



Local Content Requirements and The Green Economy





Local Content Requirements and The Green Economy



Note

This study expresses the views of the author and does not necessarily reflect the views of UNCTAD or its member states. The designations employed and the presentation of the material do not imply the expression of any opinion whatsoever on the part of the United Nations Secretariat concerning the legal status of any country, territory, city or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries.

This document has been reproduced without formal editing.

Material in this publication may be freely quoted or reprinted, but acknowledgement is requested, together with a reference to the document number. It would be appreciated if a copy of the publication containing the quotation or reprint were sent to the UNCTAD secretariat at the following address:

Chief, Trade, Environment, Climate Change and Sustainable Development Branch (TED),
Division on International Trade in Goods and Services, and Commodities (DITC),
UNCTAD, E Building, Palais des Nations, CH - 1211 Genève 10, Suisse.

UNCTAD/DITC/TED/2013/7
UNITED NATIONS PUBLICATION
Copyright © United Nations, 2014
All rights reserved

Contents

Note	ii
Acronyms.....	iv
Acknowledgements.....	iv
I. BACKGROUND AND INTRODUCTION	1
II. LOCAL CONTENT: RATIONALE AND PRACTICE	3
A. What are local content requirements?	3
B. The positive rationale for local content requirements	4
C. Current use and best practices.....	6
III. LESSONS FROM BEST PRACTICE AND KEY CONCERNS	11
A. The wider context for local content: Value-added and competitiveness.....	11
B. The importance of openness	13
C. The importance of realism and “soft” targets.....	15
D. Phasing in and phasing out.....	17
E. Local content: Not a panacea	17
IV. LOCAL CONTENT AND THE GLOBAL GREEN ECONOMY: A SOUTH AFRICAN FOCUS..	19
A. The rationale and context for South Africa’s green economy measures	19
B. The role of local content outside and inside the South African green economy.....	22
C. Other uses of local content in the global green economy	24
V. LOCAL CONTENT AND THE GREEN ECONOMY: ISSUES AND CONCERNS.....	27
A. Local content, growth and competitiveness	27
B. Transparency and institutions.....	31
C. Expectations versus reality.....	32
D. Local content and the global framework for renewables.....	32
VI. CONCLUSION: OLD AND NEW OBJECTIVES	35
References.....	36
Notes	37

Acknowledgements

This study was prepared by Sacha Silva of World Trade Advisers and substantively edited by Mr. Bonapas Onguglo and Mr. Alexey Vikhlyaev of the United Nations Conference on Trade and Development (UNCTAD) secretariat. The desk-top publishing was done by Mr. Rafe Dent.

This publication, Local Content Requirements and the Green Economy, is a product of the Trade Environment, Climate Change and Sustainable Development Branch, DITC, UNCTAD. It was commissioned for and forms part of the background documentation for an ad hoc expert group, entitled: “Domestic Requirements and Support Measures in Green Sectors: Economic and Environmental Effectiveness and Implications for Trade”, held in Geneva on 13 and 14 June 2013.

The study is far from an exhaustive examination of these issues. In many areas, the analysis is speculative, aimed at raising questions and suggesting areas where domestic and international policy makers may need to consider undertaking further analysis. Above all, it should be stressed that the study raises these matters at a very general level. Whether any given governmental measure is consistent with WTO rules is a highly contextual question, that may well depend on the exact design features of that particular measure, and its broader context – regulatory, technological and commercial. Thus, nothing in this study should be considered as a judgment that any actual measure of any particular government violates WTO rules.

The study and the meeting are part of a larger effort by UNCTAD to analyze issues arising at the intersection of green economy and trade policy. The study has been prepared at a time when the “green economy” concept moved from theory to practice, with a range of developed and developing countries placing local content at the heart of their green economy strategies, and their green economy plans at the heart of their industrial policies. It reflects developing countries’ increasing emphasis on the “sustainable” element of traditional development objectives, such as rural development, urban planning and industrialization. The study has also been prepared at a time when countries across the income spectrum are taking a fresh look at local content requirements, after having largely phased them out in traditional strategic industries such as fossil fuel energy and automobiles.

What do we know about the economic and environmental effectiveness of performance requirements in green sectors? Do performance requirements provide a compelling business case, with short- and long-term returns? Is there anything unique about renewables that makes them a special case for performance requirements? Does the politics of accommodating the higher cost of renewable energy demand a clear-cut avenue towards job creation through localization? Does greening the value chains provide a new rationale for performance requirements? Can better governance play a role in dealing with protectionist elements of support measures? Are there any upsides for developing countries in a world where performance requirements are extensively used? Objective evidence on the economic and environmental effectiveness of trade-related measures such as subsidies or local content requirements can provide the answers.

Guillermo Valles,
Director,
Division on International Trade
in Goods and Services, and Commodities.

Acronyms

B-BBEE	Broad-Based Black Economic Empowerment	IPAP	Industrial Policy Action Plan
BNDES	Brazil National Development Bank	IRP	Integrated Resource Plan
BOP	Balance Of Payments	kWh	KiloWatt Hour
COP	Conference of the Parties	NNPC	Nigerian National Petroleum Corporation
COSATU	Congress of South African Trade Unions	PPPFA	Preferential Procurement Policy Framework Act
EEG	Export Expansion Grant	PV	Photovoltaic
EPA	Economic Partnership Agreement	REIPPP	Renewable Energy Independent Power Producer Programme
FIT	Feed-In Tariff		
HDSA	Historically Disadvantaged South African	SARI	South African Renewables Initiative

I. BACKGROUND AND INTRODUCTION

This study explores the use of local content requirements in the green economy, with a specific focus on South Africa. The study examines the emerging use of local content as an increasingly common tool in industrial policy; one aimed both at higher (and higher-skilled) job creation and the shifting of economies towards low-carbon, resource-efficient and socially-inclusive bases. In terms of approach, the study:

- Outlines the basic definition, rationales, history and traditional practice of local content requirements, with emphasis on the energy sector (Chapter II);
- Notes some of the lessons from the successes and failures of local content measures, particularly in the developing-country setting (Chapter III);
- Outlines the emergence of local content to promote industrial objectives based on a green economy platform, with a specific focus on South Africa (Chapter IV); and
- Explores some of the same key lessons highlighted earlier, but in the context of the green economy (Chapter V), and provides concluding thoughts (Chapter VI).

The study was prepared at a time when developed and developing countries are increasingly adopting both green economy and local content objectives. As the green economy concept has moved from theory to practice, and as green industrialization is seen as a promising avenue for increasing employment, a number of developed and developing countries are increasingly placing local content at the heart of their green strategies, and their green strategies at the heart of their industrial policies. Among the developed countries, Canada (in Ontario and Quebec), The EU (in Spain, Italy, France, Greece and Croatia) and the United States have used local content requirements in some form to stimulate the growth of renewable energy projects. Among the developing countries, the use of local content in green economy strategies extends from large global players such as China, Brazil, Argentina, India and South Africa, to smaller countries such as Tunisia, Ecuador and Nepal. Outside of the green sector, both developed and developing countries have strengthened the role of local content policies in stimulating job creation, providing – in a time of global recession – investment

incentives (via, for example, government procurement) to domestic producers in key sectors.

The analysis comes at a time when a green economy and local content linkage is viewed as a tool for development. There is an emerging body of work emphasizing the need for a sustainability push within traditional development objectives, such as rural development, urban planning and industrialization. Moreover, many developing countries see growth and income opportunities (or risks to be managed) in the international climate change architecture, whether it implies complying with carbon limits, or seeking economic opportunities in the new markets for managing emissions. At the same time, the job creation imperative – one particularly strong given the aftershocks of the 2008 global financial crisis – and the need to “leap-frog” technological barriers has led many developing countries to re-visit the use of local content requirements, which have rapidly spread outside of traditional heavy industries (e.g. energy and automobiles) into green economy investments and regulations.

The study also emerges at a time of increasing recognition of the link between trade and the green economy. The link between trade and the environment, once considered a marginal policy discussion, has now become mainstreamed to the degree that it forms a core area of WTO negotiations, and enshrined in key trade documents such as the legal texts establishing in the WTO. While there is no specific agreement dealing with green economy issues, under WTO rules members can adopt trade-related measures aimed at protecting the environment, provided a number of conditions to avoid the misuse of such measures for protectionist ends are fulfilled – an issue which has generated significant interest within the WTO (particularly the issue of local content). The WTO legal aspect is outside of the scope of this paper, which focuses instead on the practical, industrial planning elements of the link between local content and the green economy.

The study was prepared on the basis of desk research and stakeholder interviews. The study, written in November–December 2012 and revised in April 2014, was primarily based on desk research drawing from documents prepared by the United Nations (especially UNEP and UNCTAD), outside sector-specific research, and materials collected during the author’s previous work on local content in both the global energy sector and the Nigerian economy. The paper also benefited from interviews held with stakeholders in Sub-

Saharan Africa, most of which were held off-the-record given stakeholder sensitivities when discussing the is-

sue of local content. The list of documents cited can be found in the **References** section at the end of this study.

II. LOCAL CONTENT: RATIONALE AND PRACTICE

A. What are local content requirements?

The aim of local content requirements is to create rent-based investment and import substitution incentives. Local content requirements are provisions (usually under a specific law or regulation) that commit foreign investors and companies to a minimum threshold of goods and services that must be purchased or procured locally. From a trade perspective, local content requirements essentially act as import quotas on specific goods and services, where governments seek to create market demand via legislative action. They ensure that within strategic sectors – particularly those such as oil and gas with large economic rents, or vehicles where the industry structure involves numerous suppliers – domestic goods and services are drawn into the industry, providing an opportunity for local content to substitute domestic value-addition for imported inputs. Thus – in contrast to the traditional protected export platform proposed by many development advocates in the 1960s and 1970s – local content requirements seek to attract foreign direct investment (FDI) by firms.¹ Moreover, through local content requirements, government can achieve these goals often without sharing in the risk of commercial undertakings.²

Local content requirements are often paired with investment incentives, as part of a “carrot and stick” approach to attracting FDI. While the use of local content measures has attracted outsized attention inside and outside the WTO, governments (both developed and developing) employ a range of measure to attract investment, using a “carrot and stick” approach.

- On the “stick” side, governments use performance requirements, which can be generally understood (as defined by UNCTAD in 2003) as stipulations – whether related to local content, export performance, technology transfer, R&D, employment and domestic equity/ownership – imposed on investors, requiring them to meet certain specified goals with respect to their operations in the host country.³ The specific policy goals – strengthening infant industries, increasing revenue, improving the balance of trade and lowering unemployment – are not always accounted for in the decisions of private

economic agents. The use of some measures is restricted at various levels – the WTO Agreement on Trade-Related Investment Measures (TRIMs) prohibits the use of measures related to local content, trade balancing, export controls and certain foreign-exchange restrictions, and certain bilateral treaties limit the use of other performance requirements. These measures however are nonetheless widely used by governments to align investment with industrial planning.⁴

- On the “carrot” side, governments use a range of investment incentives to offset costs incurred by firms that choose to establish in the host market. These incentives range from direct transfers – e.g. grants (for R&D projects or new capital investment) and dedicated public-private investment funds – to indirect transfers, such as low- or no-cost government services in marketing and distribution. The sum of government resources used for investment incentives is significant: available information indicates that, in 2003, 21 developed countries spent nearly US\$250 billion on subsidies; the total for the world was more than US\$300 billion in that year, with state and local incentives in the United States (US\$50 billion) nearly equally the total subsidies in developing countries.⁵

This carrot-and-stick approach has been used successfully by several countries as an integrated package of industrial planning policies. Chile, for example, successfully used cash subsidies and local content requirements – prior to their phase-out under Chile’s WTO obligations – to develop a more diversified exporting base, with small and medium-sized enterprises in particular seeing a rapid increase in growth and export volumes. Malaysia employed a combination of “pioneer status” tax incentives with employment requirements from the 1960s through the 1990s to achieve dramatic increases in manufacturing employment – from 318,000 in 1970 to 2.1 million persons in 2000; corresponding to a doubling of its share of total employment to 23%, and contributed to a reduction of unemployment to below 4%.⁶

Local content requirements can be both explicit and implicit. In their most direct and explicit form, local content requirements can be explicit (i.e. numerical or qualitative) targets contained in national legislation or industry-specific regulations that specify a minimum share of locally-sourced goods and/or services (or conversely a maximum ceiling for imported inputs). Other, less direct, forms include the creation

of ‘weighting’ or ‘scorecard’ systems where local content is one of usually several criteria (including export performance and whether or not the sector in question has been designated as strategic by the Government). This mixed system generally arises in the case of subsidy programmes – such as the Nigerian Export Expansion Grant to encourage non-oil manufacturing – where the score determines the level of subsidy to be received, or for targeted goals within government procurement to ensure that government purchases are in line with employment policies and targets. Local content requirements may not necessarily need to be *de jure* (i.e. written in legislation, regulations or directives); for public procurement where selection processes can be heavily influenced by political considerations, a statement by relevant government officials that local content will be given heavy weighting in tender assessment could suffice to serve as a clear signal to potential bidders that a *de facto* local content standard will be applied.

Local content can take many different forms, affecting any number of sectors. Local content requirements can be fashioned for virtually any good or service that can be used as an input into most goods and services. This can include *inter alia*:

- Minimum thresholds on the amount of locally-sourced materials for the production of goods – usually expressed as a percentage of volume, tonnage, length (e.g. for cables), or number – particularly for large/heavy industrial inputs;
- Minimum thresholds on the amount of locally-sourced expenditure or man-hours for the use of services, ranging from engineering and transport to financial services and insurance;
- Explicit or implicit requirements that companies/entities take local content development into account in their project and strategic planning, or when undertaking feasibility studies; and/or
- Requirements for companies, operators or investors to locally establish facilities, factories, production units or other operations for the purposes of carrying out any production, manufacturing or service provision currently being imported.

Although restricting trade is not always the primary aim of local content requirements, they can have significant impacts on trade. In a scenario where both (a) local content targets are high (i.e. greater than 20-30%) and (b) enforcement and compliance mechanisms are effective at both the sector and product level, a Government’s use of local con-

tent requirements can dramatically effect the investment and sourcing patterns of firms in the host country market, and by extension on trade. For example, the use of targeted local content policies by the Thai Government in its automobile sector led to a 77% decrease in the value of imported parts and components in each domestically assembled vehicle; similar measures imposed by the South African government in its vehicles sector from 1965 to 1985 resulted in a nearly one-quarter decrease import penetration ratios.⁷

B. The positive rationale for local content requirements⁸

The economic impetus can arise from several sources, primarily to strengthen a weakened or infant industrial base. The primary rationale for the use of local content requirements is either the development (i.e. the infant industry argument) or the strengthening of the domestic industrial base, particularly where a developing country has been historically engaged in enclave and/or low value-added activities, or where weak linkages exist between large industries and the rest of the manufacturing and service sectors. In many resource-rich developing countries, the capital flows and demand associated with the exploitation of fossil fuels has often led to overvalued exchange rates, a high propensity to consume (with associated balance-of-payments difficulties), a neglect of basic investment measures to bring down business costs, and a neglect in certain cases of entire sectors (e.g. agriculture, light manufacturing) that could serve as inputs into higher value-added activities. Local content requirements thus become a means of shifting the economic base away from both consumption and rent-based industries (e.g. mineral extraction), and towards the creation of an indigenous production platform focused on domestic value-added.

The industrial strengthening case is particularly strong in some developing countries in Sub-Saharan Africa. Immediately following independence, a number of Sub-Saharan African governments embarked on an ambitious programme of import substitution, public spending and development planning – for example, Nigeria channelled 14% of public investment towards industrial development from 1962-1968 – coupled with legislative measures to restrict strategic economic sectors for nationals, or place strict quotas on expatriate hiring. For some countries, the import substitution approach to industrial development, during its initial stages, saw argu-

able successes. In Nigeria for example the number of industrial firms grew at over 12% annually from 1964 to 1972; the annual average growth rate of wage bills and total gross domestic output increased by 17.9% and 16.4% respectively over the same time period. More ambitious initiatives however ran into significant obstacles, as the reality set in that many measures – which strongly affected key sectors such as banking, construction, tourism, and energy – were crafted with little consideration of capacity, industry competence or competitiveness, and that economic rents created by the investment restrictions quickly became a valuable trading commodity between established foreign companies, powerful politicians and private sector middlemen, whereby the latter two groups earned large commission fees with little real capacity building in the process. The combination of economic fluctuations due to commodity price swings (especially the price of oil) and the rapid expansion of the state's role in the economy created a powerful disincentive against long-term foreign investment, particularly for small and medium-size enterprises (SMEs) who could not afford access to political elites. Thus local content requirements are seen as a way to channel investment away from the often import-heavy, low value-added industrialization that often resulted from the post-independence period.

The industry-strengthening argument is mirrored in trade-related concerns over the balance of payments. A major motivation of developing countries in implementing local content requirements is the safeguarding of the balance of payments (BOP), given the often very high foreign currency drainage associated with the importation of goods and services for strategic industries. This concern is particularly true in the case of technologically-intensive resource extraction (e.g. offshore oil and gas) – in Nigeria's case, authorities in charge of implementing new local content legislation estimated in 2011 that orders from oil companies with foreign equipment manufacturers totalled US\$15 billion per year.⁹ The balance-of-payment arguments is not always cited as a primary rationale behind new local content guidelines for the simple reason that the energy discoveries that prompt local content legislative efforts are often accompanied by dramatic increases in export values that either match or outpace the concomitant growth in exports. The concerns however tend to arise when energy prices suddenly fall; leading to a situation where the costs (and hence import bills) of production are maintained but export revenues are dramatically decreased.

A secondary use of local content requirements is to address a market or policy failures. Local content requirements can help in correcting an economic outcome whereby multinationals fail to respond to employment and sourcing opportunities available on the domestic market. This failure can arise due to, for example, governments being aware of, but multinationals or domestic firms not accounting for, the positive “externalities-from-entry”, spillovers and learning effects that could be generating by local content. In simpler terms, local content requirement can help in closing the gap between social and private returns to certain FDI activities. Local content can also compensate for certain business practices undertaken by foreign or domestic firms that hinder the growth of local capacity – for example, if large firms become reluctant to cede their technological or market advantages by licensing or sub-contracting, or engage in restrictive practices such as price-fixing, collusion or manipulation of transfer prices that prevent wage and price signals from reaching domestic investors and firms.¹⁰

Countries also use local content to “leap-frog” existing barriers to technological transfer. The use of performance requirements (particularly those on local content) are just one of many means to discipline and speed up the process whereby developing countries (or advanced economies seeking to quickly develop a new strategic sector) are able to learn, adopt and adapt technologies and production processes innovated elsewhere. The use of performance requirements is particularly prevalent not only (as noted above) in sectors with high rents and strong network effects, but also in highly sophisticated industries where these entry barriers are extremely high and potentially prohibitive for most developing countries. The barriers can be particularly high in the case of new technologies such as deep-water oil/gas extraction, or green technology (see the discussion on the green economy in Chapter III). The fundamental “leap frog” rationale, especially in the developing country context, is concisely captured by Veloso (2001):

The logic for performance standards seems straightforward. Governments in industrializing nations were aware that local firms needed to learn how to master the technologies of the developed world to be able to catch up and compete. Nevertheless... market power and coordination problems may result in under-investment by both local firms and foreign investors in the types of skills and technologies that

are critical for industrialization. The government response was to step in and intervene, setting targets and defining milestones that could steer the economy in the right direction. Some of their main targets were export promotion and backward linkage formation, exactly those that are recognized as having more importance for development, and also those that are more prone to be subject to increasing returns and externalities that generate under-investment.¹¹

Countries can also use local content to re-distribute rents arising from economic activities.

One of the specific attractions of local content requirements to industrial policymakers is their ability to be carefully tailored, both in terms of which industries are targeted and in terms of what level local content targets are set. Local content requirements allow governments to re-direct the rents arising from economic undertakings (particularly in high-rent activities such as natural resource extractions) away from foreign investors and towards specific groups, firms or regions in the host country. This can either serve a beneficial purpose – e.g. to ensure that the profits and employment from natural resource extraction are felt directly in the communities where the extraction is done – or a negative purpose, e.g. where the distribution of rents, or the local content process itself, is used as a means to compensating certain individuals or firms for political reasons, or to fuel corruption. The re-distribution can also be aimed globally, such as when developing countries seek in the host country to offset subsidies and measures that foreign firms enjoy in their home countries – for example, subsidies on education, materials, or the tax treatment of profits.

Local content requirements may be preferable to other forms of protection.

The specificity of local content requirements has led some observers to suggest that – from an overall welfare perspective, particularly in the developing-country setting – content policies might be preferable to other trade-distorting measures such as tariffs and subsidies. Tariffs, for example, create a cost penalty on imported inputs that does not exist in the case of local content requirements. While governments gain from higher tariff revenues, they lose the ability to ensure that the increase in demand is limited to the strategic good in question. Moreover, governments' abilities to increase tariffs may be limited either by their WTO commitments, or by FTA commitments with the country of origin of the imported inputs, or by participation in a regional trade

agreement (RTA) common external tariff arrangement that sets certain tariff rates (usually low) for industrial inputs.

C. Current use and best practices

i). A global picture

Local content requirements have been widely used at the global level. While there is a paucity of recent global surveys, a mid-1980s UNIDO study of the use of local content requirements found that in just a single sector (automobiles), 27 (mostly developing) countries out of 50 employed local content guidelines to boost domestic value-added. In 1989, a study conducted by the United States Trade Representative (USTR) found that 23 of 31 developing countries (and one-third of developed countries) surveyed applied some form of local content requirements. A follow-up study in 2002, based on WTO notifications, found that large developing countries used local content guidelines in a range of industries (particularly automobiles). In some industries, such as the automotive sector, the use of performance requirements is particularly prevalent, with virtually every developed country using (at one point or another) either local content requirements, export performance requirements or local equity requirements to build indigenous industrial capacity. Further studies however have found that – in part as a response to WTO commitments – the overall global trend is a move away from strict local content targets, with both developing and developed countries tending to rely more on requirements linked to incentives.

The rationale for local content requirements is especially strong for the energy sector.

Apart from the United Kingdom, very few new energy producers – including Norway, long considered as the gold standard of local content – had, upon discovery of their oil and gas deposits, the requisite industrial capacity to serve as an internationally competitive platform for exploration, extraction, distribution and export. Given that the oil industry is nearly a century old, the dominance of established operators and the sophistication of energy technology – particularly for offshore deposits – implies that emerging energy producers will, at the outset, nearly always depend on foreign firms. While energy sector investments (if properly managed) can ensure a steady revenue stream and constant (and in the case of developing countries, rising) demand levels, its exploitation requires sophisticated

and cutting-edge technology, a ready-made demand for a wide network of suppliers in virtually all areas of manufacturing and services, and ongoing employment for trained staff, both at home and in other energy-producing countries around the world. The “fixed” and finite nature of energy deposits however gives host countries – even developing countries with weak institutions – a distinct bargaining power with respect to foreign firms seeking access to natural resources, vis-à-vis investment sectors (e.g. automobiles) where firms are able to consider a number of potential sites for investment.¹²

The impetus is particularly strong for Sub-Saharan countries that have historically depended on a narrow range of fossil fuels. In the oil industry alone, services to producing firms have historically accounted for nearly 90% of total costs. Weak industrial capacity in many sub-Saharan economies, particularly in post-conflict environments such as Angola, however implies that the overwhelming majority of expenditures on goods and services by energy companies go to foreign suppliers. In the Nigerian case for example, the market for oilfield services totals some \$8 billion per year, with an expectation of a near-doubling in size due to supply increases from future projects.¹³ Despite the significant market for energy services however the shares (including materials procurement) that accrue to indigenous producers in Nigeria are estimated at between 3% and 11%. In 2000, industry experts estimated that up to 90% of capital input went overseas via equipment purchases, consulting/services fees and expatriate wages.¹⁴

Many developing countries continue to struggle to develop effective local content policies. In their pursuit of locally-focused industrial development, particularly based on the exploitation of natural resources, many developing countries have faced steep obstacles in their efforts to develop indigenous skills and production:

- Many countries (e.g. Angola, Libya, Yemen) are emerging from protracted internal conflicts that have destroyed most national infrastructure, led to a global dispersion of skilled nationals, and reduced business confidence of overseas investors who are unwilling to make the often enormous investments required to make the remaining infrastructure viable;
- A number of countries’ local content efforts continued to be stymied by governance issues at state-run oil companies, who tend to issue scattered or outdated regulations that are unevenly enforced,

fail to coordinate with other government agencies and/or implement local content policies in a non-transparent or highly politicised manner; and

- Geographical or logistical hurdles (e.g. in Papua New Guinea and Nigeria’s offshore fields) implies that productive activities are inherently high-cost and require globally-competitive level of sophistication even for basic parts or services, leading to very low initial levels of local sourcing in countries with a weak industrial base.

ii). Country cases

***Brazil* is an often-cited success story, given its transformation of a protected state-run energy sector into a globally competitive industry.** From the mid-20th century until the 1990s, Brazil’s oil and gas industry developed in a highly protected market – where the state-owned Petrobras was the sole developer of all Brazilian oil and gas until the 1990s – with licensing agreements with international firms allowed Brazilian suppliers to develop state of the art technologies in an environment isolated from overseas competition. Government policy in the energy sector explicitly sought to promote self-sufficiency in most petroleum products (a goal not yet reached at present) as well as develop national technical know-how in all aspects of petroleum production. Petrobras, as the appointed “national champion” for the energy sector, was given sole responsibility for developing a new national supply industry. The company also established a number of subsidiaries in other industrial areas, such as petrochemicals, fertilizers, sulphur and commercial distribution.

Brazil has successfully used, at different times, a mix of protection and deregulation to create strong local content capacity. Under the pre-liberalization import substitution policy, Brazil was able to develop a protected – albeit technologically unsophisticated – industrial base, both within the energy sector and in the wider economy, despite facing political turbulence in the form of a military dictatorship. The Brazilian import-substitution approach however ran into difficulties during Latin America’s “lost decade” of the 1980, with severe inflation and slow growth. The import substitution policy was then reversed in a series of policy reforms, including the restructuring of state-owned enterprises and the relaxation of barriers to trade. A key element was a complete reorganization and partial privatization of Petrobras in 1997, with a focus on improving performance, decentralization and cost-cutting, whereby the company headcount was

reduced from 60,000 to slightly fewer than 40,000 employees. Government policy still acknowledged national ownership of mineral assets, but created a market whereby Petrobras was forced to compete with foreign suppliers. A key policy change in 1997 was the switch from a complete Petrobras monopoly on the supply of goods and services, to a policy where contractors are required to purchase local goods and services only when they are competitive on cost and quality with foreign suppliers. These measures have transformed Petrobras into a global energy player, and a key driver of local content at home.

Brazil has used a multi-prong approach towards increasing local content. The Brazilian government has adopted a policy of “*Tudo que pode ser feito no Brasil, tem que ser feito no Brasil.*” (Everything which can be done in Brazil should be done in Brazil). The Brazilian approach mixes over-arching government policies and programs – such as the National Program for the Mobilization and Development of Oil and Gas Industry, established by the Ministry of Mines and Energy and coordinated by Petrobras – with company- and contract level specifications for local content. For example, Petrobras sets explicit targets for local content in individual projects¹⁵ as well as pursuing macro objectives; the company has publicly stated its aims to create some new 100,000 jobs by 2010 through ratcheting up local content requirements and implementation, and its 2006-2010 Petrobras strategic investment plan calls for 65% of equipment and services to be sourced from domestic suppliers. This gradual increase in local content has been achieved through successive bidding rounds, with each round increasing the desired level of local content. The success of the local content build-up in Brazil’s energy sector has led to the similar approaches in other strategic sectors, such as mining.¹⁶

Malaysia, like Brazil, has developed a strong national petroleum company that drives local content development. Malaysia’s state oil company Petronas has historically focused on an international expansion strategy to compensate for the relatively small domestic petroleum market. The company has been able to successfully pursue joint ventures with large petroleum multinationals and has pursued an aggressive human resources strategy, offering numerous training programs and establishing its own university to train management and technical staff. Petronas requires firms under production-sharing contracts to secure equipment, facilities, goods, materials and ser-

vices locally unless a waiver is granted by Petronas. Similarly, contractors are required to fill positions with suitable Malaysian personnel, with exceptions only granted via a waiver from Petronas.

Malaysia’s local content requirements however have been developed in the context of an institutionally strong, market- and export-oriented economy. Malaysia has over time used windfalls from the energy sector to invest in massive public-sector projects and heavy industries such as cement, petrochemicals and steel – and like some other developing countries, these “white elephant” investments led to massive over-borrowing and fiscal-debt crises. The primary reason why in Malaysia’s case these periods of fiscal profligacy did not lead to chronic fiscal crises lies in the overall export orientation of the economy:

Since the early 1970s the country has led an export-oriented industrial policy welcoming foreign investment while developing infrastructure and local skills through heavy investment in infrastructure, education and health. In addition the country has had a stable policy environment, a competitive exchange rate and a reasonably prudent macroeconomic policy. Thus, except for relatively short spells of excesses, the Malaysian government has not let the petroleum sector drive up costs and wages in the economy. As a result, rapid non-oil industrialization has taken place in parallel with the expansion of the petroleum sector, an unusual achievement indeed.... Perhaps the most important success factor is the checks and balances embedded in the Malaysian institutional setting... Malaysia has demonstrated an ability to adjust and rethink policy measures when they have turned out not to have the desired effects, or when unfavourable unintended side effects have arisen.¹⁷

Thus the Malaysian Government’s desire to enforce strict local content requirements on petroleum sector investors had to be balanced against the risk of negatively affecting the overall attractiveness of Malaysia as an export base, and thus compromise its ability to compete on an equal footing with other regional export bases such as Singapore and China.¹⁸

In the case of Norway, the government took an early policy decision to actively develop a domestic industry, rather than solely rely on local content requirements. Upon discovery of Norway’s

offshore energy deposits, very little initial energy-related capacity existed in the primarily fisheries-based economy. The country did however boast internationally recognized shipyards, a strong overall maritime industry, and resilient democratic institutions. At an early stage the Norwegian government undertook numerous initiatives – many under its strong national petroleum company Statoil – to re-orient its local industrial base to serve the needs of the new energy industry. Statoil and associated Ministry of Petroleum played a key role in developing local technologies: the private companies developed products, but Statoil defined product requirements, ensured overall project control, and provided technical skills and advice on the newly developed products. The government sponsored a Supplier Development Programme to address the commercial needs of the industry with local firms. The Norwegian government invested significant sums in research and development, as well as building strong links between private firms and local academic centres to create industry “clusters”, which in turn have grown into service suppliers for overseas petroleum markets.

While Norway has never implemented specific local content targets, strong incentives were put into place to encourage local industrial development. In Norway, domestic firms were given preference when they were considered competitive in terms of price, competitiveness and quality until 1996, when – in response to EU legislation – equal conditions/access was granted to all operators regardless of origin. In developing its domestic supply sector however, the Norwegian government set in motion a series of deliberate policies and mandates that essentially forced the international oil companies to develop the Norwegian industry as a condition, and by-product, of their own operations. Commitments by foreign firms to transfer technology to their Norwegian counterparts were enshrined in legally binding agreements. Petroleum multinationals were placed in the role of technical assistants to both Statoil and smaller Norwegian firms, and joint teams were used to fast track the Norwegian companies into fully-fledged operators. Companies were required to conduct at least 50% of the research for technology needed to develop prospects in Norway at local institutions. Some of Norway’s protective measures were gradually relaxed over time as the industry reached international standards of competitiveness.

The United Kingdom government has historically taken a very hands-on approach to developing

local content. In developing its North Sea oil fields, the UK government implemented a series of local content measures, including discretionary licensing (as opposed to auctions), audits of purchases made by oil companies and provision of financial assistance to domestic suppliers. The successful implementation of these measures increased the UK local content in the North Sea oil sector from 30% in 1973 to 82% by 1986, with nearly 100% local content in post-development operations. Much like their Norwegian counterparts, local content policies have been successful in turning UK firms into competitive suppliers of petroleum services at the international level.

The UK’s local content measures have however been taken in a much more favourable context than that of most new energy producing nations.

The UK – at the time of the North Sea oil discoveries – already had a well-established industrial base and highly trained and educated workforce, with a high level of technical competence in manufacturing, shipbuilding and engineering. The UK also provided significant support to its domestic supplies industry, creating a dedicated agency (the Offshore Supplies Office) to develop the industry’s competitiveness, develop R&D initiatives and advise on joint ventures with established operators. The UK government also instituted strict auditing procedures to ensure full and fair opportunities for domestic suppliers. Most importantly, government policy ensured that the focus of local content requirements was on creating high value addition, rather than mere local incorporation, low levels of transformation or local ownership. Firm-level sanctions for a lack of local content development were largely of the “soft” kind – i.e. difficulty in future bidding rounds – rather than legal mandates, prosecutions or fines. The UK government also recognized that in a highly specialized field such as offshore oil and gas, foreign (mostly US) involvement was inevitable at least in the initial stages of industry development, by providing strong support to a number of multinational subsidiaries in the North Sea fields.

Other emerging producer countries such as Trinidad and Tobago, Nigeria and Ghana are beginning to explore and/or implement local content regimes. Other developing-country energy producers are beginning to implement their own local content regimes, including:

- In Trinidad and Tobago, local content policies have been driven by the realization that the traditional approach – whereby preference was given to lo-

cal suppliers if their services were of equal quality to the international competitor – was not yielding sufficient capacity building for domestic firms.¹⁹ At present, the government plans to institute several local content measures, including the establishment of an electronic clearinghouse between multinationals and local suppliers, and partnerships with several local academic institutions to create curricula specifically targeted at creating local technical and management staff. The local content approach has heavily benefited from participation by private sector operators and has benefited from a wider focus on using oil and gas local content for other areas of the economy, given the recognition of the finite nature of Trinidad’s energy resources.

- Nigeria’s 2010 Content Act creates a number of incentives throughout the bidding and contracting process to increase local content levels in its domestic oil and gas sector. The 2010 Act requires that “all regulatory authorities, operators, contractors, subcontractors, alliance partners and other

entities involved in any project, operation, activity or transaction in the Nigerian oil and gas industry” to incorporate Nigerian content as a key element in project development and management. At the outset, the Act ensures that “first” and “exclusive” consideration to be given to Nigerian providers in certain instances, for example, where the indigenous providers have the requisite capacity. The key local content element of the Act is an annexed Schedule that provides for minimum percentage specifications of Nigerian content for any project to be executed in the Nigerian oil and gas industry.

- In Ghana, the government has set a 90% local content target and has mandated operators to create an Annual Local Content Plan and Annual Recruitment and Training Programme, and shall “as far as practicable” prefer local inputs to imported goods. The Ghanaian government has instituted the same 10% preference threshold as the Nigerian regime, and mandates a local content target of 10% in the first year, increasing by 10% each following year.²⁰
-

III. LESSONS FROM BEST PRACTICE AND KEY CONCERNS

There are a number of key issues and lessons, particularly in the developing country context and especially in the Sub-Saharan context, that determine the success or failure of local content policies. This chapter will explore five key issues, criticisms and lessons from the application of local content requirements that have often determined the degree of actual industrial development occurring from local content regulations and institutions. These issues, each considered in turn, are the need for:

- Local content regimes to be couched in a wider strategy of value-added creation and competitiveness;
- The process of local content policy formulation to be open and transparent, backed by strong and accountable institutions;
- Realism in setting local content targets, which should be modified as conditions change;
- A gradual phasing in of local content policies to allow for industrial development and adjustment of the regime to accommodate new information, but also a gradual phasing-out to avoid the entrenchment of special interests that thrive on regulatory barriers; and
- Local content not to be seen as a panacea for every challenge within the domestic economy.

A. The wider context for local content: Value-added and competitiveness

The primary lesson from best practice is that local content requirements must be focused on capacity-building and value-added, rather than mere ownership. By far the most important success factor identified in the literature on local content is the presence of wider strategic planning in trade and industry that accompanies local content regulations. To sum in a single phrase, the most successful local content requirements are not merely focused on the transfer of income from goods and services from foreigners to locals, but rather part of wider strategy focused on increasing domestic value-added, regardless of the nationality of the firms, employees or investors. All too often, the implicit assumption underlying some developing countries' approach to local content is that domestic firms have the requisite capacity to supply strategic sectors, but suffer from a demand bias of

foreign firms against sourcing locally. Thus measures tend to focus more on using legislative mandates to transfer of economic activity towards firms that are nominally "local", either by incorporation or ownership. While desirable, ownership is not necessarily synonymous with capacity building, which involves developing basic managerial, technical and operational skills within the national labour force and domestic firms.

The key focus, repeated in several case studies, is the need to include the "golden rule" of local content measures. The so-called "golden rule" of local content requirements states that firms or procurement authorities should only give priority to the purchase of local products and services when they are competitive in terms of price, quality and timely availability. While recent comparative studies are not available, a 2003 study of best practices in energy-sector local content requirements found that countries that achieved the highest level of industrial capacity-building specifically used this simple but effective benchmark.²¹ In most cases, the 2003 study found that this rule was either implemented immediately (e.g. Norway) or only after a significant delay where the nascent indigenous operators were able to build world-class systems and quality standards (e.g. Brazil). A number of countries surveyed in Chapter II have employed a somewhat modified version of the local content golden rule. This modification either takes the form of:

- A price preference – e.g. for local suppliers that still comply with the necessary quality and timeliness criteria, but are (within a fixed margin) more expensive in terms of price – and/or
- A condition that firms must either "demonstrably not disadvantage" or "provide full, fair and reasonable access" to domestic suppliers.

The crucial objective of a local content policy that truly promotes competitiveness is thus not to simply shift industry rents from foreigners to locals, but rather to gradually minimize the market power of large international contractors, whose global sourcing arrangements and repeat use of preferred suppliers may lock-out fully capable and competitive domestic suppliers.²²

Mandates that are primarily targeted towards foreign operators – rather than looking holistically at capacity needs in the entire sector – are fundamentally misguided. This point was effectively argued by a joint Ugandan-Norwegian study group preparing recommendations for leveraging Uganda's new oil wealth:

Successful national content development cannot be achieved by regulation and legislation alone. An extensive framework often tends to lead to rules that are too ambitiously and strictly enforced, which easily leads to consumption of wealth, inferior industry development, violation of international obligations and corruption. National content should be achieved through capacity building. It is a side-track if the focus of national content is on to what extent the oil companies adhere to strict quantified ambitions set by law or regulation. Real contributions to capacity building, by creating a credible atmosphere for industrial collaboration as well as for the transfer of competence and technology, are the only route to create lasting value to society...

Countries that only have been willing to acknowledge value adding activities in indigenous firms have not succeeded with their national content ambitions... National content, measured as value added, should cover value generation in both indigenous and foreign-owned firms. It is the use of domestic resources that is of importance. The ownership of firms is not a panacea for value addition.²³

Ultimately, the study group recommended that national content should be measured as value added from the increased use of domestic resources (and less use of imported resources) in all companies with an infrastructure within the host country. This formulation includes, by definition, the use of domestic resources by foreign firms. The study group is careful to point out that this does not necessarily create an inconsistency with respect to the desirable long-term goal of "indigenizing" a strategic sector. It merely makes value-addition by foreign and domestic firms a short- to medium-term measure to build industrial capacity, as a final driver towards creating an indigenous industrial base.

Local content cannot be separated from the wider issue of industrial development and trade policy. Each country examined earlier in the context of international best practice saw local content as only one element in a broader policy of developing a national supply industry. In the developing country context – particularly in LDCs and post-conflict states – the growth of local content will likely remain stillborn until significant improvements are made in the provision of public services, basic infrastructure, a streamlined

business environment and improved access to capital. This includes a focus on both the "hard" elements of trade and industry (e.g. land, industrial parks, utilities and transport) and the "soft" elements (vocational education and training, trade fairs, access to risk finance and tax policy).²⁴ This holistic trade and industry approach to addressing the costs and risks of doing business will, over time, achieve far more successes in creating local content than mere legislative targets for isolated sectors. A 2007 UNCTAD study, echoing the conclusions of nearly all available literature on the subject, found that arguably the most important factor that doomed several developing countries' efforts to use local content requirements was the "general lack of a dynamic and coherent industrial policy to support market development, learning and innovations."²⁵ The conclusions of the 2007 UNCTAD study reiterated the conclusions of an earlier study undertaken by the same authors, noting that:

"Where [local content requirements are] used carefully, with offsetting measures to ensure that suppliers face competitive pressures and have access to the technology and skills they need to improve their capabilities, they can foster efficient suppliers. Where used in a protective setting, with few pressures to invest in building competitive capabilities, they can result in inefficient suppliers that saddle the economy with high costs, outdated technologies or redundant skills."²⁶

This focus on value-added and competitiveness is particularly relevant given that local content requirements nearly always constitute a "second-best" tool to improve domestic value-added. Since the existence of local content requirements nearly always presupposes that domestic input sources are less efficient than imported substitutes (otherwise minimum local sourcing thresholds would not be required), these requirements result in input cost increases for producing firms, with the negative impact increasing on a per-unit basis for relatively more efficient firms. Despite increasing the share of domestically produced intermediate goods, for a firm with a given profit margin and cost structure, local content requirements results in an overall decrease in purchases of intermediate goods (relative to a situation where firms are free to source from the lowest-cost suppliers). By installing a degree of monopoly pricing – that increases for more binding content targets that allow less and less freedom to import substitutes –

standard economic models forecast that local content requirements result in higher prices, lower consumer surplus, lower quantities sold, lower firm profits and lower government revenues (particularly where they rely heavily on royalties). Furthermore, in a context where the actual interpretation of specific requirements is unclear, input costs not only become higher but also more difficult to forecast.

Poorly designed local content requirements may also create perverse outcomes. Firm-level production functions are highly sensitive to the degree of substitutability in production, the supply conditions in the domestic intermediate-goods industry, and the market structure for the good in question. Since local content requirements directly impact these production functions, they require careful calibration by policymakers if they are to truly act as an incentive for multinationals to domicile their activities within the host country. If they are not implemented however in a targeted, temporary and flexible way, they can easily create a politically powerful lobby of short-lived and inefficient companies that thrive on the imperative for local content. The policies may not even bring the intended FDI benefits: by tending to channel investment into and attracting relatively inefficient firms – since these firms have the lowest switching costs to higher-cost suppliers – local content requirements often serve instead as a cost disincentive for FDI ventures, resulting in firms deciding to export instead and avoid the investment and profit risk. While even a successful local content policy will create a certain economic inefficiency in the short- to medium-term, those higher costs are economically justified only if domestic firms acquire the industrial capabilities to generate higher value-added in the future. If not however, then local content guidelines may consume economic wealth within the protected sector, rather than creating it.²⁷

Local content requirements must carefully balance costs and competitiveness. The burden of compliance costs being placed directly on firms – particularly in the absence of a wider government strategy to address deficiencies in training and infrastructure – may negatively impact export competitiveness in several ways:

- **First**, local content requirements often require significant additional paperwork to show compliance with the various regulations governing the targeted sector. While larger and multinational firms are generally able to absorb the higher compliance costs, the additional paperwork serves as a bias

against SMEs, and in most cases directly contradicts most countries' explicit government policies aimed at developing the SME sector. For example, in the case of the Export Expansion Grant (EEG) subsidy administered by the Government of Nigeria to boost local content in non-oil manufacturing, the Manufacturers Association of Nigeria estimates that up to half of the financial benefit of the export grant is wasted in dealing with application procedures, claims backlogs and bureaucracy. According to the Association, the EEG paperwork requirement has effectively shut out local SMEs from accessing the grant scheme and severely affecting SME growth in Nigeria, given that they are less able to circumvent poor infrastructure relative to larger multinationals. As a result, the Association estimates that 90% of the value of the grants is captured by the largest 10% of qualifying exporters.²⁸

- **Second**, companies are likely to pass on local content compliance costs to their consumers, further driving up the cost of essential services. In the case of the shipping industry, for example, compliance costs associated with local content regimes (such as cabotage policies that require all coastal shipping to be conducted by local vessels) often result – particularly in enclave economies with low industrial capacity and a high propensity to import – in compliance costs being passed on to importers in the form of higher freight charges, and ultimately on to consumers in the form of higher wholesale and retail prices.
- **Third**, the additional local content requirements could serve as a complete barrier to FDI, with some firms choosing instead to export rather than incur the costs and risks of domiciling their activities in the host country. Within the energy sector in Sub-Saharan countries such as Angola and Nigeria, on-shore activity has virtually ceased due to security concerns, leaving only offshore sites where exploration and exploitation costs are significantly higher. In a highly price-competitive market such as oil and gas, multinationals have warned that – in the absence of wider cost-of-business reductions – more stringent local content guidelines may risk pushing out foreign investment entirely, or substitute technologically competitive companies for less efficient multinationals.²⁹

B. The importance of openness

The second lesson is that the local content requirements themselves must be formulated in an

inclusive and transparent manner. In the application of local content regimes, a most common stakeholder concern centres on a perceived narrowness in the way by which local content regimes are often formulated, particularly in developing countries with a history of contention between the Government and large multinationals. To address these concerns and set a level playing field for foreign and local operators, policymakers should focus on process, i.e. the institutions and channels by which local content targets are formulated and enforced, based on a number of key questions/considerations. For example:

- With respect to the involvement of foreign firms, is there a clear channel for these companies to provide inputs into (a) proposed legislation and/or guidelines that govern local content and (b) proposed changes to the regime under scheduled reviews? Where such inputs are provided, what assurances exist that the inputs will be seriously and openly considered? Is there a serious effort to ensure that the obligation to comply with local content requirements will be equally imposed on both foreign and domestic firms?
- With respect to the public sector, is the input of Ministries that fall outside the sector in question – particularly the Ministries of Trade, Commerce, Finance and Agriculture – actively solicited, particularly when local content measures may be challenged in outside bodies (such as a potential dispute in the WTO)?
- Is there a serious effort to solicit the input of civil society bodies (e.g. trade unions, community representatives) from the regions and social groups that should, in principle, see the largest benefits from the local content measures?

The ultimate aim of a successful local content process is to build a commitment by industry operators to take – and accept – a major share of the responsibility to achieve the objectives that are set. The ideal end-result of a successful local content regime should be buy-in from both the public sector and domestic suppliers (i.e. acting as the *demandeurs* for higher levels of local content) as well as the foreign and domestic operators that will be tasked with complying with the stated targets, at the risk of losing all or part of their markets.

The process of setting and enforcing local content targets must be administered by institutions with a clear, limited mandate. A crucial consideration for the success or failure of local content require-

ments is the design of the entity ultimately responsible for the formulation of local content requirements and the management/monitoring of the regime. In many developing country cases, virtually all substantive powers to oversee and implement local content requirements are given to either the Minister in charge of the sector in question (e.g. Energy or Economic Development), or the state-owned monopoly that *de jure* falls under the relevant Minister's administrative and political control, and *de facto* operates as an independent political and economic entity. As with the concerns on process, there are a number of key questions with respect to the institutions overseeing local content:

- What regulations, if any, set the statutory powers, budgetary resources and procedures within the regulating entity? Are there clear institutional barriers between the entity and other parts of government, particularly the state-owned monopolies that are in theory subject to its control? Are the decisions of the entity subject to any sort of legislative review or appeal?
- Does the entity have a governing council, and if so, who sits on the council? Is there a serious effort to ensure fair representation by non-public sector entities, particularly foreign firms? Has the council issued omnibus guidelines to clarify, aside from existing/overarching legislation, how it intends to carry out specific elements of the local content regime?

The relevant institutions need to be given the resources to effectively carry out their mandate.

Given that its responsibilities often include the development, monitoring, implementation and industry consultation of local content requirements, the public entity in charge of local content often has a daunting task. Even in developed countries, the management of local content is a highly resource-intensive task – in Canada, for example, the agency in charge of local content was staffed with more than 130 professional employees, half of whom were professional or technical staff; even so, it reportedly had a hard time performing its tasks.³⁰ Perhaps more important however than the quantum of financial resources allocated to relevant entity is the independence and integrity of its staff; policymakers must ensure that the managing entity is not “stacked” with political appointees or current or ex-employees of former state monopolies – a difficult proposition in a developing-country setting where such persons are normally the only qualified nationals with adequate exposure to industry jargon and local content issues. It is important to reiterate,

of course, that government control of the managing entity is essential to ensure that local content regulations actually promote development policy; in nearly all the successful local content case studies in the energy sector for example, the main agency for implementing local content was closely associated with the Ministry of Petroleum or Energy Resources. The Government however should ensure that the staffing of the entity in charge of local content is made on the basis of technical considerations and industry knowledge, rather than political or social affiliations, with a balance of government employees and technicians with industry experience.

C. The importance of realism and “soft” targets

The third key lesson is that local content targets should be realistic and based on plausible economic assumptions. Perhaps the most difficult barrier facing policymakers in the design of local content regime is the question of where to apply local content targets, and at what level to set relevant targets. This question is particularly difficult in an LDC or post-conflict setting where industrial capacity is low (or in many cases, non-existent) but where there is a strong socio-economic or political imperative towards creating the largest number of jobs or firms in the shortest period of time possible. The literature and case studies on local content point to the second key lesson listed above – i.e. the need for an open process of local content policy formulation – as the key element in ensuring that realism reigns over target-setting and compliance monitoring. When, for example, foreign firms (which often are the only entities with significant experience in actual capacity-building) are excluded from the process, and/or where local content policy formulation is the sole preserve of a single Ministry or parliamentary committee, there is a significant risk of purely “aspirational” targets that are unachievably high, given the current level of competitiveness of local firms and the inevitably long time-frames required to increase productivity, particularly in a high-cost, high-risk economies. The frustrations felt by some observers of developing-country efforts to implement local content were crystallized by a critique of efforts by both Nigeria’s state-owned NNPC (through its 2005 directives to the oil and gas industry) and the Nigerian Parliament (through the 2010 National Content Development Bill) to create local content by legislative fiat:

The ambitious directives had little correlation with Nigeria’s capacity. Even the NNPC belatedly acknowledged lack of capacity in some of the sectors... Notwithstanding capacity limitations, remarkable efforts were undertaken by the IOCs [international oil companies] to implement the directives, resulting in general compliance with the above requirements but with challenges remaining, [and] lack of capacity remains the primary challenge in attaining these objectives. The directives were issued with scant regard for the country’s technical manufacturing base and technical competence, availability of required equipment, or the financial capacity of domestic companies to execute any major contracts. Nor does it appear that their capacity to meet requisite health, safety and environmental standards was considered.

Like the NNPC directives, the draft Bill had a similar disregard for human, technical, financial and manufacturing capacity. It tasked IOCs with furnishing requisite human, manufacturing and materials capacity and sought to penalize them for the country’s technical, financial and educational deficiencies. It also neglected the cost impact of compliance, notwithstanding NNPC’s notoriety for failing to fund its share of joint venture operations.³¹

The need for realism is particularly important when consumer prices may be affected. The use of local content, as noted earlier, is essentially the creation of artificial demand via regulation. If this level of demand is set too high relative to current capacity, the combination of rapidly rising demand coupled with a slowly growing quantum of local supply will inevitably lead to higher prices for domestically sourced content, and likely higher prices faced by consumers, unless the firm in question operates in a highly competitive market, or has the cash reserves to absorb the higher costs. This is particularly true in the short-run, when the quantity of local content – whether production plants, skilled/unskilled labour, or service providers – is fixed, so there are fewer options available in the domestic market vis-à-vis the equipment that could be sourced globally.³²

The main difficulty in creating a regime of unrealistic expectations is then managing the chronic undershooting that inevitably results. While ambitious targets are not themselves a problem, chal-

Challenges may arise from policymakers in how to manage chronic undershooting of local content targets:

- On one hand, policymakers can choose not to penalize or sanction non-compliance. On the plus side, this approach allows for capacity to gradually build, and for operators to adjust levels of local content to suit individual projects and strategic assumptions. As a negative however it could lead to local content guidelines not having enough “bite”, i.e. a legal or regulatory incentive for operators to make the difficult and costly switch towards local sourcing, and thus frustrate and/or render ineffective the entire local content strategy.
- On the other hand, policymakers could choose to penalize non-compliance of local content targets. This could take the form of simple disqualification in a bidding process, or even a financial penalty, such as a given percentage of the project budget. As with the more *laissez-faire* option above, this choice brings positive and negative consequence. Penalties for non-compliance can send a strong signal of the Government’s seriousness in developing local content. They can however also lead to a dilemma of what avenue to take when too many firms are unable to achieve local content targets. Some countries (e.g. Nigeria) have instituted a waiver system, whereby the Minister for Petroleum Resources can waive the obligation under Nigeria’s 2010 Content Development Act for a given firm or project, subject to the firm providing a clear plan for future local sourcing. This waiver-based system however can easily lead to incentives for corruption, particularly where the criteria for evaluating waiver applications is not made public, or is not applied in an objective or transparent manner.

Unrealistic targets may also create strong incentives for circumvention by operators. A wide gap between current capacity and some local content targets, particularly combined with a punitive regime for non-compliance, may create strong temptations for both domestic and multinational firms to create Special Purpose Vehicles and other temporary legal entities with *prima facie* local ownership to satisfy local content requirements, with little or no improvement in actual domestic capacity utilisation.³³ Local providers can easily form, for example, shell “engineering companies” that employ skeletal technical staff to secure local content-compliant contracts, which then outsource actual implementation to the same foreign firms that traditionally imported the given good or service. This incentive is compounded in a context where

local content legislation lacks a clear definition of key terminology, specifically what constitutes a “local” or “indigenous” company: arguably, a domestic affiliate of an international service provider could qualify as a “local” company even though actual service or material provision is outsourced outside the country.³⁴

The key is to allow local content regulations and targets to be modifiable as conditions change.

The crucial consideration in designing local content regimes is to ensure that, as conditions change – for example, as capacity improves, or as global/domestic economic conditions change, as technology moves in new directions, or as new information is available to policymakers with respect to current and potential local capacity – the local content targets and policies change in tandem. This requires primarily a clear statutory obligation to regularly review the local content regime at an appropriate interval, with the active involvement of all stakeholders (both domestic and foreign). Modification however requires, perhaps more importantly, political will. When local capacity improves, the upward adjustment of local content targets is a natural and painless political exercise. However when local content targets have been shown to be unrealistic given current conditions, a downward adjustment is particularly difficult, given the strong political pressures, high public profile and quantitative job-/industry-creation commitments that often accompany local content measures. As with other key lessons highlighted in this chapter, the main goal is to achieve balance: in this case, between targets that reflect the current low-capacity reality too closely (and thus do not provide a sufficient market and rate of return for new investors), and between targets that are too far removed from reality (and thus create distortions, opportunities for circumvention and a loss of faith in the overall management of the local content programme).

An optimal approach would eschew hard, quantitative targets in favour of “soft” measures.

Governments are arguably correct in assuming that many foreign firms, particularly in high-risk undertakings such as energy extraction, are not likely to fully engage in long-term capacity-building unless a local content program has some form of clear legislative “bite”. Best practice however suggests that – rather than setting arbitrarily ambitious targets across the entire industry – an optimal local content regime should focus instead on mandating energy companies to develop plans for domestic capacity-building, *which the companies themselves expect to work*, based on their

understanding of production realities and the constraints within the domestic economy. The proposed approach draws from the Norwegian case, where legislatively mandated local content requirements were eschewed in favour of “soft” measures. The Norwegian measures ensured *inter alia* that operators were not only specifically aware of industry requirements for local content, but also keenly aware that lack of compliance would cause difficulties in future bidding rounds; similar approaches were used in the United Kingdom. Thus rather than setting highly ambitious and potentially unrealistic targets, thresholds in local content legislation should be conceived as long-term targets rather than immediate minimum levels backed by the threat of regulatory retaliation (e.g. fines and sanctions).

D. Phasing in and phasing out

The fourth lesson is that local content regimes – like any form of protection – should be carefully calibrated implemented over time, and ideally reduced over time as capacity improves. The analysis of the previous paragraphs suggest that local content targets should be modified to allow year-by-year increases, based on realistic expectations, from current levels of industry capacity to full “localization” of the good or service supplied. Ambitious levels can be immediately visualized in areas (e.g. banking and legal services) where the host country already has strong domestic capacity, whereas other areas (e.g. manufacturing) that suffer disproportionately from a high-cost setting could be granted longer phase-in periods. Targets can then be increased and become more ambitious over time as capacity is expanded and a diversified industrial structure is assured, or converted into a more appropriate metric (i.e. using a different percentage ratio, or basis for compliance).

The most binding local content measures should have a clearly defined time limit, to ensure that protection does not create an entrenched group of firms that thrive from the existence of regulatory barriers. Another key lesson from successful local content programs, from Norway to Malaysia, is that the initial industrial gains from protection were often dissipated as insulated local suppliers – provided with a guaranteed and legislated industry demand, removed from market prices and technological trends – gradually lost sight of standards of international competitiveness, and suffered a strong adjustment during periods of market liberalization. It is worth noting that

even in the standout case of Norway, this pitfall was not avoided by the forward-thinking policy choices of the government, but rather was forced upon the system by the collapse of oil prices in 1986 and Norway’s participation in the European Economic Area that required the abolishment of all local content laws. Nonetheless, industry experts estimate that between 10 and 15 years was necessary to develop necessary capacity in Norway’s non-maritime industries to international competitive standards.³⁵

E. Local content: Not a panacea

The fifth and overall lesson is that local content should not be seen as a panacea to systemic problems in the economy. One area of common agreement between both governments and foreign firms is that the latter have a strong long-term commercial incentive to increase their local content levels – as a means of cutting costs, avoiding constant border delays, increasing their understanding of local markets and opportunities, and clarifying their strategic planning both in the host country and abroad. That long-term objective however cannot be instantly brought to reality by legislative fiat, particularly when local content measures are isolated from wider and deeper structural changes to the economy. Without policymakers focusing on addressing basic infrastructural and trade/industry policy deficiencies before implementing a wide-ranging local content programme, ambitious local content targets simply act as an additional cost on foreign operators, who will either reduce their investments (further exacerbating the low domestic spillovers on employment and supply) or reduce their profits, which could in turn lead to shareholder pressure back home to further reduce investments and exposure in the host country. One observer of Nigeria’s new oil and gas legislation expressed concern that local content is being seen by both the political class and its domestic industrial lobby as a cure-all to attract foreign investment and create employment in Nigeria – one that failed to address Nigeria’s multiple economic, social and political challenges:

While a combination of lack of capacity, infrastructure, basic industry and corruption probably contributed to the drain of capital, economic woes (including Nigeria’s endemic unemployment, lack of local capacity, widespread poverty, and also militancy in the Niger Delta) are often blamed on a lack of local content. Local content has metamorphosed into

the silver bullet that cures all ills, notwithstanding systemic corruption, political instability, fiscal mismanagement, unemployment and

crime; it has become the single engine for job creation, cross-sectoral growth and capacity building.³⁶

IV. LOCAL CONTENT AND THE GLOBAL GREEN ECONOMY: A SOUTH AFRICAN FOCUS

This chapter provides an overview of the use of local contents in the global push towards a green economy, with a specific focus on South Africa. The last two decades have seen a steady increase in policymakers' interest in not only the concept of the green economy – once a specialized niche within environmental economics – but also its practical applications as a tool of trade policy, industrial planning, urban design and economic development. Whether guided by recognition that fossil fuels are an inherently risky and unsustainable economic platform, or a national desire to minimize the ecological impact of day-to-day activities – neither of which are necessarily limited to developed or developing countries – the push towards a green economy has become an increasingly mainstream policy concern. Moreover, the green economy has seen a major shift in attitudes towards local content. Many countries after largely phasing out the use of local content requirements in strategic industries (due to structural adjustment, internal liberalization or WTO legal outcomes), are increasingly taking a “second look” at local content, and placing local content measures at the heart of their green economy plans. This speaks to the importance that countries place on – and the desirability of – the creation of green economy suppliers, energy sources and employment.

The analysis is mindful of the many different approaches towards defining a “green economy”. At its most basic level, the green economy has been defined as one that is low carbon, resource efficient and socially inclusive; in practice, the sectoral scope is focused primarily on four sectors: renewable energy (e.g. solar, wind, geothermal), green building and energy efficiency technology, energy-efficient infrastructure and transportation, and recycling/waste-to-energy.³⁷ The emphasis of green economy measures however can vary significantly, with some countries focusing on the “low carbon” element of the definition – e.g. measures taken to comply with emissions targets, or to take advantage of carbon trading schemes – while others have focused on the socially inclusive employment effects. Some countries choose to emphasize the production side, targeting strategic export and energy sectors, while others emphasize changes in

creating “sustainable consumption” patterns in the domestic market. The analysis in this chapter will focus primarily on renewable energy, due to the fact that this sector (a) often assumes central importance in countries' green economy plans and (b) has been especially fertile ground for local content schemes.

A. The rationale and context for South Africa's green economy measures

The framework for the Government's green economy and local content imperatives are both found in the “New Growth Path” framework, key industrial planning documents and Green Economy Accord. In 2010, the South African government launched the “New Growth Path” – an ambitious framework policy that seeks to create five million new jobs by 2020, with most growth envisaged in the private sector. The framework policy is seen as a means to correct the legacy of the apartheid era – high level of economic inequality, rising unemployment and widespread job insecurity – as well as effect a paradigm shift in an economic model overly concentrated in consumption (with a persistent trade deficit) and narrow minerals exports, and reliant on outdated economic and human skills infrastructure. To reverse this model, the New Growth Path targets five sectors for priority intervention – infrastructure, agriculture, mining, manufacturing, tourism and the green economy – largely through new public investment.³⁸ Another key policy document – the Government's Industrial Policy Action Plan for 2011-2013 (IPAP2) – has echoed the same call for a radical shift in South Africa's industrial base.³⁹ As an outcome of the “social dialogue” on these key policy documents, the Government has signed a number of “Accords” with labour, business, public sector and civil society stakeholders, including *inter alia* a *Green Economy Accord* (hereinafter referred to as “the Accord”) aimed at creating 300,000 “green jobs” by 2020.

The 2011 Green Economy Accord grew from previous policy efforts to develop the renewable energy sector in South Africa, beginning in 2003. South Africa relies heavily on fossil fuels, and particularly on its abundant coal reserves, for 91% of its energy needs, with renewable energy playing a negligible role. Its reliance on coal however has led South Africa to a dilemma – while it ranks among the world's cheapest energy producers, it also commands the unenviable position of being one of the world's worst emitters of greenhouse gases, dominated by

Box 1. Commitments under the South African 2011 Green Economy Accord

Under the Green Economy Accord, the parties commit to *inter alia*:

1. Install one million solar water heaters by 2014 and increase the local content of components;
2. Develop new initiatives, including financing/funding sources, to rapidly increase green economy investment levels, particularly for small and social enterprises;
3. Realise the renewable energy targets under the IRP;
4. Develop, monitor and realise energy efficiency targets by 2015;
5. Increase recycling rates in the public sector, paper/packaging sector and industrial waste;
6. Kick-start the development of a local biofuels industry to achieve mandatory blending targets;
7. Develop clean coal technologies applicable to the power generation sector;
8. Increase energy-efficient retrofitting of workplaces, homes and power-stations;
9. Invest in mass-transport systems to reduce transport-related carbon emissions;
10. Improve rural electrification to reduce informal settlements and environmental degradation;
11. Provide incentives and conditionalities to increase local employment and manufacturing; and
12. Cooperation between government and the private/civil society sector during the COP17 talks.

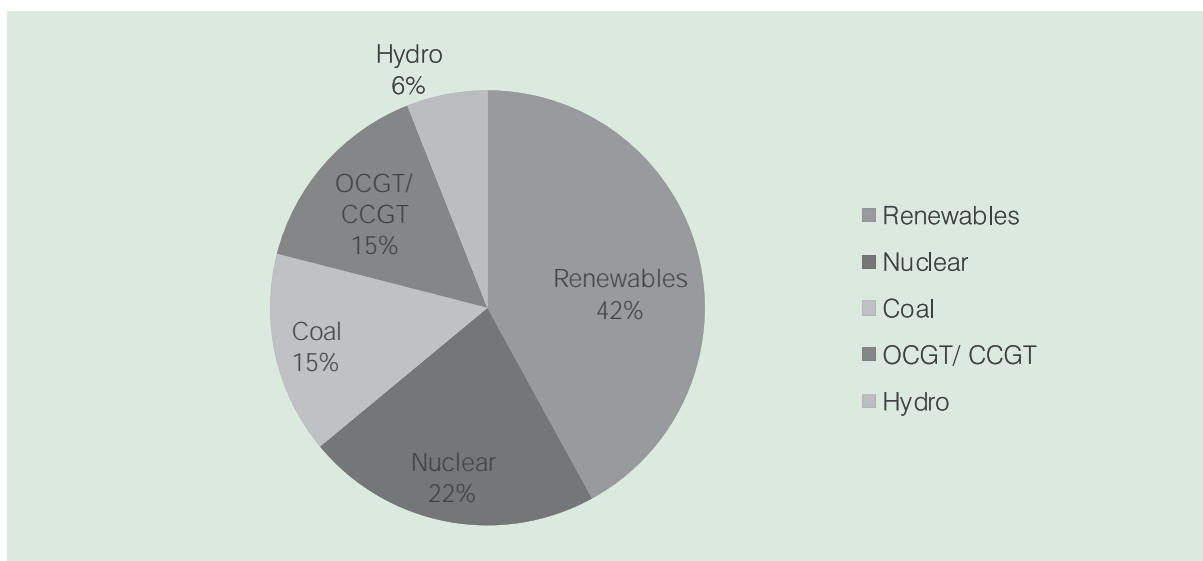
Source: "New Growth Path: Accord 4 – Green Economy Accord", Economic Development Department, Republic of South Africa, Cape Town, 17 November 2011.

Eskom, a limited-capacity state-run utility.⁴⁰ As part of a deliberate government effort to both reduce greenhouse gas production and revamp the energy sector to meet South Africa's economic needs, The Department of Minerals and Energy issued the *White Paper on Renewable Energy* in 2003, which first set out clear definitions of the sector,⁴¹ established targets for renewable energy generation, and began the first efforts to create an "enabling environment" – including financial instruments and legal reforms – that encouraged the entry of new and multiple players on the generation market.⁴² The *White Paper* was followed by the *2007 Biofuels Industrial Strategy*, which proposed targeted interventions (including exemptions/rebates and agricultural support programs) in sugar cane/beet and oilseeds to achieve 2% market share in the national liquid fuel supply.⁴³

The Green Economy Accord is a comprehensive strategy covering both energy and non-energy sectors. The Accord, signed in Durban in 2011, envisages the creation of 300,000 ranging from energy generation and "clean manufacturing" to eco-tourism and environmental services. The Accord is comprised of twelve commitments (see Box 1 below), ranging from highly specific short-term targets (e.g. the installation of a million solar water heaters by 2014) to more systemic long-term initiatives, such as the development of mass transportation to reduce the number of cars on South Africa's roads. At the time of its launch, the Accord was touted by the Government as "one of the most comprehensive social pacts on green

jobs in the world".⁴⁴ The Accord however faced some criticism from some environmental activists, who claim that rather than the Accord – rather than setting new targets and initiatives – simply gathers a number of existing initiatives which have been in the public domain for some time. Other activists however acknowledge that, despite its flaws, the Accord symbolizes high-level political signals to key stakeholders – particularly within South Africa's powerful trade unions – to support green economy investments.⁴⁵

The Accord has been supported by a number of financing initiatives. During 2011-2012, the Government of South Africa – via the Department of Environmental Affairs – established a R800 million (approximately US\$100 million) "Green Fund", implemented by the Development Bank of Southern Africa and aimed at providing "catalytic finance" to facilitate investment in green initiatives through three windows.⁴⁶ During the first wave of applications, the Green Fund received proposals totalling R10.9 billion – more than thirteen times the size of the current Fund. Starting in 2012, the state-owned Industrial Development Corporation will provide up to R25 billion (over US \$3 billion) for investments in green economy activities until 2017; the South African Treasury has also established a Renewables Fund that has begun receiving tender applications.⁴⁷ The Government's efforts have also been matched by donors and private firms, including the establishment by in December 2011, following the COP17 talks, the European Investment Bank and the Anglo-African bank Investec of a €100 million renew-

Figure 1. Revised energy balance in 2010-2030 IRP

Source: Integrated Resource Plan For Electricity 2010-2030 (Revision 2), Department of Energy, Republic of South Africa, March 2011.

able energy funding facility to promote clean energy and energy efficiency in South Africa.⁴⁸

The funding efforts for the renewables sector in particular received an added boost with the South African Renewables Initiative (SARI). The SARI was launched at end-2011 as an international partnership (originally supported by funding from the UK, Germany, Norway and Denmark) to “mobilise and channel” international public finance into the development of renewables generation capacity in South Africa. The initiative, which was being driven jointly by the Department of Energy, the Department of Trade and Industry and the National Treasury, was premised on “crowding in” low-cost loans, insurance products, and other financial instruments to lower the cost of capital and reduce the incremental cost of renewables.⁴⁹

With respect to renewable energy, a major step forward was the 2010 Integrated Resource Plan (IRP), which set a targeted balance between different energy sources. The IRP – a 20-year electricity plan considered by the South African government as a “continuously revised, living plan” – establishes targets and commitments for energy from coal, nuclear power, imported hydropower (from Zambia and Mozambique), and renewables. The IRP seeks to more than double installed capacity by 2030, with nearly half of new capacity to be drawn from renew-

able sources, evenly divided between wind and power (see Figure 1 below). The final “resource balance” contained in the IRP recommendations are based a number of key policy considerations, including *inter alia* managing the cost and affordability of new technologies, achieving reductions in carbon emissions, and localization/job creation. The IRP document demonstrates the trade-offs between the use of cheap coal and expensive new technologies, estimating that the “low carbon” scenario (with renewables at 32% of total generation) would result in 80% higher costs per kilowatt-hour than the “low cost” scenario (with renewables at a mere 3% of the total).⁵⁰ The IRP represents the first time that the private sector has been actively encouraged to providing electricity to the national grid on a significant scale, with investment costs estimated at \$36 billion by 2030.⁵¹

The Renewable Energy Independent Power Producer Programme (REIPPP) represents by the far the largest and most publicly visible government programme for reaching the renewables targets under the IRP. The REIPPP is a procurement programme specifically focused on achieving the South African government’s targets for renewable energy targets. The REIPPP invites bids from independent producers in a series of bidding “windows” for the seven major categories of renewable energy – i.e. onshore wind, solar thermal, solar photovoltaic, biomass solid, biogas, landfill gas and small hydro.

Already the REIPPP has issued two bidding windows, with the third expect to conclude in May 2013, and five rounds in total.⁵² Projects are expected to begin commercial operation between 2012 and 2016. At present, the REIPPP is procuring 3,725 MW of energy; the Department of Energy however approved in October 2012 a doubling of that figure.⁵³

B. The role of local content outside and inside the South African green economy

There is already a significant push towards local content creation in South African government policy, particularly with respect to public procurement. The Preferential Procurement Policy Framework Act (PPPFA), revised in 2011, has been explicitly crafted by the Government as a means to harness the government's purchasing power to "arrest the industrial decline" in South Africa.⁵⁴ The PPPFA scores bids on an 90/10 split on price and economic development for contracts above R1 million (modified to 80/20 for contracts below that level), of which local content requirements form a part of the "economic development" criteria. For those sectors which have been "designated" by the Government as a strategic objective under the IPAP – where local production and content is of "critical importance" – only those bids with a stipulated minimum threshold for local content will be considered.⁵⁵ For non-designated sectors, bidding entities may choose to still include a minimum threshold for local content. In addition to the public procurement rules under the PPPFA, government also has significant influence over the funding activities (and hence local content requirements) of state-owned financial institutions such as the Development Bank of Southern Africa and the Industrial Development Corporation.⁵⁶

De facto local content measures can also be found in the Broad-Based Black Economic Empowerment (B-BBEE) legislation. B-BBEE measures were launched by the Government following the end of apartheid, aimed at "chang[ing] the imbalances of the past by seeking to substantially transfer and confer ownership, management and control of South Africa's financial and economic resources to the majority of the citizens".⁵⁷ The policy framework provides a B-BBEE "scorecard" verified by specialized agencies, which are then used in the assessment of contracts. While the B-BBEE regulations do not specify local content *per se*, they operate as

de facto local content measures by requiring companies to grant special status to B-BBEE compliant domestic suppliers. While the B-BBEE regulations are not either mandatory or legal obligation for all private businesses, stakeholders have indicated that failure of a company (or its suppliers) to have a given B-BBEE score can lead to difficulties or disqualifications during tender procedures. The B-BBEE scorecards provide a score the degree of Black involvement or ownership on seven codes which are assigned a given weight or share, as shown in Table 1 below.

Table 1. B-BBEE scorecard criteria

Element	Weighting Points
Ownership	20
Management Control	10
Employment Equity	15
Skills Development	15
Preferential Procurement	20
Enterprise Development	15
Socio-Economic Development	5
Total Score	100

Source: South Africa SME Toolkit, accessed online at <http://southafrica.smetoolkit.org>.

In certain industries, mandatory B-BBEE scorecards and requirements have been developed, leading to *de facto* mandatory local content requirements in these sectors. In the 2005 "Broad-Based Socio-Economic Empowerment Charter for the South African Mining Industry", the industry committed to, *inter alia*, grant "preferred supplier" status for Historically Disadvantaged South Africans (HDSAs) – a designation not available to non-South Africans – as well as encouraging firms to partner and enhance the capacity of HDSA-owned companies. In the mining industry, the 'scorecard' for individual companies is 20% based on preferential (i.e. B-BBEE-compliant) procurement, broken down into procurement of capital goods (5%), services (5%) consumables (3%), international suppliers (2%) and utilization of South African research facilities (5%).⁵⁸

The South African Government has emphasized local content creation at the heart of the Green Economy Accord. At the very outset, the Accord speaks to the necessity of:

[having] a localization strategy that uses the enormous spending on climate change-induced technologies to create local industrial

capacity, local jobs and local technological innovation. Without a deep commitment to localization, we will bear much of the cost of greening our society without reaping an important benefit in the form of job creation.⁵⁹

Following this emphasis, several of the twelve main interventions contain local content targets, aside from the general aim of creating 300,000 new green jobs by 2020. These commitments include *inter alia* a “drive to increased localization” of components for solar water heaters; an industry wide localization target of 35% by 2016 in the renewable energy sector, increasing to 75% in the years to follow; and emphasis on South African leadership in new market opportunities such as clean cook-stoves and heaters. The eleventh pillar of the Accord is dedicated to addressing localization issues, referring to “incentives, industrial funding... and conditionalities” that will be used in “every effort to develop [local] capacity on a viable basis.⁶⁰

There has been a high-level, cross-Ministry approach to developing local content in the green economy. Given the importance of both “localization” and economic diversification under the key

Government strategies – i.e. the New Growth Path and the IPAP – the push towards setting local content targets, and managing local content initiatives, has benefited from the participation of a number of government departments. The Green Accord, for example, was a joint initiative of nine different departments/ministries, including *inter alia* Energy, Trade & Industry, Economic Development and Public Enterprises. Stakeholders have confirmed that the setting of sector-specific targets (e.g. for “designated sectors” under the IPAP2 process or for projects tendered under the REIPPP) is done by the lead departments (e.g. the Department of Energy in the case of the REIPPP) in coordination with the Department of Trade and Industry, who in turn consults with the relevant industry stakeholders. As an example of the political profile of local content in the green context, the key South African government official in charge of industrial policy has explicitly spoken to the importance of leveraging local content in government procurement for the promotion of renewable energy, noting that:

... Significant work is being done to understand the industrial opportunities arising from the pro-

Table 2. Breakdown of “economic development” criteria in REIPPP onshore wind projects

Factor	Sub-Criteria	Threshold %	Target %
Job creation	RSA-Based Employees who are Citizens	50	80.0
	RSA-Based Employees who are Black Citizens	30	50.0
	Skilled Employees who are Skilled Black Citizens	18	30.0
	RSA-Based Employees that are Citizens from Local Communities	12	20.0
Local content	Value of Local Content Spend	25	45.0
Ownership	Shareholding by Black People in the Project Company	12	30.0
	Shareholding by Black People in the Construction Contractor	18	20.0
	Shareholding by Black People in the Operations Contractor	8	20.0
	Shareholding by Local Communities in the Project Company	3	5.0
Management Control	Black Top Management		40.0
Preferential Procurement	B-BBEE Procurement Spend		60.0
	QSEs (Qualifying Small Enterprises) and EMEs (Exempted Micro-Enterprises) Procurement		10.0
	Women Owned Vendors Procurement		5.0
Enterprise Development	Enterprise Development Contributions		0.6.0
Socio-Economic Development	Socio-Economic development contributions	1	1.5.0

Source: “Generating Power for Emerging Markets”, Mark Pickering, WINDABA Conference, 22-24 October 2012, Cape Town.

posed deployment of renewable-energy technologies into the power mix... The [Department of Trade and Industry] is working with technical teams at the Department of Energy and the National Treasury to understand, for instance, the various components that are required for a wind farm and to then assess what could be produced locally at competitive prices. The early studies suggest that the towers and possibly even the blades could be made in South Africa, but the DTI is keen to engage with original-equipment manufacturers to understand what other components could be produced by domestic industry.⁶¹

The emphasis on local content is particularly strong in the development of renewable energy.

The link between localization and the green economy is particularly evident in the REIPPP. On one hand, the REIPPP is exempt from the main local content rules in the South African economy – it is fully exempt from the PPPFA's 90/10 and 80/20 bid evaluation rule, and there is no explicit link between the B-BBEE scoring system for the REIPPP (i.e. no scorecards or minimum scores for qualifying bids). On the other hand, the link between local content and the REIPPP is arguably stronger than in the two above-mentioned programs, with a 70-30 split that more heavily weighs on 'economic development' (i.e. non-price) considerations. Of the 30% allocated to economic considerations, the threshold and target value for local content vary by sector (see Table 2 below for the breakdown of the economic development component in the case of on-shore wind power). For each type of renewable energy (e.g. solar, wind, etc), the Department of Energy sets specific minimum local content requirements – applicable to both goods and services – for each bidding window.

Both the minimum local content requirements and actual local content levels are expected to rise over time. The REIPPP has an explicit built-in increase in local content targets over time, in order to ensure that the Government's local content targets are meant, and the ensure that suppliers have an sufficient level of demand to ensure adequate return on their investment. For solar and wind power, the average levels of local content for the first round of bids were 28.5% and 21.7% respectively; these levels rose to 47.5% and 36.7% respectively during the second round of bidding. Department of Energy officials have since proposed further increases for the third bidding

window, stating that "the requirements for localization will be revised "in recognition of a need to continuously improve potential benefits to local industry"; the Congress of South African Trade Unions (COSATU) has argued for a 50-65% level.⁶² The importance of local content in the REIPPP bidding process has been underscored by the Director-General of the Department of Energy in 2011, who stated "if you cannot meet localization and job creation requirements, we will not even look at the price".⁶³ The emphasis on local content in the renewables programme is so pronounced in fact that one stakeholder characterized off-the-record the REIPPP as a "socio-economic development programme via the promotion of the renewables sector, rather than the other way around".

C. Other uses of local content in the global green economy

South Africa is only one of several countries, both developed and developing, who are employing local content measures as part of their green economy strategy. As noted in the introduction to this chapter, the high-level importance placed by governments on the development of green economy has led to a fundamental shift in attitudes towards local content at the global level. Where such measures were increasingly rare in strategic industries, local content is once again at the forefront of trade policy and industrial planning, particularly with respect to green sectors and green industrial measures. Perhaps the most striking development – particularly given the controversy generated by local content at the WTO – is the fact that both developed and developing countries have openly linked investment into their green sectors with local content obligations, ranging from major global players (e.g. Canada, China, and Brazil) to newer emerging powers.

Canada applies local content requirements to the renewables sector in Ontario, its largest province. The Ontario framework is based on the *Green Energy and Green Economy Act*, passed by the provincial legislature in 2009, and (in the Ministry of Energy's words) intended to "provide the government with the necessary tools to ensure Ontario's place as North America's renewable energy leader, and to create a culture of conservation, assisting homeowners, government, schools and industry in embracing lower energy use". The 2009 Act was created with the goal of creating 50,000 new green jobs and builds on earlier provincial government commitments to eliminate

Table 3: Ontario's Local Content Requirements

Technology	Project Size	Local Content Requirement
Wind	10 kW or less	None
Wind	Over 10 kW	25%; increased to 50% on January 1, 2012
Micro solar photovoltaic	10 kW or less	40%; increased to 60% on January 1, 2011
Solar photovoltaic	Over 10 kW	50%; increased to 60% on January 1, 2011

Source: Sustainable Prosperity (2012)

coal-fired power plants by 2014 – the single largest climate change initiative in Canada.⁶⁴ The 2009 Act contains a range of green economy initiatives, including streamlined approvals for renewable energy projects and mandatory energy audits for new homes. The key provisions however – i.e. those that have attracted the most scrutiny – are:

- Those requiring that transmission and distribution utilities accept electricity from qualifying facilities (with special incentives for small/micro providers) on the basis of *inter alia* wind, solar and biomass production;
- Incentives for small/micro producers and community-based projects;
- A “feed-in tariff” program that provides qualifying producers with long-term contracts at premium prices; and
- The conditions that feed-in tariff rates are granted only to those projects that achieve a minimum local content threshold (see Table 3 below), with each project developer obligated to present to the Ontario Power Authority a domestic content plan, showing how they intend to reach the stated target. Based on an analysis by Ontario authorities of the production chain involved in different renewable production functions, the overall targets are subdivided into the different goods and services, with item-level qualifying percentages. Failure to achieve the given percentages can lead the Power Authority to cancel the contract.

Canada also applies local content at the provincial level in Quebec. In the province of Quebec, the main provider (Hydro-Quebec) undertook a significant overhaul of its previous total monopoly in response to its inability to fully service the domestic market, and the lure of overseas markets (requiring *inter alia* liberalization at home). Part of this overhaul involved sourcing energy from private providers, with a recent focus on wind energy. Like the Ontario FIT program, Hydro-Quebec has a number of special programs for generation facilities run by small and/or community

providers. But as with Ontario the most controversial provisions have been those requiring bidders to guarantee that they will meet up to 60% local content in tenders for wind power, including 30% in a specifically (and economically depressed) region. In addition, bidders can only source the wind turbines used in their facility from so-called “designated manufacturers”: Hydro-Quebec-approved turbine manufacturers who have invested in certain regions.⁶⁵

China used local content measures to create a domestic wind industry that has become a global player in renewable energy. From 1996 to 2008, manufacturers and operators of wind turbines in China were required to source at least 70% of content from local manufacturers; bids with larger amounts of domestic content were scored higher. Under directives from the National Development and Reform Commission, the local content requirements were combined with subsidies – with individual grants since 2008 ranging from US\$6.7 million to \$22.5 million, and which could collectively total several hundred million dollars – and support under the Clean Development Mechanisms established under the Kyoto Protocol, of which China is by far the largest beneficiary. The nature and scope of China’s wind industry may be altered going forward by the shutdown of China’s wind subsidies regime - known as the Special Fund for Wind Power Equipment Manufacturing – following a trade dispute with the United States, instigated by the United Steelworkers Union and settled in 2011. The termination of the subsidy program may not have a substantive impact on China’s success – while in 2004 82 percent of all wind power equipment installed in China was imported, in 2010 Chinese-made equipment accounted for almost 90 percent of new installations. This has led to speculations that the success of the program, rather than the WTO dispute, was the primary motivation behind the Chinese government’s cancellation of the subsidy regime.⁶⁶

Spain has utilized informal local content requirements to build the world’s second-largest wind

turbine manufacturer. While there is no national-level local content policy, Spanish provinces utilize local content guidelines in granting development concessions to firms as well as an attractive feed-in tariff rate for renewables. Four Spanish provinces (Galicia, Navarra, Castile & Leon and Valencia) utilize some form of local content rules, with the latter two having established a 70% local content threshold since 1995. A critical additional factor in the growth of the Spanish firm Gamesa (which is now active in other markets, particularly in China) was a close joint venture with a foreign market leader (Denmark-based Vestas) that transferred key technology and know-how over time, allowing the smaller Spanish firm to grow within the confines of the joint venture.⁶⁷

Since 2005, Brazil has required that at least 60 percent of the total cost of wind energy projects is sourced from Brazil. Compliance with local content regulations is a precondition for access to subsidized loans from Brazil's National Development Bank, which is the market leader in financing for the domestic wind sector and provides up to 50% reduction in interest rates for qualifying projects. The local content requirement in wind was increased to 90% in 2007.⁶⁸ Brazil also has a 60% (for components) and 90% (for services) local content minimum – referred to as “nationalization indices” in its Programme of Incentives for Alternative Electricity Sources, also aimed at the wind power sector.

India is incorporating local content into the context of an ambitious renewable energy programme. In 2010, the Indian government launched the Jawaharlal Nehru National Solar Mission, aimed at promote ecologically sustainable growth, address India's energy security challenges and establish India as a global leader in solar energy. India's green econ-

omy local content targets include *inter alia* stipulations that all eligible solar PV projects must use cells and modules made in India, and that 30% of a project's value in solar thermal projects must be sourced locally. Further additions to the Solar Mission local content guidelines (e.g. requirements to source solar inverters from local manufacturers) are currently being contemplated by the Government. India has also used local content as a means to develop its domestic manufacturing of electric vehicles; from 2010 onwards, vehicle firms were eligible for a 20% cash subsidy from the Ministry of New and Renewable Energy in return for sourcing 30% of parts and component from local suppliers.⁶⁹

A number of other countries are beginning to implement local content policies as part of their green economy strategy. The use of local content is not limited to established players on the green energy market. The European Bank for Reconstruction and Development reports for example that in the Ukraine, an increasing share (from 30% to recently 50%) of a renewable projects cost has to be sourced domestically to be eligible for feed-in tariffs; Turkey offers a FIT premium in proportion to the local content in the renewable generation assets; in Croatia, the variable part of the FIT depends on the share of goods and services of domestic origin used in wind farm construction. A number of the Bank's Southern and Eastern Mediterranean clients have also introduced local content rules into the tender requirements for renewable energy development contracts.⁷⁰ In Argentina's Chubut province, the wind energy law of 2005 stipulated that feed-in tariff support is conditioned upon compliance with local content targets that rapidly increased from 10% in 1999, to 60% in 2003, and 100% in 2007.

V. LOCAL CONTENT AND THE GREEN ECONOMY: ISSUES AND CONCERNS

This chapter addresses many of the key lessons drawn from the larger global study on local content, but with a specific focus on the Green Economy and, where appropriate, South Africa.

Chapter III of this study outlined a number of key lessons learned from the practice of local content in both developed and developing countries, largely limited to heavy industries (e.g. automobiles) and the non-renewable energy sector. In light of the rapid increase in local content rules in the newly-emerging green economy global market, this chapter re-visits (and adds to) many of the key lessons highlighted earlier.

A. Local content, growth and competitiveness

The use of local content requirements has, in several instances, attained its key policy objectives – the creation of green jobs and the attraction of green investments. One of the few disputed stylized facts of the link between the green economy and local content is the success that many countries have seen in creating green jobs and persuading investors to domicile their green investments in the host country, rather than simply exporting energy products into the host market. Some of these successes include:

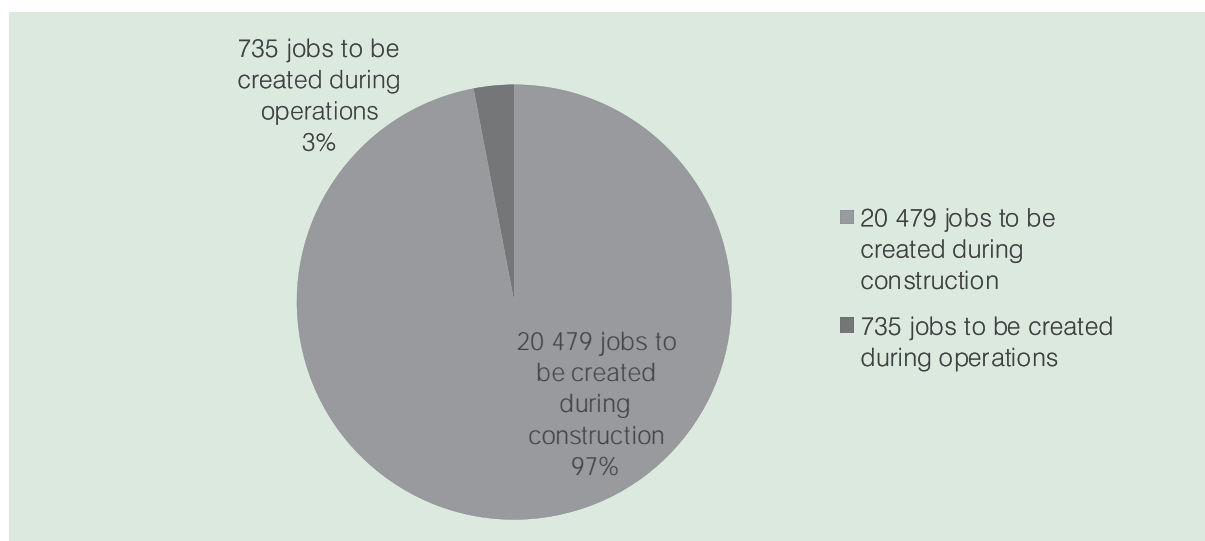
- In Ontario, the local content requirement (along with \$110 million in economic development financing) has attracted a \$7 billion wind turbine manufacturing investment from South Korea-based Samsung. According to the Ontario government, the Green Energy and Economy Act has created 20,000 jobs; independent observers note that approximately 3,000 new jobs are accounted for (as of 2011) in new proposals for manufacturing plants under the Ontario FIT program.⁷¹
- Quebec's local content requirement likely helped spur the creation of a General Electric-commissioned plant – the largest wind farm in Canada – with 450 employees, and has led to several companies – including a number of German firms who pioneered the use of renewables in the European market – establishing renewable energy supply chains in the province, particularly in designated economically depressed regions.⁷²
- Following a decade-long implementation period,

China has now overtaken the United States in installed wind energy capacity, and has gone from a small-scale turbine manufacturing base to having three of the global top 10 manufacturers in only six years' time (2003-2009).⁷³ Similar successes have been noted in the domestic market: before 2000, Chinese companies held only a 10% share of the domestic market; in 2009 however, the top ten Chinese companies accounted for 85.3% of newly installed capacity.⁷⁴

The employment figures for individual projects are only nominal figures that do not account for wider supplier and network effects: one study of job creation from solar PV manufacturing suggests a total (direct and indirect) employment boost of 10 jobs per MW during PV production – in the Ontario case, this translates to a multiplier effect of 5-10 indirect jobs for each green manufacturing job.⁷⁵

It is not clear however what “additionality” in employment has been gained from the local content requirements. While the increases of local content in these markets are clear, some critics of the guidelines have argued, using economic models and assumptions of market growth, that local content has actually reduced employment relative to a no-guidelines situation. They have argued that the rapid bidding up the price of domestic goods and services (which are fixed in the short run) leads to increases in production costs, which then lead to higher prices, reductions in demand, reductions in new orders for goods and services, and thus lower employment. In the Ontario case, a study, commissioned by foreign renewable energy manufacturers seeking entry into the Ontario market, led by Mitsubishi Electric of Japan, found that the domestic content rules for solar will lead to increased costs, 9,000 fewer jobs and \$2-billion less in investment than would occur without the content rules.⁷⁶

The sustainability of local content employment targets in renewables is also unclear over different stages of project implementation. The high technological component of the renewable energy sector implies that the labour intensity (and thus employment impact) is likely to be much higher in the initial construction stages than the long-term operations, unlike other traditional targets of local content (e.g. automobile manufacturing) which are much more labour intensive over the whole life of the given project. Moreover, the skills differential between the construction and operational phases – given that many renew-

Figure 2: Job creation in South African wind projects

Source: “The Impact of Importing RE Technology and Opportunities for Localization”, South African National Energy Development Institute, presentation to the “Energy Consultative Meeting: Portfolio Committee on Energy (PCE), Thursday 07 June 2012, Johannesburg.

able projects use sophisticated electronic platforms – implies that companies may easily achieve employment targets in the initial phase, but then struggle to find the requisite high-skilled local labour in the operational phase, particularly in a developing-country setting with several sectors competing for scarce high-skilled locals. Figure 2 below shows an estimate for the South African wind industry, showing that 97% of the estimated job creation will occur in the construction phase, with the remaining 3% in the longer-term operational phase. In the United States, green-power companies have received more than \$4-billion (U.S.) to build wind farms as part of the Obama administration’s job-stimulus program. A recent Wall Street Journal investigation found that those projects created a total of 7,200 temporary construction jobs and only 300 permanent jobs.⁷⁷

The employment impact also varies significantly between different technologies – for example, wind and solar technologies are among the more high-profile targets for policymakers when designing green economy initiatives; these two technologies however have, particularly during their operational phases, relatively low employment impacts vis-à-vis other renewables sources (such as waste-to-energy) with a much longer, more varied and less technology-intensive production chain.⁷⁸

While the focus on small energy operators is laudable, the stringent paperwork requirements

often result in additional costs and delays.

Another common feature of many countries’ local content legislation – particularly in the energy sector – is the use of special incentives to attract small operators. While this is an important policy goal, particularly for countries with parallel strategies to encourage the growth of SMEs, their coupling with stringent local content requirements (and voluminous paperwork to show compliance) often acts either as a significant regulatory cost – one usually passed on to consumers – or a complete barrier to investment by small and micro enterprises. This factor has been blamed for unforeseen costs and delays in both the Ontario program⁷⁹ and the South African REIPPP, with observers noting that the REIPPP bid documentation runs to several thousand pages, and that the minimum scale of many projects – R1 billion (approximately US\$117 million) for a medium-sized facility, and three times that level for the biggest projects – essentially serves as a deterrent for most SMEs.⁸⁰

One of the most commonly cited concerns in the use of local content requirements regards the high prices paid particularly to producers of renewable energy, and its effect on the prices paid by consumers and companies. Following from the general analysis of local content requirements in Chapter III, the key concern regarding their use is that many renewable energy sources are, in the short- to medium-term, more expensive than traditional fossil

fuels for countries with abundant reserves. By forcing developers of renewable energy to source from domestic suppliers (rather than technology providers from outside the jurisdictions that might be lower cost), local content requirements risk raising the cost of generating renewable electricity by an even greater margin. This is particularly true for renewable energy, where cost differentials between efficient and less-efficient producers of high-technology components can be far more dramatic than for traditional heavy industries or basic services. One observer of the Ontario FIT program has qualified the positive results of the program by noting that:

The [positive] response... must also take into account the financial cost of implementing a FIT program. For instance, the average weighted price of electricity in Ontario as of August 2010 was 4.02 cents/kWh. With the FIT program guaranteeing rates between 13.5 and 19.0 cents/kWh, a significant discrepancy exists. Typical consumers in Ottawa are now paying 17.7% more for their energy than they were in April of 2010; half of the increase is due to the implementation of HST [harmonizes sales tax], but the other half resulted directly from rate increases. Additionally, rates are predicted to increase steadily for the next four or five years.⁸¹

Another recent analysis of the Ontario program in Canada's flagship *Globe and Mail* newspaper found that

Ontario residents will pay an average of \$285-million more for electricity each year for the next 20 years as a result of subsidies to renewable energy companies... By the end of 2013, Ontario household power rates will be the second-highest in North America... and they will continue to accelerate while they level off in most other jurisdictions. Even more alarming for Ontario's economic competitiveness, businesses and industrial customers will be hit by almost \$12-billion in additional costs over the same period.⁸²

These price increases are particularly worrying for developing countries, some of which have some of the highest energy costs in the world, constituting a formidable barrier to trade and economic growth. At present, many developing countries – including many of the higher-profile emerg-

ing markets – already face a competitiveness barrier in the form of high electricity prices. Energy costs in Brazil are currently the world's third highest, leading to prohibitive production costs for domestic and foreign investors. Electricity prices are a big component of what investors have termed the "Brazil cost" – the mix of taxes, high interest rates, labour costs, infrastructure bottlenecks, and other issues that have caused the economy to become less competitive.⁸³ As a comparison with the United States – where electricity costs average 11.5 cents per kilowatt hour (kWh) – some emerging markets show much higher current price levels, including Mexico (19.3 cents/kWh), the Philippines (30.5 cents/kWh) and Brazil (34.18 cents/kWh).⁸⁴ Given that the purchasing power of both consumers and firms (especially at the small- and medium-sized end of the spectrum) is much more limited than in European or US markets, this implies that in the renewable energy sector there is a direct ceiling on the ability of authorities to set ambitious local content targets where sufficient levels of price-competitive local industrial output do not exist, unless governments are willing to incur large fiscal losses to subsidize prices in the short- and medium-term. The political trade-offs are particularly difficult in markets such as South Africa that can exploit abundant fossil fuel reserves and thus enjoy low prices. Whereas wind, solar and other green energy sources are cost-competitive in Europe given favourable market conditions and the scarcity of non-renewable sources, the current market price – set in the South African case by coal – is not sufficiently high to make many renewable technologies commercially attractive.⁸⁵

Given that subsidies are often required to keep prices at a competitive level, high-level political concerns have been expressed over whether local content funded by large transfers from taxpayers are the best and most stable means of encouraging the growth of green jobs. The large gap between taxpayer subsidy levels and gross job creation – shown in Table 4 below, albeit for a range of producers in which only some used local content rules – suggests that policymakers, particularly those in developing countries with scarce budgetary resources and narrow tax bases, need to carefully consider the appropriateness of combining local content with green economy goals. This is particularly true for countries that adopt highly ambitious local content targets, implying – where there is little initial capacity in the domestic market – that the gap between production costs, retail prices and profitability will remain

Table 4. Comparison of renewable program job impact and maximum subsidy amounts (2012)

	Job growth (thousand job years, gross)*	Costs (€ billion)
Wind		
Germany	832	33.3
China**	83	0.9
Biomass		
Germany	472	60.4
UK	54	4.4
Solar		
Germany	256	71.8
Spain	105	33.5

Source: "Assessing the Cost-Effectiveness of Renewable Energy Deployment Subsidies: Guidance for Policy-Makers". World Trade Institute, Berne, January 2012.

* Job growth measured in maximum estimate of thousand job years, gross.

** Includes only the impact of concessionary tendering, not subsidy regime or feed-in tariff (not included due to lack of data).

significant for the short- to medium-term. Until industry consolidation and/or growth occurs, the interim financing needs will need to be filled by the same public entities that have set the original targets and signed the (often long-term) purchasing contracts at a set price. The effect of such support (see the following paragraph) being terminated can be negative and large: when the Government of India withdrew its 20% cash subsidy to electric vehicle producers, contingent on 30% local content in 2012 after only two years in operation, manufacturers estimated that business fell by 70%, and that EV sales dropped from 7000 per month to between 2500 and 3000 per month.⁸⁶ The Government of South Africa in 2011 cut subsidies for renewables from 7% to 40% after the Treasury published revised figures for debt and inflation.⁸⁷

The cost-price trade-off of local content is particularly relevant for high capital-intensive green economy investments. The first key lesson outlined in Chapter III – i.e. that the use of local content had to be balanced against the inevitably higher costs that resulted from inefficient domestic sourcing, and that local content was thus a "second best" option – is particularly true in green economy undertakings, given the heavy capital during the construction and establishment phases. The often large differentials between the costs of imported and domestic components however, especially in the early phases when local firms have yet to reach sufficient size and quality levels,

can lead to increasing (and expensive) calls for state intervention, and/or pressures on the Government to begin carving out exceptions – which frustrates the original intention to create a regulatory incentive for local content. A 2012 study by the World Trade Institute highlights the chain of events in the Brazilian wind turbine sector, which are subject to a 60% local content requirement by the National Development Bank (BNDES):

Brazilian steel is about 70% more expensive than imported steel. Accordingly, the turbine costs will increase as well, which is likely to be supported by subsidies and an increase in power prices. In 2009 and 2010, Brazil issued tenders to encourage wind energy development. However, the winning bid prices were much lower than expected. This reduces profit margins across the entire value chain and reduces market attractiveness – This is why [the BNDES' concessionary] loans are rather important, even though they come with a stringent local content requirements. Still... wind energy project developers have accused the Brazilian local content requirements for their difficulties in scaling up the wind market in Brazil. In 2010, BNDES considered offering an exception on local content for imported steel. However, the steel industry in Brazil is aiming at market growth as well and blocked this proposal. In response, some wind energy turbine developers have started experimenting with concrete towers.⁸⁸

Although the Brazilian market has been described as having "massive" potential, the financing difficulties from traditional lenders have hindered growth possibilities. The BNDES credit lines however – as of August 2012 – have, despite providing a significant below-market subsidy – gone unused, as both domestic and foreign investors have stated that they are unable to comply with the 60% local content requirement, with the representative of one major German solar operator noting: "You can get a government loan but then again your module is 30% more costly so what's the point?"⁸⁹

In certain countries, the cost-price gap has led to the either dramatic cuts or outright termination of support programs for the renewables sector. In the Spanish case, the funding of the highly successful renewable energy program has created a

debt burden of €16 million, largely due to a €4 billion gap between wholesale prices and final prices paid for by consumers. The cost of the renewables program, no doubt prompted by Spain's severe financial difficulties following the collapse of its housing market after 2008, has led the Government to re-evaluate its subsidy program, with a planned 35% decrease in wind energy subsidies by January 2013. This dramatic policy reversal has had an impact on investor behaviour in the Spanish renewable energy market, forcing some companies to delay their IPOs and others to look at investing in less risky markets.⁹⁰ In Germany, subsidies to renewables to date total US\$130 billion, mostly to solar power companies who nonetheless maintain a miniscule (0.3%) share of the energy market – leading Germany to recently announce a pullback from green-power subsidies, saying the cost was “a threat to the economy” and announcing an end to solar subsidies by 2017.⁹¹ In the United Kingdom, more than 100 MPs have written to the government demanding cuts in wind subsidies that currently amount to £400 million per year.⁹² The key concern is thus whether a local content model that relies on premium feed-in pricing – a key element to ensure viability of new green energy sources – and large taxpayer transfers can be sustained given the reality of fiscal constraints faced by governments.

B. Transparency and institutions

While most green economy initiatives are still too recent to provide clear data, there remains some degree of concern regarding transparency. The realization of bold green economy goals will depend, as with the administration of any industrial program, on good governance at the national level. This is particularly true given that the majority of green economy initiatives at present constitute either explicit government purchases (through public procurement) or implicit government guarantees (e.g. through state-owned financial institutions). The global green economy push in most developing countries is still relatively recent, and thus there is little hard data to suggest that green initiatives have departed from general governance trends, although some anecdotal evidence suggests otherwise:

- Stakeholders in South Africa generally expressed positive views on the REIPP procurement process, noting that the bid evaluations take place on closed but video-recorded premises, and that the first two rounds have not produced any allegations of irregu-

larities. Some observers however have cautioned that there are “serious gaps in the governance of the electricity sector in South Africa”, and drawn attention to the politicisation of public procurement in the REIPPP/IRP process.⁹³

- The regulatory bodies in charge of Thailand's green economy initiatives have been criticized as lacking “sufficient data, knowledge or human resources to provide sufficient oversight of investment plans” and exhibiting a “rampant conflict of interest in the regulation of the sector” that has led to both excess demand forecasts and higher bills for consumers. A review of Indonesia's renewable-energy procurement program also found “the absence of an independent regulatory institution to scrutinize either the basis for awarding the contracts or their renegotiation”, with contracts finalized behind closed doors rather than through competitive bidding processes; solar power projects in India were providing large incentives with little evidence-based justification, leading to a high failure rate of green products and companies – for example, in Maharashtra state, of 380,000 compact fluorescent lamp light-bulbs sold, 50% failed within six months.⁹⁴

Some countries have underestimated the degree of capacity building required to implement ambitious local content programs. The attractive investment incentives created by governments in their green economy strategies – including *inter alia* local content measures and subsidies – have, in many large markets, attracted a flood of proposals in the various tender/bidding rounds. In certain instances however the ability of governments to process the applications and finalizing purchasing agreements has lagged behind market realities, creating strong disincentives against local employment and production. For example, the October 2012 announcement by the Government of South Africa that the third round of bidding would be postponed into 2013 was widely greeted with dismay among energy producers, many of which had incurred significant costs to navigate the complex bidding process that required an army of legal, technical, financial and empowerment advisors. Parallel with the announcement of the delayed bidding, there was a “candid admission... that [the Government agencies] were perhaps not equipped for the volume of administrative, regulatory and financial requirements” of the process – a cautionary tale for other, smaller developing countries that lack even South Africa's economic size and public sector weight.⁹⁵ In 2011, the Department of Energy unit in charge of managing the REIPPP bid-

ding process was estimated to have only half of the necessary capacity needed for smooth functioning of the initiative.⁹⁶ Moreover, the delays due to lack of capacity has a direct impact on the Government's policy aim of assisting small businesses, given that they are much less able to absorb long delays vis-à-vis larger conglomerates, who will either crowd out or absorb the smaller firms.⁹⁷

C. Expectations versus reality

Another key issue the realism of targets vis-à-vis actual increases in capacity. Once again echoing the key lessons from Chapter III, some observers of local content in the renewables sector have argued that the application of traditional local content ambitions (i.e. 25%-35% in the first few years, rising to greater than 50% in subsequent years) is misguided given the high technological barriers particular to the renewables sector and the long time lags associated with high-tech 'learning by doing'. This concern has been raised in programs ranging from South Africa's REIPPP – whose sector-specific local content targets have been characterized as “unrealistic” and “not cost effective”⁹⁸ given the high tech- and capital intensity of the sector – to Ontario's feed-in program.⁹⁹ In 2011, the mid-year report submitted by the South African Department of Energy highlighted the challenges of rapidly scaling-up green economy capacity: instead of 4,500 temporary jobs created each year, the actual number stood at 521; with respect to additional full-time jobs created through energy projects, the actual number was 104 compared with forecasts of 500.¹⁰⁰

There is also a danger in the setting overly ambitious growth targets given the current oversupply in the renewables market and substandard connections. The need for local content targets that are (a) gradually introduced and (b) able to be modified over time is nowhere more apparent than in green economy initiatives. There are two implicit assumption underlying ambitious local content targets, namely:

- That the requisite demand exists both at home and abroad for renewables, and that this demand will increase over time; and
- That even where demand exists, there is adequate capacity to connect new producers with the existing market (e.g. power grids).

In the Chinese case, the difficulties being faced by the renewables sector suggest *inter alia* that some local content targets may have been too ambitious. While

an estimated one million people have found work in China's green sector (600,000 in the solar sector alone), the sector as a whole faces massive overcapacity due to a global glut that has cut the price of some key green products (e.g. solar panels) in half, and driven several major producers in the developed and developing world out of business. China's biggest solar panel makers are suffering losses of up to \$1 for every \$3 of sales this year, as panel prices have fallen by three-fourths since 2008. One-quarter of China's wind farms are not connected to a power grid—a reflection of poor planning, insufficient transmission lines, and technical concerns by regional utilities that the intermittency of wind power can be disruptive to normal operations. China Datang Corporation Renewable Power, a state-owned wind energy developer, saw first-half 2012 profits plunge 76%, in part because regional utilities did not have the capacity to accept all the energy it produces.¹⁰¹

The FDI penalty for over-ambition is particularly true for many green activities that, unlike their traditional heavy industry counterparts, are not geographically fixed. When setting targets for traditional fossil fuel industries or heavy industry sectors such as automobiles, the geographically fixed nature of inputs and markets implied that host countries have a certain degree of leverage when setting local content targets. This is particularly true for the traditional oil and gas extraction industries, given that easily accessible and/or high-quality deposits are only found in a certain number of countries and regions, and firms deterred by high local content requirements are likely to incur high costs by deciding to invest in jurisdictions with less stringent regulations but less accessible resources. In the case of the renewables sector however the natural resources that are being harvested – e.g. wind, sun, biodiesels and waste-to-energy – are either much more widespread or can be easily harvested with a sufficiently advanced agricultural sector. The high degree of responsiveness to market conditions in the renewables sector – and thus the importance of setting achievable local content targets – can be seen in the rapid movement of producers out of major renewables market such as China, Brazil, Canada and Europe following the announcement of major cut-backs in subsidy level.¹⁰²

D. Local content and the global framework for renewables

Efforts are underway to liberalize trade in environ-

mental goods and services. Under paragraph 31(iii) of the Doha Ministerial Declaration, WTO Ministers mandated negotiations on “the reduction or, as appropriate, elimination of tariff and non-tariff barriers to environmental goods and services”. “Environmental” goods and services are not an internationally defined category, and will have to be defined by WTO negotiators, most likely in the form of a positive list of products to be covered under an eventual sectoral agreement, once negotiators have settled a number of conceptual and practical issues – for example, how to consider goods that have environmental and non-environmental uses, given that the Harmonized System largely classifies on the basis of the composition of a good (rather than its end-use), and that tariff negotiations are conducted on the basis of tariff codes.¹⁰³ Outside the WTO, bilateral and bi-regional efforts are also underway to ensure non-discriminatory and liberalized trade in environmental goods and services. The European Union tabled proposals in various ACP regions for reductions on environmental goods during the Economic Partnership Agreement (EPA) negotiations; in 2011, APEC leaders pledged to develop a list of environmental goods upon which a maximum rate of 5% would be applied, as well as “eliminate, consistent with our WTO obligations, existing local content requirements that distort environmental goods and services trade in the region by the end of 2012, and refrain from adopting new ones, including as part of any future domestic clean energy policy.”¹⁰⁴ The 2011 APEC declaration was followed by an agreement in September 2012 to reduce tariffs on 54 environmental goods – the first time that trade negotiations have produced a specific list of goods for liberalization in the name of promoting trade in green economy goods.¹⁰⁵

For the limited set of environmental goods, countries may find reduced policy space in

designing local content regimes. Until the major conceptual issues have been settled – e.g. changes in tariff structures to distinguish by environmental and non-environmental uses – the set of goods and services strictly deemed to fall under the “environmental” umbrella is likely to remain limited to finished products (e.g. solar panels and specialized components such as water and gas turbines). Until that point, the impact of liberalization on the policy objectives of local content regimes may be minor, given that few countries outside of the club of major renewable-energy players (e.g. United States, Europe, Canada and Brazil) have the capacity to produce these finished goods; the more basic components produced by less established players – for example, pipes, paints, cement and un-/semi-skilled labour – will likely remain uncovered as long as end-uses are impossible to distinguish. There are several longer-term trends which suggest a potential conflict between local content and the global push towards environmental goods and services, including:

- The fact that while actual liberalization is being proposed on a limited set of items, prohibitions against the use of local content as they affect trade in environmental goods and services (see the APEC Ministerial Declaration in the previous paragraph) are couched in much broader language that appears to address virtually any local content measure that could restrict trade in designated goods/services, both present and future;
- Successive changes to the Harmonized System will ensure that, over time, structural distinctions in national tariffs will be made to ensure that end-uses (i.e. environmental/non-environmental) will be reflected in the national tariff, allowing trade agreements to significantly expand the reach of liberalization agreements to more basic environmental inputs, further reducing policy space for local content as a trade and industrial development measure.

VI. CONCLUSION: OLD AND NEW OBJECTIVES

As with earlier efforts at crafting local content regimes, policymakers must exercise caution when estimating the potential employment, production and trade gains from the green economy. As noted in the outset of Chapter V, the employment gains – whether additional or not – and nationalisation of market shares from green economy local content measures have, in the cases of many developed and developing countries, been extremely encouraging. The closing paragraphs of chapter III cautioned however that how local content measures cannot be seen as a “magic bullet” to reverse wide-ranging and deep-seated structural problems in the economy that act as a brake on investment. In the South African case for example, the ambitious push to transform the country’s energy future through renewable energy has encountered obstacles with respect to the efficiency and capacity of regulatory agencies; in Brazil, the Government’s plan to develop a global renewables industry to rival Petrobras in the oil and gas sector has been stalled by the “Brazil cost” of doing business, reflected long-standing weaknesses in infrastructure and regulatory oversight. In China, the attractions of the lucrative and growing domestic

market have been, in some instances, dampened by the lack of transparency at the public level and weaknesses in the basic infrastructure required to realized green economy objectives.

The key lessons, once again, is the need for carefully calibrated and realistic local content regimes. The rapid scaling-back of renewable energy subsidies in virtually all major markets reflects not only the sensitivity of local content ambitions to economic and fiscal cycles, but also suggests that – notwithstanding the effects of the recent global recession – the ambition of many green energy programs, particularly their local content components, did not adequately account for the slower pace of regulatory and productivity change in the wider economy, the often prohibitive price differential between domestic and imported substitute inputs, and by extension the level of taxpayer subsidy required to both honour long-term purchase agreements and ensure competitive rates for final consumers. As with traditional efforts at crafting effective local content regimes, the focus of trade and industrial planning policymakers should be on creating realistic, flexible and transparent local content frameworks that carefully balance the socio-economic ambition of politicians and the society at large, with the realities of price, cost, market size and regulation facing individual firms and employees.

References

- Heum et al (2011). "Policy and Regulatory Framework to Enhance Local Content: Yardsticks and Best Practice". Working Paper No 02/11, Norwegian Petroleum Directorate, February 2011.
- Ihua et al (2010). "Nigerian Content Policy in the Oil and Gas Industry: Implications for Small to Medium-Sized Oil-Service Companies". University of Kent, United Kingdom, August 2010.
- ILSR (2011). "Maximizing Jobs from Clean Energy: Ontario's "Buy Local" Energy Policy", ILSR Policy Brief, Institute for Local Self-Reliance, Washington, January 2011.
- Kuntze and Morenhoute (2012). "Local Content Requirements and The Renewable Energy Industry – A Good Match?". International Institute for Sustainable Development, September 2012.
- Lampros (2010). "Support for Renewable Energy and WTO Law: The actionability of Ontario and Québec renewable energy support mechanisms". Law Faculty, University of Montreal, August 2010.
- Neff (2005). "Memorandum on International Best Practice in Development of Local Content in the Energy Sector". Goldwyn International Strategies, May 2005.
- Nordas, Vatne and Heum (2003). "The Upstream Petroleum Industry and Local Industrial Development: A Comparative Study". Institute for Research in Economics and Business Administration, Bergen, May 2003.
- Nwaokoro (2011). "Nigeria's National Content Bill: The Hype, the Hope and the Reality". *Journal of African Law*, Vol 55 No 1 (2011). School of African and Oriental Studies, London.
- Nwokeji (2007). "The Nigerian National Petroleum Corporation and The Development of the Nigerian Oil and Gas Industry". James Baker Institute for Public Policy and Japan Petroleum Energy Center, Rice University, March 2007.
- Obasi (2010). "Analysis of the Nigerian Oil and Gas Industry Content Act 2010". Source unknown.
- PISC (2010). "Scaling-up Renewable Electricity in BC: Tackling the Institutional and Political Challenges". Pacific Institute for Climate Solutions, University of Victoria, March 2012.
- Sustainable Prosperity (2012). "Domestic Content Requirements for Renewable Energy Manufacturing", Policy Brief, University of Ottawa, Ottawa, April 2012.
- Thomas (2007). "Investment Incentives: Growing use, uncertain benefits, uneven controls". International Institute for Sustainable Development (IISD), Geneva, Switzerland.
- Uganda Ministry of Energy and Mineral Development (2011). "Enhancing National Participation in the Oil and Gas Industry in Uganda". Final report for the National Content Study in the Oil and Gas Sector in Uganda, Kampala, September 2011.
- UNCTAD (2003). *Foreign Direct Investment And Performance Requirements: New Evidence From Selected Countries*. United Nations Conference on Trade and Development, Geneva, 2003.
- UNCTAD (2006). "UNCTAD/CALAG African Oil And Gas Services Sector Survey – Volume 1 – Nigeria – Creating Local Linkages By Empowering Indigenous Entrepreneurs". United Nations Conference on Trade and Development, Geneva, 2006.
- UNCTAD (2007). "Elimination Of Trims: The Experience Of Selected Developing Countries". United Nations Conference on Trade and Development, Geneva, 2007.
- Veloso (2001). "Local Content Requirements and Industrial Development – Economic Analysis and Cost Modeling of the Automotive Supply Chain". PhD Thesis, Massachusetts Institute of Technology, Cambridge, February 2001.
-

Notes

- 1 Veloso (2001).
 - 2 UNCTAD (2003).
 - 3 UNCTAD 2003.
 - 4 Ibid.
 - 5 Thomas (2007).
 - 6 UNCTAD (2003).
 - 7 “Thailand in Global Automobile Networks”, International Trade Centre, Geneva, date unknown, accessed online at www.intracen.org and “Globalisation, Imports and Local Content in the South African Automotive Industry”, Anthony Black and Siphon Bhanisi, Development Policy and Research Unit, Johannesburg, October 2006.
 - 8 This section draws heavily from UNCTAD (2003).
 - 9 “NCDMB Issues Deadline On Oil Equipment Import”, *Leadership Online*, 02 August 2011, accessed online at <http://www.leadership.ng>.
 - 10 Veloso (2001).
 - 11 Ibid.
 - 12 UNCTAD (2003).
 - 13 UNCTAD (2007) & Ihua et al (2010).
 - 14 UNCTAD (2006), Neff (2005) and Nwokeji (2007).
 - 15 In its oil exploration, for example, the Brazilian minimum local content requirements are 70% for onshore, 51% for off shore in shallow water of up to 100 meters and 37% for deep water between 100 and 400 meters.
 - 16 “Brazil Said to Require Local Content on New Mining Contracts”, *Bloomberg Businessweek*, 14 February 2012, accessed online at <http://www.businessweek.com>.
 - 17 Nordas et al (2003).
 - 18 UNCTAD (2003).
 - 19 Government of Trinidad and Tobago (2004), “Local Content & Local Participation Policy & Framework For The Republic Of Trinidad And Tobago Energy Sector”, Port of Spain, Trinidad, October 2004.
 - 20 Government of Ghana (2010), “Local Content and Local Participation in Petroleum Activities – Policy Framework”, Accra, February 2010.
 - 21 Nordas et al (2003).
 - 22 “Are Local Content Regulations a Pathway to Competitiveness or a Road to Protectionism?”, Michael Warner – Local Content Solutions, 2010.
 - 23 Uganda Ministry of Energy and Mineral Development (2011).
 - 24 Ibid 18.
 - 25 Nordas et al (2003), Neff (2005), UNCTAD (2007).
 - 26 UNCTAD (2007).
 - 27 Heum et al (2011).
 - 28 See “EEG Submission to Minister of State, FCMI”, Manufacturers Association of Nigeria, Abuja, 20 January 2010.
 - 29 See “Panel Discussion: Local Content Rules Changing Nigerian Business Models”, *Drilling Contractor*, 22 October 2010, available online at <http://www.drillingcontractor.org>.
 - 30 UNCTAD (2003).
 - 31 Nwaokoro (2011).
 - 32 Sustainable Prosperity (2012).
 - 33 Obasi (2010).
 - 34 Nwaokoro (2011).
 - 35 Nordas et al (2003).
 - 36 Nwaokoro (2011).
 - 37 “Defining the Green Economy: A Primer on Green Economic Development”, Center for Community Innovation, University of California at Berkeley, November 2008.
 - 38 See “The New Growth Path: The Framework”, Department of Economic Development, Republic of South Africa, 23 November 2010.
-

-
- 39 The IPAP2 identifies several support areas relevant to this study, including green/energy saving industries and biofuels, and creates a process whereby the Department of Trade and Industry can “designate” certain sectors and products as local content targets in local procurement, with each designation specifying a sector- or product-specific level of local content. The first designations, made in December 2011, included power pylons, rolling stock, buses, canned vegetables, clothing, textiles, footwear, leather products and set-top boxes. (Ibid. 18) Where the industry or sector is not designated, the procurer may include local content requirements in the tender if done in accordance with specific Government directives. (See “South Africa’s Renewables Programme – Latest Developments and the Way Forward”, Scott Brodsky, Dewey & Laboef, Johannesburg, July 2011.)
- 40 See “Effort To Wean Country Off Coal”, *Financial Times*, Friday December 11 2011. The remaining 9% is generated from unsustainably harvested fuelwood.
- 41 The White Paper covered solar, wind, biomass, biofuels, hydropower and geothermal energy generation.
- 42 See *White Paper on Renewable Energy*, Department of Minerals and Energy, Republic of South Africa, Pretoria, November 2003.
- 43 See *Biofuels Industrial Strategy of the Republic of South Africa*, Department of Minerals and Energy, Republic of South Africa, Pretoria, November 2007.
- 44 “South Africa: Nation’s Green Economy Accord”, Press release, Department of Economic Development, Republic of South Africa, 29 November 2011.
- 45 See “SA’s new green economy accord met with scepticism” *Mail & Guardian*, 17 November 2011, accessed online at <http://mg.co.za>.
- 46 The three windows are: (i) Green Cities and Towns, focused on *inter alia* waste management, transport and urban development; (ii) Low Carbon economy, focused on *inter alia* energy efficiency, rural energy and biofuels; and (iii) Environmental and Resource Management, focused on biodiversity and land use.
- 47 See “Broader Frameworks”, South African Renewables Initiative, Pretoria, accessed online at <http://sarenewablesinitiative.wordpress.com>.
- 48 See “€100m boost for ‘green’ energy in SA”, SouthAfrica.info website, 2 December 2011, accessed online at <http://www.southafrica.info>.
- 49 See “Renewables sector makes local content pledge as SA unveils new green deal”, *Engineering News*, 17 November 2011, accessed online at <http://www.engineeringnews.co.za>.
- 50 See “Executive Summary of the Draft Integrated Electricity Resource Plan for South Africa - 2010 to 2030 – IRP 2010”, Department of Energy, Republic of South Africa, Pretoria, 22 October 2010.
- 51 Ibid, *Financial Times*, Friday December 11 2011.
- 52 See REIPP website, Department of Energy, accessed online at <http://www.ipprenewables.co.za>.
- 53 See “SA’s renewables procurement programme to be enlarged by a further 3 200 MW”, *Engineering News*, 9th October 2012, , accessed online at <http://www.engineeringnews.co.za>.
- 54 See “SA pins reindustrialisation hopes on new procurement rules”, *Engineering News*, 6 February 2012, accessed online at <http://www.engineeringnews.co.za>.
- 55 “Preferential Procurement Policy Framework Act (5/2000): Preferential Procurement Regulations”, 2011, National Treasury, Republic of South Africa, 8 June 2011.
- 56 See *Industrial Policy Action Plan 2011/12 – 2012/13*, Department of Trade and Industry, Republic of South Africa, February 2011.
- 57 “South Africa’s Economic Transformation: A Strategy for Broad-Based Black Economic Empowerment”, Department of Trade and Industry.
- 58 See “Increasing Local Procurement By the Mining Industry in West Africa”, Report No. 66585-AFR, World Bank, Washington, January 2012.
- 59 See “New Growth Path – Accord 4: Green Economy Accord”, Economic Development Department, Republic of South Africa, Cape Town, November 2011.
- 60 Ibid.
- 61 See “Updated Ipap adds impetus to big local-content push”, *Polity*, 6 August 2011, accessed online at <http://www.polity.org.za>.
- 62 See “More local content required for renewable energy projects”, *Business Report*, 14 May 2012, accessed online at <http://www.iol.co.za>.
- 63 See “Renewable Energy Has to Go Local”, *Business Day Live*, 04 July 2011, accessed online at <http://www.bdlive.co.za>.
- 64 “Ontario Legislature Passes Green Energy Act”, Ministry of Energy, Ottawa, 14 May 2009.
- 65 Lampros (2010).
-

-
- 66 "China to End Challenged Subsidies in Wind Power Case", China Programme, Volume 11 / Number 11 , International Centre for Trade and Sustainable Development, 13th June 2011.
 - 67 Kuntze and Moerenhout (2012).
 - 68 Sustainable Prosperity (2012) and Kuntze and Moerenhout (2012).
 - 69 Kuntze and Moerenhout (2012).
 - 70 "Local content requirements for renewable energy: an unnecessary evil", EBRD Blog, European Bank for Reconstruction and Development, 23 November 2012, accessed online at <http://www.ebrdblog.com>.
 - 71 Sustainable Prosperity (2012) and ILSR (2011).
 - 72 Ibid.
 - 73 Kuntze and Moerenhout (2012).
 - 74 Ibid.
 - 75 ILSR (2011).
 - 76 Ibid.
 - 77 "The sorry lessons of green-power subsidies", Globe and Mail, 29 April 2012, accessed online at <http://www.theglobeandmail.com>.
 - 78 "The Impact of Importing RE Technology and Opportunities for Localization", South African National Energy Development Institute, presentation to the "Energy Consultative Meeting: Portfolio Committee on Energy (PCE), Thursday 07 June 2012, Johannesburg.
 - 79 Ibid.
 - 80 "SA's renewables plan: too important to fail", *Tech Central*, 19 July 2012, accessed online at <http://www.techcentral.co.za>.
 - 81 PISC (2012).
 - 82 Ibid 35.
 - 83 "Brazil cuts high electricity costs to boost economy", Reuters, 12 September 2012, accessed online at www.reuters.com.
 - 84 "Global electricity price comparison", Wikipedia entry on "Electricity Pricing", accessed online at <http://en.wikipedia.org>.
 - 85 "Prospects for Renewable Energy in South Africa", German Development Institute, Discussion Paper Number 23/2009, 2009.
 - 86 Kuntze and Moerenhout (2012).
 - 87 "South Africa cuts proposed green energy subsidies", Reuters, 23 March 2011, accessed online at www.reuters.com.
 - 88 Kuntze and Moerenhout (2012).
 - 89 "Local Content Rule Thwarts Solar Development in Brazil", Bloomberg, 9 August 2012, accessed online at <http://www.renewableenergyworld.com>.
 - 90 PISC (2012).
 - 91 "Solar Stocks Plunge as Germany Vows to Quicken Subsidy Cuts", Bloomberg News, 20 January 2013, accessed online at <http://www.bloomberg.com>.
 - 92 "Ontario's green dream was just a fantasy", *Globe and Mail*, 15 March 2012, accessed online at <http://www.theglobeandmail.com>.
 - 93 "EGI at the 14th International Anti-Corruption Conference", Electricity Governance Initiative, World Resources Institute, 12 December 2012.
 - 94 Ibid 85.
 - 95 "A bureaucratic learning curve: South Africa's renewable energy plans face further delays", Gordon Addie, Taylor Hopkins Associates, Cape Town, October 2012.
 - 96 "Department misses green targets", *Mail and Guardian*, 28 October 2012, accessed online at <http://mg.co.za>.
 - 97 "Delay in Alternative Energy Bidding Will Cost Jobs - South Africa", Southern African Alternative Energy Association, Welobie, South Africa, September 2012.
 - 98 "Assessment of The Procurement Framework for Onshore Wind under South Africa's REIPP Programme: Successes and Challenges", Shamilah Grimwood (White & Case LLP), WINDABA 2012 Conference, 22-24 October 2012, Cape Town.
 - 99 Sustainable Prosperity (2012).
 - 100 "Department misses green targets", *Mail & Guardian Online*, 28 October 2011, accessed online at <http://mg.co.za>.
-

- 101 “The Downside of China’s Clean Energy Push”, *Bloomberg Businessweek*, 21 November 2012, accessed online at <http://www.businessweek.com>.
- 102 Ibid 84.
- 103 Liberalising Trade in “Environmental Goods”: Some Practical Considerations”, OECD Joint Working Party on Trade and the Environment, Working Paper no. 2005-05, Organisation for Economic Cooperation and Development, Paris, December 2005.
- 104 “Annex C- Trade And Investment In Environmental Goods And Services”, Asia-Pacific Economic Cooperation, 12 November 2011, accessed online at <http://egs.apec.org>.
- 105 “APEC List of Environmental Goods: Promoting Exports, Creating Jobs, and Advancing Green Growth and Sustainable Development”, USTR Press Release, 9 September 2012, Office of the United States Trade Representative, Washington. The list includes including such core products as: renewable and clean energy technologies (e.g. solar panels, and gas and wind turbines), wastewater treatment technologies (e.g. filters and ultraviolet disinfection equipment), air pollution control technologies (e.g. soot removers and catalytic converters), solid and hazardous waste treatment technologies (e.g. waste incinerators, and crushing and sorting machinery), and environmental monitoring and assessment equipment (e.g. air and water quality monitors, and manometers to measure pressure, and water delivery systems).
-

