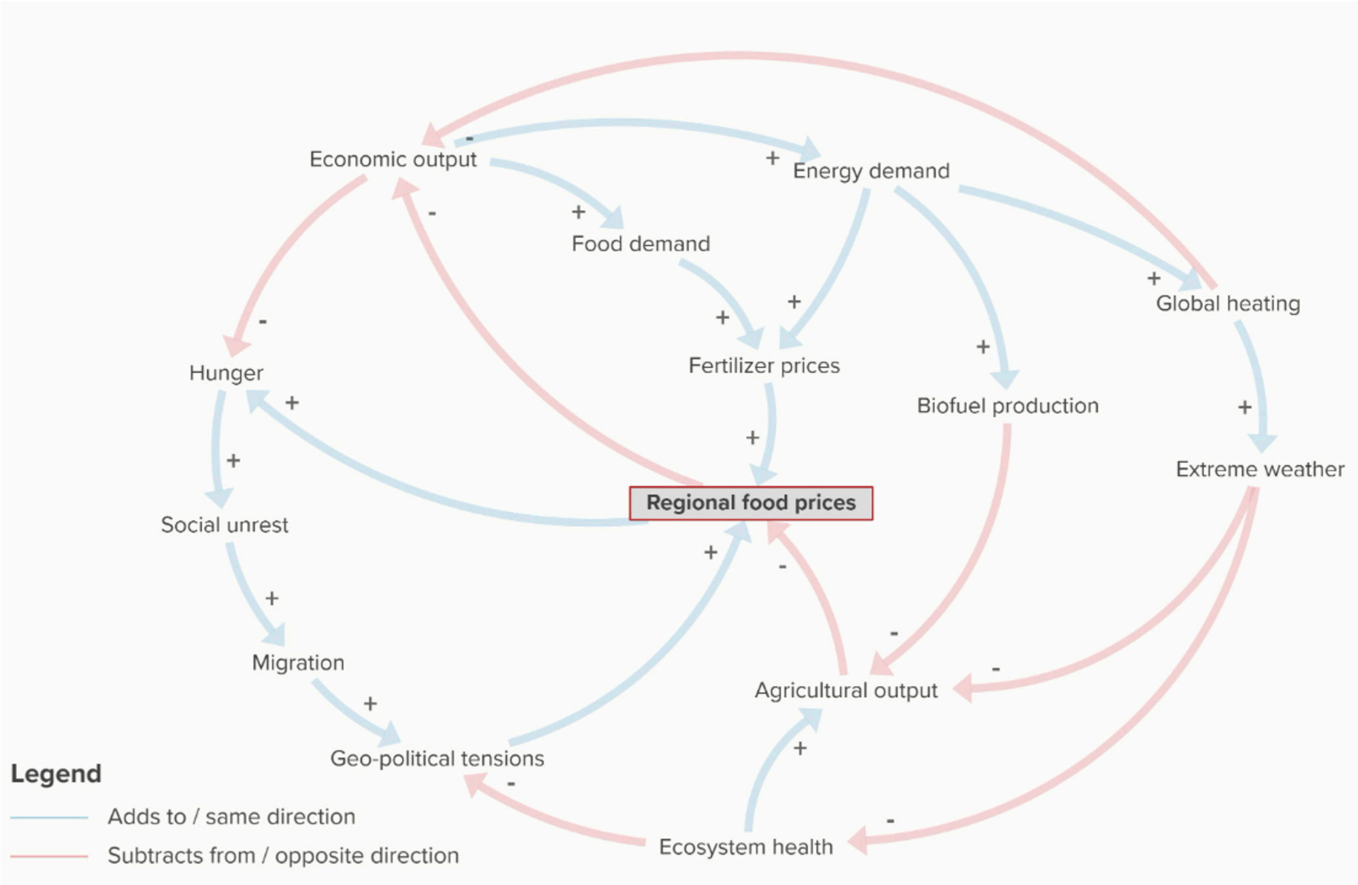

Figure 1: Positive (+) and negative (-) casual links in recent food crises (ASRA's own analysis, based on detailed analysis of 2008 and 2022 global food-energy crises - forthcoming). A "+" (blue) arrow indicates that where the casual variable increases, this leads to an increase in the dependent variable. A "-" (pink) arrow indicates that an increase in the causal variable leads to a decrease in the dependent variable. Note that this is not a comprehensive set of links but a stylized diagram illustrative of many proximate and related causes of regional food price increases as experienced in past crises. Produced using Kumu (2025)[3]

03
A shift from efficiency to resilience

A fundamental shift from just-in-time supply chains and from risk management focused on individual hazards and harms, is, therefore, required if the development story is to meaningfully continue. This necessitates an understanding of the concepts of systemic risk and resilience, far beyond what exists in current risk management practices. Far from being a costly 'compliance' measure, as is often the case with traditional risk management, this shift is instead a central tenet of credible, achievable and sustainable development going forward. Systemic risk management will require understanding the potential hazards to different people, communities, organizations and ecosystems, not just from different sources, but from the interaction of these different sources, accounting for the compounding and cascading interactions outlined above. It further requires understanding the concept of systemic resilience, and in particular the policies, measures and actions that can address these systemic risks, through preparing for them, mitigating them, adapting to them and ultimately transforming systems away from inherently risky, unjust states. This is likely to require a very different development paradigm, as it means each new policy, measure or package of interventions must address risks both in their individual and interacting sense.

3 https://kumu.io

How can our current development aims help drive this resilience agenda? Reducing poverty, inequality, environmental pollution and conflict would all go a long way towards addressing the multiple societal and environmental stressors that have, as discussed above, created the myriad overlapping and interacting risks that we now face. But we have seen a considerable backtracking against these objectives in recent years, with much of this stemming from the COVID-19 pandemic and its consequences on health, social, economic and financial systems. This has been compounded by climate change and the devastation wrought by extreme weather to agriculture, infrastructure and communities across the world, particularly in the poorest countries. We need a systemic risk and resilience approach to get back on track.

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Operationalizing systemic risk assessment to identify risks and potential crises

This systemic approach requires, at its heart, a comprehensive conceptualization of the different risks facing us in a structured, holistic process of systemic risk assessment, and the design and implementation of systemic risk responses, in a way which differs fundamentally from traditional risk management practices. Standard risk management considers severities and likelihoods of individual risks, laid out in risk matrices that identify high impact and/or high likelihood single risks as the most worthy of mitigative action. However, as previously discussed, it is the combination of risks that may prove to be our undoing through their compounding and cascading effects.

Because compounding risks involve two or more risks occurring simultaneously or in close succession, they can readily push systems beyond their single-risk limits. In addition, because cascading risks involve the materialization of a risk leading to an exacerbation of the severity or likelihood of dangers elsewhere, they can result in far greater harm than initially envisaged. One example is the multiple impacts of climate change: What if storms compound with heat-induced crop reductions to lead to displacement and hunger, cascading into conflict and migration in already unstable regions? Such entirely plausible interacting risk effects are rarely conceived of in the mainstream climate literature, even in the latest estimates from prominent climate modelling exercises, which have been updated to account for the most up-to-date research on climate damages; these often omit the devastating consequences of cascading and compounding crises[4].

Understanding the potential occurrence and dynamics of systemic (cascading, compounding) risks requires an explicit consideration of systems themselves, be they food, climate, health, societal or financial systems. This means asking who these systems serve, who is vulnerable within them, what these systems' goals are and should be, and what systems they link to - both those systems that affect them and those systems that are affected by them. For example, as depicted in Figure 1, we have seen risk dynamics leading to food insecurity for tens of millions of vulnerable people across the world, whilst geo-political conflicts have led to a rise in energy prices and fuel poverty across many regions. At the same time, many multinational agro-commodity companies and energy suppliers have made vast profits through inflated prices. Risks materializing into crises create not just harm for millions, but opportunities and benefits for others. It is only through understanding system 'architecture', including an honest examination of those who stand to gain and those who stand to lose from the materialization of risks into crises, that we can approach meaningful systemic risk assessment.

More generally, a structured analysis of the long-term contextual factors driving systems and their interconnections, the stressors that can develop within and between systems, the triggers that could turn stressors into crises, and the compounding and cascading impacts of such crises, should help elucidate the risks and timelines for their build-up and materialization. Such considerations require a broad suite of data and evidence, and a diversity of perspectives from the different stakeholders involved in different systems' architecture and operations.

4 https://www.ngfs.net/en/publications-and-statistics/publications/ngfs-scenarios-phase-v-launch-event

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Implementing a systemic resilience paradigm

A further critical consideration in systemic risk assessment, beyond just analysis of risk materialization and risk transmission within and between systems, concerns the responses that could govern risk dynamics before and after crises occur. This requires identifying the most powerful intervention points for such responses, both within and between systems, and the deepest drivers of risks, so that causes, rather than just symptoms, can be addressed.

In order to succeed in a volatile, uncertain complex and ambiguous (VUCA) world, responses must maximize synergies and minimize trade-offs with existing responses to tackle other societal and environmental goals and be as resilient as possible to future shocks and surprises. For example, it would be unwise to respond to climate change through the mass build-out of low-carbon technologies whose performance or even viability is harmed by the implications of a warming climate itself. The vulnerability of future hydropower developments in situations of increasingly likely and severe hydrological droughts, or the viability of bio-crops in possible situations of extreme heat-related crop yield reductions, must be central considerations for this particular set of response efforts. More generally, a shifting mindset from 'least cost' to 'least risk' or 'maximum resilience' would be highly advisable when planning developmental infrastructure investments in the context of an uncertain world[5].

Responses must also be adaptable to changing conditions and new information, recognizing that there is no linear or incremental path to change in the future. Some technologies, infrastructures and other investments may well underperform, overrun in terms of cost, or create hitherto unplanned side-effects, whether in terms of environmental pollution, injustice or geo-political tensions. In addition, we are now in a world of discontinuities and potential tipping points, where sudden changes can occur as systems reconfigure in response to either systemic crises or in response to rapid transitions aimed at shifting or transforming them away from their risky states. We are increasingly aware of the multitude of climate tipping points on the horizon[6], which may require accelerated mitigation, adaptation or other resilience actions at speeds and scales that are entirely excluded from national climate plans.

This means conceiving of and implementing policies and responses, which are far more holistic and adaptive than ever before, and which go well beyond previous attempts to 'solve' for individual market failures (be they pollution, or inequalities). This is no easy task, since responses that address multiple challenges at once - but that are also able to be adjusted at speed in light of evolving dynamics and emerging evidence - would require a great deal of social cohesion, cross-party political agreement and trust in governance institutions. We have seen quite the opposite in recent crises, with mis- and dis-information hampering efforts to implement measures that respond to changing circumstances, most notably when the world was faced with a novel and fast-moving pandemic in 2020. Rebuilding public trust is, therefore, critical, and will require a re-examination of governance and institutional mechanisms to achieve constructive political dialogue and civic engagement, whether through citizen assemblies, more local democratic actions, or more political honesty and media scrutiny around the real choices and implications facing societies.

Daunting though this may be, there are many opportunities to draw good practice lessons from the past. Countries across the world have readily available experience of designing and implementing 'general purpose' resilience measures to enhance societal well-being, social cohesion and trust, and to increase resilience in the wake of multiple challenges. Post-World War II settlements around major expansions of welfare states, including through the public provision of education, pensions, health and social care, as well as through public infrastructure investments, can teach us much about the measures required to ensure that people and communities are prepared for an uncertain future. However, our current 'polycrisis', stemming from rapid post-WWII socio-economic development, environmental degradation and emerging technologies such as AI, presents novel challenges, which may also require entirely novel responses. There is thus a need to both learn from the old and adapt to the new. Going forward, each developmental measure or programme must, therefore, be examined through the lens of the broad-natured, systemic resilience it can lend to societies in the context of multiple, and in some cases novel, interacting risks.

5 https://www.frontiersin.org/journals/climate/articles/10.3389/fclim.2023.1149309/full

6 https://www.science.org/doi/10.1126/science.abn7950

An important way of assessing existing responses or designing new ones is by assessing them against explicit criteria in line with principles around systemic risk management. These principles include notions of universal responsibility, justice, compassion, individual and collective agency, the recognition of the criticality and importance of non-human life and ecosystems, and the complexity and uncertainty of systems (Figure 2).

Systemic risks characterized by		Navigating systemic risk requires principles
Self-interest	→	Universal Responsibility
Anthropocentrism	→	Non-Human Sanctity and Interdependence
Inequity and injustice	→	Justice
Rule of the few	→	Individual and Collective Agency
Reductionism	→	Complexity
Overt focus on knowable risks	→	Uncertainty
Interactions across local and global	→	Cross-Scale
Narrowly-focused evidence and methods	→	Multiple Ways of Knowing
Lack of compassion	→	Compassion
Current systems creating crises	→	Transformation

Figure 2: ASRA's cross-cutting principles for systemic risk management[7]

Understanding how and where responses may fall short in these criteria or not adhere to these principles, and how they can be strengthened to become more effective in a systemic sense, is, therefore, essential.

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Valuing the role of addressing systemic risk in development

Implementing practices around systemic risk assessment and response, and ultimately shifting to a systemic resilience paradigm will not be possible without an explicit recognition of the value of resilience and de-risking development. Encouragingly, in recent years huge strides have been made in risk management, for example, around disaster risks and multi-hazard assessments and preparedness measures, and through mechanisms such as the 2015 Sendai Framework. Nonetheless, proactive, prudent systemic risk management remains sorely lacking throughout the world, and this must be amended.

In the near term, this means implementing early warning systems (taking signals all the way from on-the-ground knowledge of communities to Earth system satellite observations) to ensure that materializing risks and escalating crises are spotted as soon as possible. It further necessitates targeting investments to ensure the ability of vital transport, communications, energy, food and water supply networks are able to operate during a variety of disruptions and crises and with multiple paths to restore services even under devastating failures. This will also require a re-focusing on design for resilience and rapid repair, accepting that not all disruptions and damages can be avoided. Functional, well capitalized insurance is a bedrock for ensuring investments flow towards these vital activities.

However, such investments will only be viable if their benefits are adequately valued. This means actively pricing the benefits of risk management into economic activities. Two economies producing precisely the same goods and services would have the same level of GDP, even though one might be operating on the basis of a far more fragile local environment, far greater inequality and with energy sources and technologies that create far more adverse unpriced or unaccounted for environmental and health impacts (known as negative externalities) than the other. Thus, their economic output, as a proxy for their economic health, is not at all comparable. It is through valuing and accounting for these measures that we can de-risk economic output and development and reduce these negative externalities. We can then begin to see the true worth of economies that invest in risk management measures.

7 https://www.asranetwork.org/insights/principles-for-systemic-risk

07
Implications for multilateralism and cooperation in a fractured world

Of course, no single country or economy can de-risk its own development pathway. This is because in a hyperconnected world in which human societies impact the global environment and climate, the nature of systemic risk is also global. Addressing it will, therefore, require a truly global, multilateral conversation and coordinated governance approach.

This is a daunting prospect in a world of increasing unipolarity and multipolarity, with a surge in nationalism hindering global responses to global commons challenges, whether around climate, biodiversity loss, international trade and cooperation, security, or the regulation and oversight of powerful new technologies. Addressing such global challenges requires a shared vision of development, towards social, economic and environmental health. It requires bold thinking on truly transformative approaches to the ways in which societies operate, both with each other and with nature, recognizing the complete dependence of societies on a stable and flourishing environment.

It is clear that current institutional structures are unable to either conceive of or enact long-term transformations towards less risky, more just and more environmentally, socially and economically healthy states. This lack of appropriate institutional architecture at multiple scales (i.e. whether locally, nationally or internationally) constitutes one of the greatest risks to successful development outcomes.

This area must also, therefore, be addressed with urgency and ambition, through establishing cross-departmental structures at multiple scales of governance, which allow for an integrated analysis of risks across policy and challenge areas. It must be supported by clear, ambitious visions of transformations, which nations can collectively buy into, such that they do not enact beggar-they-neighbour policies to protect themselves in the near term, but rather act collectively towards a plausible and attractive future vision that goes far beyond GDP growth narratives. This is all the more important because of the considerable risks created by transitions themselves. We have seen many examples of rapid social and economic shifts being exploited by those in or close to power in order to make huge gains for themselves, weakening social solidarity and creating new oligarchies, which ultimately result in less freedom for the majority.

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Concluding remarks: The opportunities of grasping this new development story

Our current notion of development as GDP growth, without accounting for risk escalation, natural capital destruction, increased inequality or other societal vulnerabilities, cannot continue any longer. Without a systemic conceptualization of these risks, which have brought us into a new polycrisis era, we will continue to see global-scale disruptions and only serve to undermine the resilience and security of our societies and ecosystems. This will result in billions to trillions of dollars of wasted investment and a huge cost in terms of people's and ecosytems' lives, health, prosperity and well-being.

The imperative to restructure analytical capabilities, policy and response measures, and governance architectures towards a systemic conception of de-risking development and towards shared transformational aims, is long overdue. We have an opportunity and obligation to rapidly enact such transitions. This places a much more complex set of challenges on development organizations than has been the case to date. Thus far, the development story has been one of first chasing macroeconomic growth and more recently environmentally sustainable and socially just growth.

Development organizations, with bodies such as UNDP at the helm, must shift towards a multi-objective resilience paradigm, in which the only effective development going forward is that which builds a greater level of local, national and indeed global preparedness to systemic risk, with the requisite preparedness, adaptation, mitigation and transformational measures built into these development actions. This will require explicit goals of human and ecosystem well-being to be placed at the centre of such development, rather than traditional measures of growth. Challenging though this may be, it presents immense opportunities to discuss and unearth what is really important to us as societies, as well as to realize the delicate interdependence of all societies, communities, economies and ecosystems on each other.

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