CHAPTER 1

Big Finance, Big Technology, Wicked Problems, and the World’s Poor

THE BASICS: WHAT ARE BIG FINANCE, BIG TECH, SOCIAL FINANCE, AND WICKED PROBLEMS?

Let’s begin at the beginning with some common language and concepts. What do we mean when we say Big Finance, Big Tech, social finance, and Wicked Problems? First, let’s follow the money—who makes it, manages it, and who is doing good with it?

For a start, globally, the International Finance Corporation (IFC)—a member of the World Bank group—estimates there is as much as $269 trillion in financial assets held by institutions and households (IFC 2019). These assets are managed by banks, pension funds, Development Finance Institutions (DFI), private investment firms, foundations, and family offices—we collectively refer to these institutions as Big Finance. (Money hidden in a mattress doesn’t count.) In addition to the traditional financial returns, Big Finance is also using capital to achieve social and environmental returns, and the commitment is growing thanks in large part to client pressure by Generation Z, millennials, and women. This is a potentially transformative period in finance aligning interest of clients, the needs of private investors, and the call for funding of the UN Sustainable Development Goals. IFC, the world’s largest DFI, estimates that “investor appetite for impact investing is as high as $26 trillion—$21 trillion in publicly traded stocks and bonds, and $5 trillion in private markets involving private equity, non-sovereign private debt, and venture
capital …. Private impact funds currently total around $71 billion. Larger amounts are invested by DFIs, including more than $700 billion by those following harmonized measurement metrics, and in green and social bonds (over $400 billion outstanding). In addition, a share of the $8 trillion dedicated to activist investing in public markets may be managed for impact …. Green bonds have grown from around $10 billion in 2013 to $183 billion in 2018” (IFC 2019).

With the growth in the demand for new green and socially responsible investments comes the growth in “greenwashing” and the potential for deceptive claims (Financial Times 2019). There are efforts to develop principles for stopping “impact washing.” For example, the IFC developed Operating Principles for Impact Management to avoid problems in the field (IFC 2019). These principles are being adopted by watchdog advocacy organization, Accountability Counsel, calling out negative impacts in the international development and impact investing space. It has encouraged IFC to expand its principles and give greater community voice and oversight throughout the life of an investment to ensure safeguards for vulnerable communities. There is a growing call for greater scrutiny and more principled money with the rapid growth of the social finance market principles and the drive to leverage the trillions needed in private capital to achieve the SDGs with integrity.

What About Big Tech?

Forbes’ 2019 ‘Global 2000’ ranking of public companies calls out the largest and most successful companies on the planet, and tech businesses “account for more than $9 trillion in market value, $4 trillion in assets, and nearly $3 trillion in sales” (Ponciano 2019). In 2000, tech companies continued to grow in value, making up 10% of the top 100 firms. The five biggest tech companies in the world—Amazon, Apple, Facebook, Microsoft, and Google’s parent company Alphabet are collectively worth hundreds of billions of dollars, exceeding the value of economies of countries as big as Saudi Arabia. As well as these United States-headquartered brands, there are Asian companies such as Tencent and Alibaba that are part of the powerful Big Tech mix.

Big Tech companies drive Big Finance. Apple continues to be in first place as the most successful tech company in the world with an estimated $267 billion in revenue in 2019. In the end, this massive amount of money is managed somewhere in the world by big financial institutions.
There are dark and light, negative and positive sides to how Big Tech’s resources are used. Well-known tech companies are tackling challenging social and environmental issues caused by lack of consistent global regulation of internet technology and ease of criminals avoiding detection online. For an example of Big Tech working for the common good, we can look to 2018, when major technology companies agreed to work with World Wildlife Fund through the Global Coalition to End Wildlife Trafficking Online. Twenty-one companies including Alibaba, eBay, Etsy, Google, Instagram, Microsoft, Pinterest, Shengshi Collection, Tencent, and 58 Group pledged to work together to collectively reduce wildlife trafficking online across platforms by 80% by 2020 (WWF 2018). In collaboration with WWF, TRAFFIC, and the International Fund for Animal Welfare (IFAW), each company has been developing and implementing policies and solutions to help end wildlife trafficking online. According to WWF, bringing industry together offers the best opportunity to close the web to wildlife traffickers. Inconsistent policies and enforcement allow for trafficking ads to be removed from one site to pop up on another. Illegal sales run from elephant ivory carvings to live animals such as tiger cubs. Further, the sales are in breach of a site’s rules. WWF finds that because the Internet’s global connectivity and relative anonymity of sellers, combined with rapid transport, enable wildlife traffickers to buy, sell, and ship animals and wildlife products with an online transaction. There is a further worry that as traders and consumers move online, it will be critical to ensure that social media and e-commerce platforms cannot be exploited by the loopholes to detection created by wildlife traffickers (WWF 2018).

The estimated annual value of wildlife crime globally is $20 billion. Approximately 20,000 African elephants are illegally killed each year for trade in their tusks, and nearly three rhinos are poached each day in South Africa alone for their horns. WWF claims that countless species are under threat from trafficking, accelerated by online access to consumers, most of whom are unaware that the product they are buying could be devastating species populations and funding crime gangs (WWF 2018). This illustration shows the yin-yang of the impact of technology and the planet. According to the UN Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, wildlife protection is critical: more than 1 million species could be extinct within the next few decades (IPBES 2019).
But Big Tech’s dark side can appear more pronounced than its contributions to social or environmental good. A 2020 edition of MIT Technology Review pointed out that Silicon Valley didn’t equip the United States with the infrastructure and technology it needed to fight the COVID-19 pandemic. It hasn’t provided many solutions to climate change. Its gig-economy platforms contribute to weakening labor protections, and its social media sites spread misinformation that weakens democracy (MIT Technology Review 2020). The dark side of Big Tech’s impact on the world’s most vulnerable is illustrated in a Financial Times headline: *Tech giants sued over child deaths in DRC cobalt mining* (Dempsey 2019). A landmark legal case was brought against the world’s largest tech companies by families living in the Democratic Republic of the Congo (DRC) who say their children were killed or maimed while mining for cobalt used to power smartphones, laptops, and electric cars (Kelly 2019). Apple, Google, Dell, Microsoft, and Tesla were named as defendants. Cobalt is needed to power rechargeable lithium batteries used in millions of products sold by popular brand tech companies. Demand for products has tripled in the past five years and is expected to double again by the end of 2020. More than 60% of cobalt originates in DRC, one of the poorest and most unstable countries in the world (Kelly 2019).

The court papers allege that cobalt from the UK Glencore-owned mines is sold to Umicore, a Brussels-based metal and mining trader, which then sells battery-grade cobalt to Apple, Google, Tesla, Microsoft, and Dell. Other plaintiffs in the court documents say they worked at mines owned by Zhejiang Huayou Cobalt, a major Chinese cobalt firm which the lawsuit claims supplies Apple, Dell, and Microsoft and is likely to supply the other defendants.

Children were paid as little as $2 a day for dangerous work in which many were said to have died in tunnel collapses while others suffered life-changing injuries from accidents. The tech companies have been accused of being complicit in the forced child labor. Specifically, the families believe the tech companies had the authority and resources to supervise and regulate their cobalt supply chains, and they knew of the conditions and the link of their products to dangerous child labor conditions.

Apple responded saying: “In 2014, we were the first to start mapping our cobalt supply chain to the mine level and since 2016, we have published a full list of our identified cobalt refiners every year, 100 percent of which are participating in independent third-party audits. If a refiner is unable or unwilling to meet our standards, they will be removed from our
supply chain. We’ve removed six cobalt refiners in 2019” (Kelly 2019). As the world’s insatiable desire for tech products grow, the issue of slavery in the supply chain will remain a grave concern.

In this book, we do not want to downplay the dark side of Big Tech, and the current tensions are especially apparent in Chapter 5. At the same time, we do not want to overlook the “Tech for Good” entrepreneurs who are hoping technology will spur positive social change. Chapter 5 describes Big Finance and Big Tech prototypes that are being used for good. One is Humanity United The Working Capital Fund, which is an example of how large companies including Apple, Disney, and Walmart are partnering with Humanity United, Open Society, and Children’s Investment Fund Foundation to use technology and business to address modern-day slavery in the supply chain. A second example in Chapter 6 is the USB’s Educate Girls Development Impact Bond (DIB) which shows how big banks can use social finance for good and serve as a launch pad to advance the SDGs through partnerships with IdInsight and Educate Girls to more effectively target and scale education of girls’ efforts through technology. Also, in Chapter 6, there is the Future-Fit Foundation case that captures how Big Tech and Big Finance can work together to take on Wicked Problems in a purposeful way.

What Is Social Finance?

The industry-wide definition of social finance is still evolving as academic literature and test cases help to shape the practical understanding of the field. There are no universal definitions for some common financial instruments used to pursue the SDGs (Weber and Ermotti 2018). We use two definitions of social finance. First is the one used at the Oxford Social Finance Programme, provided by Oxford scholar and Social Finance author Alex Nicholls et al. (2015): “The allocation of capital primarily for social and environmental returns, as well as in some cases, a financial return.”

Social finance represents new investment approaches aimed at solving complex social challenges, and delivering social and environmental returns at below- or market-rate financial returns. As illustrated in Fig. 1.1, these investment tools encompass hybrid funding models and structured deals that blend various types of capital, from philanthropy to private capital. Funding can come from philanthropic donations, government grants,
“soft” return debt and equity, mutual finance, or “finance first” and “total portfolio” impact investing strategies (Nicholls et al. 2015).

Social finance invites all investors to consider social improvement as an important value-add to society and to their organizations (Nicholls 2012).

Another definition of social finance is used by the UBS Optimus Foundation (Optimus) to leverage private capital: “Financial mechanisms that have potential to mobilize significant private funding for development programs, while increasing the effectiveness of such programs in solving the world’s most pressing social challenges. Private capital is designed to complement and supplement, rather than replace, existing funding from governments and NGOs.” To Optimus, social finance also means an “explicit intention to generate measurable social impact, alongside a (typically below-market) financial return” (The UBS Optimus Foundation 2018).

These two definitions of social finance are complemented by others from the broader field, such as the Social Affairs and Inclusion Directorate of the European Commission, which offers additional social finance characteristics: methods that are autonomous of the state, nominally repayable, transparent about social impact outcomes, and inclusive (Varga and Hayday 2016).
Who Are the Players in Social Finance?

The various actors involved in the social finance ecosystem fall into three main roles—demand, supply, and intermediators—as described in Fig. 1.2.

On the supply side, banks, governments, venture capitalists, community development agencies, and other funders provide up-front capital. From there, intermediaries allocate the funding to the on-the-ground service providers. These intermediaries sometimes also manage risk for supply-side investors. Demand-side players are often nonprofits, charities, and social purpose businesses that allocate services and goods to vulnerable individuals in target countries and regions. These groups are responsible for measuring and reporting results to show progress on specific social issues (Rexhepi 2017).

Fig. 1.2  Overview of social finance marketplace (Source Adapted and re-drawn from Gadaf Rexhepi [2017])
The Social Finance Movement

Social finance is becoming more than a method of investment—it’s a movement fueled by growing client and CEO interests and the call for private sector support of the UN SDGs, which are uniting action across sectors for a common purpose (Nicholls et al. 2015; Christian et al. 2017). Attitudes across sectors are also changing about the definition of “impact and success,” with a greater focus on programs that are business-oriented and evidence-based (The Global Impact Investing Network 2018). Education is crucial to building this movement. Partners for a New Economy (P4NE) have backed pfc social impact advisors’ Capital for the Common Good Initiative which uses global online and in-classroom curricula, cases, and videos featuring alternative economic and financial models to train and transform social finance executives—current and future—to adopt new economic models that are human and planet-centric. The materials are used on the Oxford Social Finance course (Said Business School), and are being shared with 45 collaborating academic partners and the Skoll Centre for Entrepreneurship. In order to scale up their impact even further, they are also promoted to private and public sector colleagues so that they incorporate them into their own work so that their actions are more likely to reform the global economy in a way that allows people and nature to thrive.

Big Finance and Big Technology’s Role in Social Change

Social finance, impact investing, and technology are often seen as panaceas to cure Wicked Problems that threaten the world’s most vulnerable. This optimism is tempered by a series of yin-yang, light and dark side events over the past decade.

Several triggers are accelerating private investment in social change. First, the implosion of Lehman Brothers and global meltdown in 2008 triggered a shift in the banking and financial industry. The crisis continues to serve as a stark reminder of what can go wrong on a global scale and the enormous level of public distrust ignited toward financial institutions. It also spurred several banks to adopt more socially oriented products. (A jaded perspective is that the activity was an effort to improve their public image; the more positive perspective is that the crisis led to an epiphany that money has a greater social value.)
Regardless of the motivation, there have been several financial institutions that have made a commitment to what can be called “capital with purpose.” CEOs like Blackrock’s Larry Fink and Sergio Ermotti, long-time CEO of UBS (now at Swiss Re) are calling for proactive leadership toward sustainability goals. UBS created its #TOGETHER public campaign that supports the SDGs. The year 2019 saw 181 business leaders of the Business Roundtable pass a new statement to redefine the purpose of a corporation as including all stakeholders—not just shareholders—but employees, community, customers, and suppliers (Business Roundtable 2019). Other examples of business’ action to support social and environmental good include Goldman Sachs’s acquisition of Imprint Capital in 2015, and the launch in 2019 of the Sustainable Finance Group. Schroders acquired Blue Orchard, a leading global impact investment manager, calling it “a blueprint for the future of our industry” (Schroders 2019). Such initiatives are part of a growing ecosystem of investors, asset managers, investees, advisers, and think tanks that expand the scope of social finance and what it means. Finance Innovation Lab, for instance, incubates new thinking, models, and leadership within the financial sector to put environmental sustainability at its core connects, and to facilitate a shift to a financial system that serves people and planet. There is also ongoing work to promote a shift in monetary policy so that the monetary and credit systems are aligned with ecological and social sustainability. For example, a group of think tanks—New Economics Foundation, Council on Economic Policies, Institute for Innovation and Public Purpose at University College London—are collaborating to leverage the influential position of central banks in financial markets so they use their own balance sheets to support environmental objectives; to steer private sector financing toward sustainable investments; and to significantly reduce financial flows to unsustainable economic activities.

Collaboration and partnership are a recurring aspect of capital with purpose initiatives. Climate Safe Lending, for instance, is an action-focused network of banks and bank influencers—including institutional investors, insurance companies, and civil society leaders—that seeks to redirect bank credit toward climate safe activities. It seeks to align European and North American bank lending with the goals of the Paris Climate Accord to keep the planet well below a $1.5^\circ$ Celsius temperature rise, and hosts a peer-learning lab for internal leaders at medium- to large-size banks. It offers methodologies, models, tools, insights, and other enabling mechanisms to more rapidly accelerate climate positive
lending in their institutions; and a coordinated effort among banks and bank influencers to directly engage banks to move along five progressive levels of balance sheet decarbonization.

Some critics dismiss efforts involving Big Finance as window dressing by an industry that still invests the majority of its holdings in traditional, non-sustainable ways. There have been clear examples of Big Finance masquerading as social purpose. An exposé by the Wall Street Journal found The Abraaj Group, a private equity firm, misused funds purchasing yachts and living a luxury lifestyle, while the founder received high marks for building his firm’s social mission and speaking at high-profile events such as the World Economic Forum’s (WEF) Davos about the role of private equity in supporting social good (Clark 2019). The firm proclaimed it could achieve triple bottom line results but was found to have mismanaged its $1bn healthcare fund. Dubai-based Abraaj had dominated the emerging markets private equity sector. Social purpose funds mostly came from large institutional investors, including the Bill & Melinda Gates Foundation.

It will take time and a concerted effort to ensure that investments with integrity are measurable and that high industry ethics are greeted as the norm. Positive Money is a research and campaigning organization that seeks to reform the banking system, especially the central banks. Positive Money works to align central bank policy with sustainability by advocating for the Bank of England, the Bank of France and the European Central Bank to disclose the carbon footprint of their balance sheets and to add sustainability to their mandates and monetary policy frameworks.

Perhaps there is good news that young people and women investors are ready to hold business accountable and call on investment firms to “up their game,” making a commitment to evidenced-based social finance. Gen Z and X and women clients of all ages continue to demand investments in their portfolios achieve social and environmental returns. Annual surveys undertaken by Deloitte, RBC Wealth Management, and Morgan Stanley all show similar trends. Young clients worldwide believe their investments can positively impact climate change and poverty. RBC finds that 86% of younger Asians believe they have more opportunity to tackle societal issues through investing, compared with 67% of youth in the West (The Economist Intelligence Unit 2018). Morgan Stanley research shows that 75% of millennials surveyed believed their investments could positively impact climate change and 84% believe their investments could move people out of poverty (Choi 2018). A Deloitte survey shows four in
ten millennials believe business has a negative impact on society and the environment, and that business is not doing enough to change behavior (Deloitte 2017).

At the same time, there is growing use of environmental, social, and governance (ESG) factors as a proxy for doing good, even though there is inconsistency in how these principles are interpreted across the financial industry and the positive impact they have. RBC’s Managing Director, Tom Van Dyck, in the San Francisco office is expanding RBC’s profile and commitment to ESG and sustainable investments, and we will discuss his experiences in Chapter 3. He is part of a growing community of theorists and practitioners that is reimagining some of the basic premises and beliefs about the economy and financial success. This includes a new generation of economists—especially women—who are upending their field by questioning the meaning of everything from “value” and “debt” to “growth” and “GDP.” They include people such as Kate Raworth whose work on “doughnut economics” asks that we measure economic success in terms of how social and economic activity adds social and environmental value, and enables people to live within the limits of planetary boundaries. Mariana Mazzucato takes aim at the concept of value, arguing that to date what is rewarded is value extraction rather than value creation. Carlota Perez, Esther Duflo, and Stephanie Kelton are among the other economists offering alternative theories to the long-established but increasingly questioned ones that highlighted shareholder value, financial performance, and economic growth. (See Chapter 1 References for examples of these ‘new economists’ works.)

Meanwhile, technology too is reshaping our economy, our institutions, and our relationships. Big Tech is spawning what the World Economic Forum (WEF) calls the Fourth Industrial Revolution, which has significant opportunities and challenges: “technology will lead to a supply-side miracle, with long-term gains in efficiency and productivity. Transportation and communication costs will drop, logistics and global supply chains will become more effective, and the cost of trade will diminish, all of which will open new markets and drive economic growth.” But the WEF also predicts that this technology “miracle” could expand global inequality, one of the greatest societal concerns today and in the future. This “winner-takes-all” technology-based economy stagnates incomes and hollows out the middle class (Schwab 2016). The rapid rise in unemployment due to the COVID-19 pandemic showed just how vulnerable many
jobs are and how susceptible global economic systems can be to rapid shocks.

For all of its gains, the dark side of technology companies continues to come to life. Most high profile were the revelations of Facebook and Cambridge Analytica’s intrusion into the US 2016 election (Cadwalladr and Graham-Harrison 2018). The pernicious influence of YouTube in the election of populist candidates around the world, like Brazil’s Jair Bolsonaro, illustrates a growing dangerous and seemingly unchecked trend in social media and technologies’ political influence (Fisher and Taub 2019). The Council on Foreign Affairs cites that social media is spawning hate speech and violence against immigrants and helping expand global right-wing populist politics leading to the erosion of democracy and expansion of autocracy and dictatorship (Laub 2019).

The adaptation of technology from the private to the social sphere raises important questions and lessons for the field of social finance: What features of technology (both positive and negative) are replicated when a commercial technology model is repositioned in a social setting? How can those implementing technology for social finance goals ensure that the interests of vulnerable communities are heard and represented in solutions? What do social change and technology experts need to know about each other’s fields? What is the role of different forms of capital in accelerating creative solutions across these fields? And what leadership practices are needed to address the Wicked Problems emanating from sociotechnical induced changes?

Author Peter Townsend points to concerns that good ideas and intentions can produce undesirable results that threaten human survival (Townsend 2016). He says, “Progress is often transient, as faster electronics and computers dramatically shorten retention of data, knowledge, and information loss. Progress and globalization are also destroying past language and cultures …. Similarly, progress of electronics and communication has produced a boom industry in cybercrime and cyberterrorism …. Over enthusiasm in creating a global food economy is devastating the environment and causing extinction of species, just to support an excessive human population.” Curbing the dark side will require planning, investment, and political commitment. Townsend’s warning is stark: “Failure to respond implies human extinction” (Townsend 2016).
Sustainable Development Goals: Solving the World’s Wicked Problems

More money is needed to respond to the challenges raised by Townsend, and it is increasingly concentrated at the top. Oxfam reports the rich keep getting richer. In 2018, billionaire fortunes increased by 12%—or US$2.5 billion a day—while the 3.8 billion people who make up the poorest half of humanity saw their wealth decline by 11% (Lawson et al. 2019). There is a dangerous, growing gap between rich and poor that is undermining the fight against poverty, damaging our economies, and fueling public anger across the globe. According to the Oxfam report, “governments are exacerbating inequality by underfunding public services, such as health care and education, on the one hand, while under taxing corporations and the wealthy, and failing to clamp down on tax dodging, on the other.” Women and girls bear the brunt of inequality and are the hardest hit by its impact on health, education, and economic opportunity (Lawson et al. 2019). For example, an estimated 40 million people, 70% of whom are women, are victims of modern slavery. Approximately 25 million are victims of forced labor, which yields $51 billion in illicit profits annually (Boundless Impact Investing, 2018). Increased globalization, labor outsourcing, and intense market competition in industries such as fast fashion, have created complex and exploitative supply chains across the world. Combined with complex drivers of poverty, gender, caste, and migrant status, these often opaque and untraceable supply chains allow worker exploitation and abuse on the factory floors of multinational corporations. It is too early to know the impact of the COVID-19 pandemic on poverty, but the early indications are that not only have poor people in all countries been the most affected regardless of geography, but it is pushing millions of people back into extreme poverty with predictions that poverty levels will slip back to 2016 levels (World Bank 2020).

Concurrently, climate change can no longer be treated as hypothetical. The World Bank estimates that 143 million climate refugees will migrate from three regions (Latin America, sub-Saharan Africa, and Southeast Asia) by 2050 (Rigaud et al. 2018). They will be driven by the onset of desertification, flooding, forest fires, droughts, and intensified storms. And climate change doesn’t operate in isolation. Slavery, for instance, has a climate change connection. According to academic activist Kevin Bales, slavery is the cause of much of the natural world’s destruction. Bales
puts slavery in this context, “If slavery were an American state it would have the population of California, the economic output of the District of Columbia, but it would be the world’s third-largest producer of CO₂, after China and the United States” (Bales 2016).

These kinds of challenge elide to create some of the world’s most Wicked Problems. Wicked Problems are the big, complex, and dynamic challenges society confronts. Many of their components are captured in the United Nations (UN) Sustainable Development Goals (SDGs) which provide a broad overview of issues that need to be addressed by 2030. There are seventeen SDGs, and together they summarize the daunting real-life challenges facing humanity—challenges that include poverty, inequality, modern-day slavery, climate change, protection of oceans and forests and indigenous people (UNDP 2017).

Table 1.1 lists the goals and provides examples of the indicators that international bodies and national governments have promised to meet, and to which other organizations such as business have signed up to. There are arguments about whether or not the SDGs—and particularly the indicators—are too ambitious, or are so broad that institutions can cherry-pick ones that are easy while ignoring ones that might be more impactful. However, for the purposes of this book, the SDGs provide a broad overview of what social finance should be aiming to address, and the areas Big Tech and Big Finance should be targeting. What the SDGs also provide is a chart for understanding the many components of sustainability, and how when they come together they can create problems that are confusing and contradictory. These are known as Wicked Problems, and understanding what they are is central to how social finance should advance sustainable development among the world’s poor.

**What Are Wicked Problems?**

Google search the term Wicked Problems and it reveals 55,300,000 results in 0.63 seconds. It is a term and framework that has been adopted and used by scholars, policymakers, and urban and social designers worldwide since the 1960s. What makes a problem wickedly difficult? Complexity. Wicked Problems are difficult to understand, and are often a symptom of another problem with interrelated issues—pull one thread and many others may unravel.

Oxford scholar Steve Rayner (2006) described Wicked Problems as “characteristics of deeper problems.” For example, climate change, like
| Goal                        | Sample indicator                                                                 | Goal                        | Sample indicator                                                                 |
|-----------------------------|---------------------------------------------------------------------------------|-----------------------------|---------------------------------------------------------------------------------|
| No-poverty                  | By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than $1.25 a day | Industry, innovation, and infrastructure | By 2020, substantially reduce the proportion of youth not in employment, education, or training |
| Zero hunger                 | By 2030, end hunger and ensure access by all people to safe, nutritious, and sufficient food all year round | Reduced inequality         | Develop quality, reliable, sustainable, and resilient infrastructure with a focus on affordable and equitable access for all |
| Good health and well-being | By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births | Sustainable cities and communities | By 2030, ensure access for all to adequate, safe, and affordable housing and basic services and upgrade slums |
| Quality education           | By 2030, ensure that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy | Responsible consumption and production | By 2030, substantially reduce waste generation through prevention, reduction, recycling, and reuse |
| Gender equality             | Eliminate all harmful practices, such as child, early and forced marriage, and female genital mutilation | Climate action              | Integrate climate change measures into national policies, strategies, and planning |
| Clean water and sanitation  | By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers, and lakes | Life below water            | Provide access for small-scale artisanal fishers to marine resources and markets |

(continued)
Table 1.1 (continued)

| Goal                                  | Sample indicator                                                                 | Goal                       | Sample indicator                                                                 |
|---------------------------------------|----------------------------------------------------------------------------------|----------------------------|----------------------------------------------------------------------------------|
| Affordable and clean energy           | By 2030, double the global rate of improvement in energy efficiency              | Life on land               | Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems |
| Decent work and economic growth       | By 2020, substantially reduce the proportion of youth not in employment, education, or training | Peace, justice, and strong institutions | Significantly reduce all forms of violence and related death rates everywhere |
| Partnerships to achieve the goal      | Mobilize additional financial resources for developing countries from multiple sources |                            |                                                                                  |

educational underperformance or food insecurity, “has a kind of circularity that goes on, the same things crop up as explanations of other parts of the problem. Wherever you push, it pops out somewhere else” (Rayner 2006). Climate change is connected to poverty, is connected to deforestation, is connected to indigenous rights, is connected to economic development, and so on. There is a web of issues and stakeholders that must be recognized and understood when tackling complex challenges.

Wicked Problems are also unique to the circumstances and context. Though enormous progress can be made in alleviating Wicked Problems, they will likely remain with us—child abuse, domestic violence, and poverty are examples. The search for solutions and strategies to mitigate them is ongoing (Stichler 2009). They require skillful, courageous leaders to tame them.

**A History of Wicked Problems**

Academic Horst W. J. Rittel started talking about Wicked Problems in the mid-1960s (Skaburskis 2008) to describe “that class of problems which are ill-formulated, where the information is confusing, where there are many decision makers and clients with conflicting values, and where the
ramifications in the whole system are confusing” (Churchman 1967). In 1972 Wicked Problems were described in the publication, “On the Planning Crisis: Systems Analysis of the First and Second Generation” (Rittel 1972). In 1973, Rittel and Melvin M. Webber came out with their landmark article “Dilemmas in the General Theory of Planning” (Rittel and Webber 1973) in reflection of the complexity of the era, one of the most volatile periods of US history: racial violence unleashed by the deaths of Martin Luther King, Jr. and Malcolm X; massive student protests over the Vietnam War; the war on poverty publicly calling out the dichotomy of wealth and extreme poverty in America; environmental and public health crises over the use of cancer-causing pesticides such as DDT and defoliant Agent Orange; the 1973 oil crisis; and the nightly news reflecting the shattering of traditional boundaries of race, religion, and justice (Peterson 2010).

Rittel and Webber used the term Wicked Problems to name the social conditions of the times. As planners and social policy professionals, they recognized that a linear, scientific approach to problem-solving would not capture the colliding of complex systems (Peterson 2010). For example, the “Newtonian mechanisms” that had succeeded in solving the problems of the previous century—drinkable water, municipal sanitation, infectious diseases—would not sum up the nuance or tumult of contemporary concerns over equity and pluralism (Peterson 2010). Through Wicked Problems, Webber and Rittel found a way to describe the “waves of repercussions” that rippled through systemic networks of changing values and goals in a nation in turmoil (Rittel 1972).

Wicked Problems, as envisioned by Rittel and Webber (1973), captured the multidimensional nature of systems and allowed planners and policy professionals to describe the challenges they faced, “whether concerns over the location of a freeway, the adjustment of a tax rate, the modification of school curriculum, the confrontation of crime … or The System … as an evil source of misery and suffering” (Rittel and Webber 1973). The fathers of “Wicked” identified ten characteristics to identify Wicked Problems:

1. There is no definitive formulation of a Wicked Problem. It is impossible to write a well-defined problem statement about Wicked Problems.
2. Wicked Problems have no stopping rule. Since you cannot define the problem, it is difficult to tell when it is resolved.
3. Solutions to Wicked Problems are not true-or-false but good-or-bad: Choosing a solution to a Wicked Problem is a matter of judgment.

4. There is no immediate and no ultimate test of a solution to a Wicked Problem. Solutions to Wicked Problems generate waves of consequences, and it is impossible to know how all of the consequences will eventually play out. Measurement is hard.

5. Every implemented solution to a Wicked Problem has consequences: Solutions to Wicked Problems have consequences that cannot be undone.

6. Wicked Problems do not have a well-described set of potential solutions: Various stakeholders will have differing views of acceptable solutions. It is a matter of judgment as to when enough potential solutions have emerged, and which should be pursued. Wicked Problems do not have an exhaustively describable set of potential solutions.

7. Every Wicked Problem is essentially unique. There are no “classes” of solutions that can be applied to a specific case.

8. Every Wicked Problem can be considered a symptom of another problem: A Wicked Problem is a set of interlocking issues and constraints which change over time, embedded in a dynamic social context. They have no single root cause.

9. The causes of a Wicked Problem can be explained in numerous ways: There are many stakeholders who will have various and changing ideas about what might be a problem, what might be causing it, and how to resolve it.

10. A designer attempting to solve a Wicked Problem must be fully responsible for their actions. Problem solvers dealing with a wicked issue are held liable for the consequences of any actions.

Since the introduction of the Wicked Problems concept, it has been adapted and used across disciplines. Many scholars believe this “Disciplinarity”—knowledge creation that is transdisciplinary, reflective, nonlinear, and hybridized—has made the Wicked Problem framework useful and important (Yawson 2009). Use of the Wicked Problem framework is well documented by academics: public administration, political science, and public policy (Briggs 2007; Fischer 1993; Harmon and Mayer 1986; Head 2008, 2010; Roberts 2000), natural resource management and urban and regional planning (Allen and Gould 1986; Freeman 2000;
Innes and Booher (1999, 2016), cybernetics research (Conklin 2006), software engineering (DeGrace and Stahl 1990), interaction design (Stolterman 2008), military science (Clemente and Evans 2015), systems engineering (Kovacic and Sousa-Poza 2013), architectural design (Fischer et al. 1991), environmental policy (Balint et al. 2011), healthcare (Arnett 2012), management science (Dunne and Martin 2006), and organizational development (Marshak 2008; Fyke and Buzzanell 2013; Sherman and Peterson 2009; Ritchey 2011; Yawson 2015).

Over the years, scholars have added their own twist to Wicked Problems. Bayard Catron (1981) created key attributes of the Wicked Problem concept and taming wicked problems as ontological for identifying the existence of Wicked Problems, epistemological for challenging our ability to understand them, and axiological for questioning our ability to act rightly in relation to them.

Chaos theory, complexity theory, and complex adaptive practice are all ecosystem models underlining Wicked Problems framework (Peterson et al., 2018). Complexity theories tend to focus on systems and the interactions within them. These systems may be natural such as climate or they may be primarily human such as poverty. These theories maintain that “relationships in complex systems, like organizations, are made up of interconnections and branching choices that produce unintended consequences and render the universe unpredictable” (Tetenbaum 1998).

The unpredictable nature of Wicked Problems and the potential for unintended consequences is significant. To our team, the tenth characteristic describe by Rittel and Webber, is one of the most important: “A designer attempting to solve a Wicked Problem must be fully responsible for their actions. Problem solvers dealing with a wicked issue are held liable for the consequences of any actions.” Being accountable for actions and doing no harm must be an ethical cornerstone for social investors. “Not knowing what you don’t know” or placing “big bets”—a gambling metaphor popular among philanthropists and social investors to describe a willingness to take bold risks for high potential results—doesn’t exonerate social investors from being liable for actions. Approaching social change as a high-risk game, could be a particularly dangerous as newcomers from finance and technology enter into the dynamic field of social and environmental change.

Although more business and engineering schools are teaching Wicked Problems, complexity and systems change, often this knowledge isn’t
fully incorporated into required curriculum and is considered an elective. Consequently, products of our schools are often unprepared to tackle Wicked Problems in practice. These complex challenges require skills different from those provided by traditional business schools such as training in empathy, inclusion, work-life balance, and knowledge of social justice and individual rights. To address the needs of a new workforce, *Fast Company* calls on companies to hire staff with Social Work degrees to help them build more ethical workplaces. Facebook, Uber, Wells Fargo have all apologized for corporate malfeasance that potentially could have benefitted from staff with training in social justice (Bullinger 2018).

A frequently used example of unintended consequences involves the Bill & Melinda Gates Foundation (Gates or Gates Foundation) efforts to reduce deaths from malaria worldwide. The Wicked Problem: there are an estimated 584,000 deaths from malaria worldwide, with 90% occurring in Sub-Saharan Africa. Nearly 300,000 children under the age of five died of malaria in 2016, equivalent to nearly 800 young lives lost each day. An estimated 200,000 infants die due to malaria during pregnancy. These deaths are preventable, by controlling human exposure to the mosquitoes carrying the disease. For more than a decade, the Gates Foundation has tried to eradicate malaria and reduce deaths from the disease using a variety of strategies. One of the most high-profile strategies has been the widespread distribution of malaria nets in Africa (World Health Organization 2018).

In 2015 the *New York Times* reported on Gates’ Malaria Net Initiative and the complexity of the problems associated with malaria deaths and the unintended consequences of the wholesale distribution of millions of mosquito nets (Gettleman 2015). A video documented the challenges and negative impacts on people and the environment. The title of the story captures the challenge: “Meant to Keep Malaria Out; Nets are Used to Haul Fish In: millions of mosquito nets are given out fight to malaria in Africa, yet many faced with hunger use them as fish nets, creating potential environmental problems.” The story points out the dichotomy and tough decisions when poor people must make choices between hunger and health and destruction of life-sustaining fisheries and potential poisoning of people and fisheries with pesticide laced nets.

While using malaria nets for fishing may seem harmless, but the small holes of the nets needed to keep mosquitoes away from humans are so small that they don’t allow fish fry-lings to escape. The results: fishing nets decimated fisheries in communities across African countries including
Nigeria, Zambia, Tanzania, Mozambique, Uganda, Kenya, and Madagascar. The research illustrates the collateral damage done at scale, by one of the “biggest and most celebrated public health campaigns” in the world. Mosquito nets are a billion-dollar industry, with hundreds of millions of insecticide-treated nets being given away throughout Africa. While lives are being saved, the incidence of malaria deaths appears to be on the rise. According to World Malaria Report, there were 219 million cases of malaria in 2017, up from 217 million cases in 2016 (World Health Organization 2018).

Scientists are alarmed that the nets could imperil already stressed fish populations, a critical food source for millions of the world’s poorest people. Governments have tried to prevent the use of nets by fishermen. The pesticides used on the nets are also dragged through lakes and rivers used as drinking supplies for residents. Permethrin is often used to treat the nets and is highly toxic to fish. Warnings that the nets should not be washed in a lake or river are frequently unnoticed or ignored.

There are concerns that the nets pose health risks to humans as well, although there is dispute about how significant this is. Fish can absorb the pesticides, and people then ingest them. Academic Anthony Hay calls the problem, “white man’s burden” he believes, “We think we have a solution to everyone’s problems and here is an example of where we’re creating a new problem” (Gettleman 2015). Fortunately, the Gates Foundation has shifted to become more systems, community-oriented after learning about the unanticipated negative consequences of malaria nets. Avoiding arrogance and entering into deals with eyes wide open will be discussed in Chapter 2 on Deliberate Leadership.

Unintended consequences and taking responsibility for mistakes as social investors is essential. Wicked Problems will be with us forever, social investors will struggle and fall. Adaptation is essential. One of the ways to anticipate negative and positive outcomes is to understand the systemic nature of a problem. Our team uses the United Nations Development Programme (UNDP) human security framework to explain the interconnected nature of a Wicked Problem. These eight dimensions to identify what humans need to have “freedom from want and freedom from fear” as illustrated by Fig. 1.3

To help create questions for social investors to ask about potential negative and positive consequences, we converted the Human Security dimensions into a matrix Fig. 1.4. This approach allows investors to ask the questions—do we have sufficient information to understand
whether the investment will have a negative, positive, neutral, or harm. This approach allows investors who are unfamiliar with systemic social challenges to begin to see the system in action.

Is a Problem Wicked: The Taxonomy of Wicked Problems

To differentiate types of problems—and appropriate responses to these challenges—scholar Keith Grint (2010) created a taxonomy of problems to illustrate: Tame, Critical, and Wicked. Tame problems are generally linear, and solution can be managed: what Grint describes as déjà vu. Tame problems are known problems with known solutions that are within existing expertise and know how. Tame problems are best approached from a management style of leadership, with a structured logical approach: “I have seen this problem before and I can use the same strategies to solve
| Category       | Issue                                                                 | Positive | Negative | Neutral | Need More Info |
|----------------|----------------------------------------------------------------------|----------|----------|---------|----------------|
| Personal       | Violence, crime, terrorism, child labor, control by others            |          |          |         |                |
| Economic       | Poverty, unemployment, no access to capital                           |          |          |         |                |
| Community      | Interethnic, religious, sexual, or gender discrimination              |          |          |         |                |
| Environment    | Degradation, resource depletion, disasters, pollution, climate change |          |          |         |                |
| Education      | Limited access, undervalued, prohibitive cost                         |          |          |         |                |
| Food           | Hunger, famine, desertification, malnourishment, obesity, land grabs  |          |          |         |                |
| Political      | Repression, human rights abuses                                       |          |          |         |                |
| Health         | Infectious diseases, unsafe food, lack of access to healthcare        |          |          |         |                |

Adapted from UN Human Security Index | prepared by pfc Social Impact Advisors

**Fig. 1.4** Human Security Framework and unintended consequences matrix
(Source Adapted from UN Human Security Index | prepared by social impact advisors [Reproduced with permission from pfc social impact advisors llc])

...it as I have in the past.” Examples include life-saving heart surgery or building a complex bridge.

Critical problems cause a crisis and need immediate action. They demand immediate and decisive actions or “command and control.” They fetch uncertainty and fear. “Commanders” are needed who will coerce people into action and tell people what to do. Examples include a fire or an automobile accident.
Wicked problems are complex problems that hold a multitude of other problems within them. There is no known solution. Sometimes they have to be accepted and adapted to rather than overcome. Wicked Problems require a different type of leadership: “I have not seen this problem before and the challenges I face require me to think and act differently.” Leaders need to embrace collaboration and invite new and divergent perspectives to the table to help offer new approaches to problem-solving. They also require leaders to be empathetic, to listen and to “walk in someone’s shoes.”

Wicked Problems represent complex social, environmental, and organizational challenges such as the SDGs, and change is based on the lens through which leaders view the problem over time. Academic Peter Senge (2006)—senior lecturer at the MIT Sloan School of Management and founder of the Society for Organizational Learning—and author of the seminal book, The Fifth Discipline: The Art and Practice of the Learning Organization, distinguishes between two types of complexity as “detail complexity” and “dynamic complexity.” The complexity of Wicked Problems is dynamic and “cause and effect are distant in time and space”; whereas complexity associated with tame problems is detailed, and although there are many variables, they are predictable (Yawson 2015).

Like Grint, Harvard professor Ronald Heifetz (1994) also categorizes problems into three types. He describes Type I situations as technical, where the problem can be defined and can be solved with an engineering know-how and skills. Type II situations are where the problem is apparent, but the solution is not. Type III situations are adaptive problems, where there are no obvious definitions of the problem or the solution. Type I problems are tame or technical problems and can be very complex, but they are not messy and have a readily available solution (Heifetz et al. 2009). Types II and III are complex, multi-framed, cross-boundary, hard to solve, and are Wicked Problems (Yawson 2015). Heifetz (1994) explains that Types II and III are increasingly becoming problems that organizations face and thus call for “new leadership skills and competencies, a dynamic process that emphasizes the need for quality, flexibility, adaptability, speed, and experimentation” (Beinecke 2009).

Climate change has introduced unprecedented complexity and jeopardy into the world. It has a rapid and devastating domino effect, especially on the poor. The strategies for tackling climate will require radical innovation and transformation to protect very vulnerable people and planet. There are no quick wins or simple solutions (Catron 1981). A
path forward will require collaboration across stakeholders that are often mired in disagreement (Beinecke 2009). Moreover, finding solutions will be difficult to recognize because of the complex interdependencies of government, business, and civil society organizations (Connolly and Stanfield 2006).

Steven Rayner summarized these challenges, “we are not dealing with problems where we’re just uncertain, we’re dealing with problems where people know what the answer is. Different people know what the answer is. The trouble is the answers they have are just irreconcilable with each other” (Rayner 2006). Reconciling these diverse options and opinions requires decentralized power and leaders able to successfully navigate tough negotiations. Wicked Problems may be best tamed by identifying “preferred directions” rather than “optimal solutions” (Catron 1981). Leaders taking on Wicked Problems must be bricoleurs—French for jack-of-all trades—uniquely crafting solutions (or cobbling them together) using the appropriate tools for the problem—whether command and control, managed, or adaptive leadership, or a combination of them all. French social anthropologist Claude Lévi-Strauss described the process of bricolage as the artist who “shapes the beautiful and useful out of the dump heap of human life.” He compared the artistic process to the work of a handyman who solves technical or mechanical problems with whatever materials are available.

Global leaders today must be very talented at bricolage to succeed against Wicked Problems. Annually, the WEF publishes its Global Risk Report, and in 2020 the top ten challenges that keep an estimated 1000 cross-sectorial leaders awake at night include: extreme weather conditions; failure of climate change mitigation and adaptation; natural and man-made environmental disasters; biodiversity loss and ecosystem collapse; water crises; cyber-attacks and data fraud; global governance failure; and large scale involuntary migration. If the report had come out a few months later, infectious diseases would most certainly have been added to that list. Again, these are issues and leadership skills that are not typically taught in business schools. Overall, Big Finance and Big Technology leaders are unprepared for tackling the Medusa-like, large scale global problem. They must navigate global negotiations that are entwined in politics and diverse opinions of business, advocates, and government. It will require, in the words of Richard Pascale, world leaders who will need to “act their way into a new way of thinking” (Pascale et al. 2001, p. 229).
Conclusion

Big Technology and Big Finance are so pervasive in modern life that it seems inevitable expectations are placed on them that go beyond shareholder value and legal compliance. One of the ways they can add new types of value is when they come together in the field of social finance. Social finance is not only made possible because of advances in technology, it is increasingly important given the array of interrelated Wicked Problems affecting people’s lives and planetary well-being.

However, money and technology alone can’t resolve Wicked Problems. The complexity of the world’s most intractable problems requires individual and organizational leadership that is fearless, compassionate, and adaptive. Because each Wicked Problem is unique, leaders must choose their approaches carefully. Should they employ command and control decisions when faced with a crisis? Should they manage the problem by calling on previous successful experiences? When facing a complex challenge, should they be collaborative and adaptive leaders, adjusting their strategy based on clear-eyed understanding of what is and is not working? How do leaders hold onto their vision while putting their preconceived notions aside, recognizing the strengths and limits of their expertise and seeking solutions where one might least expect to find them, including across disciplines and within communities affected by the problem?

To answer these questions we will now introduce Deliberate Leadership, an amalgam of the most effective adaptive leadership strategies as a framework to empower leaders in social finance and impact investing to thoughtful take on complex problems and accept the risk and consequences of decision-making and the challenges ahead. On to Chapter 2.

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