



**TOWARDS AN AFRICAN
GREEN INDUSTRIES
VALUE CHAIN WITHIN
THE AfCFTA**



THE CONTEXT: AN ACCELERATED TRANSITION TO A LOWER-CARBON ECONOMY

A transition to a lower-carbon world economy is already well under way. There can be no doubt that it will gather momentum in the near future and have an increasing impact on all economic activity in every part of the world.

The reasons for this transition are well known. High carbon-emitting industrial activity has disrupted humanity's relationship with the natural world to the point where catastrophic climate change has become an imminent existential threat. This has been most intense and most evident in what some have called the anthropocene age – where human action has become the main factor in earth system change. This began after the end of World War II, when nuclear weapons testing began to take place and when fossil fuel driven energy generation, transport equipment and production of consumer and capital goods expanded exponentially, most particularly in the advanced industrial countries.¹

The 'best guess' of climate scientists participating in the United Nations Intergovernmental Panel on Climate Change (IPCC) is that the default scenario of 'business as usual' will result in a rise in average global temperatures of 4.4 °C by the end of the twenty-first century.² Such a scenario would result in the collapse of industrial civilisation and render large parts of the planet uninhabitable, leading to hundreds of millions, if not billions, of climate refugees.

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Some have indeed argued that while life on earth would be able to adapt to such an environment, human civilisation would not. According to a redacted section of the IPCC's 2021 report, which was leaked and is now publicly available,³ the consensus of climate scientists is that a best-case scenario of containing the average temperature rise to 1.5° until 2040, with a rise of only one-tenth of a degree between then and the end of the century, is only possible if supply-side measures (the introduction of new low-carbon industrial technologies) are complemented by 'fundamental structural reforms', including a 40% reduction in overall energy consumption.⁴ Even in this scenario, global warming already 'locked in' will result in increasingly frequent extreme weather events of different sorts across the world.

While critics have accused the United Nations Conference of the Parties (COP) 26 held in Glasgow in November 2021 of being mere 'blah blah' – meaning that commitments to action that were made there were insufficient to address the looming climate crisis – they do herald a likely acceleration of the transition to a lower-carbon economy. The commitment to 'phase down' coal (even if a dilution of the originally proposed formulation 'phase out') – and even though manifestly contradicted by the absence of anything similar with respect to the other fossil fuel – will accelerate the decommissioning of coal-based energy generation across the world. The 'net zero' commitments made by several developed countries will also likely see increased unilateral action against imports of products identified as being dependent on high carbon inputs, including coal-based energy. This is likely to even include agricultural products emanating from what are seen as high-carbon electricity jurisdictions. Even if unfair and arbitrary formal trade measures like border adjustment taxes (import duties levied on alleged high-carbon goods) are successfully resisted, actions by private importers or consumers seeking to demonstrate 'green credentials' could set a rising floor of private carbon standards that suppliers across the world will have to meet. Carbon measuring and trading, in short, are likely to become more prominent in a host of transactions.

Africa's contribution to global greenhouse gas emissions is minimal, yet the African continent is part of the world most vulnerable to global warming, with risks of both flooding and desertification. Africa, along with other parts of the developing world, has argued strongly for 'common but differentiated responsibilities' in undertaking mitigation measures. The continent has also argued that it can do more by way of mitigation if promised funding from the developed world (the main polluters) is indeed forthcoming. More than that, huge investments will be required to 'climate proof' existing and potential new infrastructure – both social and economic – against extreme weather events that will likely become more common and increase in intensity, even if catastrophic climate change is avoided.

THE IMPERATIVE OF A 'JUST TRANSITION'

While there can be no escaping from the reality of a transition to a lower-carbon economy, there is enormous potential in a world of rising inequality for this to be driven by much that is unfair. A transition to a lower-carbon economy will produce potential losers as well as winners, both within and between countries. Those whose current livelihoods depend on high-carbon-emitting activities will find their jobs at risk. Depending on the circumstances within individual countries, there could be at various times in what will inevitably be a prolonged and uneven transition, more people whose livelihoods are at risk than there are new job opportunities created in new low-carbon activities. Those in vulnerable positions may also not be the best equipped to benefit from opportunities created by potential new lower-carbon activities. In such countries and societies, the default scenario (that which unfolds without purposeful intervention) could result in more losers than winners, at least for a time. This highlights the imperative for a struggle for a just transition that is more than mere rhetoric but involves campaigns and struggles for concrete programmes that identify potential losers and act both to mitigate the negative impacts on the jobs and livelihoods of such persons and communities, while simultaneously working to ensure a faster pace in the creation of new jobs in lower-carbon activities as well as ensuring the equitable access of vulnerable people and communities to new opportunities.

The struggle for a just transition will also have to recognise the inequalities and disparities between the developed world (which bears greatest responsibility for the climate crisis) and the underdeveloped world, which has a much lower level of responsibility but which will be among those most affected by catastrophic climate change. Any transition claiming to be just will thus have to include a global redistributive dimension that deliberately seeks to reduce the existing inequality and uneven development between countries, in particular by supporting poorer countries in their quest to overcome underdevelopment. New low-carbon technologies and products have been developed in industrialised countries, and if the lion's share of manufacturing output and jobs remains confined to those regions, existing inequalities between developed and developing countries will likely widen.

Striving to ensure that the developing world secures an equitable share of the value-added and manufacturing opportunities associated with a transition to a lower-carbon economy will therefore have to be central in the struggle for a just transition. Without this, the developing world will be relegated, once again, to being consumers of products and technologies produced elsewhere, just as many existing economic activities are decommissioned and costs (both human and monetary) associated with extreme weather events increase. Any such outcome would widen inequalities between the developed and underdeveloped parts of the world.

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AFRICA'S POTENTIAL GAINS FROM A TRANSITION TO A LOW-CARBON ECONOMY

Much of the existing literature on Africa's transition to a lower-carbon economy has focused on opportunities that could be created from the roll out of renewable energy, particularly as what are termed modern forms of renewable energy generation (wind, solar, biomass) become cheaper. According to the International Renewable Energy Agency (IRENA), only 20% of the installed electricity generation in Africa in 2019 came from renewable sources. Of that, hydropower was the largest contributor, accounting for 67% of the continent's renewable energy generation. The contribution of hydropower was, however, lower than the 92% recorded in 2010 and the declining percentage reflects the fact that other (so-called modern) forms of renewable energy have begun to come on stream.⁵ With Africa home to 60% of the world's population without access to electricity,⁶ the roll out of less costly renewable energy has been identified as an opportunity to close the energy gap, including in potentially more accessible off-grid forms. Electrification has also been identified as a way to replace the high-carbon-emitting wood and paraffin burning on which many low-income households currently depend. Africa has plentiful sunshine and wind that could drive renewable energy generation, as well as many more opportunities to expand hydropower generation. Some of the latter, such as Inga Falls in the Democratic Republic of the Congo, could literally be game changing.

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The World Bank has also pointed to the mining opportunities that a global transition to a lower-carbon economy will provide. According to its calculations, three billion tonnes of minerals will need to be mined to support the lower-carbon technological changes required to contain global warming to less than 2 ° C⁷ (although we have already seen that the redacted sections of the 2021 IPCC report argue that this alone will not be enough). Africa has deposits of many of these minerals (cobalt, lithium, graphite, chromite, manganese, platinum, rare earths, etc.) and in several cases is home to the largest known reserves.

While it is, of course, important to work for the realisation of such opportunities, they alone will neither ensure a just transition nor that the lower-carbon economy assists Africa in its quest to overcome underdevelopment. African leaders and analysts have long identified the central challenge of underdevelopment on the continent as being the continent's integration, under colonialism, into the global division of labour as mere producers and exporters of raw materials used in the production of value-added products elsewhere. The United Nations Economic Commission for Africa's African Alternative Framework to Structural Adjustment Programmes, adopted in 1990, accordingly identified the central task of Africa's development as 'structural transformation', a key element of which required 'Africa...to break the apron strings of structural and relational dependence on producing a limited number of cheap primary commodities for export'.⁸

This formulation, repeated in one way or another in many other agreed policy documents, points to a strongly held view that only by transitioning to higher value-added production and industrialising can the continent hope to overcome its underdevelopment. This kind of thinking echoes that of heterodox economists and economic historians who have argued that almost all countries that have transitioned from low to high income, or from underdeveloped to developed, have passed through a stage of economic diversification involving a shift to higher value-added production.⁹ In other words, they have industrialised. Poor countries have stayed poor because they have remained trapped in the much lower value-added production and export of some primary product or products, agricultural or mineral. Most of these countries were at some stage in their history colonised. Several were subject to colonial laws explicitly preventing their development of industries, particularly those that could compete against industries in the 'mother country'.¹⁰

Those few previously underdeveloped countries that have more recently emerged as high-income or 'moderately prosperous' countries have all followed the same path as earlier industrialisers. Whether they were the East Asian newly industrialising economies in the 1960s and 1970s (South Korea, Taiwan) or, more recently, China, their governments intervened to actively promote, nurture and protect nascent industries. As such industries developed, they were encouraged to export, taking advantage of whatever market access opportunities were available to them. But only as their industries became competitive did industrialising countries open up their domestic markets to potentially competing imports. In other words, they followed a path of strategic trade policy, where trade and

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tariff policy was seen as a tool of industrial policy and carefully calibrated to the imperative of industrialisation. The industrialisation they experienced not only resulted in greater output and higher incomes for those firms and workers directly involved in manufacturing, it also supported a host of related service activities that created better remunerated and higher-quality jobs than those that existed before. All of this created a generalised improvement in productivity that raised incomes throughout diversifying economies. Erik Reinert argues that the reason luggage handlers, bus drivers, hotel personnel, barbers and shop attendants in Peru are paid less than their counterparts in Norway has nothing to do with lesser abilities or the nature of the work they perform.¹¹ Both do the same job, and indeed those in Peru probably work longer hours than their counterparts in Norway. The reason for their different incomes lies in the fact that industrialisation in Norway generated an overall increase in incomes in that country.

Regional integration has long been identified as another key enabler of African development. While, as we shall see later, many different conceptions and paradigms have informed concrete proposals and projects, at its simplest and most basic the central idea informing this view is that the division of the continent into 54 separate countries under colonialism fragmented its economies into units too weak and small to make deep structural transformations possible within national territories, and that more could thus be achieved by creating larger regional or continental markets.

What the above suggests is that whatever opportunities a transition to a lower-carbon economy may bring for existing economic activities, its real test will be whether it enhances or impedes the continent's industrialisation efforts. Another key question will be how a just transition that enhances development can leverage off and deepen regional integration efforts, particularly now those culminating in the establishment of the African Continental Free Trade Area (AfCFTA).

According to the McKinsey Group, existing African industries emit 440 megatons of greenhouse gases – 30 to 40% of the continent's total emissions.¹² The group argues that the continent's industries are at a 'crossroads' and will be 'left behind' unless they can become more sustainable. But, in a continent that remains largely unindustrialised, and where neoliberal policy prescriptions of the 1990s and early 2000s led to premature de-industrialisation in several countries, the key question is less about what happens to existing

industries than it is about what a low-carbon transition will mean for future industrialisation programmes. In an important study, Lopes and te Velde have argued that the continent has a historic opportunity to leap-frog over high-carbon technologies (and the costs associated with transitioning out of them) and create a competitive advantage based on establishing new industries using lower-carbon technologies.¹³ They further argue that ‘the Covid-19 crisis offers perfect timing to accelerate Africa’s industrialisation along a green pathway’.¹⁴ Achieving this will, however, require a clear roadmap, leadership and commitment, as well as the implementation of industrial policy that supports, nurtures and protects infant industries as they develop and also supports and facilitates their beneficial integration into value chains. This of course applies to all industries and sectors, but a particular ‘green opportunity’ cited by Lopes and te Velde is the development of hydrogen fuel cell technology using platinum as a catalyst. Experimentation is already under way in South Africa to use this technology to power underground mining and public transport vehicles, as well as small-scale off-grid electricity generation.

The Covid-19 crisis highlighted the vulnerability created by dependence on imported supplies of personal protective equipment (PPE), vaccines and other medical supplies. The pandemic saw many instances of withholding and hoarding vital supplies to the disadvantage of Africa and other developing regions. This has led to an increasing recognition of the imperative of building greater diversity in the manufacturing and supply of strategic pharmaceutical products and medical devices, including Africa becoming a more significant manufacturer of strategic medical equipment. A similar argument could be advanced with respect to components and materials involved in the roll out of both renewable energy and programmes to ‘climate proof’ current and future infrastructure. If all the technology and equipment required for these programmes is simply imported, this will mean both a loss of potential industrial development and the export of associated jobs at precisely a time when jobs in high-carbon industries are at risk. More than that, with many parts of the world making such a transition simultaneously, there could be security of supply issues, while importing heavy components that could be made locally will involve the unnecessary use of carbon in their transport. Once again, developing green energy and climate proofing components industries will require a clear roadmap, leadership, determination, the application of industrial policy, including nurturing and protecting local producers through appropriate strategic trade policies and preferences in procurement for locally manufactured products, as well as promoting the beneficial creation and integration of such industries into value chains.

Although several countries on the continent have renewable energy programmes,¹⁵ it seems that few currently have strategies to develop associated manufacturing industries. Thus, while the production of some components – including wind towers, blades, frames for solar plants – does take place in South Africa, Egypt and Morocco, and while some innovative work is under way on green hydrogen, most of the green technology equipment and components currently deployed on the continent are fully imported. Only South Africa is known to have a programme that explicitly aims at developing manufacturing capacity in this area. A South African Renewable Energy Masterplan (SAREM) is currently being finalised. According to the Director General of the lead government department, this would aim to position the country as a ‘globally significant’ producer of inputs used in renewable energy plants.¹⁶ According to press reports, research conducted for SAREM will identify a matrix of primary materials, components and sub-components used in the manufacture and assembly of renewable technologies identified in the country’s Integrated Energy Resource Plan adopted in 2019 – mainly wind and solar power as well as green hydrogen. An Executive Oversight Committee comprised of representatives of business and organised labour would then identify and oversee the implementation of the investment promotion and industrial policy interventions to give effect to the strategy.¹⁷

THE SIGNIFICANCE OF REGIONAL VALUE CHAINS

Passing reference has already been made to the ways in which beneficial integration into value chains can support industrialisation, including green industrialisation. The term ‘value chain’ refers to the full range of activities needed to create a product or service, encompassing everything from conception to final distribution. This would include the production and procurement of raw materials, the manufacturing of all components, the final assembly and packaging of products, their marketing and branding, transport and logistics and all other associated services.¹⁸

The concept of cross-border value chains gained prominence during the era of globalisation/hyper-globalisation that began at the end of the twentieth century. It was noted that, as what Manuel Castells called ‘globally networked capitalism’¹⁹ advanced, an increasing range of products could no longer readily be identified as products of particular countries but were rather ‘products of the world’. This meant that activities related to different parts of their value chains were being conducted in multiple locations, with transnational corporations deploying digital technology to coordinate and manage such chains as well as rearrange inclusion/exclusion of particular activities according to perceptions of opportunities to enhance profit.

Proponents of the neoliberal ideology that became hegemonic during this period argued that the key task of development was to work to ‘integrate’ the economies of developing countries into emerging global value chains. They argued that the best, and indeed only, route to achieving this was trade liberalisation on the grounds that by allowing the seamless entry and exit of products and services, countries would make themselves attractive to transnational corporations at the head of global value chains. Critics argued that the fundamental issue for developing countries was not inclusion into value chains per se but rather the position they occupied in value chains. Almost all former colonies had been integrated into cross-border value chains, but in the least lucrative place – as producers and exporters of unprocessed raw materials used in industrial production elsewhere. The addition in some cases of low-waged basic assembly had not altered the fundamental reality that developing countries continued to be integrated into the lowest value-added parts of value chains. Nor could neoliberalism adequately explain why those very few countries that succeeded in transitioning to higher value-added activities during this period (China foremost among them) did not follow the neoliberal policy prescription of ambitious autonomous liberalisation. Rather, like all earlier industrialisers before them, they applied a strategic approach to tariffs and trade issues guided by an active industrial policy, while few if any of those following the recommendation of ambitious unilateral trade liberalisation succeeded.

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Over time a more developmental approach to value chains, and particular regional value chains in the developing world, has emerged. This gained traction in the period following the onset of the Great Recession in 2008. The Great Recession ushered in important new realities. Growth in the developed world became more insipid and industrial policy, once anathema, began to be re-embraced in a host of developed countries. Both these factors led to a growing recognition that the markets of the developed world could not and would not provide the driving force for equitable global growth and development. The world economy also became more contested as the developed world became less tolerant of disruptive challenge from new competitors, particularly but not only focused on China. Under these circumstances, larger developing economies – China and India among them – began to turn to their own domestic markets to drive the next phase of their industrialisation, but also with a strong base in the Asian regional markets behind them. Even though China has a global reach, building strong regional value chains in Asia is a central component to its flagship Belt and Road Initiative.

Africa's path to what is now the AfCFTA was a complex one. As indicated earlier, regional integration has long been seen as a critical means of creating the scale required to underpin deep structural transformation on the African continent. As also noted, differing and often competing paradigms have informed practical calls and programmes in this regard. They include an orthodox trade integration approach that sees regional integration as being driven by the adoption in linear succession of formal trade arrangements (free trade area, customs union, common market, economic and monetary union). Such approaches have often been (consciously or unconsciously) imitative of the process of integration in a developed region (Europe), with insufficient assessment of the implications of the realities of underdevelopment in Africa. All too often they have prioritised the creation of formal arrangements that have had little real impact on real economies.

But an alternative has also emerged among more heterodox thinkers, termed 'development integration' or 'developmental regionalism'.²⁰ This holds that a narrow trade integration approach based exclusively on formal trade arrangements is both Eurocentric and ignores the reality that in developing regions the major barriers to increasing intra-regional trade are not fundamentally tariff regimes but rather real economy constraints. These include both underdeveloped production structures and inadequate infrastructure. Put simply, if one underdeveloped country's trade profile is dominated by the export of some or other

primary product (and it does little processing in its domestic economy), it has little to trade with its neighbour whose specialisation is also as an exporter of primary raw materials. If the road and rail connection or the digital connectivity between them is inadequate, that further impedes trade between them. From this, proponents of development integration argued that trade integration needed to be seen as only part of a broader integration strategy, which would also need to include cooperation to overcome infrastructure backlogs and aim explicitly to promote economic diversification, including industrial development. Unlike the conventional trade integration paradigm, development integration envisages cooperation and policy coordination at an early stage. Moreover, it envisages specific trade integration arrangements as needing to be calibrated to the concrete conditions in the real economy and not driven by *a priori* or ideological considerations.

Faizel Ismail outlines four pillars that would need to underpin developmental regionalism:²¹

- Asymmetrical trade integration to cater for the uneven development of the countries of the continent;
- Cooperation on cross-border infrastructure investment (and trade facilitation);
- Structural transformation and transformative industrialisation, including creation of regional value chains to build a robust regional market to unlock the continent's manufacturing potential; and
- Cooperation to promote democracy, good governance and peace and security.

In addition, Africa's path to AfCFTA followed a major debate in at least some of the Regional Economic Communities (RECs) as to whether the next stage of integration should prioritise deepening integration within RECs over broadening integration beyond RECs. By the end of the first decade of the twenty-first century, most RECs had established at least a Free Trade Area (FTA). In several, a strong view developed that the urgent priority was to turn these into customs unions (in which there would be a common external tariff), monetary unions (with a single currency), etc. Others, however, argued that conditions in the world economy required the creation of arrangements at FTA level that reached beyond the confines of the RECs.²² Africa's path to the AfCFTA was in many ways a synthesis of all these factors and more. While it can be recognised as having been initially conceived and designed by many of its key architects in the African Union Commission as a regular trade integration initiative, increasing attention is now being paid to its potential in supporting deeper structural transformation and industrialisation. Thus, while its immediate benefit is often proclaimed to be its potential to bring about a quantitative increase in intra-regional trade, proponents of a development integration approach have argued that its real prize would be if it supported the emergence of regional value chains involved in the production of a range of higher value-added goods and services.

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Such an outcome could expect to see components and other intermediate inputs being produced in several countries before being assembled into ‘products of Africa’ consumed by the citizens of the continent and also exported. Such an outcome could be expected to result not just in a quantitative increase in intra-regional trade but a qualitative change in its character. This would involve greater absolute and relative intra-trade in components and intermediate products, which is in fact the largest and fastest growing part of global trade in goods.

A significant body of research now exists identifying potential value chains that could be built at both REC and continental level.²³ Sectors identified include food and agroprocessing, pharmaceuticals and medical devices, clothing and textiles, mineral beneficiation and mining capital equipment and automotive assembly and components. Of course, much of this remains merely potential, with economic activity in most countries still dominated by production and export of raw materials used in value-added processing outside of the continent. A chapter in a volume on harnessing regional value chains for development in the Southern African region, commissioned by the United Nations Conference on Trade and Development (UNCTAD), concluded that realising the evident benefits of building stronger regional value chains ‘would require considerable capacity to identify appropriate measures and strengthen regional cooperation. Deepening regional specialisation and exchange [requires] an institutional framework able to identify realistic projects, manage trade offs between countries and secure alignment around regulatory frameworks, trade facilitation and infrastructure development and maintenance’.²⁴ Each and every regional value chain will, of course, also have to come to terms with the reality of the global transition to a lower-carbon economy.

TOWARDS AN AFRICAN GREEN REGIONAL VALUE CHAIN

How then can the development of an African green regional value chain assist the continent in its struggle to ensure a just transition to a lower-carbon economy? Such a regional value chain could be expected to be dedicated to the production of value-added low-carbon technologies and products, including critically the manufacture of inputs and components for solar, wind, biomass and hydropower energy generation. It could also facilitate and support the manufacture of inputs and components required to ‘climate proof’ current and future infrastructure. The precise list would need to be developed on the basis of research and consultation so that evidence-based decisions could be taken on what could be developed and when.

The case for securing a greater participation in the value-added activities associated with a lower-carbon transition has already been made. The current relatively low level of deployment of renewables together with the premium on increasing their proportion in energy mixes points to the certainty that a significant market for such products will emerge. IRENA suggests that providing ‘sustainable and reliable energy’ to the continent

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will require a doubling of investment from the current US\$30 billion a year to between US\$40 and US\$65 billion by 2030.²⁵ The imperative for ‘climate proofing’, even if not carried out proactively, is likely to command increasing attention as the world and continent experience the inevitable extreme weather events. Moreover, the development of the types of green technology particularly suited to African conditions or drawing on its resource base, such as hydropower or platinum catalysed green hydrogen, is more likely to be prioritised if there is a continental green ecosystem in place than if the continent is largely dependent on imports.

Building an African green regional value chain, leveraging off the AfCFTA and/or REC arrangements, could potentially realise the benefits identified for regional value chains more generally. It would also have to overcome the challenges identified in the construction of regional value chains. It would need to be driven by a clear vision and commitment, depend on a step-up in cooperation and coordination, require the establishment of a mechanism to manage trade-offs between countries and be underpinned by an active industrial policy and appropriate regulatory framework. With regard to the latter, an FTA needs to be understood as supporting free trade among its cooperating partners. It cannot become a mere stepping stone towards liberalisation to the world at large. This means that as a tool to support industrialisation, the FTA must allow a margin of preference for products produced by local nascent or infant industries over competing imports. This will need to be reflected both in tariffs applied to competing third-party imports and in localisation regulations for public procurement. Of course, the setting of such margins needs to be evidence based and informed by an active industrial policy. It will also be important to defend such a perspective against potentially undermining proposals for global trade rules, such as the many proposals on trade in environmental goods which would remove duties on all trade in goods recognised under this category. Any such move would entrench the competitive advantage of existing producers to the detriment of nascent or emerging producers.

At present only one cross-border renewable energy project appears to exist. IRENA is promoting an Africa Clean Energy Corridor in Southern and East Africa.²⁶ This aims to identify potential green energy projects (mostly wind and solar PV) in 21 countries participating in the Southern and Eastern African power pools. Through pooling and mutual balancing from hourly variable resources, this project aims to overcome some of the disadvantages these forms of renewable energy face in providing constant supply. In this way it is hoped to increase the attractiveness to investors of renewable energy projects and facilitate an increase in renewable energy generation. Largely absent, it appears, is any idea of how such a programme could promote local manufacturing.

This points to the urgent need for a greater synthesis between programmes and projects seeking to promote renewable energy and those aiming to advance industrialisation. It also points to the necessity for greater African ownership, leadership and direction of a continental strategy to promote at least some aspects of Africa’s just transition to a lower-carbon economy.

This points to the urgent need for a greater synthesis between programmes and projects seeking to promote renewable energy and those aiming to advance industrialisation.

ENDNOTES

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- 5 International Renewable Energy Agency (IRENA), *The Renewable Energy Transition in Africa, Powering Access, Resilience and Prosperity*, March 2021, p.24.
- 6 Carlos Lopes and Dirk Willem te Velde, 'Structural Transformation, Economic Development and Industrialization in Post Covid-19 Africa', Institute for New Economic Thinking, January 2021, p.34.
- 7 Kirsten Hund, Daniele La Porta, Thao P Fabregas, Tim Liang and John Drexhage, 'Minerals for Climate Action: The Mineral Intensity of the Clean Energy Transition', World Bank Group, 2020, p. 11.
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- 14 Ibid.
- 15 For a list, see *ibid*.
- 16 Thabo Mokoena quoted in Terence Creamer, 'Masterplan to Position South Africa as "Globally Significant" Renewables Manufacturer', *Engineering News*, 8/6/2021.
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- 18 Paraphrased from 'Value Chain Definition', <https://www.investopedia.com/terms>.
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- 20 See R Davies, 'Promoting Regional Integration in Africa: An Analysis of Prospects and Problems from a South African Perspective', *African Security Review*, Vol. 5, no. 5, 1996; S Adejumbi and Z Kreter, 'The Theory and Discourse on Developmental Regionalism', paper prepared for Regional Forum on Developmental Regionalism, organised by ECA-SRO-SA and APN-SSRC together with SADC Secretariat, Swaziland, 28–30 September 2016; UNCTAD, *Economic Development in Africa Report 2013*, <https://unctad.org/webflyer/economic-development-africa-report-2013>. This report 'recommends that African Governments should promote intra-African trade in the context of developmental regionalism. In particular, it stresses the need for a shift from a linear and process based approach, which focuses on elimination of trade barriers, to a more development-based approach to integration, which pays as much attention to the building of productive capacities...' See also Faizel Ismail, 'A "Developmental Regionalism" Approach to the AfCFTA', Trade and Industrial Policy Strategies, Working Paper in celebration of the 90th birthday of Chief Olu Akinkugbe CFR CON, Tshwane, 5 December 2018.
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ABOUT THE AFRICAN CLIMATE FOUNDATION (ACF)

The African Climate Foundation, established in 2020, is the first African-led and -based strategic grant-maker and think-tank working at the nexus of climate change and development in Africa.

ABOUT THIS SERIES

The ACF commissioned a series of expert briefs undertaken for its Energy Access and Transitions Programme, focused on specialised topics on the political economy of Africa's power sector transformation, and the opportunities and challenges for scaling renewable-based electrification.

ABOUT THE AUTHOR

Rob Davies is an Honorary Professor at the Nelson Mandela School of Public Governance at the University of Cape Town. He also serves on the Advisory Council on Trade and Industrial Development appointed by the Secretary General of the African Continental Free Trade Area. In 2019 he retired after 25 years' service as a Member of Parliament. Between 2009 and 2019, he served as South Africa's Minister of Trade and Industry. He holds an Honours degree in Economics, a Master of Science (Social Science) in International Politics, and a PhD in Political Studies.

ABBREVIATIONS AND ACRONYMS

ACF	African Climate Foundation
AfCFTA	African Continental Free Trade Agreement
COP26	United Nations Conference of the Parties (November 2021)
FTA	Free Trade Area
IPCC	United Nations Intergovernmental Panel on Climate Change
IRENA	International Renewable Energy Agency
PPE	Personal protective equipment
REC	Regional Economic Communities
SAREM	South African Renewable Energy Masterplan
UNCTAD	United Nations Conference on Trade and Development



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