



Rebound: Building a More Resilient World



**Rockefeller
Foundation**

Innovation for the
Next 100 Years

ABOUT THE ROCKEFELLER FOUNDATION

The Rockefeller Foundation is committed to achieving equitable growth by expanding opportunity for more people in more places worldwide, and building resilience by helping them prepare for, withstand, and emerge stronger from acute shocks and chronic stresses.

Throughout its history, The Rockefeller Foundation has supported the ingenuity of innovative thinkers and actors by providing the resources, networks, convening power, and technologies to move innovation from idea to impact. From funding an unknown scholar named Albert Einstein to accelerating the impact investing industry, the Foundation has a long tradition of enhancing the impact of individuals, institutions and organizations working to change the world.

In today's dynamic and interconnected world The Rockefeller Foundation has a unique ability to address the challenges facing humankind through a 100-year global legacy of innovation, intervention, and the influence to shape agendas and inform decision-making.



Resilience for the Next Century

Judith Rodin, PhD

PRESIDENT, THE ROCKEFELLER FOUNDATION

It's a lesson we continue to learn with each passing year: we cannot predict where or when the next major shock or disruption to our well-being will manifest.

Perhaps it will emerge from our global financial system, just as we saw happen when the U.S. housing bubble burst and the ensuing credit crisis in Reykjavik rippled across the world. Perhaps it will be a result of our changing global climate, which caused the devastating floods in Bangkok or the Superstorm that, months later, continues to leave devastated coastal communities in the Northeastern United States. Or it could transpire in something as simple as a handshake, which once sent a pandemic from Asia travelling far across the globe at the speed of a 747.

Threats and stresses to our 21st century world come in all shapes and sizes, just as they have since the beginning of human existence. But what distinguishes today's threats from those of the past is the escalating rate at which they are occurring, without mind for geography or respect for man-made borders. Today, vulnerability in one area leads to vulnerability in others in a way that is fundamentally new. Issues once identified and

“We cannot predict where or when the next major shock or disruption to our well-being will manifest.”

analyzed individually – our environment, the economy, and social challenges – are now inextricably interlinked.

Exacerbating these issues are a growing global population and a warming planet. The latter is changing just where and how new populations will live, and in some cases, whether they will survive at all. And while globalization and free trade have increased the efficiency of markets, they may well be reducing the resilience of economies, and indeed societies. For example, while the proliferation of mobile communications in the developing world has enabled us to close the gaps between banking access and health inequalities among rural populations, these nations are now at-risk for cyber-attacks, including identity theft and fraud, which will attack a population that can least afford it.

This is just one example of how progress on our global challenges – health, access to education, economic growth, environmental sustainability – may be threatened in a way we cannot immediately control. What we can control, however, is how we to respond to these challenges, how we absorb the shocks of our world, and how quickly we spring back after a blow. In other words, we can control how resilient our institutions, communities, and people are against these disruptions.

But what, exactly, does “resilience” mean? Resilience means different things across a variety of disciplines, but all definitions are linked to the ability of a system, entity, community or person to withstand shocks while still maintaining its essential functions. Resilience also refers to an ability to recover quickly and effectively from catastrophe, and a capability of enduring greater stress.

Humans are not born resilient – we learn it, adapt it, improve upon it. The same is true for organizations, systems, and societies. But what makes some people or organizations more resilient than others? Through research, practice, and experience – including The Rockefeller Foundation’s 100 years of work – we have learned that resilient systems share five core characteristics:

- Spare capacity, which ensures that there is a back-up or alternative available when a vital component of a system fails.
- Flexibility, the ability to change, evolve, and adapt in the face of disaster.
- Limited or “safe” failure, which prevents failures from rippling across systems.
- Rapid rebound, the capacity to re-establish function and avoid long-term disruptions.

- Constant learning, with robust feedback loops that sense and allow new solutions as conditions change.

Yet, despite all we know about resilience, there is much more we have to do, share and learn, particularly across domains, to put in place the resilience strategies and, importantly, connect those strategies across sectors to successfully recover from the current and unknowable future risks we face.

As Mayor Bloomberg discusses in greater detail in his essay, Superstorm Sandy was a stark reminder of the urgency of this work, and underscored the importance of taking a holistic view of resilience across systems after the storm. At the invitation of New York State Governor Andrew Cuomo, The Rockefeller Foundation led the NYS2100 Commission to make specific recommendations to improve the strength and resilience of the state's infrastructure and systems. We looked across every aspect of society to identify vulnerabilities that put the entire system at risk, putting forth a final set of cross-sector recommendations, from the insurance industry to land use, from transportation to energy, and from finance to regulatory reforms - all of which contribute to a region's ability to bounce back after crisis.

There are plenty of measures we can take to help institutions, individuals, and communities build resilience in their systems and infrastructure, before those systems are tested by outside forces. The Rockefeller Foundation is currently supporting an initiative called the Asian Cities Climate Change Resilience Network (ACCCRN). This \$90 million project focuses on ten cities with very rapidly growing populations in four countries - Vietnam, India, Indonesia, and Thailand - that are on fragile ecologies. With the Foundation's help, these cities are making forward-looking investments in resilient infrastructure and land development, in information systems and feedback structures, and in community-based social resilience, that will enable them to withstand the negative effects of climate change, such as rising sea-levels, unpredictable rainfall patterns and increasing temperatures. The vision of ACCCRN is to catalyze attention, funding, and action on building the climate-change resilience of cities around the world - and within that, developing the resilience of the most vulnerable and poor communities in those cities. We have a range of impressive grantees and partners contributing to this work, including multilateral and bilateral funders, local and regional think tanks and NGOs, and a large network of government officials, academics, and private sector actors from each of these cities.

Resilience requires us to take a combination of both macro and micro approaches. There is perhaps no clearer illustration of this than in agricultural economies of sub-Saharan Africa, where a major climate related natural disaster, such as a severe drought or debilitating storm,

could wipe out as much as 25 percent of a country's GDP. To help build greater resilience to these shocks, The Rockefeller Foundation is supporting an innovative project of the World Food Programme that will help governments better predict and mitigate the most devastating impacts of climate change. Through software which translates satellite-based rainfall data into real-time needs and cost estimates for every first-level administrative district in sub-Saharan Africa, the government and the World Food Programme can predict with great certainty when droughts will occur, enabling more timely and effective responses to prevent food shortages and famine.

At the same time, we are also investing in projects in these same countries that work to empower poor farmers and households and increase individual climate resilience. Through the R4 Rural Resilience Initiative, which Ertharin Cousin, José Graziano da Silva and Kanayo F. Nwanze discuss in their chapter, farmers have greater access to a host of risk management tools, including micro credit and microinsurance, which they pay for by working on community projects that improve local agriculture and build greater climate resilience, including irrigation systems, composting, and tree planting. With the extra money and more plentiful crop yields, farmers are able to save money for hard times and provide greater opportunities for their families – all of which contributes to greater resilience in their communities.

Each of these innovations by themselves can have a profound impact on small holder farmers in Africa, but when pursued together in elegant coordination, we begin to see the true potential that integrated innovation can bring in building resilience against the shocks and disruptions of our modern world. For an additional example, take a read of Mushtaque Chowdhury's essay on how a range of macro and micro level innovations over the last few decades have increased health resiliency in Bangladesh.

While institutional and individual resilience strategies are critical, we must also build the capacity of neighborhoods and communities to respond to and recover from challenges and reduce vulnerability through collective action, known across disciplines as social resilience. At its core, social resilience is enabled by strong relationships and networks that advance individual and community agency and support effective information and feedback systems. But it also about building stronger bridges among diverse groups. As we've seen in the aftermath of past disasters, such as the Haiti earthquake and the tsunami in Southeast Asia, social ties that unite some groups of survivors can also exclude other groups from needed aid and relief. Bridges are needed to ensure

that strong relationships are a positive force for resilience, rather than a barrier to it. In addition to linking populations, social resilience also relies on the linking of different sets of actors at every level – local, regional, and nation – and across sectors – civic, businesses, and government – to enable more effective responses to crisis.

“A more resilient world is in our reach, if we work towards it together.”

A focus on social resilience places the human dimension and human development square at the center of our work. In her essay, Jane Weru highlights the important work of community groups in Nairobi assisting the city’s slum dwellers with the issues and implications of rampant evictions that destroy livelihoods and the confidence in governing systems. By putting the well-being of individuals as the focus, resilience strategies can become transformative.

Thus far within this essay, I’ve covered the importance of and connections among resilience-building strategies across ecological, institutional, social, and physical domains – but no study of resilience could be complete without a perspective from the economic system. This publication contains two such perspectives, one from Andrew Liveris, Chairman and CEO of The Dow Chemical Company, on the importance of a robust advanced manufacturing sector for a resilient global economy, and a second by Muhtar Kent, Chairman and CEO of The Coca-Cola Company, reflecting on the challenges and opportunities of building resilient organizations in what he calls a “reset world.” Both underpin the reality that while the poorest and most vulnerable among us are often the hardest hit by the shocks to global markets, businesses and industries are not immune, and indeed can contribute to greater resilience across societies.

Through the lens of our contributors’ own unique, often groundbreaking work, we can begin to explore some of the ways we can help prepare for, withstand and emerge stronger from the acute shocks and chronic stresses of the 21st century. Building resilience is not the task of a single actor or a single sector, no matter how innovative or passionate. Rather, building resilience requires partners from every sector: governments who must create the right policies, plans and infrastructure investment; businesses who ensure the functioning of our economic systems; communities and civic institutions who must organize to be more flexible, responsive and robust; organizations and individuals who have the core skills required to adapt and cope.

A more resilient world is in our reach, if we work towards it together. The ideas contained in this booklet are a good place to start.



Reshaping New York City's Future After Sandy

Michael R. Bloomberg
MAYOR, NEW YORK CITY

In our New York City's long history, we had never seen a storm like Sandy. Water levels at the Battery in Lower Manhattan reached 14 feet; the U.S. Federal Emergency Management Agency had estimated there was a less than 1 percent chance of that happening. The previous record – set in 1960 – was 11 feet. It was a perfect storm – a hurricane that coincided with a full moon and a high tide, and it collided with a second weather front that led it to make a left turn in about the worst possible place, devastating communities and killing 43 people. We may or may not see another storm like Sandy in our lifetimes, but we cannot leave it to our children to prepare for the possibility.

We are a coastal city – and a harbor city. Sea levels are expected to rise up to another two and a half feet by the time a child born today reaches 40, making surges even more powerful and dangerous. And intense storms are likely to increase as the ocean's temperatures continue to rise. We cannot solve the problems associated with climate change on our own here in New York City, but we can lead the way – and we have been – both locally and globally.

Over the past five years – in partnership with New York City Council and Speaker Christine Quinn – we’ve reduced the City’s carbon footprint by 16 percent and we’re well on our way to meeting our goal of a 30 percent reduction by 2030.

Through the C40 Climate Group, which is a coalition of many of the world’s largest cities, we’ve worked with mayors around the world to share strategies and innovative ideas. Cities are not waiting for national governments to act on climate change. Whether or not any one storm is related to climate change, we have to manage for risks and we have to be able to better defend ourselves against extreme weather and natural disasters.

“We don’t know whether the next emergency will be a storm, a drought, a tornado, or a blizzard, but we have to be better prepared for all of them.”

We don’t know whether the next emergency will be a storm, a drought, a tornado, or a blizzard, but we have to be better prepared for all of them. Throughout the city’s history, there have been times when New Yorkers stepped forward to re-shape the city in ways that modernized and protected it.

In fact, the city we know today exists only because the New Yorkers who came before us responded to tragedy and adversity with inspired vision and impressive resolve. For example: The Great Fire of 1835 burned much of Lower Manhattan to the ground, partly because the Fire Department did not have access to an adequate water supply. In response, the city and state dammed the Croton River in Westchester County and built an extensive aqueduct system to deliver water to the city.

It was one of the greatest engineering achievements of its time. When the Great Blizzard of 1888 paralyzed the city’s elevated trains it proved to be a catalyst for creating the largest underground subway network in the country.

The Triangle Shirtwaist Fire of 1911 that killed 146 garment workers was one of the deadliest industrial accidents in American history. In response, city leaders led the effort to adopt new health and fire safety codes, new restrictions on child labor, and other workplace protections that became models for the Progressive Era.

And after the terrorist attacks of 9/11, we built the largest counter-terrorism operation of any city in the world and we brought Lower Manhattan back faster and stronger than anyone thought possible. After each one of those calamities, New Yorkers recognized that the city had to adapt to survive – and thrive. In each case, New Yorkers put politics-as-usual aside and set a new course that would redefine the future of our city.

“No matter what we do: the tides will continue to come in, and so we have to make our city more resilient in other ways, especially when it comes to our critical infrastructure.”

New York City has 520 miles of shoreline, and it is some of the most beautiful, dynamic shoreline in the world, with the most beautiful views. That’s why people have chosen to live at the coastline for centuries. The question I have gotten most often since the storm is not about the damage Sandy caused, but about whether people can rebuild their homes in coastal communities such as the Breezy Point and Midland Beach sections of Staten Island. Let me be clear: We are not going to abandon the waterfront. But we cannot just rebuild what was there and hope for the best. We have to build smarter and stronger and more sustainable.

There are no panaceas or magic bullets. No matter what we do: the tides will continue to come in, and so we have to make our city more resilient in other ways, especially when it comes to our critical infrastructure.

New Yorkers have never been shy about taking on big challenges, and taking our destiny into our own hands. I have every confidence that by confronting this challenge head on we will succeed, just as we have so many times before. There is no storm, no fire, no terrorist act, that can destroy the spirit of our city, and keep us from looking forward, envisioning a better tomorrow, and bringing it to life.



Principles and Practice for Resilience, Food Security & Nutrition

Ertharin Cousin

EXECUTIVE DIRECTOR OF THE WORLD
FOOD PROGRAMME

José Graziano da Silva

DIRECTOR-GENERAL OF THE FOOD
AND AGRICULTURE ORGANIZATION

Kanayo F. Nwanze

PRESIDENT OF THE INTERNATIONAL
FUND FOR AGRICULTURAL DEVELOPMENT

We are at a tipping point in the fight against hunger and malnutrition. The world is becoming a less predictable and more threatening place for the poorest and most vulnerable.

As we grow more interconnected, a range of complex risks, including climate change, environmental degradation, population growth, conflict, and food and fuel price volatility, are exacerbating the challenges faced by vulnerable communities. Unless we protect the world's poorest people and empower them to adapt to change and build robust, adaptable and more

prosperous livelihoods, we face a future where every shock becomes an opportunity for hunger and poverty to thrive.

All of us engaged in the fight against hunger – governments, international organizations, non-governmental and community-based organizations, private businesses and foundations – recognize the need to shift the way we work with food insecure communities to help them become more resilient.

The Rome-based United Nations agencies are championing this shift by aligning our policies and programmes with six core principles.

PRINCIPLE 1: People, communities and governments must lead resilience-building for improved food security and nutrition

Resilience-building strengthens the capacities of vulnerable households and communities to adapt to changing circumstances, manage an increasingly complex risk environment, and cope with shocks they are unable to prevent.

“Resilience-building strengthens the capacities of vulnerable households and communities to adapt to changing circumstances.”

Efforts to assist vulnerable groups to manage risks and build their resilience must be developed through country- and community-led efforts. Government leadership brings a more holistic approach that transcends any institutional barriers partners might have to working together. Capacity-building of local authorities and better engagement of community leaders increases the likelihood that activities will be relevant to local needs and deliver sustained gains. All efforts must focus on people, their organizations, and build on their current risk management and coping strategies.

PRINCIPLE 2: Building resilience is beyond the capacity of any single institution

Building resilience must be a joint effort. No single activity on its own is likely to build resilience, yet together and if taken to relevant scale, each can contribute to improved resilience overall.

In Kenya, during the 2011 crisis, communities enrolled in programmes to build assets and reduce disaster risks were able to harvest crops, while their neighbors required emergency relief assistance. FAO, IFAD and WFP, in partnership with the Government of Kenya, are working together to replicate this successful experience on a larger scale, turning post-disaster recovery into an opportunity for building resilience.

Through the R4 Rural Resilience Initiative, Oxfam America, Swiss Re and WFP, with support from The Rockefeller Foundation and the



“Building resilience must be a joint effort. No single activity on its own is likely to build resilience.”

United States Agency for International Development, are scaling up a resilience-building approach that brings together safety nets, disaster risk reduction and micro-insurance. R4 enables cash-poor farmers to work on community-identified projects in exchange for drought insurance, reducing the potential negative impact of future disasters. Insurance also allows farmers better access to credit for livelihood investments. In Ethiopia, R4 reached a major milestone in 2012 when nearly 12,000 drought-affected households received an insurance payout of over US\$320,000, or US\$26 each. This insurance payout helped households absorb the shock, repay loans, and invest in agricultural inputs for the next season.

PRINCIPLE 3: Planning frameworks should combine immediate relief requirements with long-term development objectives

Building resilience means addressing the immediate causes of vulnerability, food insecurity and malnutrition, while building the capacity of people and their governments to better manage underlying risks to their lives and livelihoods. We can no longer divide development from humanitarian action.

Better risk management and strengthened resilience are as central to the development agenda as they are to humanitarian action. They are a prerequisite for enabling vulnerable people to cultivate a new crop, start a new enterprise, or take any new action to overcome hunger and poverty. IFAD’s 2011 Rural Poverty Report affirms that “because the risks that poor rural people face today are changing and arguably increasing, improved risk management needs to become a central, cross-cutting element within the development agenda.”

PRINCIPLE 4: Ensuring protection of the most vulnerable is crucial for sustaining development efforts

Productive safety nets are a cost-effective way to achieve longer-term solutions to hunger and increased flexibility to manage risks.

Only 20 percent of people in the world today have access to social protection. The poorest, most vulnerable and food insecure among us typically have no access to social protection or safety nets. For this reason, when disaster strikes it has a more dramatic effect on the lives and livelihoods of poor people.

Building resilience is complex and dynamic. It requires a concentration of resources to address fundamental challenges faced by vulnerable populations.

But experience in Ethiopia offers a welcome glimpse into a more hopeful future. Although Ethiopia faced a severe drought in 2011, the impact on the most food-insecure people was less severe than in similarly affected neighboring countries. The Government of Ethiopia's Productive Safety Net Programme (PSNP), Early Warning System, bi-annual Food Security Assessment and associated Humanitarian Requirements Document (HRD) contributed to a more timely and effective response to people affected by drought. In 2011, the HRD provided relief assistance to more than 4.5 million people while the PSNP provided food and cash support to over 7 million people.

PRINCIPLE 5: Effective risk management requires integration of enhanced monitoring and analysis into decision making

Better monitoring and early warning will provide decision makers at all levels with the information they need to manage risks, adjust plans, and seize opportunities.

Our approach begins with the vulnerable communities and continues through local, national and regional levels, helping ensure that action at every level is mutually reinforcing. This allows for better responses to shocks, but it also saves a lot of money. The World Bank estimates early warning systems save between 14 and 70 U.S. dollars per dollar invested.

PRINCIPLE 6: Interventions must be evidence-based and focus on long-term results

Building resilience is complex and dynamic. It requires a concentration of resources to address fundamental challenges faced by vulnerable populations. To ensure the most effective use of resources, we must rigorously evaluate the resilience-building impacts of medium- and long-term interventions on household food security and nutrition.



“Our choice of a world without hunger and poverty requires us to help vulnerable people build resilience against complex risks.”

The 2011 famine in Somalia starkly illustrated how shocks overwhelm the resiliency of the poorest or most marginalized, leading to destitution, displacement, hunger, illness, death and the breakdown of families and communities. This highlighted the inadequacy of efforts in the years prior to the crisis to build people’s resilience to future and recurrent shocks.

Our choice of a world without hunger and poverty requires us to help vulnerable people build resilience against complex risks. We need to support their livelihood, risk management and coping strategies. We must encourage and support the leadership of the governments and people we assist so they can build their own resilience. We must work together more effectively.

To do this, we must improve our policy and planning frameworks to combine our short-term humanitarian work with longer-term development objectives. We must change the way we grow, share and consume nutritious food. We must make concerted efforts to assist the most marginalized people through safety nets and other investments. We must bolster risk management services, including insurance for poor and vulnerable populations, to encourage investment and development of their livelihoods. And we must act on a more robust evidence base to ensure we use the limited resources that we have in the most efficient way possible.

If we do these things, we will help build a future where periodic shocks no longer plunge people into hunger and poverty, and communities thrive where the threats of hunger and poverty once ruled.



Saving Lives & Livelihoods:

Resilience in the Context of Health

Mushtaque Chowdhury
VICE CHAIR, BRAC

The world has made impressive progress in health over the past few decades, leading to untold lives being saved. This has been possible due to deliberate efforts in providing prevention and healthcare, and improving the various social determinants of health. Yet, nearly ten million children die before reaching their fifth birthday and half a million women die each year in child birth. Many others die in and as a consequence of natural disasters and pandemics. We now know that it is not realistic to end such threats to public health; the real key lies in increasing the resiliency of individuals, communities and systems to face the odds that lead to death, disease and disability. I am fascinated by the concept of resilience in the public health sector and want to share four poignant examples of how different actors in and around Bangladesh are contributing to building such resilience by implementing innovative ideas and actions.

Saving Lives From Killer Diseases: The Case Of Oral Rehydration Therapy (ORT)

“Having the answer is only part of the solution.”

Until recently, diarrhea was a major killer of children. In the late 1960s, scientists in Dhaka and Kolkata simultaneously discovered a simple treatment that revolutionized the management of the disease. Called Oral Rehydration Therapy (ORT), the secret lay in replenishing orally what is lost in diarrhea stools. Unfortunately, this discovery, which *The Lancet* called ‘the most significant advance’ of the century, was confined to hospitals and not available to the vast majority of millions who needed it at home. In this case, the technological solution was relatively simple and the science behind the diarrhea remedy was already complete. Having the answer is only part of the solution, however; the next challenge was to build up the social networks that help provide health care services in places like Bangladesh to build community resilience to diarrhea by replicating ORT at scale. Enter BRAC, a Bangladeshi non-governmental organization (NGO) that developed a home-made version of ORT using salt and unrefined sugar. Aiming to educate mothers on how to treat their children’s diarrhea, BRAC female health workers visited every household (numbering over 12 million) in the 1980s and taught them face-to-face how to mix a pinch of salt and a fistful of sugar into half a liter of drinking water. A built-in evaluation system monitored the performance of the workers and how well the mothers were learning the method. Bangladesh now has the highest rate of ORT use in the world, and BRAC’s work is attributed to a major increase in the resilience - and the accompanying fall in child mortality rates - that Bangladesh’s public health system has witnessed over the past two decades.

Resilience Through Local Capacity Building: Community Health Workers (CHW)

The global community’s effort in scaling modern healthcare to those who need it is hampered by a crisis in the health workforce. There is a perennial shortage of appropriately trained health care workers in low income countries. In addition, in the few places where there are enough workers, there are problems of maldistribution and inappropriate skill-mix. To address this, countries have tried various measures, one of them being the training of field community health workers (CHWs). Following China’s barefoot doctors concept, BRAC trained over 80,000 such workers in rural Bangladesh. Female and often illiterate, these workers are now trained to treat common illnesses and refer more complicated cases to formal health centers. Availability of CHWs in a village increases access to basic care and connectedness to the broader health system, and thereby resilience against disease. Like Bangladesh, many countries have adopted this as a way to increase their communities’ capacity to manage their own health affairs to a great extent.

“The global community’s effort in scaling modern healthcare to those who need it is hampered by a crisis in the health workforce.”

Reducing Deaths from Natural Disasters

Natural disasters in the form of cyclones, tornadoes, droughts and floods still cause havoc to people’s lives in many parts of the world, and have a particularly negative impact on poor and vulnerable communities. Fortunately, our capacity to deal with such disasters has improved tremendously over the past decade. Bangladesh is common prey to such natural disasters, including floods and cyclones. But in recent years, the situation has improved dramatically, due mainly to increased individual resilience and concomitant actions from the government, NGOs and development partners. For example, the cyclone that struck the coastal belt of the country in 1970 is estimated to have killed up to 500,000 people. Compare this to a most recent cyclone in 2007 which, at about the same force and fury, killed less than 3,000. This improvement was a result of many actions taken by different stakeholders. The Red Cross and Red Crescent Society trained thousands of volunteers who, upon receipt of early warnings, moved people from their impoverished homes to cyclone shelters built by the government and NGOs.

Similarly, flooding is a common phenomenon in Bangladesh but the damage to the health of the public as a result of floods has been reduced significantly over the years. The work of the government and NGOs has built resilience by making people aware of the value of clean water, and the knowledge of and familiarity with ORT has ensured that nobody dies from diarrhea. As a strategy to empower and capacitate the health systems to face health threats due to climate change, the Life Centre, an NGO in Southern Vietnam, is training functionaries of local health departments in the Mekong Delta. Such an effort is designed to increase the capacity and resiliency of the health systems to face any unpredictable threats.

Building Resilience against Pandemic Threats: Networking In The Mekong Region

Pandemics such as H1N1 or Avian Flu remain a constant threat to human health across all countries, rich or poor. With globalization in full swing, outbreaks that swept through Asia in 2002 and 2003 can spread infections across borders continents. The Mekong Basin Disease Surveillance (MBDS), a network of six countries in the Mekong sub-region was formed in 1998 to facilitate cross-border collaborations in containing pandemics. MBDS countries collaborate on improving health outcomes, empowering and educating health workers, and slowing the spread of disease by working collaboratively to exchange information,



training, response efforts and disaster preparedness. Supported originally by The Rockefeller Foundation, the Network has now become a pioneer in such cross-border collaborations which is based entirely on trust.

Just as risk managers have learned it is impossible to eliminate risk, the public health community is learning the value of building resilience - the ability to absorb and bounce back from chronic shocks and stresses. When we take technological innovation and apply the critical real world experience of bringing solutions to hard-to-reach communities, we can make a real difference. Further focus on the concept of resilience and applying it to all sectors - not just public health - will benefit the world's poor more than we know.

Mekong Basin Disease Surveillance Network in Action

When doctors at a hospital in Laos attempted to diagnose a young girl suffering from flu-like symptoms, they came up with more questions than answers. They quickly exhausted their testing and treatment capabilities with no successful diagnosis. Instead of simply administering basic care and attempting to provide the girl some comfort, the doctors contacted their MBDS colleagues and officials in neighboring Thailand. Quickly the girl was sent to a hospital in Thailand, where she was diagnosed with Avian Flu. Multinational health teams were immediately activated and visited 20 separate villages in regions close to the girl's home. Their quick response helped stem the spread of a dangerous contagion.



Security of Tenure for The Urban Poor:

A Critical Tool For Sustainable Social and Community Resilience

Jane Weru

EXECUTIVE DIRECTOR, AKIBA MASHINANI TRUST

Nairobi is a thriving metropolis that unfortunately suffers from high levels of inequality and violence. 65% of the city's population of 4 million lives in the highly marginalized densely populated slums of the city, where residents face conditions of considerable insecurity and indignity characterized by single 10' x 10' shacks made of galvanized sheets, wood, polythene, wattle or mud with little access to clean water, sanitation, health care, schools and other essential public services. The poor who live in these fragile areas are at the mercy of environmental vagaries, especially flooding. Overcrowding raises the risk of respiratory illness. Contaminated water supply and unsanitary waste disposal causes gastro-intestinal problems, skin ailments, cholera, typhoid and other infectious diseases. Malnutrition is highly visible among children. At almost every turn, these factors thwart efforts by these communities to become resilient.

“Forced evictions and demolitions have resulted in the displacement of entire communities, plunging hundreds of thousands of people further into excruciating poverty as they are forced to begin rebuilding their lives from scratch.”

In addition to the conditions that prohibit more resilient systems from developing within the slums, housing is fundamentally unstable. Most of Nairobi’s slums are situated on private lands. Consequently, residents live with the threat of forced evictions and violent demolitions with no warnings and no recourse. Eviction orders are often hidden by slumlord cartels in order to mitigate the risk of losing rental income prior to the evictions. Before demolitions and evictions, armed contingents of riot police and provincial administration gather at local police stations. Massive bulldozers and excavators are stationed around the settlements with the owners’ addresses carefully concealed and camouflaged. On many occasions, vigilante groups from neighboring areas are hired to ensure “adequate security” during the demolitions.

These forced evictions and demolitions have resulted in the displacement of entire communities, plunging hundreds of thousands of people further into excruciating poverty as they are forced to begin rebuilding their lives from scratch. The destruction of small businesses and micro enterprises worsens the state’s already dire unemployment rate, while individual slum dwellers lose everything, including the friends, neighbors and community connections they have developed over time. Children’s education is disrupted and a culture of violence is embedded into their psyche as they watch their parents and relatives fighting back attempts to violently demolish their homes. While new slums are often created on unfenced parcels of land close to the eviction area, a fresh demolition at a later date is inevitable, and the incessant cycle of forced evictions and violent demolitions creates an environment where thousands of slum-dwellers are teetering on the precipice of a revolt, making slums a potential source of national, regional and global insecurity.

The Mukuru slum in Nairobi sits on private land. Since the value of the Mukuru plots has appreciated over the years, the registered title deed holders are in the process of selling them, and for the slum residents the threat of evictions has become very real.

In 2007, something remarkable happened in Mukuru. A few leaders of a small saving scheme of slum dwellers approached my organization, the Akiba Mashinani Trust (AMT), which is supported in its efforts to build resilience by The Rockefeller Foundation, asking for assistance in dealing with the problem of evictions. They decided to shop around for available plots of land and began saving a portion of their daily incomes. After a short while, they identified a 23-acre plot situated in Mukuru Kwa Njenga belonging to a local company called Milwhite Limited. The asking price was Ksh. 104 million (USD 1,235,000). Seeing the commitment of the slum dwellers, AMT then engaged with the land owner and negotiated the

price down to Kshs. 81 million (USD 963,000), and began searching for a commercial bank that would be willing to finance the slum dwellers for the remaining purchase price of the land.

The members of the Mukuru saving scheme developed a robust system to collect and track funds, which itself was resilient. The scheme is organized into twenty-three zones. Each has its own leadership a chairman, a treasurer and a collector. Every day the collector visits each member within the zone and collects whatever funds are available and the funds are meticulously logged in a redundant system with checks and controls.

The savers meet once a week at the zonal level, to check on their savings and to share information. At least once a year the scheme audits its accounts. A trained team of members from the various zones conducts the audit. After the audit, the results are shared with the zonal leaders and recommendations on how to improve the saving systems of the scheme is shared.

As part of the land purchase, AMT approached several banks for financing, all of whom were very keen to collect the impressive deposits of the slum dwellers. But they were all, however, hesitant to issue a land purchase loan to AMT for a variety of reasons, including that they were not equipped to transact business with a large groups of slum dwellers.

AMT was able to secure a 5-year term bank loan of Kshs. 55 million (USD 653,600) for the purchase of the land. This was only done after placing a cash guarantee of Kshs. 24 million (USD 285,000) from SDI through the support of the Bill and Melinda Gates Foundation. Thanks to the vibrant savings of the 2,200 Mukuru residents, the loan was fully repaid within 1 year and 7 months of the disbursement.

There are other impressive examples of slum dwellers, undeterred by their low societal standing, using new Kenyan constitutional provisions that give Kenyans the right to housing making their communities more resilient. I was proud to be recognized for the work of AMT at The Rockefeller Foundation 2011 Innovation Forum.

Recently, as the Mukuru people were in the process of completing the planning of their land, many of the members were faced with eviction from their homes by land owners. As a result of the relationships developed over time, the leaders of the saving scheme jointly began to gather information on the eviction process and began to organize themselves and built relationships with their local churches and schools for greater solidarity. They obtained temporary court orders barring the

“Despite high levels of instability, violence and poverty, slum residents were able to look out for themselves by pooling meager resources that in the aggregate were significant.”



land owners from evicting them, they organized protests and marches and built public awareness of their plight.

While the plan of the Mukuru residents was reliant on outside funding and technical expertise, their scheme worked because it was theirs, and community members could intrinsically trust it. Despite high levels of instability, violence and poverty, slum residents were able to look out for themselves by pooling meager resources that in the aggregate were significant. This is a valuable lesson for similar communities around the world that seek to make themselves more resilient.



Building a Resilient Economy through Manufacturing

Andrew N. Liveris

CHAIRMAN AND CHIEF EXECUTIVE OFFICER,
THE DOW CHEMICAL COMPANY

In countries around the world, manufacturing has entered a new era. By need or demand, manufacturing is evolving to reflect struggling economies, emerging markets, modern technology and a new generation of workers. This is creating a new definition of manufacturing – one that is fuelling competition between countries, not just companies. To succeed in this new environment, an innovation-centric model of advanced manufacturing is critical.

Now more than ever, manufacturing matters. It is critical to economic resilience and long-term prosperity across the globe. Manufacturing produces more value and creates more jobs across the economy per dollar invested than any other sector, and drives innovation that produces new goods with the potential to fundamentally change the world. The manufacturing industry performs a significant portion of private sector research and development, and pushes the frontiers of science and technology. It extends to nearly every metric of a country's

“Manufacturing produces more value and creates more jobs across the economy per dollar invested than any other sector, and drives innovation that produces new goods with the potential to fundamentally change the world.”

competitiveness. Manufacturing boosts productivity and lowers prices. It accelerates innovation, increases consumer demand, and turns trade laggards into trade leaders.

In the United States, weak economic growth, high unemployment and increasing debt and deficits all derive — at least in part — from a reduced manufacturing base. A reinvigorated U.S. manufacturing sector has the potential to positively address each of these challenges. In Europe, it is widely understood that advanced manufacturing and industrial competitiveness are crucial to renewing and revitalizing the continent's economy in a competitive and fast-changing world. In Asia Pacific but also in emerging geographies, growth and expansion of the manufacturing sector is creating employment, raising wages, elevating living standards, and increasing purchasing power.

A Case Study: American Manufacturing

American manufacturing is at a crossroads. It has historically been the lifeblood of U.S. economic growth, job creation and prosperity. But that is no longer the case. While production was responsible for 28 percent of GDP in the 1950s, it now makes up less than 15 percent — and that number is shrinking. In 1975, the United States exported \$12.4 billion more goods than it imported. Since then, the nation has continued to run a trade deficit in the tens of billions of dollars.

Despite the loss of jobs and the closing of factories, American manufacturing remains an important component of its national economy. It directly employs 17.2 million Americans and is responsible for millions of additional indirect jobs. There are signs of a manufacturing revival underway. Since 2010, manufacturing has been a bright spot as the economy continues to recover from the financial crisis of 2007-2008. In fact, nearly 500,000 manufacturing jobs have been created since January 2010, and global fundamentals are pointing in the right direction for a renaissance in American manufacturing.

The long-term growth and resilience capacity of the American economy hinges, in large part, on capitalizing on the opportunity that advanced manufacturing presents. Manufacturing today is not the industry of yesterday, characterized by smokestacks, repetitive manual tasks and basic industries. When we manufacture high value-add products in state-of-the-art industries in the United States, we also build capacity to advance innovation, which leads to the next generation of products that help drive economic growth. The lesson here is clear — where production goes, innovation and growth inevitably follow.

A Sustainable Path to a More Resilient Future

Through sound policymaking and commitment from both the public and private sectors, the world's leading manufacturing regions can begin a sustainable path to a more prosperous and resilient future, enabled by advanced manufacturing.

At Dow, we have a vision of how government and policy stakeholders can revive manufacturing and consequently create a more resilient global economy. We have developed an advanced manufacturing plan - a comprehensive set of specific solutions to address the vital economic needs of key manufacturing regions all over the world, from energy to infrastructure, tax policy to trade.

From our perspective, perhaps the most crucial elements of this manufacturing strategy are policy recommendations with regard to energy and human capital. To strengthen manufacturing and build a more resilient global economy, we must encourage smart energy policies that promote efficiency and conservation, and more importantly, optimize our hydrocarbon resources. We need to accelerate innovation in practical, renewable and clean energy technologies, including wind and solar. The more countries compete for investment in these areas, the more manufacturing jobs they will bring with them. At Dow, we are directing significant portions of our \$1.6 billion research & development (R&D) investments toward energy solutions that will be economically sustainable and environmentally effective. Our innovations help society solve its energy challenges through insulation, advanced photovoltaics, and solutions that make renewables and alternatives more cost effective as well as enhancing the sustainability of fossil fuel production and use.

In addition, to strengthen manufacturing and build a more resilient global economy, we must nurture the next generation of scientific talent. The extent and quality of Science, Technology, Engineering, and Mathematics (STEM) education levels is a key to determining national competitiveness and economic prosperity. Many industries around the world depend on a STEM talent pipeline to advance innovation and build the products and processes of the future. A comprehensive integrated approach involving collaboration among academia, business and government, will ensure workforce is comprised of a steady stream of STEM talent to help build the future of advanced manufacturing.

Since the Company's founding in 1897, Dow has had an abiding commitment to both education and R&D, and has supported STEM programs in communities around the world. For example, in the U.S., Dow collaborates with teachers to provide professional development

“The long-term growth and resilience capacity of the American economy hinges, in large part, on capitalizing on the opportunity that advanced manufacturing presents.”



“Manufacturing today is not the industry of yesterday, characterized by smokestacks, repetitive manual tasks and basic industries.”

and cutting edge teaching and curriculum resources to help address the nation’s STEM shortage. More broadly, in October 2011, Dow announced a partnership with 11 major universities to strengthen R&D. Dow is investing \$25 million per year over 10 years to advance research in traditional scientific fields important to Dow and the United States. Dow’s investment will support faculty, students and infrastructure, to build and maintain the resources necessary to solve key global challenges.

Manufacturing for a New Generation

Around the world, the countries that are succeeding are taking action. They know what kinds of industries are essential – and work with all stakeholders to win that business. These countries are developing comprehensive, national strategies for manufacturing – and executing against them relentlessly. They are creating a manufacturing sector with the ability to transform and create a more resilient global economy, and build a better future for all.



The Coca-Cola Company & Resilience

Muhtar Kent

CHAIRMAN AND CHIEF EXECUTIVE OFFICER
OF THE COCA-COLA COMPANY

A global business like Coca-Cola has no choice but to be resilient. People enjoy our products in more than 200 countries – and in some corner of the world there is always an external disruption that can have bearing on our business. It is what we call doing business in a “reset world.” For a company like Coca-Cola to be resilient in the “reset world,” we have to keep a close watch on new consumer attitudes; the role of government in economic and commercial affairs; and geopolitical, economic and demographic shifts.

Building a resilient company, organization or community in 2013 requires nothing short of complete and absolute focus. I am a firm believer that challenging times like these are not an excuse to sit back and ride out the storm.

On the contrary, this is the time to confront our current reality head-on, with courage, with tireless determination and with great strategic dexterity. This is exactly the time to focus on what matters most, shed what is wasteful and unproductive, and keep communicating with our customers and stakeholders.

History has shown us, time and again, that the world's most resilient organizations are those that do more than just prepare for change and turbulence. Instead, they see—and seize—opportunity in the eye of the storm.

At Coca-Cola, our 2020 Vision and Roadmap for Winning Together is an integral component of our resiliency. It is a system-wide plan to double the size of our business over the course of this decade. To reach this ambitious but achievable goal, we have built resilience into the suppliers, retailers, technologies, people and infrastructure that bring our beverages to market every day around the world. Sustainability is a critical factor in driving our vision and creating resiliency across our system.

“At Coca-Cola, our 2020 Vision and Roadmap for Winning Together is an integral component of our resiliency.”

Indeed, we think the lion's share of innovation over the next decade will reside at the intersections of sustainability and the supply chain. How do we do more with less? How do we prosper and grow in an era of natural resource scarcity? We have developed many sustainability-minded innovations that are centered on reducing our packaging, energy and water footprint and improving the wellbeing of the communities we serve.

Our supply- and value-chain partners are critical to building resilience. One value-chain innovation we are hard at work on is our effort to empower 5 million women entrepreneurs by 2020. In this effort, called 5by20, we are working with UN Women and numerous government and private sector partners on four continents to bring new resources, tools, ideas and inspiration to women business owners who are part of our Coca-Cola system value chain.

We are also building resilience through our water stewardship efforts. Since 2005, as part of our goal to become water neutral by 2020, we have conducted 386 community water projects in 94 countries, working hand in hand with local governments and partners including World Wildlife Fund (WWF), the United States Agency for International Development, The Nature Conservancy and CARE.

“How do we do more with less? how do we prosper and grow in an era of natural resource scarcity?”

We have also entered into a long-term global clean water partnership with world renowned innovator Dean Kamen of DEKA R&D to bring Kamen's revolutionary Slingshot water purification technology to communities where potable water access is limited. The Slingshot system uses a vapor compression distillation system that runs on low levels of electricity so that any dirty water source -- river water, ocean water and even raw sewage -- can be turned into pure, clean drinking water. One Slingshot unit can purify enough daily drinking water for roughly 300 people, while consuming less than the amount of power needed to run a standard handheld hair dryer. This year, we will install and operate 100 Slingshot units in schools and health centers in Africa and Latin America.

Longer term, we plan to marry the Slingshot technology and our 5by20 commitment to deliver a full-service community center. The EKOCENTER will house the Slingshot water purification system as well as deliver other basic necessities and products such as electricity, internet access and vaccination storage, to communities in need. Each EKOCENTER will enable communities to have services that otherwise would not be available - all within one location - and be operated by local female entrepreneurs. We see this initiative as an investment in the future prosperity and progress of the communities in which we operate.

Also, in a move that builds resiliency, over the last decade we have invested more than \$100 million in the development of highly efficient, HFC-free cooling technologies, including, most recently, solar-powered coolers in places such as rural India.

Although we have these great stories to share today, our journey is far from complete. The truth is, it will never be complete. The multinational corporation will always have a role to play in driving sustainable economic development.

With unyielding determination, a restless culture of innovation, and continued work with many powerful partners, it is our hope that The Coca-Cola Company can continue to be a strong and enduring force for progressive growth and positive change for generations to come.





**Rockefeller
Foundation**

www.rockefellerfoundation.org