EXECUTIVE SUMMARY

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African countries face unprecedented challenges of defining a future development pathway in a resource- and carbon-constrained world. This book addresses these challenges, with special reference to the set of infrastructure that most African countries require to meet the Sustainable Development Goals (SDGs) and fulfil the aspirations of Agenda 2063. Infrastructure is a key factor that determines how resource and energy flow and transform through socio-economic systems. Decisions made today by African countries on their infrastructural configuration will determine the inclusivity, resource intensity and climate resilience of their development pathways for decades to come. This book is a product of a two-year research conducted by a group of African scholars who have extensive academic and practical experience on the development of key infrastructure sectors in Africa. This executive summary highlights the key conclusions and recommendations made in each chapter of the book.

Chapter 1: Transformative leapfrogging to a wellbeing economy in Africa

Social transformations of different proportions and scope have shaped human history over millennia. Two of the most significant social transformations are the agricultural and industrial transformations. These transformational processes radically redefined human society and determined the future critical features of socio-economic relationships within communities and across nations. Furthermore, they fundamentally redefined our relationship with the natural environment. The confluence of economic, social and environmental challenges that humanity currently faces require a transformational transition towards an inclusive, climate-resilient, and resource-efficient economy. This is a global transition with significant impact on Africa as a region.

The dominant development narrative of the ‘growth economy’ is driven by the neo-liberal economics of the market. This not only led to environmental destruction on a global scale but also miserably failed in ensuring social justice across the world and within communities. The transformational transition of the twenty-first century requires a new development narrative that ensures environmental sustainability and social inclusivity while promoting economic development. This book proposes the notion of the ‘wellbeing economy’ as an alternative. This approach envisages the continuous fulfilment of human wellbeing, with primary attention on job creation, poverty eradication and gender equality, while maintaining the sustainability of the ecosystems.

The Sustainable Development Goals of Agenda 2030, the Paris Declaration on Climate Change and the emerging possibilities created by the accelerated application of renewable energy and IT-based technologies have created new opportunities for African countries to move to inclusive, low-carbon and resource-efficient economies. This evolution is also characterised by forces of lock-in, which actively work to maintain the status quo. At the same time, the drivers of leapfrogging that continuously develop and introduce new systems and technologies are also acknowledged as equally significant. Managing the tension between the lock-in and leapfrogging factors – and moving beyond incidental leapfrogging that is often externally driven and at best incremental – is the critical challenge that African countries currently face.

The recent developments in disruptive technologies such as information and communication, manufacturing, and renewable energy technologies, which are more distributive, coupled with the early stage of economic development of most African countries, opens-up tremendous leapfrogging opportunities for these countries. However, African countries should actively promote transformative

leapfrogging that is internally driven and responsive to the national context as the critical success factor for the development of a wellbeing economy that is inclusive, climate-resilient and resource-efficient.

One of the critical domains which will determine the development trajectory of African countries for the coming decades is the strategic choice and decisions they make on how to develop their socio-economic infrastructure for the coming decades. Developing a wellbeing economy by capturing and utilising the available opportunities provides a strong basis for fulfilling the aspirations of Agenda 2063 and the 'Africa We Want' campaign. The fundamental basis for this transition process is maintaining its ecological infrastructure, which provides the foundation for the development of a wellbeing economy. Development of the energy, industrial and urban infrastructures from a life-cycle management perspective will also determine the pace of their transition to an inclusive, climate-resilient and resource-efficient economy.

Chapter 2: Ecological infrastructure as a basis for the African wellbeing economy

Sustainable development relies on a balanced relationship between addressing social and economic growth within the boundaries of the environment. The environment not only presents the foundation that creates and sustains life on earth but also provides the assets upon which to build a country's economic development. The production of food, provision of water and natural resources for industrial activities, regulation of climate and purification of air rely on the sustainable management of the natural world. Natural resources, however, are limited and are decreasing rapidly. If they are not sustainably managed, the system in which they are embedded will collapse. Building a wellbeing economy across the continent depends explicitly on the protection and integrity of the natural resources that are critical life-support systems for sustained development. A powerful way of approaching this is to consider that ecological infrastructure needs to be at the forefront when thinking about the wellbeing economy. Ecological infrastructure is the nature-based equivalent of built or hard infrastructure.

According to the United Nations Economic Commission for Africa (UNECA), more than 50 million hectares of forests have been lost in Africa between 1990 and 2000, representing an average deforestation rate of nearly 0.8 percent per year (UNECA, 2011). Land degradation is a severe threat in Africa, with about 500 000 km² of land estimated to be degraded due to soil erosion, salinisation, pollution and desertification (United Nations Environment Programme [UNEP], 2013). This is primarily driven by deforestation, forest fires,

over-cultivation, inefficient irrigation practices, overgrazing, over-exploitation of resources (including mining), and climate (UNECA, 2011). Land degradation reduces agricultural productivity and directly impacts on food availability, nutrition and human health. Land degradation in drylands can result in desertification. The desert lands of the Sahara, Namib and the Kalahari, and the drylands of northern Kenya, southern Ethiopia and Somalia cover around 40 percent of Africa's land surface area (International Soil Reference and Information Centre [ISRIC], 2013).

A significant share of the continent's natural resources is used unsustainably, with some lost through illegal activities. This means that the stream of benefits generated from these resources is being reduced over time. This has serious implications for the long-term wellbeing of the population, as natural capital accounts for between 30 and 50 percent of total wealth. Population growth will also have significant implications for building resilient social-ecological systems. Population growth in Africa is likely to continue to put pressure on food, land and water resources.

While the inherent uncertainty and diversity in potential futures across the continent makes it tenuous for a set of prescriptive policies to be established, policy decisions should aim to minimise environmental and developmental trade-offs and maximise Africa's ability to safeguard its natural capital adequately. Living with such complexity and uncertainty requires resilience-building approaches to the management and governance of social-ecological systems. The social-ecological systems approach emphasises the role that people, communities, economies, societies and cultures play in the natural environment. Ecosystem-based adaptation is a nature-based solution that uses biodiversity and ecosystem services to support communities to adapt and build resilience in the face of disturbance.

Underpinning an economic trajectory that will lead to a continent-wide wellbeing economy comes with significant challenges, not least of which is the need to reduce the region's ecological footprint and safeguard the life-support system provided by healthy land, water, air and biodiversity. Ecosystem-based adaptation is recognised for its ability to offer co-benefits in helping society adapt to changes, including climate change. Agricultural biodiversity is vital to the functioning of agro-ecosystems, to ensure food and nutrition security and to cope with the challenges of climate change. African farming systems can build on a fundamentally different model of agriculture based on diversifying farms and farming landscapes, replacing chemical inputs, optimising biodiversity and stimulating interactions between different species, as part of holistic strategies to build long-term fertility, healthy agro-ecosystems and secure livelihoods.

Chapter 3: Sustainable energy systems in Africa

Africa has the largest share of the population without access to energy and addressing energy poverty is central to the eradication of poverty in Africa. The region has a significant volume of renewable energy resources that are yet to be developed. Almost every country that has achieved universal access has reached this goal with the support of strong leadership that can establish a shared vision of the benefits of enhanced energy systems for equitable wellbeing. Leadership is critical to driving through comprehensive long-term planning in partnership with public, private and civil society stakeholders. Visionary political leadership supported by public energy administration systems that embody long-term visions are critical for a successful transition to sustainable energy.

Costs for new energy options are falling and technologies such as wind turbines and grid-based PV systems are becoming competitive. Feed-in tariffs have been the most widely used government support mechanism for accelerating private investment in renewable energy generation. Competitive tenders or auctions have also emerged in various countries as acceptable instruments. Country-level experience has shown the importance of strong banking, legal and other advisory resources in rolling out effective renewable energy programmes. However, there is much more that must be done, particularly in the area of promoting the development of distributed energy systems that are critical for Africa's development. In this regard, it will be necessary to replicate and scale-up proven policy instruments and financing mechanisms.

It has long been evident that low levels of transformative knowledge and skills across sectors account for Africa's overwhelming dependence on prescriptive solutions imported from abroad. This applies as much to sustainable energy efforts as to other efforts at improving living conditions on the continent. The success of sustainable energy initiatives depends on how well they are aligned with domestic needs and resources. There is, therefore, an urgent need to build domestic capacities for multi-level design and management of sustainable energy transitions. Academic and professional institutions can play fundamental roles in creating and disseminating the necessary knowledge and skills within political, business-entrepreneurial, civil society and the general public.

Domestic social entrepreneurs across Africa can help fill the gaps across the sustainable energy supply and value chains and this needs to be further strengthened by recognising and nurturing domestic sustainable energy enterprises. Private entrepreneurs are successfully deploying innovative business models that are unlocking internal and external investments, creating jobs, catalysing local economic growth, and making measurable impacts on poverty reduction. This effort needs to be scaled up to unlock real social innovations that can sustain action

and transform the energy landscape. Providing systematic support to renewable energy service cooperatives could make a significant contribution to job creation, value addition and women's empowerment at the local level.

Agro-industries, such as tea, coffee and sugar estates, already utilise energy for their processing and, on occasions, supply power to their employees within their estates. In the event of non-access to the grid, scaling up electricity service would have direct economic and social benefits to rural communities in the vicinity of these estates, while it offers the agro-businesses a potentially attractive commercial opportunity for diversifying into the energy market. Supporting agro-industrial co-generation and anchor clients as a local solution could contribute to sustainable energy transitions in the region. In situations where the industry is connected to the grid, it creates the possibility to feed into the grid in times of surplus and drawing from it when supplies are low.

Chapter 4: Inclusive and sustainable industrial development for Africa

The industrial revolution, which started in the eighteenth century in England, has gone through different stages of development. By the middle of the twentieth century, industrial modernity was a global phenomenon. Compared to previous centuries, the twentieth century was a time of unprecedented economic growth driven by accelerated industrialisation and globalisation. However, it was also a century that saw exponential growth in the volume of resources extracted from the natural environment and the related environmental degradation. The *Global Resource Outlook* produced by the International Resource Panel (IRP) stated that the decoupling of natural resource use and environmental impacts from economic activity and human wellbeing is an essential element in the transition to a sustainable future (IRP, 2019). Reducing the emissions of greenhouse gasses has become the major environmental challenge that needs to be addressed to mitigate the adverse effects of climate change.

The Malthusian theory of 'environmental limits' and Schumacher's 'small is beautiful' concept are perhaps the early precursors of sustainable development within the disciplines of economics and political economy. Since the middle of the twentieth century, many concepts and tools that focused on reducing and containing the adverse impacts of industrialisation on the environment have been developed. These range from different sets of end-of-pipe management technologies to technologies aimed at improving the resource efficiency of industries from micro to systemic levels. Different economic development models have also been developed with the purpose of transitioning to more sustainable consumption and production patterns. Africa's industrialisation can benefit from

these technologies and knowledge systems, leading potentially to improvements in industrial efficiency.

African countries have been aspiring to industrialise their economies since their early years of liberation. This has led to the development of numerous regional and national economic development strategies that place significant emphasis on industrialisation. Ironically, despite all the efforts and investment since liberation, most African countries have been through decades of premature de-industrialisation. Industrialisation is still an economic imperative for Africa to meet the needs and aspirations of its people, as outlined in Agenda 2063. However, neither the European model nor the 'exemplary' Asian models of industrialisation are appropriate for Africa for the following two main reasons. Firstly, attempting to industrialise through the conventional model of industrialisation is neither feasible nor sustainable within the available regenerative and assimilative capacity of the already constrained planetary ecosystem. Secondly, the industrialisation of the twenty-first century is fundamentally different from previous industrialisation paths both in terms of its technological drivers and the expected socio-economic outcome and impacts.

In the twenty-first century, the traditional top-down organisation of society that characterised much of the economic, social, and political life of the fossil-fuel-based industrial revolution is giving way to a distributed and collaborative relationship in the emerging green industrial era. Furthermore, the new industrialisation path has to utilise the opportunities provided by the so-called 'machine age' (often referred to as the 'fourth industrial revolution' (Industry 4.0) while withstanding its adverse impacts. This includes employing the potential of distributed manufacturing as a basis for developing distributed economic networks that create jobs, empower women and promote local value addition. The transition from mass production to mass customisation as a result of digitisation of the supply chain also provides new opportunities for industrialisation in Africa.

The development of eco-industrial parks that are seamlessly integrated, both horizontally and vertically, into the local and national economy provides a strong basis for inclusive and sustainable industrialisation. Leveraging and utilising all the available opportunities while containing the related adverse effects will require putting the appropriate institutional, physical and human infrastructure in place. Creating a dynamic innovation space with the right combination of institutional, physical and social infrastructure is an essential prerequisite for being an active player in the global economy of the twenty-first century. In this context, African countries need to give maximum attention and support to university-industry linkages and partnerships as a key institutional pillar for sustainable industrialisation.

Chapter 5: Sustainable urban development in Africa

Urbanisation is among the megatrends shaping Africa's economic, social and environmental transformation. Though countries differ considerably, urban Africa is well below the global average in resource consumption. Even if the average per capita energy consumption and carbon emission of Africa are low in comparison to developed economies, energy intensity level remains significantly higher than the world average. Further, a growing urban population lack access to energy, basic infrastructure and services. African cities, therefore, face triple challenges: meeting the growing demand for resources to drive their economies, expanding access to the urban poor, and improving resource efficiency. African cities and urban system are critical in achieving low-carbon job-rich inclusive growth and accelerating the transition to sustainability. However, this requires a rethink in the way African cities are conceived, designed, built and managed.

With many African countries on a rapid urban and economic growth trajectory, Africa's resource consumption and carbon emissions are likely to increase in the following decades. However, its low stock of capital and existing technology and the promising prospect of environmentally sustainable technologies such as renewable energy gives Africa a 'late-comer' advantage to leverage urbanisation for sustainable development. The system of cities in many African countries is characterised by primacy, missing middle and rapidly growing small towns, weak economic bases and inadequate rates of job creation. The urban system is imbalanced, underperforming and unsustainable. Decongesting and improving principal cities is necessary, but not sufficient. Investment in connectivity infrastructure, decentralised energy systems, and leveraging ICT to promote distributed service and industrial economies should help to accelerate progress to economic de-concentration and a balanced spatial system constituting villages, towns and cities across the human settlements continuum.

There is the opportunity to reap a 'sustainability dividend' by adopting a compact and dense urban form and by shifting to cheaper and cleaner energy. Moving to smart urban infrastructure design and technology can be a game-changer. At a more fundamental level, three issues are critical. Firstly, urban form and design which determine the nature and configuration of urban infrastructures. The built environment of today's cities is the product of urban vision and design implemented generations ago. The 'lock-in effect' of urban form is long-lasting. Secondly, considering severe resource scarcities and the long life-cycle of infrastructure, project prioritisation should be considered within appropriate strategic frameworks. Even within energy or connectivity sectors, there are multiple decision issues that matter, such as choice of technology or energy mix, or scale and location. Thirdly, in the context of sustainability transitions, investment

decisions involve shifting to new technologies or future technologies. Policy inertia and powerful stakeholder interests can constrain these decisions if not effectively countered. This kind of obduracy could hamper the necessary technological shift and increase the stock of 'stranded capital' thus making 'leapfrog' transformation increasingly difficult or costly.

Sustainable infrastructure design and implementation can also facilitate investment in affordable housing. The price-to-income ratio of housing in Africa is much higher than the world average. The prevalence of slums and informality in African cities is to some extent due to the disconnect between planning, infrastructure and housing construction. Studies show that if land is efficiently laid out, housing and service provision can be incrementally improved at much less cost than retrofitting slums. Neither shack formation in the middle of the city, nor mega housing projects on the urban edge disconnected from job and economic opportunities or without access to public transport is sustainable. The anomaly of 'housing without people' and the problem of 'people without housing' observed in many cities around the world is symptomatic of fundamental urban development flaws and resource inefficiencies that Africa should strive to prevent or mitigate. Effective housing solutions require multiple front interventions in, for example, land and housing regulations, housing finance and building technology.

Many African cities had master plans, but by the time the plans were completed, the realities on the ground had utterly changed as the rapid forces of urbanisation took their course. The plans remained static and rigid, while the realities continuously evolved. The dynamism and ingenuity generated in bottom-up approaches and the static and rigid planning and control interventions struggling to cope with old and new challenges coexist with limited interaction on the margin. This all results in chaotic urban development. The solution does not lie in the top-down command and control system nor in the bottom-up self-development. What is needed is light-touch top-down planning to provide guidance and structure while allowing adaptation and innovation to suit diverse needs and bottom-up initiatives that are spontaneous, adaptive and collaborative. In a nutshell, business-as-usual does not work. However, action is needed before the window of opportunity closes.

Chapter 6: Life-cycle management for sustainable infrastructure planning and development in Africa

At the heart of global and national socio-economic development are:

- ☐ mobility of people, goods and services;
- ☐ information through transport, energy, water and wastewater; and
- ☐ information and communication technology infrastructure.

How these people, goods and services, and information are moved from one place to another and how the choice affects economic, social and environmental quality continues to be the subject of inquiry of many fields of research and practice. The type and spread of infrastructure systems in different parts of Africa play a strategic role in influencing its path to sustainable development and will determine whether its diverse national, continental and global commitments, such as Africa's Agenda 2063 and UN's Sustainable Development Goals 2030, will be met. It will also ultimately determine the progress of each country in creating jobs and eradicating poverty.

As indicated in many reports on the continent, Africa's infrastructure gap is enormous. Leaving this infrastructural deficit unaddressed for so long or addressing it in a business-as-usual way will pose significant threats to the region's sustainable economic development. The long lifespan of infrastructure systems and the fact that the bulk of Africa's infrastructure requirements to 2050 is yet to be developed, provides a vast opportunity for planning and laying out the systems sustainably. Africa needs to ensure its new infrastructure systems leapfrog the inefficient, sprawling and polluting systems of the past, and develop systems that are inclusive, resource-efficient, low-carbon and climate-resilient. Sustainable infrastructure systems in the continent will be critical elements of achieving a more sustainable form of economic development adaptable to global changes and the changing needs of its population.

The most significant opportunities for improving the overall outcome of planning for sustainable infrastructure systems could result in higher positive impacts without the negative consequences of sub-optimal solutions that are prone to problem shifting. These opportunities must be exploited during the earlier stages of the planning process and at the very start of each stage. A review of existing evaluation tools shows significant gaps in the coverage of sustainability principles at the upstream planning stage. This is because the focus of sustainability analyses are mainly or entirely on later stages in the value chain ('end of pipe') after important decisions have already been made. By this stage, it is too late to make positive interventions. Emerging knowledge for creating sustainable infrastructures can be found in the procedural and analytical tools of life-cycle management. These tools support the mitigation of problems associated with the conventional 'silo' approach.

As key policy and strategic issues for African countries, there is a need for articulating national strategies and fostering leadership for sustainable infrastructures. It is essential to link urban planning with a higher level of integrated infrastructure planning while working on institutional reforms and capacity building to increase access to life-cycle management skills. There is a need to focus on prioritising

strategic partnerships and implementing knowledge management and community engagement systems that are critical for transforming the conventional planning process to be compatible with the requirements of planning for sustainable infrastructure in African countries. To this end, realigning available resources is as important as creating new resources.

The framework proposed in this book in support of strategic planning of sustainable infrastructure in Africa is structured to show the different levels of planning from the national to the local level. While recognising the whole planning ecosystem as a continuum, the framework identifies where broader qualitative life-cycle management elements and specific quantitative life-cycle management elements can be used to take infrastructure planning to the next level. Broader qualitative aspects, such as life-cycle strategies, programmes, systems, processes and concepts, can be used at the highest level, such as national planning, and at the early stages of subnational planning and decision-making. The specific quantitative life-cycle management elements consisting of analytical tools and techniques supported by quantitative data, information and models are better used at the local level and in planning and decision-making circumstances where a higher resolution of planning outcomes are sought. The conditions for a successful application of the proposed framework include aspects of the planning process, assessment and institutional architecture. There is a need for the implementation of a life-cycle-driven adaptive strategic planning process, a strategic environmental assessment with a life-cycle sustainability assessment content, and life-cycle management-based institutional architecture to support the evaluation and the planning process.

Chapter 7: Distributed renewable economy for Africa as a basis for wellbeing economy development

The unprecedented economic growth registered through the agricultural transformation and the successive stages of the industrial revolution led to new sets of environmental scarcities and crises on a global scale. These scarcities grew exponentially with the fast pace of industrialisation and globalisation that was registered during the second half of the twentieth century. The globalisation of the twentieth century did not only globalise national economies but it also globalised environmental pollution and degradation, which had remained local for millennia. This has resulted in global challenges such as climate change. The exponential increase in inequality between and within countries is another worrying social outcome of unbridled globalisation. As reported in an Oxfam Briefing Paper, the 26 wealthiest people on earth in 2018 had the same net worth as the poorest half of the world's population, some 3.8 billion people (Vázquez Pimentel, Ayma & Lawson, 2018).

The emerging disruptive technologies, which are inherently distributive, provide excellent opportunities for the economic empowerment of people provided that they are utilised innovatively. This includes technologies such as artificial intelligence, robotisation and block-chain technology driven by digitisation, renewable energy technology systems and distributed manufacturing systems. However, the possible impacts and benefits of these disruptive technologies will mostly depend on who controls the use of these technologies. The battle is already on between the corporate establishments that are bent on maximising profit and their market position by exploiting the emerging disruptive technologies and the advocates for the transformational utility of these technologies for the broader and higher benefit of humanity through, for example, open-source knowledge commons-based ‘prosumer’ systems.

Given the major economic, social, environmental and technological factors that are at play, the twenty-first century will be registered as the century of the most significant social transformation in human history. This transformation on a global scale will have significant immediate and long-term impacts on the ability of African countries to develop their respective economies. As was noted earlier, Africa has a unique opportunity to be a significant beneficiary of this transformation. However, for Africa to reduce the adverse impact of this transformation on its people and maximise its benefit, it has to break away from its ‘passive recipient’ status and prepare itself to be an active player of this global transformation by seizing the available opportunities.

‘Distributed economies’ generally promote small-scale, flexible networks of local socio-economic actors using local resources according to local needs, in the spirit of sustainable development. Besides the direct economic and environmental benefits, this approach provides a robust socio-economic basis for job creation, empowerment of women and broad participation of local communities in development management. It also provides fertile ground for socio-technical innovations driven by local needs and conditions. Thus, the promotion of networks of local economies that create more jobs and add more value to local economies need to be at the centre of promoting sustainable development in Africa. This can be driven by distributed renewable energy (DRE) systems, which offer an unprecedented opportunity to address energy poverty and accelerate the transition to modern energy services for rural communities.

Planning for a distributed renewable economy is aimed at creating a local, sustainable economy network as a foundation for developing a wellbeing economy that continuously fulfils the needs and aspirations of its people while ensuring the wellbeing of the natural ecosystem. The crucial first step of the whole process is to identify a natural resource sector and or an economic actor which could be

used as an anchor for the development of the distributed economy network. The next step is to organise an innovation incubation space to identify the specific economic activity that may lead to higher value addition and job creation for the local economy. Development of the first tier of the economic network around the most promising resource and economic actors by ensuring optimal vertical and horizontal integration across the value chain is at the core of planning for a distributed renewable economy. This will be further consolidated by replicating the economic network into a second-tier of economic activities.

Chapter 8: Inclusive governance for sustainable development in Africa

The discourses around developmental states and sustainable transition have gained increasing prominence in development studies over the last couple of decades. Proponents of both developmental states (DS) and sustainability transition (ST) agree on the need for profound structural transformation, but with two different ends in mind. For proponents of developmental states, the end is accelerated economic 'Development' (big 'D') that substantially raises the average gross domestic product (GDP) per capita with a focus on industrialisation and urbanisation. On the other hand, the end state for proponents of sustainability transition is a socio-technical transition that results in a low-carbon and resource-efficient economy. This chapter argues that the synthesis of these two bodies of scholarship needs to open up a space for a more detailed discussion about governance for a just transition, with particular reference to how we deepen our understanding of the dynamics of the polity in African governance systems.

A new kind of political leadership is required that strikes a very delicate balance between regulation of shared norms/values and self-managed implementation. It also needs to recognise that there are emergent properties that stem from dense networks of people, working together across institutional boundaries within well-defined institutional ecosystems, unconstrained by outdated, usually hierarchically organised, norms or an atmosphere of fear and conformity. Furthermore, embeddedness for the twenty-first-century developmental states might mean building a polity that broadens out developmental partnering with networks of civil society formations and smaller entrepreneurs rather than focusing only on the investment strategies of large corporates.

To ensure that the directionality of the transition to more sustainable modes of production and consumption is also oriented towards a just transition will depend on power dynamics within the polity. The rise of governance since the 1970s is primarily about the organisation and outward expansion of the polity to incorporate policy actors that were previously excluded from having any influence on policy. Much of this was to compensate for the weakening of the state as

complexities mounted. However, ‘collibration’ is the counter-trend, referring to the way key actors within the polity seek – with varying degrees of success – to harness and mobilise governance and complexity more generally. It is this kind of ‘governance of governance’ that has the potential to guide and shape long-term structural transformation that would be required in the African context to drive a just transition. The core skill required for this is process facilitation.

It is necessary to move away from a ‘black box’ approach to the African polity. Detailed granular analyses of the inner dynamics of the polity will be required. This will need to include, firstly, an understanding of the underlying power relations at the very heart of the polity. Without this, facilitated collibratory governance to widen stakeholder involvement in the polity will be impossible. Secondly, an understanding of the potential and limitations of the paradigm(s) shared by key actors within the polity will be required. Without this, learning and innovation will be difficult to achieve. Thirdly, how state/government institutions are organised, funded and operated is critical. This is where ‘lock-in’ and path dependency sets in, often conditioning constrained parameters within which policy alternatives are considered. Fourthly, how policies are formulated and the potential futures they express is also critical for success.

To effectively implement the SDGs, the traditional debate about African developmental states must incorporate sustainability transitions and conceptualise sustainability-oriented developmental states. The need for purposive directionality to tackle the tremendous African challenges of inequality and unsustainability has never been greater. Collibratory governance in practice is about building a new generation of meta-governance institutions with a mandate and capabilities to facilitate new modes of partnering within reconfigured more inclusive polities.

Chapter 9: Indicators on transformational infrastructure for a wellbeing economy

The most dominant economic development indicator since the middle of the twentieth century is gross domestic product. This indicator has served well for the promotion of the free-market economy in the twentieth century and subsequently globalisation during the second half of the century. GDP, as a measure of the market value of goods and services produced within an economy in a given period, has been a reasonable indicator to measure the level of economic production in a region or country. The limitation of GDP as a measure for development was well recognised even by its creator back in the 1930s and 1940s. However, since the second half of the twentieth century, it garnered a disproportionate amount of attention and influence from both policymakers and the general public as a measure of human wellbeing and social progress. The mounting evidence from countries

has shown that a narrow focus on GDP is at odds with the broader outcomes of sustainable development, particularly those relating to environmental wellbeing and social equity.

The need for developing alternative indicators to GDP has been recognised for many decades. The most notable challenge came from the global effort to develop sustainable development indicators that address the economic, social and environmental dimension of sustainable development. This effort received a new push since the 1990s and led to the development of different methodologies and hundreds of indicator sets including composite indicators. These include ecological footprint (EF), environmental sustainability index (ESI), wellbeing index (WI), human development index (HDI), global happiness index (GHI), and green economy indicators (GEI).

The various sustainability assessment approaches and development indicators provide valuable insight into how to navigate through development and utilisation of alternative indicators. The key selection criteria African countries are advised to consider in selecting an indicator set are policy relevance, the utility for policy and decision-making, soundness of the methodology, interpretability of generated information and availability of relevant data. While many lessons could be drawn from existing literature and practical experience in developing and utilising sustainability-related indicators, the indicator framework proposed in this book is specifically focused on assessing the leapfrogging possibilities from a transformative infrastructure perspective.

The guiding vision of the indicator framework is that African countries can transition to a wellbeing economy that will enable them to fulfil the basic needs and aspirations of their people while sustaining the wellbeing of the natural ecosystem as a foundation for their development. The scope of the framework is that the investment decisions to be made on essential infrastructure development within the coming five to ten years will determine the leapfrogging opportunity of African countries to a wellbeing economy both in the medium and long term. The framework also recognises that the ability of countries to effectively integrate the above consideration into their policy, planning and budgeting process is a crucial factor in determining their leapfrogging potential.

The proposed set of indicators are clustered under transformative policy formulation, transformative infrastructure development, and transformative governance. The policy component looks at the high-level political commitment for a transformational transition to a wellbeing economy expressed in different forms in national policy and strategy documents. The infrastructure component looks at the level of commitment for transformational infrastructure and the lifecycle consideration in the planning and development of energy, industry and urban

infrastructure as the primary drivers. Finally, the governance component looks at the fulfilment of both distributional and representational justice for communities as fundamental prerequisites for achieving transformational development in the twenty-first century. The proposed framework needs to be further adapted and developed according to the specific context of each country.

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