The Hague Centre for Strategic Studies

The Other Side of the Security Coin

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Volatility and Friction in the Age of Disintermediation: HCSS StratMon Annual Report 2016/2017

The Hague Centre for Strategic Studies

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This report is from the HCSS theme SECURITY. Our other themes are GLOBAL TRENDS and GEO-ECONOMICS

SECURITY

HCSS identifies and analyzes the developments that shape our security environment. We show the intricate and dynamic relations between political, military, economic, social, environmental, and technological drivers that shape policy space. Our strengths are a unique methodological base, deep domain knowledge and an extensive international network of partners.

HCSS assists in formulating and evaluating policy options on the basis of an integrated approach to security challenges and security solutions.

Key Take-Aways

» Societal resilience to conflict is the foundational pillar of peace. On the *other side of the security coin*, there are many positive trends related to socioeconomic development that underpin growing levels of individual empowerment and increased citizen participation. Many of these trends are in one way or another related to the trend of disintermediation and the disappearance of the middle man. Greater individual empowerment across many different domains boost societal resilience to conflict. *Access* remains one of the key components of individual empowerment and resilience to conflict.

» The Internet and emerging mobile technologies act in a facilitatory role to provide services that enhance the livelihoods of citizens – particularly those in developing countries. Over the next few years, access to the Internet is projected to further boost economic, societal and political participation of hundreds of millions of people worldwide.

» Access to finance is improving citizens' abilities to participate in society and fulfill their social and economic potential. Mobile technologies and services have allowed for financial services to be extended to new remote, rural areas in developing countries and improve access to economic opportunity, thereby increasing individual empowerment.

» *Access to electricity from renewable sources* is widening and becoming more common in developing countries. In 2015 developing countries invested more in renewable technologies than developed countries. Related trends have allowed for citizens to act as energy producers rather than solely as energy consumers. Trends in micro-electricity generation are likely to enhance greater access to energy for many people around the world.

» *Access to political and social participation* by advancing gender equality initiatives is empowering women across the world. It is ensuring women's' greater access and inclusion in the labor force and political institutions results in greater societal levels of empowerment and enhanced resilience to conflict.

» *Access to clean water and sanitation facilities* is rising due to worldwide initiatives to provide citizens with basic, but crucial resources for their livelihoods. Developments related to improving water and sanitation facilities in developing countries have high financial value, reduces squalor and enables citizens to explore new social and economic opportunities by reducing the time needed to collect and clean water.

» *Access to opportunities through greater social inclusion* has improved as a result of the global war on poverty, which has empowered citizens across the world who have long been deprived access to key services and resources and left on the margins of society as a result. Poverty acts as a blanket inhibitor and can prevent extremely poor people from benefitting from the effects of positive developments ongoing in the world today.

» These drivers of change are likely to improve individuals' access to crucial resources and opportunities, greatly enhance levels of individual empowerment and increase societal resilience, even more through innovative technological developments that will arise in the future.

5.1 Towards Sustainable Security

The presence of peace is more than the absence of conflict. Analyses and evaluations of the state of the international security environment often focus solely on the most concerning developments and tend to fall back on various conflict-centric metrics when providing assessments of the security landscape, as we have done in our previous StratMon 2016-2017 study *The Many Faces of Political Violence*. In these cases, statistics pertaining to battle-related fatalities, insurgency activities, or displaced peoples forced out of their homes often take center stage. Such an approach has merit when attempting to explore the causes and effects of violent conflict, or when evaluating country-level risk of violence episode onset. Yet it ignores the "other side of the security coin", one that recognizes societal resilience as a counterweight to conflict and a driver of peace, as we explained in more detail in our broader 2016 study *Si Vis Pacem. Para Utique Pacem*, which can be accessed on our website.[1]

In addition to the strengthening state of peace in the world today, as documented by the Institute of Economics and Peace as part of the Global Peace Index project,[2] there are also many less-apparent, but nevertheless positive socioeconomic trends occurring today that continue to increase levels of individual empowerment among citizens world-wide. As drivers of peace climb upward, citizens – most notably in developing countries – gain access to various new economic and social opportunities and develop critical civic attitudes, with their livelihoods improving in consequence. Gradually, on the level of society, these processes foster confidence and enhanced capabilities, increasing the potential of citizens to gain an interest in maintaining emerging stability, rather than acting as challengers to the state of peace.[3] A more effective approach to building societal resilience to conflict in fragile regions must recognize citizens as stakeholders contributing positively to the state of peace in their own countries, as peace will serve their social and economic interests. These trends also forward the development of human capital in developing countries and increase the overall power of a society to accomplish its goals.

A more effective approach to building societal resilience to conflict in fragile regions must recognize citizens as stakeholders contributing positively to the state of peace in their own countries.

This study will investigate a number of developments that each have the capacity to positively underpin sustainable security in the world through their unique influences and effects. We specifically examine positive trends related to poverty reduction, access to the Internet, financial inclusion, access to improved water and sanitation facilities, access to electricity produced by renewable energy sources and female inclusion in the labor force. These developments all have the capacity to foster improvements in levels of individual empowerment and social inclusion within a given population and thereby increase a society's resilience against conflict.

1. See Oosterveld et al., *Si Vis Pacem, Para Utique Pacem*.
2. The Institute for Economics and Peace, Positive Peace Report 2016: *A Compilation of the Leading Research on Positive Peace and Resilience*.
3. Matthew Hoddie and Caroline A Hartzell, *Strengthening Peace in Post Civil War States: Transforming Spoilers into Stakeholders* (Chicago; London: The University of Chicago Press, 2010), 2.

Textbox 5.1 How Does It Work? Socioeconomic Development, Empowerment and Societal Conflict Resilience

Socioeconomic development is a key driver of social change and the coming into being of civil society.[1] A functioning, strong civil society is both a fundamental requirement for a democratic state to govern effectively and also a driver for political transformation in states that have not yet achieved a state of democracy as it sets "society and polity on new courses toward unprecedented objectives."[2] A developing society generally undergoes gradual normative transformation as a result of the improvement of socioeconomic conditions and, consequently, citizen empowerment. This is due to a societal shift away from 'survival values' and towards those prioritizing self-expression.[3] Survival values are common in developing and recovering nations, where there exists greater public demand for physical and economic security over self-expression and quality-of life and high levels of public and interpersonal distrust are therefore common. In contrast, self-expression values place higher importance on democratic representation and transparency and are characteristic of postindustrial societies.[4] These values are highly complementary with a process of empowerment, as once individuals' livelihoods are secured, they can mobilize to participate fully within society.

Thus socioeconomic development – if it both improves individual levels of empowerment and promotes social and economic inclusion – not only has the effect of creating greater desire for civic involvement, but also tempers public sentiments of hostility and distrust towards a functioning and democratic state. As a consequence, civic pressures are directed towards governments and institutions to strengthen and uphold democracy and fair governance practices on the basis of newfound critical and liberal desires for democratic representation. While democracy itself does not guarantee peace, the organic development of citizen support for democratic representation and further expansion of livelihood-enhancing services and facilities ensures that citizens identify as stakeholders in the state of peace in their state, reducing risk of violent opposition or revolution and internal violence.

The process of socioeconomic development is the first step in a lengthy process of drastic social transformation, first encompassing greater levels of personal empowerment through improved socioeconomic conditions, which allows people to move away from 'survival values' and towards 'self-expression values'. These democratic attitudes accelerate the formation of civic culture and greater political engagement and ideally results in a more stable state of democracy with increased societal resilience to conflict. As levels of economic opportunity and individual empowerment rise across the world, so too will citizens' stakes in peace. Global progress and innovations in the fields of sustainable technologies, systems of governance and rule and the development of human capital should all thus be tracked with great interest, as they may all drive progress towards political and social development promoting societal resilience to conflict.

1. Among many others see Daniel Chirot and Robert King Merton, *Social Change in the Modern Era* (San Diego: Harcourt Brace Jovanovich, 1986). and Amartya Sen, *Social Exclusion: Concept, Application and Scrutiny* (Manila, Philippines: The Asian Development Bank, 2000).
2. Harry Eckstein, "A Culturalist Theory of Political Change," *The American Political Science Review* 82, no. 3 (September 1988): 798.
3. Chris Welzel, Ronald Inglehart and Hans-Dieter Klingemann, "Human Development as a Theory of Social Change: A Cross-Cultural Perspective," *Euro J of Pol Sci* 42 (2003): 17.
4. Ronald Inglehart, *Modernization and Postmodernization: Cultural, Economic and Political Change in 43 Societies* (Princeton, N.J.: Princeton University Press, 1997).

5.2 The Power of Network Technologies: the Internet and Civil Empowerment and Mobilization

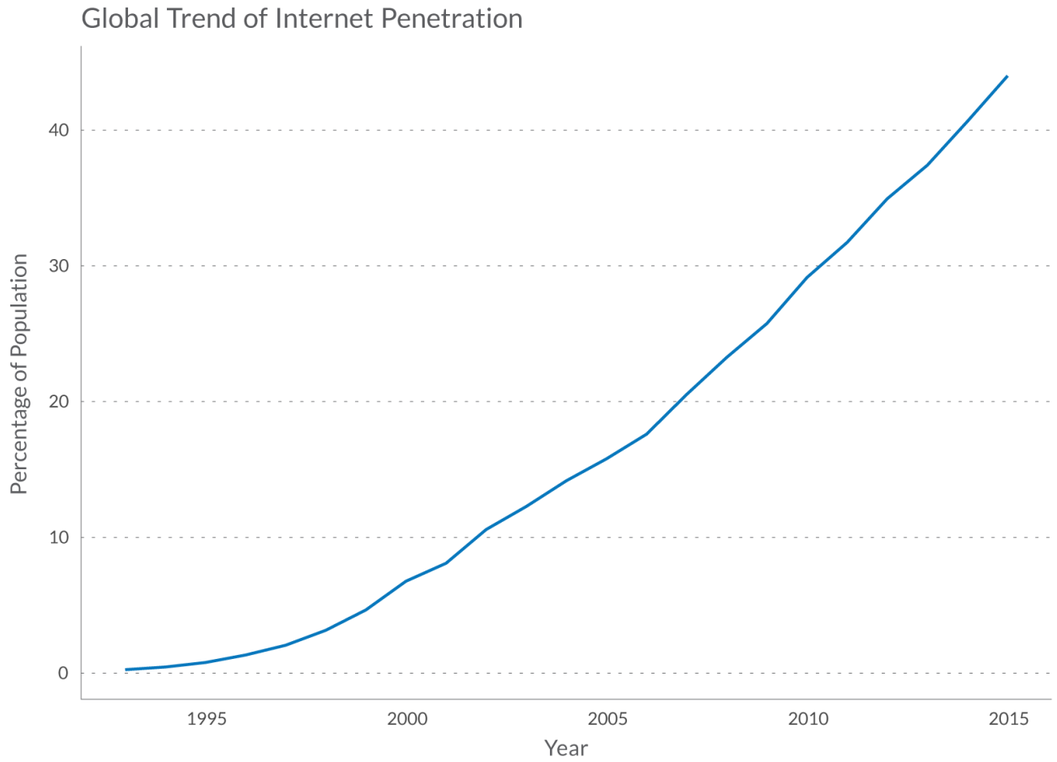

Figure 5.1 Global trend of internet penetration, 1993-2015[4]

The world's average number of Internet users per 100 people has grown from approximately one, to approximately 44 between 1995 and 2015 – meaning that virtually half the world's population today has regular access to the Internet.[5] In the European Union and the United States this number is higher, with approximately 80 and 75 percent of their respective total populations having access to the Internet in 2015. Access to the Internet is not nearly as widespread in Sub-Saharan Africa and the Middle East & North Africa region, but even there approximately 22 and 44 percent of the respective countries' populations had access to the Internet in 2015.[6] The disparity is particularly apparent in the case of Sub-Saharan Africa, even though numerous stakeholders on the continent and elsewhere have recently shown greater interest in improving its Internet capabilities to match

4. The World Bank, "Internet Users (per 100 People)," *The World Bank*, 2016, http://data.worldbank.org/indicator/IT.NET.USER.P2.

5. Ibid.

6. Ibid.

those of its peers – and for good reason.[7] A number of major private international companies like Alphabet and Facebook are also laying the groundwork for new technologies and business models that offer even greater prospects for affordable universal internet access.

From a cultural perspective, the modern-day Internet offers innumerable opportunities for civil transnationalist perspectives to emerge at a grassroots level. It is also a key driving factor in the process of disintermediation and the disappearance of middle men, allowing the user to enjoy greater transparency and to buy products or services directly from providers. The Internet today has repositioned the user at the center of the polity and the economy and empowers them to act as both a consumer and a creator by breaking down traditional barriers to accessing tools and markets.

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This process of disintermediation that has been facilitated by the rise of the Internet and mobile personal communication devices has numerous implications for individual empowerment and societal conflict resilience in the world today. Increased Internet usage provides greater access to education and participation in the global economy through improved English skills.[8] Online education resources and massive online open course (MOOC) platforms such as Khan Academy or Coursera offer high quality educational material at very little cost or for free. These resources have the benefit of empowering "especially women, children and youths all over the world" and can "address poverty, illiteracy, ill health, ignorance, unemployment, marginalization, [and] social segregation," which typically limit access to educational resources.[9] The Internet also facilitates the extension of public and private services into areas that would often lack the necessary physical infrastructure for such services to be delivered efficiently.[10] An example of this is the M-Pesa mobile banking and financial transaction service that has become widely used in African countries such as Kenya and Tanzania, which is further elaborated upon later in the study.

Digital technologies can act as accelerants to enhance the state of social inclusion in developing countries. Some initiatives have proposed using online mobile technology to identify and report counterfeit prescription drugs,[11] or report irregularities or criminal misbehavior during public elections.[12] By increasing investment in emerging technologies in developing countries, various financial, political and physical barriers that have long challenged socioeconomic development can be overcome. On top of the cases already mentioned, digital crowdsourcing platforms can create a virtual sense of community and connection through its participatory power,[13] improve government

7. Macharia, "Internet Access Is No Longer a Luxury | Africa Renewal Online," *AfricaRenewal*, April 2014, http://www.un.org/africarenewal/magazine/april-2014/internet-access-no-longer-luxury. For a more critical perspective, see Maeve Shearlaw, "Facebook Lures Africa with Free Internet - but What Is the Hidden Cost?," *The Guardian*, August 1, 2016, sec. World news, https://www.theguardian.com/world/2016/aug/01/facebook-free-basics-internet-africa-mark-zuckerberg.

8. Robert Pinon and Jon Haydon, "English Language Quantitative Indicators: Cameroon, Nigeria, Rwanda, Bangladesh and Pakistan," *A Custom Report Compiled by Euromonitor International for the British Council*, 2010, http://teachingenglish.britishcouncil.org.cn/sites/teacheng/files/Euromonitor%20Report%20A4.pdf.

9. Olu Jugede, "Open Learning for Development: Towards Empowerment and Transformation," December 3, 2013, 4, http://oasis.col.org/handle/11599/1156.

10. The World Bank, *World Development Report 2016: Digital Dividends* (The World Bank, 2016), http://elibrary.worldbank.org/doi/book/10.1596/978-1-4648-0671-1.

11. Margaret Maringa, "A Mobile Application for Reporting Aggregate HIV Data: Case Study of HIV Clinics in Kajiado Kenya" (Strathmore University, 2016), https://su-plus.strathmore.edu/handle/11071/4894.

12. D.M.C.T.K Dissanayake, "Election Complaint Tracking System" (University of Colombo School of Computing, 2016), http://documents.ucsc.lk/jspui/handle/123456789/3784.

13. Yuxiang Zhao and Qinghua Zhu, "Evaluation on Crowdsourcing Research: Current Status and Future Direction," *Information Systems Frontiers* 16, no. 3 (July 1, 2014): 425, doi:10.1007/s10796-012-9350-4.

accountability and governance standards,[14] improve disaster management effectiveness,[15] and foster the growth of positive civic advocacy and activist attitudes.[16] The popularization and proliferation of digital mobile technologies and its subsequent incorporation into various public processes has strengthened the state of social inclusion in many ways and fosters the growth of a healthy and connected society that is more resilient to conflict.

The Internet's capacity to initiate change and provide new services that encourage public involvement is a key driver for improved governance in developing and developed countries alike. As the usage of the Internet becomes more common in developing countries, the delivery of these empowering services will become more regular and overcome key limiting factors that have prevented the delivery of comparable services in the physical world. The Internet holds incredible potential to level the global social and economic landscape and improve various social issues of privilege and circumstance. As the standard of goods and services provided to citizens in countries at risk of conflict increases and social and economic grievances decline as a result, citizens will hold greater stake in the state of peace within their communities, increasing overall conflict resilience while also narrowing socioeconomic inequalities across the world.

5.3 Financial Inclusion and Mobile Banking Systems

Although on average there is only one bank branch per 10,000 people in emerging economies, there are nearly 5,100 mobile phones for the same number of people.[17] As a result, many individuals have turned to decentralized mobile banking systems to gain access to crucial financial services. In 2014, nearly a third of all account holders in Sub-Saharan Africa reported having a mobile money account. In Kenya, this figure was as high as 58 percent and in Somalia, Tanzania and Uganda the figure was at a similarly high 35 percent.[18] The high mobile money account penetration in these countries paints a positive picture of consumer-driven changes to the financial landscape in developing countries that have traditionally lacked adequate financial infrastructure. Increasing citizen access to microfinance opportunities to match public demand can include demographics from across the entire social spectrum in the peacemaking and stabilization process and increase societal resilience to conflict through a direct mechanism of financial empowerment.

Many citizens and investors have turned towards disintermediated mobile banking models as a means to overcome some of the barriers that developing countries face in expanding their financial services to its population in remote and typically rural areas. In Kenya, the Vodafone-backed mobile banking and money transfer initiative M-Pesa is used by over 21.8 million people – nearly half of the Kenya's entire population. Over 2.8 trillion KES (equivalent to 25,843,631,551.99 EUR as of December

In Kenya, the Vodafone-backed mobile banking and money transfer initiative M-Pesa is used by over 21.8 million people – nearly half of the Kenya's entire population.

14. Maja Bott and Gregor Young, "The Role of Crowdsourcing for Better Governance in International Development," *Praxis: The Fletcher Journal of Human Security* 27, no. 1 (2012): 47–70.

15. Billy Haworth and Eleanor Bruce, "A Review of Volunteered Geographic Information for Disaster Management," *Geography Compass* 9, no. 5 (May 1, 2015): 237–50, doi:10.1111/gec3.12213.

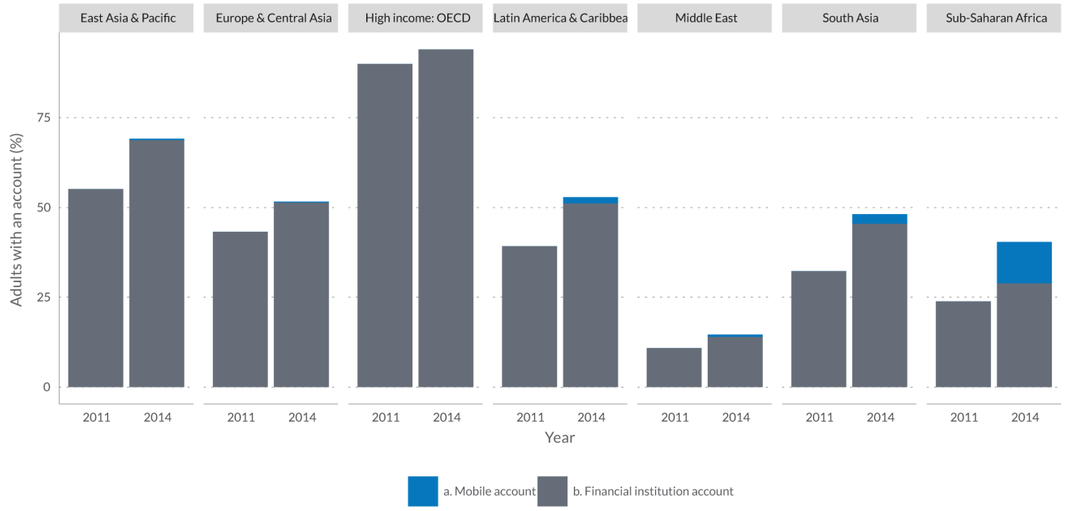
16. Chelsea Young, "HarassMap: Using Crowdsourced Data to Map Sexual Harassment in Egypt," *Technology Innovation Management Review* 4, no. 3 (2014): 7.

17. Felix Huefner and Arpitha Bykere, "Financial Inclusion: A Financial Industry Perspective" (The Insitute of International Finance, March 11, 2015), 3.

18. Asli Demirguc-Kunt et al., "The Global Findex Database 2014: Measuring Financial Inclusion around the World," *Policy Research Working Paper* 7255 (2015): 12, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2594973.

2016) were transacted through mobile banking in Kenya in the past year.[19] With a ten percent excise duty levied on all mobile money transfer services, mobile banking has not only improved the state of financial inclusion in Kenya, but has also become an important source of revenue for the Kenyan government. M-Pesa's enabled benefits such as increased velocity of financial transactions, increased public safety due to the availability of more secure payment methods and an improved capacity to manage household funds have a straightforward effect on improving the quality of life of its users. Researchers have also noted its applicative value towards curtailing national and international money laundering and terrorist financing efforts.[20] More information related to mobile banking trends can be found in Figure 5.2.

Figure 5.2 Regional trends in bank account penetration, 2011 and 2014[21]



This trend of using mobile technologies to address infrastructural deficiencies has also been embraced and transposed to augment other e-governance systems in Kenya. An example of this is the Kenyan national police's Public Complaint Rapid Response Unit (PCRRU) initiative,[22] which allows citizens to engage in dialogues with police officials and formally lodge complaints via social media platforms, email and SMS in order to improve police accountability values through greater public involvement.

Improving national microfinance capacities among disadvantaged populations in developing countries accelerates economic recovery in countries recovering from

Improving national microfinance capacities among disadvantaged populations in developing countries accelerates economic recovery in countries recovering from conflict.

19. Kiarie Njoroge, "REPORT: This Is What Would Happen to Kenya's Economy If M-Pesa Was to Collapse," *Nairobi News*, November 30, 2016, http://nairobinews.nation.co.ke/news/treasury-report-reveals-fears-m-pesas-critical-role-economy/.

20. Mercy W. Buku and Michael W. Meredith, "Safaricom and M-Pesa in Kenya: Financial Inclusion and Financial Integrity," *Wash. JI Tech. & Arts* 8 (2012): 375.

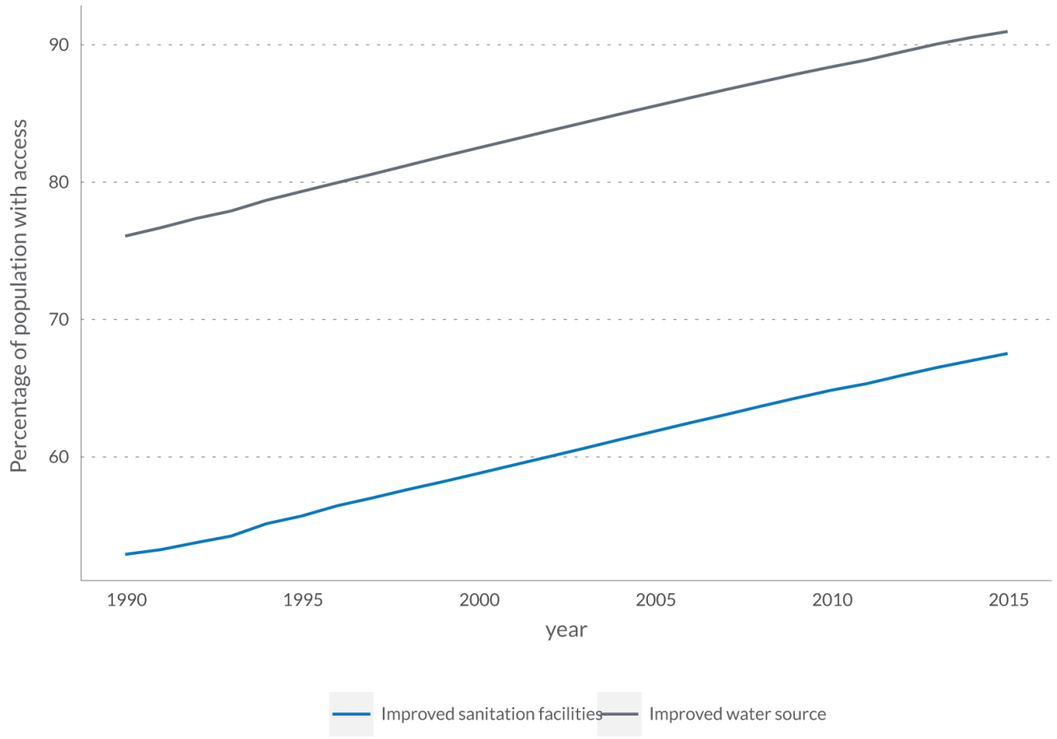
21. Demirguc-Kunt, Asli, Leora F. Klapper, Dorothe Singer, and Peter Van Oudheusden. "The Global Findex Database 2014: Measuring Financial Inclusion around the World." *Policy Research Working Paper* 7255 (2015): 13, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2594973

22. Nigeria Police Force, "Public Complaint Rapid Response Unit (PCRRU)," 2016, http://npf.gov.ng/complaint/.

conflict,[23] and can provide a means of exchange in regions and areas in which currency circulation is low or is in otherwise short supply.[24] Overall, the improvement of financial inclusive services and policies – most notably through disintermediated mobile finance technologies – empowers citizens by facilitating greater citizen access to critical economic opportunities, lessens social and economic inequalities between rural and urban areas and provides livelihood-enhancing measures that can drive a society's improved resilience to conflict.

5.4 Access to Improved Water and Sanitary Facilities

Figure 5.3 Global trend of access to improved drinking water sources, 1990-2015[25]
Global trend of access to improved sanitation facilities, 1990-2015[26]



23. responsAbility, "Microfinance and Post-Conflict Development" (Zurich, 2013), http://www.responsability.com/funding/data/docs/en/1562/Discussion-Papaer-2013-Microfinance-and-Post-Conflict-Development.pdf.

24. Tilman Ehrbeck, "The Potential of Electronic Money for Social Good," *CGAP Blog*, October 5, 2012, https://www.cgap.org/blog/potential-electronic-money-social-good.

25. United Nations Statistics Division, and United Nations Department of Economic and Social Affairs. "Proportion of the Population Using Improved Drinking Water Sources, Total." Millennium Development Goals Indicators, 2015. http://mdgs.un.org/unsd/mdg/Metadata.aspx?IndicatorId=0&SeriesId=665.

26. United Nations Statistics Division, and United Nations Department of Economic and Social Affairs. "Proportion of the Population Using Improved Sanitation Facilities, Total." Millennium Development Goals Indicators, 2015. http://mdgs.un.org/unsd/mdg/Metadata.aspx?IndicatorId=0&SeriesId=668.

Nearly ten percent of the world population have gained access to improved drinking water sources in the past fifteen years. Access to improved sanitation facilities have also risen during this time, increasing by nearly eight percent between 1990 and 2015. The improvement of critical water-reliant services and facilities such as these reduces the risk of disease transmission and greatly enhances the livelihoods of citizens in water-poor areas.

The economic value of water and other natural resources are abundantly clear to corporations and investors, however the financial and social benefits of investment in its personal uses – such as drinking and sanitation – are often left unsaid by all but humanitarian and sustainable development groups. The World Health Organization estimates that for every $1 invested in safe drinking water and sanitation, there is a return of approximately $3-34 depending on the region and technology.[27] For example, in 2011 the United Nations Environment Programme's investments in improved water and sanitation facilities in Africa had an economic return potential of nearly $28.4 billion a year.[28]

Improving private access to safe and sanitary sources of water also has numerous benefits on both the societal and the individual level. Like most vital, or otherwise valuable resources, water deficits and shortages can be a powerful driver of conflict. In 2000 for example, the Yemeni government sent 700 soldiers to subdue fighting that had killed six and injured sixty and had erupted due to ownership and access rights to a nearby freshwater spring.[29] In 2001 in Pakistan, civil unrests erupted over water shortages caused by long period of drought, lasting from March until the summer. Other modern instances of conflict stemming from water access have occurred in Bolivia,[30] China,[31] Ethiopia,[32] Kenya,[33] Tajikistan,[34] and various other water-poor countries in the world. As global demand for water is projected to rise drastically in the next few decades in the face of greater industrial and personal usage, innovative solutions are needed to manage what is a finite, but very valuable resource.

Climate change-induced effects may have greater impact upon the poor, who are typically more dependent on agriculture and have more perilous access to water.[35] The disparity between urban and rural areas in terms of access to improved water and sanitary facilities remains especially striking in the face of these risks (See Figure 5.4) and demonstrates how much ground still must be

27. World Water Assessment Programme, *The United Nations World Water Development Report 3: Water in a Chaning World* (Paris: The United Nations Educational, Scientific and Cultural Organization, 2009).

28. United Nations Environment Programme (UNEP), "In the Transition to a Green Economy," *Unep.org*, August 25, 2011, http://www.unep.org/research4policy/policybriefs/KNOSSOSPOLICYPAPERASTANA/astrefer/tabid/78512/Default.aspx.

29. M.H. Al-Qadhi, ""Thirst for Water and Development Leads to Conflict in Yemen," 2003.

30. Rocio Bustamante et al., "Livelihoods in Conflict: Disputes over Water for Household-Level Productive Uses in Tarata, Bolivia.," January 1, 2004, https://www.gov.uk/dfid-research-outputs/livelihoods-in-conflict-disputes-over-water-for-household-level-productive-uses-in-tarata-bolivia. P. Moriarty, J. Butterworth and B. van Koppen, "In Beyond Domestic: Case Studies on Poverty and Productive Uses of Water at the Household Level," *IRC International Water and Sanitation Centre*, 2004, 137–152.

31. Louisa Lim, "China Tries to Calm Dam Protests," BBC News, November 18, 2004, http://news.bbc.co.uk/2/hi/asia-pacific/4021901.stm.; Ibid.; Luis Ramirez, "China's Sichuan Province Tense in Aftermath of Violent Anti-Dam Protests," *VOA*, October 29, 2009, http://www.voanews.com/a/a-13-china-sichuan-province-tense-in-aftermath-of-violent-anti-dam-protests-67484397/386462.html.

32. BBC News, "'Dozens Dead' in Somalia Clashes," June 12, 2004, http://news.bbc.co.uk/2/hi/africa/4073063.stm.; E Wax, "At Least 16 Killed in Somalia over Water, Pasture Battles," August 6, 2006.; Emily Wax, "Dying for Water in Somalia's Drought," *The Washington Post*, April 14, 2006, sec. World, http://www.washingtonpost.com/wp-dyn/content/article/2006/04/13/AR2006041302116.html.

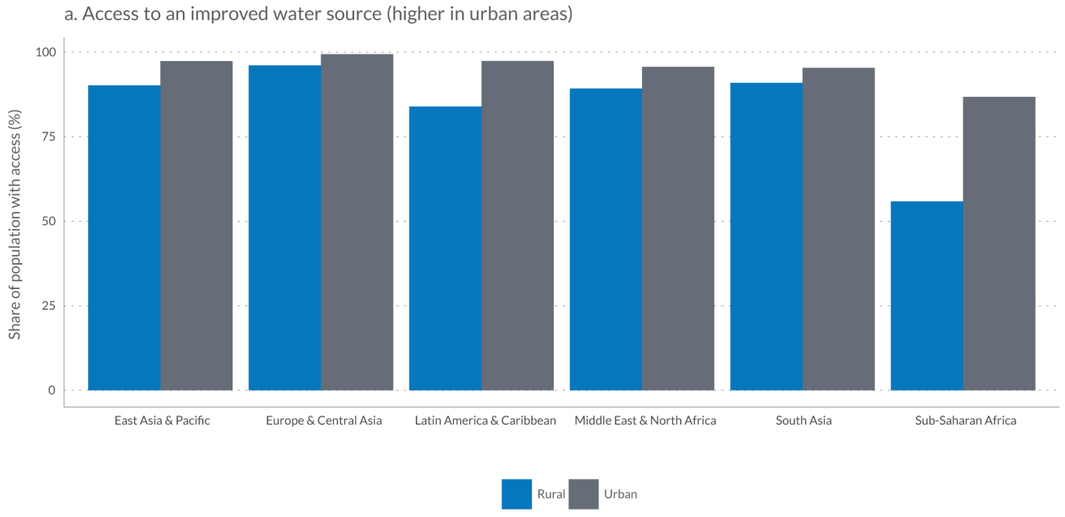
33. BBC News, "Thousands Flee Kenyan Water Clash," January 24, 2005, http://news.bbc.co.uk/2/hi/africa/4201483.stm.; A. Ryu, "Water Rights Dispute Sparks Ethnic Clashes in Kenya's Rift Valley," VOA, 2005, http://www.voanews.com/a/a-13-2005-03-21-voa28/301973.html.;M. Lane, "Personal Communication to P. Gleick Regarding Conflicts in Northern Kenya," *Sunday Nation Newspaper*, July 17, 2005.

34. R. Kozhevnikov, "Uzbekistan Resumes Gas Supplies to Tajikistan," *Reuters*, April 16, 2012, http://www.reuters.com/article/tajikistan-gas-idUSL6E8FG3YL20120416.

35. The World Bank, *Inclusive Green Growth: The Pathway to Sustainable Development* (The World Bank, 2012), http://elibrary.worldbank.org/doi/book/10.1596/978-0-8213-9551-6.

covered by future development projects and initiatives.

Figure 5.4 Regional urban-rural disparities in access to improved water sources and sanitation facilities[36]



The improvement of social services and facilities to ensure equitable and safe access to water directly contributes to the improvement of human capital in developing countries. Vital social, educational and economic opportunities are often too costly for individuals who must attend to

36. The World Bank, *Global Monitoring Report 2015/2016: Development Goals in an Era of Demographic Change (The World Bank, 2015)*, http://elibrary.worldbank.org/doi/book/10.1596/978-1-4648-0669-8.

household chores such as collecting and cleaning water. With greater access to safe drinking water sources and improved sanitary facilities and thereby breaking down common barriers to full empowerment, individuals can devote themselves more fully to achieving their social and economic potential. Furthermore, lack of access to clean water sources increases susceptibility to infectious disease in both rural areas and urban slums both on an individual and community level. Better access to safe water sources is also associated with lower infant mortality,[37] and increased productivity and household income levels.[38] As water-related issues are projected to increase in the face of growing global demand and climate change-induced effects, it is also important to eliminate water shortage concerns as a potential source of popular grievance.

Vital social, educational and economic opportunities are often too costly for individuals who must attend to household chores such as collecting and cleaning water.

New trends related to water purification technologies, such as micro-cleaners and personal water purifying systems, once again follow the growing norm of disintermediation and empower citizens to strengthen their own livelihood-enhancing capacities. Ceramic water filters produced by the United Nations and Water and Sanitation Program have increased access to clean drinking water in Cambodian households at extremely low costs. Using ceramic water filters, the cost of providing safe drinking water per family is approximately $0.0011-$0.00027 USD per liter, making it accessible to all but the very poorest of families.[39] Products such as these will allow for citizens to make individual strides to improve their livelihoods in the future.

Overall, the improvement of access to safe water sources and improved sanitation facilities and services can pervasively influence social inclusion and accelerate the development of human capital in developing countries while improving levels of economic prosperity. This process will heighten the stake that citizens have in maintaining peace at both a local and national scale and thereby increase overall resilience to conflict.

5.5 Pro-People Power: Electricity Generation from Renewable Sources

As uncertainty continues to distress the hydrocarbon industry as a result of the plummeting of fossil fuel commodities in 2015, renewable energy technologies have continued to increase their market share. Global investment in renewable energy sources rose 5% to a total of $285.9 billion last year. This figure is well above the previous annual record of $278.5 billion in 2011, during the peak of the 'green stimulus' programs.[40] As can be seen above , total electricity generation from renewable energy sources has more than doubled in the past 35 years. Today, investment in renewable energy sources is no longer a luxury and developing countries now invest more in renewable technologies than developed nations.

Today, investment in renewable energy sources is no longer a luxury and developing countries now invest more in renewable technologies than developed nations.

37. Annette Prüss et al., "Estimating the Burden of Disease from Water, Sanitation and Hygiene at a Global Level," *Environmental Health Perspectives* 110, no. 5 (May 2002): 537–542. See also Marianne Fay et al., "Achieving Child-Health-Related Millennium Development Goals: The Role of Infrastructure," *World Development* 33, no. 8 (August 2005): 1267–84, doi:10.1016/j.worlddev.2005.03.001.

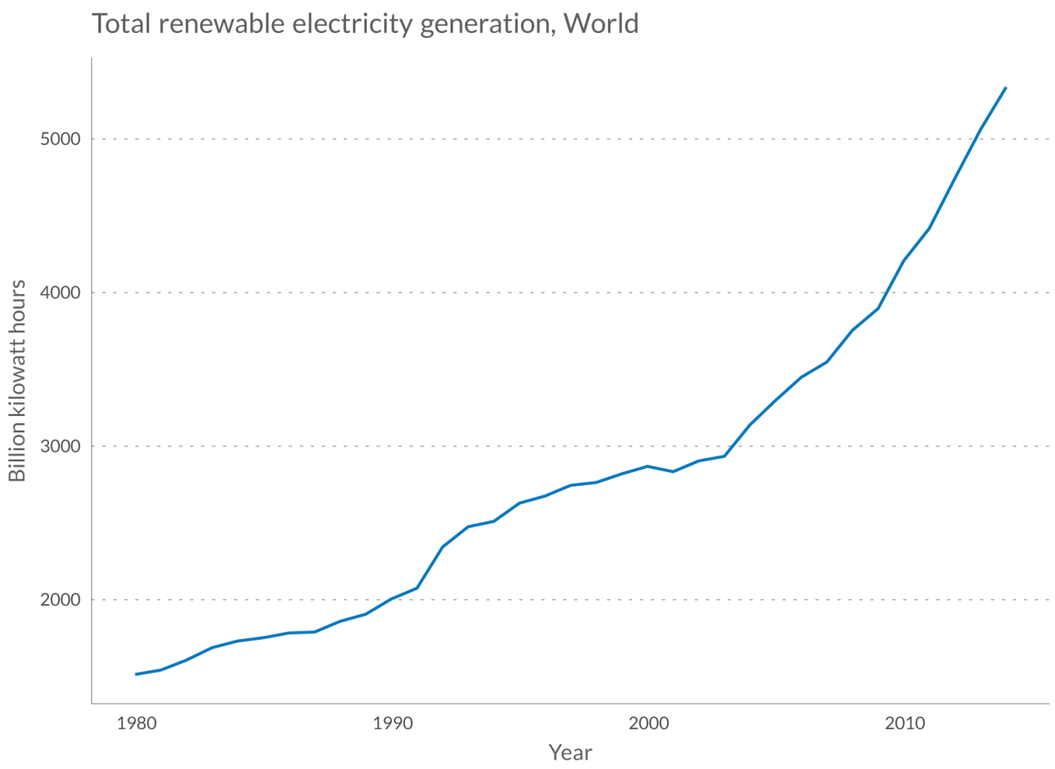
38. The World Bank, *Global Monitoring Report* 2015/2016.

39. Joe Brown, Mark Sobsey and Sorya Proum, "Use of Ceramic Water Filters in Cambodia," WSP Field Notes, August 2007, 14, http://www.potterswithoutborders.com/wp-content/uploads/2011/12/926200724252_eap_cambodia_filter.pdf.

40. Frankfurt School-UNEP Centre/BNEF, "Global Trends in Renewable Energy Investment 2016" (UNEP's Division of Technology, Industry and Economic (DTIE), 2016), 12, http://fs-unep-centre.org/sites/default/files/publications/globaltrendsinrenewableenergyinvestment2016lowres_0.pdf.

In 2015 the developing world invested almost $156 billion last year, while developed countries invested around $130 billion.[41] For more trends in renewable energy investment see Figure 5.6.

Figure 5.5 Global Trend of Access to Electricity from Renewable Energy Sources, 1980-2015.[42]



Developing energy infrastructure outside of established frameworks and institutions can circumvent barriers to progress related to corruption, rent seeking or inefficiency. As some renewable energy sources have followed a largely decentralized model of development as a result of grassroots or foreign investment initiatives,[43] off-grid electricity sources such as solar photovoltaics have become one of the best investment opportunities for sustainable development initiatives today. Deutsche Bank predicts that 80 percent of global renewable energy market could achieve grid parity in the next couple of years at the current rate of growth,[44] meaning that costs associated with renewable energy production and consumption will be less than or level with those associated with traditional hydrocarbon sources.

41. Ibid., 15.

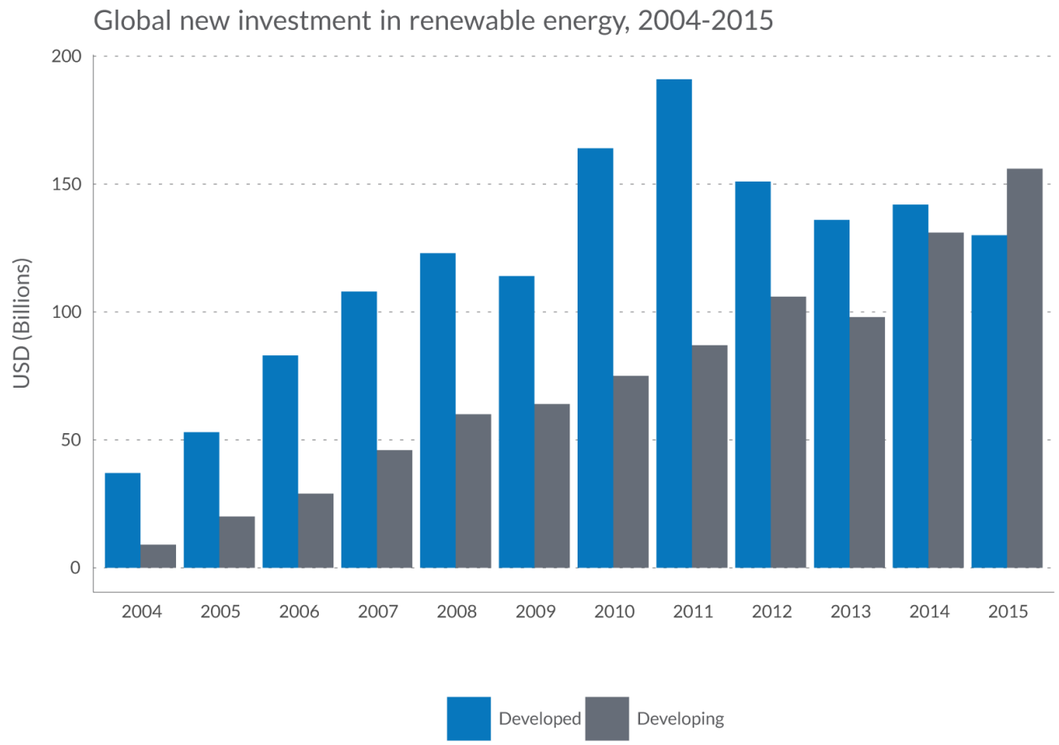
42. The U.S. Energy Information Administration. "Net Generation from Renewable Sources: Total (All Sectors), 2005 - 2015," 2015. http://www.eia.gov/electricity/annual/html/epa_03_01_b.html.

43. Rijksdienst voor Ondernemend Nederland, "Renewable Energy Report: Part 1 - Implementation 2003-2013," 2014, 28, http://english.rvo.nl/sites/default/files/2014/09/Renewable%20energy%20report.pdf. See also Frankfurt School-UNEP Centre/BNEF, "Global Trends in Renewable Energy Investment 2016," 36.

44. Bleich Katherine and Rafael Dantas Guimaraes, "Renewable Infrastructure Investment Handbook: A Guide for Institutional Investors," Industry Agenda, December 2016, 6, http://www3.weforum.org/docs/WEF_Renewable_Infrastructure_Investment_Handbook.pdf.

Increasing reliance upon renewable energy resources as a means for electricity production and subsequent consumption not only curtails growing risks associated with carbon emissions and climate change, but also can expand job markets,[45] improve public health,[46] safety and education,[47] improve living standards,[48] and strengthen infrastructural resilience against external shocks and natural disasters.[49] The development of national energy industries also boosts technical expertise among workers in developing nations, providing them with the skills and opportunities to better fulfill their social and economic potential.[50]

Figure 5.6 Renewable Energy Investment Trends in Developing and Developed Countries, 2004-2015.[51]



45. The International Renewable Energy Agency, *Renewable Energy and Jobs: Annual Review 2016*, (The International Renewable Energy Agency, 2016), http://www.se4all.org/sites/default/files/IRENA_RE_Jobs_Annual_Review_2016.pdf.

46. The World Health Organization, "Health Indicators of Sustainable Energy," 2012, http://www.who.int/hia/green_economy/indicators_energy1.pdf.

47. United Nations Department of Economic and Social Affairs, "Electricity and Education: The Benefits, Barriers and Recommendations for Achieving the Electrification of Primary and Secondary Schools," December 2014, https://sustainabledevelopment.un.org/content/documents/1608Electricity%20and%20Education.pdf.

48. P. J. Turyareeba, "Renewable Energy: Its Contribution to Improved Standards of Living and Modernisation of Agriculture in Uganda," *Renewable Energy* 24, no. 3 (2001): 453–457.

49. Eliza Hotchkiss, "How Solar PV Can Support Disaster Resiliency," *National Renewable Energy Laboratory Blog*, February 3, 2015, https://www.nrel.gov/tech_deployment/state_local_governments/blog/how-solar-pv-can-support-disaster-resiliency.

50. The International Renewable Energy Agency, *Renewable Energy Benefits: Measuring the Economics* (The International Renewable Energy Agency, Abu Dhabi, 2016), 11, http://www.irena.org/DocumentDownloads/Publications/IRENA_Measuring-the-Economics_2016.pdf.

51. Ibid.

The prospect of foreign investment in developing countries' renewable energy capabilities also provides economic partnership and development opportunities for corporations, skilled workers and aspiring young professionals in partner countries. However the introduction of renewable energy sources into energy economies nonetheless requires high amounts of capital to fund new projects found at local to national levels. To counter this, technological miniaturization and off-grid, decentralized electricity generation trends have gradually enabled energy consumers to also act as energy producers and have also taken advantage of the disintermediation process to foster greater individual empowerment in developing countries.

Micro- or nano-grids can increase resilience to external shocks that could potentially damage energy grids and deprive regions of electricity. This is particularly important in the face of growing resource scarcity and climate change-related issues. The implementation of a decentralized energy and water management system featuring a 2,500 cubic meter water tower in northern Cameroon that uses energy from solar PV panels to pump water from an underground reservoir has provided almost 80 percent of the inhabitants of six nearby villages with clean drinking water.[52] Initiatives such as these that transform citizens into energy producers, reduce reliance on large corporations and greatly accelerate improvements in individual empowerment as a result.

Renewable energy provides investors, future workers and its stakeholders with new development opportunities that are less exposed to the volatility of the hydrocarbon energy market today. In developing countries where agriculture remains a major source of income for the majority of the population, decentralized renewable energy systems raise levels of empowerment, improve quality of life and modernize agricultural processes to increase efficiency. Along with increases in the quality of life and economic prosperity, citizens gain greater stake in fair governance practices and the state of peace, which raises societal levels of conflict resilience and enables further expansion of other livelihood-enhancing services and opportunities into new communities.

Renewable energy provides investors, future workers and its stakeholders with new development opportunities that are less exposed to the volatility of the hydrocarbon energy market today.

5.6 Breaking Barriers to Build Them: Gender Equality and Societal Conflict Resilience

Global levels of gender inequality are slowly declining. According to the World Economic Forum's Global Gender Index, considerable progress has been made in closing the gender gap. The index distinguishes four core domains – economic, education, health and political – to measure gender inequality. Over the past ten years, while the domain of health has slightly decreased, the remaining three domains have trended upward. The development of inclusive employment practices with specific regard to the employment and fair treatment of women in the labor force has been furthered by numerous supranational and intergovernmental organizations such as the United Nations, the International Labour Organisation and the European Union. However, this institutional attention paid towards women's rights is a privilege that today remains disproportionately concentrated in the West and even there has not led to full gender equality. In developed and developing countries alike, women today continue to be excluded from positions often due to social or cultural acceptance

52. Elias Ntungwe Ngalame, "Decentralized Energy Management Brings Changes in Power and Poverty Struggle in Africa," *Discourse Media*, August 29, 2016, http://powerstruggle.discoursemedia.org/the-long-tail/decentralized-energy-management-africa/.

factors. Today it is estimated that women contribute to 52 percent of global work and men to 48 percent.[53] Despite this, gender discrimination continues to persist in even the most developed societies – in the United States, the salaries of female financial specialists are only 66 percent of their male counterparts'.[54] To make things worse, as of 2015, only 71 countries currently have legislative measures in place ensuring nondiscrimination based on gender in hiring practices.[55]

Female participation in the labor force has been linked to increased productivity and innovation and improved levels of domestic spending on children and youth.[56] Furthermore, women's collective agency, when improved, can drive institutional change to encompass a wider representation of inclusive and positive values and norms. Greater rates of female representation in the labor force, high levels of socioeconomic development and improved cultural attitudes towards women in developed countries have resulted in greater political representation of women in national legislatures.[57] Increasing female representation in legislative bodies in turn gives rise to developments promoting a healthier family and work time balance,[58] and prevents the development of an 'inequality gap', which can restrict future generations of women from accessing a fair education or equal economic opportunities and in turn inhibits their ability to make informed decisions and fulfill their social and economic potential.

Increasing female participation in security, governance, sustainable development and peace negotiations ensures a more diverse set of perspectives and facilitates greater innovation in the policymaking process. It has even been argued that due to their "greater experience with nurturing and human relations," women are better in conflict resolution and group decision-making and have the potential to transform world politics through their greater capacity to create and maintain peace.[59] We all stand to benefit from increased levels of female empowerment as more women gain greater access to social, political and economic opportunities and attitudes towards greater female participation in key societal processes gradually become more positive. As women become more empowered members of society, civic demands for fair democratic representation will also rise alongside their improved socioeconomic conditions.

5.7 Ensuring Social Inclusion in the Global War Against Poverty

In 1990, approximately 37.1% of the world population was living below the poverty threshold. In 2015, this proportion fell to approximately 9.6%.[60] This remarkable progress is a result of a unified global effort to curb inequality – which is inherently tied to poverty – and increase quality of life for citizens across the world. The elimination of poverty is the first of the United Nation's Sustainable

53. The United Nations Development Programme, "Human Development Report 2015: Work for Human Development" (New York, NY: United Nations Development Programme, 2015), 11, http://hdr.undp.org/sites/default/files/2015_human_development_report.pdf.

54. Ibid., 5.

55. The World Bank, "Law Mandates Nondiscrimination Based on Gender in Hiring (1=yes; 0=no)," *The World Bank*, 2016, http://data.worldbank.org/indicator/SG.LAW.NODC.HR.

56. The World Bank, *World Development Report 2012: Gender Equality and Development* (The World Bank, 2011), http://elibrary.worldbank.org/doi/book/10.1596/978-0-8213-8810-5.

57. Richard E. Matland, "Women's Representation in National Legislatures: Developed and Developing Countries," *Legislative Studies Quarterly* 23, no. 1 (February 1998): 109, doi:10.2307/440217.

58. The World Bank, *World Development Report 2012*, 35.

59. Joshua S Goldstein, *War and Gender: How Gender Shapes the War System and Vice Versa* (Cambridge: Cambridge University Press, 2003), 41–43.

60. The World Bank, *Global Monitoring Report 2015/2016*.

Development Goals and aims to end global poverty by 2030.[61] The World Bank has also announced a similar initiative and also has outlined 2030 as a target date.[62]

On a societal level, poverty and social inequality are detrimental to economic growth, weaken social cohesion and can potentially drive conflicts due to increased political and social tensions. Enhanced livelihoods provide citizens with a sense of purpose and an incentive to avoid crime and violence.[63] Food scarcity in impoverished communities can also be a source of conflict and projects providing better and more stable supplies of food have been shown to contribute positively to peace and security.[64] Impoverished communities are also less likely to be affected by the aforementioned peace drivers. Women and youth are more likely to be excluded from various economic opportunities, the Internet and its related services become more challenging to access and financial inclusion measures are less likely to be effective. In many cases, poverty acts as a blanket inhibitor of the effects of positive drivers of peace by excluding individuals from the benefits of socioeconomic development.

The considerable attention given to ending extreme poverty today is due to its diverse and destructive manifestations that drastically impact the livelihood and quality of life of extremely poor people. As a result of poverty, over 700 million people in the world cannot fulfill their most basic needs and are prevented from participating fully within society. Furthermore, despite recent gains, average within-country inequality is greater now than 25 years ago and the income shares of top income groups expand at rates faster than those of lower income groups.[65]

As a result of poverty, over 700 million people in the world cannot fulfill their most basic needs and are prevented from participating fully within society.

Several instances of using economic growth to expand economic opportunities and enhance prosperity across all social groups demonstrate how lingering symptoms of poverty can be avoided. The Malaysian government for example has made various micro-entrepreneurial schemes and microfinancing opportunities available to Malaysian women through financial institutions such as Amanah Ikhtiar Malaysia and TEKUN Nasional, which, next to economic prosperity, promotes social inclusion and gender inequality. Furthermore, the involvement of international experts with specialized knowledge can power environmentally-friendly development. For example, environmental rehabilitation and promotion of sustainable food production have been shown to reduce poverty and food scarcity and present a possibility for greater individual empowerment and enhanced peace-building opportunities.[66] Sustainable projects and initiatives such as these can be paired with poverty alleviating measures to create an environmentally-aware mindset among communities in developing countries and increase demand for skilled labor.

61. The United Nations, "No Poverty: Why It Matters," August 2016, 1, http://www.un.org/sustainabledevelopment/wp-content/uploads/2016/08/1_Why-it-Matters_Poverty_2p.pdf.

62. The World Bank, "World Bank President Outlines Strategy to End Poverty, Welcomes New Development Partners," *The World Bank*, April 7, 2015, http://www.worldbank.org/en/news/press-release/2015/04/07/world-bank-president-strategy-end-poverty-new-development-partners.

63. Andreas Wenger and Daniel Mockli, "The Untapped Potential of the Business Sector," January 3, 2004, https://www.rienner.com/title/Conflict_Prevention_The_Untapped_Potential_of_the_Business_Sector.

64. See Emmy Simmons, Emmy Simmons, "Harvesting Peace: Food Security, Conflict and Cooperation," *Wilson Center*, September 10, 2013, https://www.wilsoncenter.org/publication/harvesting-peace-food-security-conflict-and-cooperation. But also think of Amartya Sen's famous finding that no famine has ever occurred in a democracy. Amartya Sen, "Poverty and FaminesAn Essay on Entitlement and Deprivation - Oxford Scholarship," January 20, 1983, http://www.oxfordscholarship.com/view/10.1093/0198284632.001.0001/acprof-9780198284635.

65. The World Bank, *Poverty and Shared Prosperity Flagship 2016* (Washington DC: The World Bank, 2016), https://works.bepress.com/aparajita_goyal/33/.

66. Petter Gleditsch and Indra De Soysa, "To Cultivate Peace: Agriculture in a World of Conflict," *Wilson Center*, July 7, 2011, https://www.wilsoncenter.org/publication/to-cultivate-peace-agriculture-world-conflict.

Overall, reducing global poverty levels through development efforts can greatly enhance the livelihoods of disadvantaged citizens in both developing and developed countries. Further measures to enhance social inclusion will thereby enable citizens to participate fully within society and fulfill their potential. As poverty reduces the possibility of the above mentioned positive developments from reaching citizens through a process of social exclusion, its reduction will improve access to livelihood enhancing services, boost citizen empowerment and quality of life and thereby strengthen conflict resilience at a societal level.

5.8 Change Acceleration in the Modern Era

The road ahead might seem long, especially in the face of pressures related to a growing world population and climate change. When gauging our range of possibility in the long-term and the means through which we must seek to attain them in the short-term, we must take into consideration the rate of change that humankind has seen throughout history. Ray Kurzweil's 'Law of Accelerating Returns'[67] postulates that diverse technological developmental processes have progressed at an exponential rate, with the overall rate of progress doubling per decade. This means that our potential to drive change in the long-term will reach levels unfathomable to us today.

This novel understanding of our rapidly-evolving technological capabilities presents an exciting possibility for the current state of socio-economic development. Technologies driving social and financial inclusion, access to vital resources such as water or electricity, improved governance mechanisms and civil empowerment may improve drastically and greatly accelerate the rate of change achievable in the coming years. While factors such as the Internet, or technological miniaturization and nanotechnology are contemporary examples of accelerants enabling rapid change, new technologies can emerge in the short-term that can in turn further propel even faster rates of global developments. The prospect of rapid improvement of livelihood-enhancing functions and economic prosperity lend themselves to an equally improving prospect of sustainable peace through enhanced levels of societal conflict resilience.

5.9 Conclusion

Greater security policy focus on increasing societal resilience is unlikely to radically transform the geopolitical landscape in the short-term. It can, however, drive significant changes in global approaches to development and security. Security approaches focusing on the gradual and sustainable development of human capital may entail a shift towards more realistic policy goals, increased third party (private companies, NGOs, global solution networks, etc.) involvement and more comprehensive international engagement strategies. As livelihood-enhancing services in developing countries expand, as citizens gain a greater stake in the security of their societies and as individuals come to embrace values of self-actualization rather than mere survival, there is a lower risk of conflict emerging from the bottom-up as a result of economic or social grievances.

A resilient society should not only attempt to respond to disruptive forces threatening to incite violent conflict by attempting to restore balance. Rather, in order to make societies sustainably resilient, new systems should be designed within them that are capable of dealing with both

67. Ray Kurzweil, "The Law of Accelerating Returns," March 7, 2001, http://www.kurzweilai.net/the-law-of-accelerating-returns.

present and future conflict threats. Positive development trends focused on citizen empowerment have improved livelihood-enhancing services in developing countries and greatly increased the quality of life for citizens that have historically struggled to gain access to crucial resources and opportunities.

In order to make societies sustainably resilient, new systems should be designed within them that are capable of dealing with both present and future conflict threats.

These trends bode well for global security and as crucial services and processes become more inclusive in terms of their scope and degree of accessibility, more citizens will gain a greater stake in the security of their families, communities, countries and regions. We therefore still expect global societal resilience – also to conflict – to increase in the future with further private and public engagement in developmental processes.

All of this serves as a reminder that the obtainment of our societies' defense and security objectives does not depend solely – or even primarily – on our defense and security organizations. We have also argued on many occasions that they may increasingly play an even more important role as 'smart nudgers' of a much broader – and potentially more powerful and effective – defense and security ecosystem. But it is important to acknowledge that there are many other powerful forces at work that appear to be pushing in the same direction of more sustainably 'secure' societies.

The developmental forces we have described in this study are profoundly disruptive in nature. As they gather steam, they will require careful transition strategies— especially targeting the resilience of most affected groups. Investments in that resilience – both at home and abroad – is, we argue, a worthwhile part of our societies' defense and security investment portfolios. As we will suggest in the concluding study of our StratMon 2016-2017 report, this will require truly transformational thinking on the part of our defense and security organizations (and ecosystems). Yet it would be foolhardy to underestimate the independent security-relevant impact of those deeper resilience-enhancing forces.

Many of the new resilience-enhancing powerful forces appear – for the most part – blissfully impervious to what is happening at the official 'policy' level. Whether or not Western governments will push for renewable energies (and they may not), the cost curves for existing technologies (mostly solar and wind) continue to drop precipitously and there are many more new technologies waiting in the wings to complement them. These technologies are likely to dramatically weaken the power of both 'traditional' hydrocarbon companies and the governments that so addictively depend on them. Whether or not governments will be able to implement the Paris Agreement on Climate Change, market forces – in many cases boosted by the heft of governments like the Chinese – are now likely to push that agenda much more swiftly and sustainably than any intergovernmental agreement ever could. Whether or not increasingly nationalist, populist, anti-globalization forces come into power in a number of key Western countries, it remains to be seen whether they will prove a match for the powerful global supply chains that even their own 'champions' are now also inextricably interconnected with – especially as a bigger and bigger piece of the global pie is generated by bits and not atoms. Whatever our aid development agencies do, the net impact of some of various new social technologies may ultimately prove far more powerful in uplifting the remaining bottom billion. The jury is still very much out on the ways in which some at first glance relatively strong but illiberal states – whether democratic, authoritarian or in-between – are leveraging new digital and social technologies to exert more control over their own citizens. Will their increasingly educated, tech-savvy and well-traveled populations allow their efforts to come to fruition? Or may the fact that these governments seem so paranoid about their own security and their need to 'control' their

citizens be the best indication of a deeper (and self-acknowledged) weakness?

The disruptive gales of "schöpferische Zerstörung" (creative destruction) are starting to have a massive impact on what we have called 'the (underappreciated but increasingly powerful) flip side of the security coin': security resilience. Our defense and security organizations would be well advised to position themselves on the 'right' side of these gales.

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Cover Picture

Monks Protesting in Burma. Author: Racoles.