As I see it, we face two urgent energy challenges. The first is that one in five people on the planet lacks access to electricity. Twice as many, almost three billion, use wood, coal, charcoal or animal waste to cook meals and heat homes, exposing themselves and their families to harmful smoke and fumes. This energy poverty is devastating to human development. The second challenge is climate change. Greenhouse gases emitted from burning fossil fuels contribute directly to the warming of the Earth’s atmosphere, with all the attendant consequences: a rising incidence of extreme weather and natural disasters that jeopardize lives, livelihoods and our children’s future. Sustainable energy for all by 2030 is an enormous challenge. But it is achievable…. We need to raise sustainable energy to the top of the global agenda and focus our attention, ingenuity, resources, and investments to make it a reality.


1.1 Confronting the neglected nexus between climate change and energy access for the poor: Time for “bold action”

The issue of global climate change is not new to the intergovernmental arena. It first emerged in 1988, when the UN General Assembly (UNGA) adopted a resolution sponsored by the Government of Malta, recognizing climate change as a “common concern of mankind” (UNGA, 1988). In the ensuing years, global climate change has been viewed as one of the most complex socio-economic and
political challenges facing the world, and also as one of the most complicated and politically fraught global environmental problems to assess and negotiate (Stern Review, 2006). Climate change has been defined by the first, and to date the only, framework agreement on the subject, the United Nations Framework Convention on Climate Change (UNFCCC), as “a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere, and which is in addition to natural climate variability observed over comparable time periods” (Information Unit on Climate Change [IUCC], 1992, p. 5). In this context, the impacts of climate change can be viewed as the existing and potential impacts associated with increases in anthropogenic greenhouse gas (GHG) emissions that enhance the Earth’s natural greenhouse effect and result, on average, in an additional warming of the Earth’s surface and atmosphere. According to the UN, some of the main characteristics of climate change are increases in average global temperature (global warming), changes in terrestrial cloud cover and precipitation, melting of ice caps and glaciers and reduced snow cover, and increases in ocean temperatures and acidity due to absorption of atmospheric heat and carbon dioxide (CO2).

Climate change is anticipated to have wide-ranging effects on a variety of socio-economic sectors and areas, including water resources, agriculture, food security, human health, terrestrial ecosystems and biodiversity, oceans and coastal zones. The UN predicts that billions of people, particularly those in developing countries, are highly vulnerable to adverse climatic impacts and will face shortages of water and food and greater risks to health and life as a result of climate change, because they have fewer resources with which to adapt (UNFCCC, 2008). Climate change has been estimated to compound and exacerbate existing poverty because its adverse impacts are more keenly felt amongst the poor in developing countries, given their dependence on fragile and vulnerable ecosystems and natural resources, as well as their existing limited capacities to build resilience and adapt to adverse climatic impacts. The idea that global climate change magnifies and worsens existing development problems, in particular poverty, has been recognized and documented by the UN family of organizations and others for decades. An early consultative report prepared by a wide range of global development donors, including the African and Asian Development Banks, United Nations Development Programme (UNDP), United Nations Environment Programme (UNEP) and the World Bank, entitled *Poverty and Climate Change*, was presented during the 2002 UNFCCC’s Conference of the Parties (COP) eighth session in New Delhi. The report recognized that there are variations as to the impacts of climate change and the vulnerability of poor communities to such change, but that generally climate change is superimposed on existing vulnerabilities and that, in many developing countries, climate change impacts are already development stressors (African Development Bank et al., 2003).

Finding an effective resolution to global climate change has been highlighted repeatedly as a key global challenge by many leaders, including the UN
1.1 CONFRONTING THE NEGLECTED NEXUS

Secretary-General, who has identified climate change as a “defining issue of our time” since 2008 onwards (UN Secretary-General Statements, 2008).

In fact, the threat of climate change was made even more explicit in a 2014 US Department of Defense Report that was made publicly accessible, which referenced climate change as a “threat multiplier” and pointed out that “rising global temperatures, changing precipitation patterns, climbing sea levels, and more extreme weather events will intensify the challenges of global instability, hunger, poverty, and conflict” and “will likely lead to food and water shortages, pandemic disease, disputes over refugees and resources, and destruction by natural disasters in regions across the globe” (US Department of Defense, 2014, foreword). Some of the main impacts of global climate change that were emphasized in this US Department of Defense report include (p. 2):

- Reduction or melting of ice caps and glaciers
- Rises in ocean temperatures and acidity
- Increases in the frequency and intensity of extreme weather events (droughts, typhoons/hurricanes and super storms).

Figure 1.1 provides a schematic overview of the global processes and effects of climate change, which can be seen to have an impact on a wide range of human development activities that are relevant to all countries, and also distinguishes global warming and sea-level rise, which are separate yet related climate change processes.

More significantly, there has been mounting scientific evidence pointing to anthropogenic or human-induced global climate change that is simply impossible to discount or ignore. Two globally relevant scientific assessments have once again confirmed anthropogenic climate change as a key global challenge – the Fifth Assessment Report (AR5) of the Intergovernmental Panel on Climate Change (IPCC) and the Third US National Climate Assessment. The Summary for Policymakers (SPM) of Working Group I of the AR5 is emphatic in pointing out that the evidence for human influence on the global climate system has grown since its previous Fourth Assessment Report and that it is “extremely likely that human influence has been the dominant cause of the observed warming since the mid-20th century” (IPCC, 2013, p. 17). But it is the SPM’s categorical caution regarding the irreversibility of a considerable portion of anthropogenic climate change in the absence of sustained action to curb CO₂ emissions that is stark:

A large fraction of anthropogenic climate change resulting from CO₂ emissions is irreversible on a multi-century to millennial time scale, except in the case of a large net removal of CO₂ from the atmosphere over a sustained period. Surface temperatures will remain approximately constant at elevated levels for many centuries after a complete cessation of net anthropogenic CO₂ emissions. Due to the long time scales of heat transfer from the ocean surface to depth, ocean warming will continue for centuries (IPCC, 2013, p. 28).
Climate change processes and effects

CLIMATE CHANGE PROCESSES

Greenhouse effect

Sea level rise

Sea level rise:
- Water temperature
- Salinity
- Ocean circulation upheaval
- Ice caps melting
- Precipitation changes

Cloud cover changes

GLOBAL WARMING (average temperature rise)

Abrupt climate change

MAJOR CLIMATE FEATURES

Water temperature

Salinity

Ocean circulation upheaval

Ice caps melting

Precipitation changes

HUMAN ACTIVITIES

Land use change

Agriculture

Industry

Fossil fuel burning

Deforestation

Urbanization

Land conversion to agriculture

Chemicals

Deforestation

Power plants

Electricity

Fertilizers

Agriculture

Fossil fuel burning

Energy production

Transport

Gases

Greenhouse gases emissions

Carbon cycle disturbances

CO2

N2O

CH4

MAIN CLIMATE FEATURES

The grim IPCC finding about elevated surface temperatures being prolonged for centuries despite a complete stop of net anthropogenic CO$_2$ emissions not only underscores the importance of the precautionary principle in addressing climate change in a sustained manner, but also makes the inexorable pace in negotiating a globally relevant mitigation agreement harder to ignore. Box 1.1 contains key findings on the trends in stocks and flows of GHGs and their drivers as excerpted from the 2014 IPCC SPM of Working Group III.

**Box 1.1 Key trends in stocks and flows of GHGs and their drivers**

- Total anthropogenic GHG emissions have continued to increase over 1970–2010 with larger absolute decadal increases toward the end of this period (high confidence).
- CO$_2$ emissions from fossil fuel combustion and industrial processes contributed about 78% of the total GHG emission increase from 1970 to 2010, with a similar percentage contribution for the period 2000–2010 (high confidence).
- About half of cumulative anthropogenic CO$_2$ emissions between 1750 and 2010 have occurred in the last 40 years (high confidence).
- Annual anthropogenic GHG emissions have increased by 10 GtCO$_2$e between 2000 and 2010, with this increase coming directly from energy supply (47%), industry (30%), transport (11%), and buildings (3%) sectors (medium confidence).
- Globally, economic and population growth continue to be the most important drivers of increases in CO$_2$ emissions from fossil fuel combustion. The contribution of population growth between 2000 and 2010 remained roughly identical to the previous three decades, while the contribution of economic growth has risen sharply (high confidence).
- Without additional efforts to reduce GHG emissions beyond those in place today, emissions growth is expected to persist, driven by growth in global population and economic activities. Baseline scenarios, those without additional mitigation, result in global mean surface temperature increases in 2100 from 3.7°C to 4.8°C compared with pre-industrial levels (median values; the range is 2.5–7.8°C when including climate uncertainty (high confidence).

Source: IPCC (2014).
In addition to the global scientific consensus presented in AR5, the recently released Third US National Climate Assessment is equally categorical about human-induced climate change, stating that:

Natural drivers of climate cannot explain the recent observed warming. Over the last five decades, natural factors (solar forcing and volcanoes) alone would actually have led to a slight cooling. The majority of the warming at the global scale over the past 50 years can only be explained by the effects of human influences, especially the emissions from burning fossil fuels (coal, oil, and natural gas) and deforestation. The emissions from human influences that are affecting climate include heat-trapping gases such as CO₂, methane, and nitrous oxide, and particles such as black carbon (soot), which has a warming influence, and sulfates, which have an overall cooling influence (Walsh et al., 2014, p. 23).

The National Climatic Data Center of the U.S. National Oceanic and Atmospheric Administration (NOAA) recently reported (as part of the services it provides to the public to support informed decision-making) that:

2014 was the warmest year across global land and ocean surfaces since records began in 1880. The annually-averaged temperature was 0.69°C (1.24°F) above the 20th century average of 13.9°C (57.0°F), easily breaking the previous records of 2005 and 2010 by 0.04°C (0.07°F). The 2014 global average ocean temperature was also record high, at 0.57°C (1.03°F) above the 20th century average of 16.1°C (60.9°F), breaking the previous records of 1998 and 2003 by 0.05°C (0.09°F) (NOAA, 2015).

Meanwhile, the State of the Climate 2013 report pointed out that, globally, 2013 was one of the 10 warmest years on record, both at the surface and in the troposphere, and that GHGs such as “carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O) continued to increase in the atmosphere during 2013”. The report pointed out that “on 9 May, for the first time since CO₂ measurements began in 1958 at Mauna Loa, Hawaii, the daily average mole fraction exceeded 400 parts per million (ppm)” (Blunden and Arndt, 2014, p. 5).

There is increasing evidence that extreme weather events are wreaking havoc in many countries across the world, and particularly in countries with low-lying and fragile coastal areas. In the past 5 years, the spate and intensity of extreme weather events – ranging from caustic heat waves in Russia, the catastrophic destruction in the Philippines caused by Typhoon Haiyan, and the ravaging floods in Pakistan, India, China, and the northeastern parts of the United States – have been seen as harbingers of regional global climatic changes (Cherian, 2012a). Figure 1.2, which is excerpted from NOAA’s 2014 Annual Climate Report, provides a schematic representation of selected significant climate anomalies and events in 2014.

By many global estimates, the risks of global climate change are not going away, and appear to be getting riskier and costlier to address (International
Selected significant climate anomalies and events in 2014

Please note: Material provided in this map was compiled from NOAA’s NCDC state of the climate reports and the WMO provisional status of the climate in 2014. For more information please visit: http://www.ncdc.noaa.gov/sotc

Figure 1.2 Climate anomalies and events in 2014 (source: NOAA: Global Analysis – Annual 2014 Climate Report. Available at http://www.ncdc.noaa.gov/sotc/service/global/extremes/201413.gif).
Energy Agency [IEA], 2011; World Economic Forum [WEF], 2014). Regardless of the uncertainties about the exact scope of climatic impacts on individual countries, global climate change has been seen as one of the definitive forces impacting current and future prospects for human development in all countries (World Bank, 2012). There is broad agreement that the costs of inaction in addressing global climate change outweigh the costs of action (Stern Review, 2006; IEA, 2009).

A recent WEF report clearly articulated the ripple or multiplier effects of the global community’s delay in failing to act decisively in response to the risk of global climate change:

The risk of climate change by far displays the strongest linkages and can be seen to be both a key economic risk in itself and a multiplier of other risks, such as extreme weather events and water and food crises... The risk of global governance failure, which lies at the heart of the risk map, is linked to the risk of climate change. Negotiations on climate change mitigation and adaptation are progressing by fits and starts, perpetually challenged to deliver a global legal framework (WEF, 2014, pp. 21–22).

The irony is that more than 20 years ago, the UNFCCC recognized through the adoption of the precautionary principle, the risk of waiting too long and doing too little to address the challenge of climate change. Contained in Article 3.3 is the explicit recognition that:

Parties should take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures (IUCC, 1992, p. 6).

This prescient 1992 recognition calling on parties to take precautionary measures that address global climate change is often neglected in the recent global rush to call for bold action on climate change. The proverbial bottom line is that in spite of the precautionary principle being enshrined within the 1992 UNFCCC, over 20 years of arduous intergovernmental negotiations convened all over the globe, and mounting evidence compiled most recently by AR5 of the IPCC, the prognosis for securing a comprehensive consensus-based global climate change mitigation agreement by 2015 appears less than clear. The idea that bold action to mitigate against climate change is still urgently sought after more than 20 years of intergovernmental global climate change negotiations is sobering and provides a proximate rationale for the ideas outlined in this chapter and discussed further in the book.

Cognizant of the scale and scope of adverse effects of global climate change, the 1992 UNFCCC remains the only global climate change agreement that has near-universal ratification in terms of UN member states. But, after more than 20 years of climate change negotiations in cities all over the globe, there are
still no immediate signs of a comprehensive global framework agreement to mitigate climate change, even though the 2015 deadline for such an agreement is fast approaching. The decades-long UN-led climate change negotiations have been looking like a quixotic quest for a comprehensive legally binding framework deal that is anticipated to loom over the negotiating horizon, but which is never quite resolved as negotiators travel annually from one global capital to another in search of a consensus-based agreement. But, after years of negotiating around the globe, the impending deadline of a final climate change agreement that will govern the post-2015 development agenda at the 21st session of the COP (COP-21) to the UNFCCC looms ever closer.

Addressing the challenge of climate change has been made enormously difficult because it requires countries to confront their energy needs and energy security concerns, which in turn impacts on their respective national socio-economic development plans. The linkages between lack of access to energy services and diminished opportunities for economic productivity have been recognized as mutually reinforcing components (Brew-Hammond, 2010). According to the IEA:

Modern energy services are crucial to human well-being and to a country’s economic development: and yet, globally 1.7 billion people are without access to electricity and 2.7 billion are without to clean cooking facilities. More than 95% of these people are either in sub-Saharan Africa or developing Asia, and 84% are in rural areas (IEA, 2011, p. 7).

The linkages between lack of access to modern energy services and income poverty, nutrition, gender inequality and human development have been referenced previously by a range of studies (Goldemberg et al., 1988; Sokona et al., 2004; Modi et al., 2006). Access to modern energy services has been deemed crucial not only in enhancing socio-economic development but also in reducing poverty, and contributing to international security (Bazilian et al., 2010; Sovacool, 2012).

These synergies between energy and socio-economic development, and the very real health and human welfare implications of consigning millions to depend on unreliable and heavily polluting traditional sources of energy can, and should be contrasted with the claim that there is “no inherent connection between the promotion of improved welfare for the poorest households and the reforming of energy markets” (United Nations Department of Economic and Social Affairs [UNDESA], 2007, p. 2), and the characterization of the “direction of causation” between the modernization of energy systems, economic growth and the improvement of human welfare as “less established” (UNDESA, 2007, p. 44).

In fact, it can be argued that it is the inherent linkages between energy and sustainable human development, including the nexus between energy, climate
change and poverty reduction, that are crucial for any future UN-led post-2015 development agenda, because poverty eradication and climate change have long been highlighted as key areas in which UN-sponsored global agreements are being sought. It is precisely the primacy accorded to the role of energy in fueling both socio-economic development and anthropogenic climate change that translates to make the global goal of mitigating energy sector emissions such a thorny political issue for the world’s largest aggregate GHG emitters. Despite a broad global consensus that anthropogenic emissions of CO₂ and other GHGs are the leading cause of climatic changes (World Bank, 2012; IPCC, 2013), progress to mitigate climate change through a comprehensive framework agreement that would limit GHG emissions has been both very slow and difficult. Furthermore, it has been estimated that GHG emissions from developing countries are likely to exceed those from developed countries within the first half of this century (IEA, 2009, 2011), which complicates the ongoing global discussion on allocating responsibilities for addressing anthropogenic global climate change in the lead-up to COP-21 in 2015. But the problem of climate change is more challenging for developing countries that have simultaneously to deal with increasing energy access for their poor, whilst also addressing energy-related mitigation. In other words, there is another, somewhat less discussed, aspect of the energy and climate change relationship, which is that close to 1.3 billion people lack access to sustainable and cost-effective energy services, and 2.7 billion rely heavily on polluting and unsustainable forms of energy to secure their basic human needs.

The number of poor on a regional basis who lack access to modern energy services are hard to ignore, especially in light of the UN-led quest for a sustainable future for all. In its 2011 report outlining a review of good practices and lessons learned in terms of energy access for the poor in the Asia-Pacific region, the UNDP noted that “nearly half of the world’s population still lacks reliable access to modern energy services”. According to the report: “Roughly 2.7 billion people (40 percent of the world’s population) depend on traditional biomass for cooking and 1.4 billion remain without access to electricity”, but there is a regional thrust to this problem because in the Asia-Pacific region “almost 2 billion people are dependent on the traditional use of biomass”, and almost 800 million in this region have no access to electricity (UNDP, 2011, p. 15).

In reviewing the energy access situation in developing countries, UNDP/World Health Organization (UNDP/WHO) notes that 44% of those who die each year from household air pollution resulting from the use of traditional biomass and ineffective energy services are children, while women account for 60% of all adult deaths (UNDP/WHO, 2009). In 2008, the WHO pointed out that the number of people estimated to die every year due to household air pollution from poorly combusted biomass fuels is expected to rise by 2030 to around 1.5 million (WHO, 2008). More recently, the WHO
has outlined the linkages between indoor air pollution and household energy use for “the forgotten 3 billion” poor people who rely heavily on solid fuels and inefficient cooking fuels and technologies that produce high levels of household air pollution, including small soot particles that penetrate deeply into lungs. According to the WHO, indoor smoke can be 100 times higher than acceptable levels for small particles in poor households relying on inefficient energy sources and systems, risks of exposure are particularly high among women and young children, and this heavy reliance on solid fuels for cooking and household needs by the poor has resulted in over 4.3 million premature deaths in 2010 due to indoor air pollution (WHO Media Centre, 2014).

The lack of access to modern energy services has been termed “energy poverty” and it is considered to have lasting impacts on health, education, and employment for the poor. The energy-poor, for instance, suffer the health consequences of indoor air pollution due to the inefficient combustion of solid fuels and biomass, as well as the economic impacts of their lack of access to energy for sustaining livelihoods and education opportunities (UNDP, 2011, p. 13). Currently, many poor communities, primarily in developing countries located in Asia and Africa, lack access to safe and reliable energy, and pay disproportionately high prices for inefficient and ill-health-generating energy sources. In many developing countries, poor households spend more than a third of their household expenses on poor-quality sources of energy; and poor women and young girls spend a disproportionate amount of daily time and effort in securing inefficient solid fuels (traditional biomass), which gives them less time for productive employment/livelihood opportunities (Modi et al., 2006).

Table 1.1, which has been excerpted from Organisation for Economic Co-operation and Development (OECD)/IEA 2011 special report, Energy For All: Financing Access for the Poor, provides an overview of the numbers and regional nature of representation of people without access to modern energy services, including those without access to electricity and those who rely heavily on the traditional use of biomass for cooking.

While the broad topic of “energy access for the poor” is considered at length in this book, it is important to note at the outset that the concept of energy access has proven to be challenging to define, categorize, and implement. Recognizing that there was no universally agreed and adopted definition of energy access, the IEA sought to provide a clearer definition of energy access as: “a household having reliable and affordable access to clean cooking facilities, a first connection to electricity and then an increasing level of electricity consumption over time to reach the regional average” (IEA, 2011, p. 12). Pointing to the 20-year trajectory of analysis focused on the topic of access to modern energy services, and its role in poverty reduction and economic development, Sokona et al. (2012) have argued that responding to the challenge...
Increasing access of energy services requires a cross-sectoral approach to development planning, and requires the “energy access debate” to be “broadened towards a system-wide treatment of the energy issue in development” (p. 4). According to Sokona et al. (2012), it is the idea of expanding the concept of energy access and thereby addressing energy access in the context of the broader energy transition that makes it “imperative that countries need to develop their future energy systems with due consideration to climate change issues” (p. 5). From the perspective of this chapter and this book, it is exactly this expansion of the concept of energy access for the poor in terms of its linkages with climate change and sustainable development that is the main focus of investigation. In this regard, the argument that is advanced is not whether and how to increase energy access for the poor, or whether and how to improve the prospects for a comprehensive climate change agreement, but instead to ask whether and how energy access for the poor has been

Table 1.1 Number and share of people without access to modern energy services in selected countries, 2009

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<tr>
<th>Without access to electricity</th>
<th>Relying on the traditional use of biomass for cooking</th>
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<td>Population (millions)</td>
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* World total includes Organisation for Economic Co-operation and Development (OECD) countries and eastern Europe/Eurasia.

factored into the series of key UN-led intergovernmental climate change and sustainable development outputs.

At the intergovernmental level, the vital role of energy in driving human development was explicitly recognized as early as the historic 1972 Stockholm Conference and the 1983 World Commission on Environment and Development. Goldemberg et al. (1985, 1988) provided an early understanding and recognition of the links between energy and a host of other development concerns, including income poverty, malnutrition, and ill-health. Evidence underscoring these linkages between energy and poverty, gender and health in terms of the impacts of household energy use on indoor air pollution and health of women and young children was raised early by the WHO (2000). This lack of access to sustainable and cost-effective energy services for millions of people who live primarily in South Asia and sub-Saharan Africa is a different aspect of the climate change and sustainable development relationship that has to be reconciled within the UN’s quest to secure a shared post-2015 development agenda.

The multidimensional development linkages among energy and poverty, women, urbanization, and production and consumption patterns were documented in a 2000 report jointly prepared by two of the main development agencies of the UN, and the World Energy Congress (WEC). The report noted that although current energy consumption patterns are unsustainable, energy can help to solve global concerns, particularly those related to poverty, gender, and urbanization, amongst others. But according to the report, “to realise this potential, energy must be brought to centre stage and given the same importance as the other major global issues” (UNDP/UNDESA/WEC, 2000, p. 40).

Over the past two decades, poverty reduction and global climate change have been identified as two of the most pressing challenges in the UN’s quest for a shared development agenda. Energy has clearly been identified as a key driver in both global challenges, but the question is whether there are concrete references and recommendations on how to address energy access for the poor in key globally agreed outputs emanating from the global climate change and sustainable development negotiations. This chapter will provide a framework for the argument that the linkages between climate change and energy access for the poor are crucially important to UN’s quest for shared post-2015 sustainable development agenda precisely because energy access for the poor cuts across two of the most urgent development-related challenges: climate change and poverty reduction. The well recognized linkage of modern energy access to development and environmental objectives is what make the concept of energy access a “central element of the debate on sustainable development” (Rehman et al., 2012, p. 27). Perhaps the simplest and starkest way to understand the human costs of this nexus is that the heavy reliance on inefficient energy sources contributes to emissions of short-lived climate pollutants (SLCPs) that impact negatively on the daily lives and health of millions of
poor people. And it is this neglected nexus between energy access for the poor and climate change mitigation that has not received adequate global attention to date. As the evidence presented in this book will demonstrate, the linkages between climate change and poverty reduction, especially in terms of increasing energy access for the poor, have not been referenced in a systematic and organized manner within the context of negotiated and agreed global climate change outcomes.

Coincidentally, at the very time that UN climate change negotiations appear to be progressing fitfully, there has been a push by the UN Secretary-General to advocate for linkages between energy and climate change under the aegis of the Advisory Group on Energy and Climate Change (AGECC), established in 2010. The AGECC was convened to address the dual challenges of meeting the world’s energy needs for development while contributing to a reduction in GHGs, and it resulted in calling on the UN and its member states to commit themselves to two key goals (UN Secretary-General’s AGECC, 2010, p. 9):

- Ensure universal access to modern energy services by 2030.
- Reduce global energy intensity by 40 percent by 2030.

In 2011, AGECC was subsumed by the UN Secretary-General’s initiative known as the Sustainable Energy for All (SE4All). Currently, led by the UN and the World Bank, SE4All includes an additional goal of doubling the share of renewable energy added to the twin goals identified previously. However, the intergovernmental response to the advocacy of these goals has been mixed and the lackluster reference to the SE4All in the 2012 Rio+20 Conference is a factor that is discussed later in the book.

In an urgent bid to scale up high-level climate change action prior to the globally agreed 2015 deadline by which intergovernmental negotiators are supposed to secure a consensus-based comprehensive climate agreement, the UN Secretary-General convened a special high-level Summit on Climate Change on September 23, 2014, where heads of state and leaders of business and civil society were invited to come with “bold and new announcements and action” (UN Secretary-General Statements, 2013). Reiterating that “climate change is the defining issue of our time”, at a preparatory meeting held in Abu Dhabi (May 4, 2014) ahead of the 2014 Summit, the Secretary-General called on governments to “complete a meaningful new climate agreement by 2015 that will rapidly reduce emissions and support resilience” and “identified nine key areas with the greatest potential for fast, meaningful results” which include “energy, cities and transport, finance, resilience, agriculture and short-lived climate pollutants” (UN Secretary-General Statements, 2014).
With the leaders of the top aggregate GHG emitter, China, and the third largest aggregate emitter, India, not in attendance, along with the leaders of key countries such as Australia, the Russian Federation, and Germany, news reports were quick to dampen expectations of bold and new announcements emerging. Bloomberg reported that the leaders of China and India skipping the Climate Summit can be seen as signaling their “tepid support for a global pact to cut greenhouse gases among two of the largest emitters” (Yoon and Drajem, 2014). But there can be little doubt that the role of sustainable energy services, including technologies and systems, was highlighted by many heads of state and government from developing countries at the 2014 Climate Summit. In fact, Zhang Gaoli, the Special Envoy of the Chinese President, was quite clear about the predominant role that the energy sector would play in addressing climate change stating that: “China will advance a revolution in energy production and consumption, cap total energy consumption, raise energy efficiency and vigorously develop non-fossil fuels”. Gaoli went on to emphasize the role of cooperation amongst developing countries – South-South cooperation – stating that “China will work hard to promote South-South cooperation on climate change”; and that China would double its annual financial support for the establishment of the South-South Cooperation Fund on Climate Change and provide an additional “six million US dollars to support the UN Secretary-General in advancing South-South cooperation on climate change” (UN Climate Summit 2014/Executive Office of the UN Secretary-General, 2014, p. 2).

The role of South-South cooperation in addressing climate change will, in all likelihood, grow in significance, given that China and India are among the largest aggregate GHG emitters. The importance of energy as a driver in economic development and anthropogenic climate change is one that has been recognized by countries like China and India, but not necessarily reflected in terms of programmatic guidance in the actual globally agreed climate change outcomes. The neglected part of the climate change–energy nexus, namely the linkages between climate change and increasing access to sustainable energy services for the poor, has received very little by way of concrete global programmatic focus and scaled-up action to date. It is precisely this neglected nexus between energy access for the poor and climate change that has not been adequately referenced in past global outcomes related to climate change and sustainable development that is the focus of this book.

The initial identification of energy and SLCPs as two of nine key action areas for climate action at the 2014 Climate Summit can be seen as significant and long overdue, because these sectors represent the potential for addressing the often-neglected nexus between climate change and energy access for the poor, but the subsequent absence of SLCPs as an action area in the final Summit outcome acts as a potential constraint. In the end, the action area of SLCPs was not included in the list of eight final action areas identified in the
2014 Climate Summit outcome, and a concrete opportunity to focus on reducing SLCPS in terms of energy access for the poor was perhaps missed. However, the Summit’s summary outcome on energy does note that the SE4All initiative has set 2030 as a goal for doubling the global rate of energy efficiency improvement, doubling renewable energy’s share in the global energy mix, and ensuring universal access to modern energy services (UN, Action Areas/Summit Announcements, 2014).

The reality is that the 2014 Climate Summit hosted by the UN Secretary-General was not the first time global attention has been focused on this issue. A high-level event focused on climate change was held on September 24, 2007 in the UN, entitled “The Future is in our Hands: Addressing the Leadership Challenge of Climate Change”, and the first-ever thematic plenary debate of the UNGA, also held in 2007, focused solely on climate change and was entitled “Climate Change as a Global Challenge”. In fact, 2007 was a watershed year in terms of focusing global attention on climate change with the nomination and subsequent joint awarding of the Nobel Peace Prize to Al Gore and the IPCC for their respective work on climate change (Gore, 2006). A few days after the UN special event on September 28, 2007, President Bush sponsored a conference meeting of the 16 “major emitters” of GHGs, namely Australia, Britain, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, South Korea, Mexico, Russia, South Africa, and the United States, which together account for more than 90% of global GHG emissions. The stated objective of the meeting was to initiate a process by which the world’s biggest emitters will outline targets for reducing their emissions, including outlining national measures for curbing emissions, setting long-term pollution objectives and seeing how smart technology, forestation, and financing for developing countries can help the carbon clean-up. This grouping of “major emitters” has been discussed as a forum for putting together voluntary measures to address global warming as opposed to comprehensive and mandatory targets and limits on emissions, and as a mechanism for getting the world’s largest developing and developed country emitters together for the first time outside of the official UNFCCC processes (Johnson, 2007). The idea of a major emitters group was more formally launched by President Obama as the Major Economies Forum (MEF) and is discussed later in the book, as it continues to play a role in terms of bringing together key emitters, including key developing countries such as Brazil, South Africa, India, and China (also referred to as the BASIC countries).

A little over 7 years later, it is possible to argue that the collective will to secure a binding consensus-based climate mitigation framework agreement has clearly not been due to a paucity of global fora/venues for intergovernmental meetings and negotiations. Climate change negotiators have traversed the globe seeking the elusive consensus deal, but with leaders of key countries
like China, India, Australia, and Germany absent from the 2014 Summit, persisting concerns about the global political will to secure a binding agreement by COP-21 in 2015 exist.

Twenty-two years after the UNFCCC agreement, the 20th COP (COP-20) in Peru resulted in the Lima Call to Climate Action (LCCA) with its “commitment to reaching an ambitious agreement in 2015 that reflects the principle of common but differentiated responsibilities and respective capabilities, in light of different national circumstances” (UNFCCC, 2015, p. 2). Key distinguishing features of the Lima COP-20 outcome are the “invitation to each Party to communicate to the secretariat its intended nationally determined contribution towards achieving the objective of the Convention as set out in its Article 2”, and the agreement that each Party’s intended nationally determined contribution aimed at achieving Article 2 – the UNFCCC’s objective – “will represent a progression beyond the current undertaking of that Party” contained in paragraphs 9 and 10 (UNFCCC, 2015, p. 3).

These “intended nationally determined contributions” (INDCs) can therefore be anticipated to be the key component of any proposed new agreement that might be agreed at COP-21 in December 2015. INDCs can be characterized as a historic, first step towards a more inclusive coverage of countries, in contrast to the 1992 UNFCCC’s, and the 1997 Kyoto Protocol’s, references to Annex I Parties’ (developed countries) obligations as being distinct from the roles and needs of non-Annex I Parties (developing countries). In paragraph 11, Parties are invited to “communicate” their INDCs “well in advance of” COP-21 (UNFCCC, 2015, p. 3), but paragraphs 7 and 8 of the Lima decision, which precede the reference to INDCs, are categorical in pointing out that any negotiating text or any submission of INDCs is “without prejudice to the legal nature and content of the intended nationally determined contributions of Parties or to the content of the protocol, another legal instrument or agreement” that might be agreed to at the Paris COP in 2015 (UNFCCC, 2015, p. 3). In fact, there is no formalized template or exact guidance as to the full scope of the quantifiable information being communicated, and/or agreement specifying any review or assessment processes that can be used for the reporting of these INDCs. INDCs submitted by a Party are supposed to represent a progression beyond the current undertaking of that Party and the question is how exactly national “progression” can be accounted. Paragraph 16 of the LCCA merely calls on the UNFCCC Secretariat to publish on its website the INDCs as communicated by Parties; and to “prepare a synthesis report of aggregate effect of the intended nationally determined contributions communicated by Parties by 1 October 2015” (UNFCCC, 2015, p. 3).

In terms of the Lima COP outcomes, it is actually the Annex to the LCCA, entitled “Elements for a draft negotiating text”, that is most significant, because it is this Annex that can be seen as the negotiating blueprint of sorts for the
upcoming Paris COP-21. The Annex consists of a listing of various options and proposals put forward by different countries and groups of countries and provides an important footnote reminder that the “elements for a draft negotiating text reflect work in progress” and these elements “neither indicate convergence on the proposals presented nor do they preclude new proposals from emerging in the course of the negotiations in 2015” (UNFCCC, 2015, p. 6) But, as Davenport (2015) notes, the Lima outcome does not include any legally binding commitments that specify any particular amount of emissions reductions that countries need to cut; instead countries are requested to submit national INDCs by March 31 and those that miss this deadline are supposed to submit their INDC plans by June 2015. As of April 22, 2015, the UNFCCC Secretariat website lists that INDCs were communicated by only the following Parties: Switzerland, Latvia and the European Commission on behalf of the European Union and its member states, Norway, Mexico, the USA, Gabon, and Russia (UNFCCC/INDC website, 2015).

Interestingly, the LCCA and its Annex does not reference the terms “energy access” or “access to energy” but it does contain references in relation to paragraph 53.1 on “private and alternative finance” that call for, amongst other things, “a tax on oil exports from developing to developed countries to established”, “an international renewable energy and energy efficiency bond facility to be established”, and “the phasing down of high-carbon investments and fossil fuel subsidies” (UNFCCC, 2015, p. 24). Each of these three proposals has serious implications for the future of global energy scenarios and climate change mitigation, and when taken together can signal massive changes for sustainable development at the national and global level, so it will be important to see whether and how they factor into the final agreed text at the upcoming Paris COP in 2015. These proposals for a tax on oil exports from developing countries to developed countries, as well as the phasing down of high carbon investments and fossil fuel subsidies, have the potential to completely alter not just the global energy landscape, but also the financial and development arenas, particularly for developing countries that are heavily dependent on fossil fuels for socio-economic growth. This proposal to establish a tax on oil exports from developing to developed countries is also puzzling in terms of its placement within the Annex, precisely because the idea for a tax on oil exports from developing to developed countries has no concrete referential analog in any of the key agreed global decisions of the over 20-year UNFCCC process, starting from the UNFCC itself to the 2013 Warsaw COP-19 outcomes. A search of all the key agreed outcomes, from the UNFCCC to the Kyoto Protocol, the Berlin Mandate and on to the 2013 Warsaw COP-19, indicates that no proposal on establishing a tax on oil exports from developing to developed countries has ever been agreed to before. The establishment of tax on oil exports and the phasing out of high carbon investments and fossil fuel subsidies have massive implications for future
global financing and sustainable development, but happen to be listed in a
sub-section dealing with “private and alternative finances.” What is also
interesting is that the draft proposal suggests that only oil exports from de-
veloping countries to developed countries would be targeted for taxation, which
could impose new responsibilities and costs associated only with oil exports
from developing countries, and which can be seen as a new means of trade
and environmental conditionality on oil exports of developing countries.

In the lead-up to the Paris COP-21, the draft negotiating text is continually
growing in length and subject to change. The most current version of the draft
negotiating text emanating from the post-Lima negotiations process – the
February 2015 session of the Ad Hoc Group of the Durban Platform – indi-
cates that the proposal for a tax on oil exports is contained in paragraph 128.1
and now reads: “A tax on oil exports from [developing] [Parties not included
in annex X] to [developed countries] [Parties included in annex X][Parties in
a position to do so, considering evolving capabilities] [all countries in a posi-
tion to do so] to be established” (UNFCCC/ADP, 2015, p. 50). The brackets
around the terms “developing” and “developed” and the introduction of
newly introduced and additional bracketed references indicate that the
proposal, like many other elements of the negotiating text, is neither agreed
to nor without contestation. The other two proposals, namely the establish-
ment of an international renewable energy and energy efficiency bond facility
and the phasing down of high carbon investments and fossil fuel subsidies,
currently remain without brackets, which indicates that global climate change
negotiators have not suggested or proposed changes to these two proposals to
date. While the Annex to the LCCA did not contain any references on energy
access, the most recent version of the draft negotiating text does now contain
one solitary option referencing “universal energy access”, which is contained
in paragraph 176.1 of the section dealing with time frames/commitments,
which states: “Each Party to consider adjustments on the basis of historical
responsibilities and equitable sharing of global atmospheric resources and
carbon space in the context of imperatives of poverty eradication, universal
energy access and sustainable development for developing countries”
(UNFCCC/ADP, 2015, p. 75). However, it remains to be see whether and how
these proposals, which have serious implications for future global and national
energy and sustainable development arenas, will fare in terms of the final
agreement at the end of COP-21.

In light of these proposals, and given the absence of concrete, specific
guidance linking climate change and energy access for the poor within the
LCCA and in the current draft negotiating text, the overall question that needs
to be asked is whether the nexus between climate change energy-related mit-
igation and energy access for the poor will ever be explicitly reflected in any
comprehensive global climate change agreement arrived at in 2015. The year
2015 is shaping up to be a pivotal one for agreement on the UN’s post-2015
development agenda, anchored by an ambitious set of sustainable development goals, including separate stand-alone goals on climate change and energy access. It stands to reason that increasing access to clean and affordable energy services for the poor should serve as a crucial link between two separate sets of UN negotiations on climate change and sustainable development, which are both expected to yield global agreements in 2015. In other words, linkages among energy access, poverty reduction and climate change cannot and should not be ignored by the UN quest for a comprehensive global climate change agreement and a shared post-2015 development agenda.

What this book will demonstrate is that the heavy reliance on inefficient and polluting energy services by the poor, including, more specifically, the challenge of worsening air pollution due to emission of SLCPs and attendant disease burden resulting from a lack of access to sustainable energy services, has not been adequately focused despite decades of global negotiations on climate change mitigation and sustainable development. Energy access for the poor has not been referenced in key agreed global outputs resulting from both sets of negotiations. Despite years of global negotiations, an examination of the actual record of key UN globally agreed climate change and/or sustainable development-related outcomes reveals a surprising paucity of programmatic guidance and references regarding the linkages between lack of access to sustainable energy services for the poor and climate change.