Addressing Local Content Requirements in a Sustainable Energy Trade Agreement

Sherry Stephenson

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ICTSD welcomes feedback on this document. These can be forwarded to Joachim Monkelbaan, jmonkelbaan@ictsd.ch

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The Global Green Growth Institute (GGGI) is a new kind of international organisation that has been established to accelerate "bottom up" (country- and business-led) progress on climate change and other environmental challenges within core economic policy and business strategies. The Institute provides an international platform for evidence based learning and policy innovation that helps to illuminate practical opportunities for progress on the twin imperatives of economic development and environmental sustainability, while deepening cooperation among developed and developing countries, the public and private sectors, and practitioners and scholars. Founded in June 2010 and established in Seoul, GGGI is committed to help developing and emerging countries pioneer a new "green growth" paradigm, and is scheduled to be converted into an international organisation in October 2012.

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Abbreviations and Acronyms

APEC	Asia-Pacific Economic Cooperation
CanWEA	Canadian Wind Energy Association
CSi	Crystalline silicon
EU	European Union
Ex-Im Bank	Export-Import Bank of the United States
FDI	Foreign direct investment
FIT	Feed-in-tariff
G20	Group of Twenty
GATT	General Agreement on Tariffs and Trade
GDP	Gross domestic product
GW	Gigawatts
JNNSM	Jawaharlal Nehru National Solar Mission
kW	Kilowatts
KWh	Kilowatt hour
LCR	Local content requirement
MW	Megawatts
PV	Photovoltaic
RCR	Regional content requirement
RFP	Request for proposal
SCM	Agreement on Subsidies and Countervailing Measures
SEGS	Sustainable Energy Goods and Service
SETA	Sustainable energy trade agreement
TRIMS	Agreement on Trade-Related Investment Measures
US	United States

Foreword

Climate change and the sustainable supply of energy are key challenges. Scalingup and deploying renewable energy sources could significantly reduce the emissions responsible for climate change and contribute to a more secure supply of energy for all.

While sustainable energy needs to be as cheap as possible, governments use green industrial policies to achieve other policy objectives,such as economic growth and employment. Governments expect to gain local benefits from increased renewable energy deployment through 'local content requirements' (LCRs), despite uncertainties about the long-term benefits and the legality of such measures under WTO law. LCRs clearly run counter to WTO rules, as has been recently confirmed by the Appellate Body in the 'Ontario case' in which Japan and the European Union (EU) complained about LCRs for renewable energy equipment in the Canadian province of Ontario.

Existing literature has already tended to monitor the frequency of LCRs for renewable energy and their overall effectiveness. This paper offers more pointed policy recommendations in the context of a sustainable energy trade agreement (SETA).

After giving an overview of LCRs in renewable energy, this paper assesses the rationale and effectiveness of LCRs. Then it presents two case studies of LCRs in renewable energy.

Finally, this paper analyses LCRs in the context of a SETA as well as alternatives to LCRs and lessons learned for future trade agreements. Given the stalemate in the WTO's Doha negotiations and thelack of a holistic perspective on energy, a SETA may present a worthwhile alternative. A SETA could address barriers to trade, enable trade policysupported energy governance, and help clarify existing ambiguities in various trade rules and agreements as they pertain to sustainable energy.

According to the paper, a SETA could provide an opportunity to change current approaches concerning LCRs for sustainable energy goods and services (SEGS). In addition to ensuring non-discriminatory treatment for the same SEGS as far as parties to a SETA are concerned, the author acknowledges that this may be challenging given the stance of various WTO members on deriving wider benefits from scaling up renewable energy.

This paper was conceived by the International Centre for Trade and Sustainable Development (ICTSD) and written by Sherry Stephenson, Senior Fellow with ICTSD.

The paper is produced as part of a joint initiative of ICTSD's Global Platform on Climate Change, Trade and Sustainable Energy and the Global Green Growth Institute (GGGI). Recently research on LCRs has accelerated. This paper draws and builds on the work by Jan-Christoph Kuntze and Tom Moerenhout, authors of a recent ICTSD-issues paper,* as well as the work by Gary C. Hufbauer and other economists at the Peterson Institute for International Economics.** The concept of the research has been informed by ICTSD policy dialogues, in particular a dialogue on 'Clean Energy: Market and Rules' in Shanghai, China in November 2012; a high-level Roundtable in Geneva inJanuary 2013; and a policy dialogue on the occasion of the Clean Energy Ministerial in New Delhi, India in April 2013. As a valuable piece of research, it has the potential of informing innovative policy responses on sustainable energy trade initiatives and will be a valuable reference tool for policymakers involved with procurement as well as trade negotiators. We hope that you will find the paper to be a thought-provoking, stimulating, and informative piece of reading material and that it proves useful for your work.

Ricardo Meléndez-Ortiz
Chief Executive, ICTSD

Executive Summary

The combination of the financial crisis of 2008, together with inadequate international policy momentum on agreed policies to achieve sustainable economic development, is contributing to a new form of protectionist trade policy, namely local content requirements (LCRs) devised at the national level as a tool of green growth policy.

Local content requirements typically require a certain percentage of intermediate goods used in the production processes in renewable energy projects to be sourced from domestic manufacturers. LCRs are often coupled with other policy measures to encourage green growth.

Despite the questionable nature of LCRs under WTO rules, both developed and developing countries have turned to local content requirements. Public financing for low-carbon energy policies has been squeezed, while governments feel the need to address the pressing concerns of climate change and environmental degradation. LCRs are viewed as an attractive policy tool for the promotion of renewable energy. However, given their potential trade distortive impacts, it is imperative to address the effectiveness of LCRs in achieving green growth objectives.

Building on the work by Jan-Christoph Kuntze and Tom Moerenhout (2013), as well as the work by Gary C. Hufbauer et al. (2013), this paper reviews the breadth of LCRs in the renewable energy sector. It points out that although over 100 LCRs have been imposed since 2008, only about 20 have been applied in the renewable energy sector. These may have impacted approximately $100 billion of international trade. The effectiveness of these measures is hard to evaluate, as they have been in place in the "green" sector for only a short time.

The rationale behind LCR use is summarized in the paper which presents the pros and cons of recourse to these measures. Proponents argue that LCRs can be used to address valid environmental objectives in a context of limited financial resources, allowing firms the breathing space to reach a sustainable scale of green energy output and providing for the creation of "green" jobs. They also claim that LCRs will spur innovation in the renewable energy sector in the medium term and consequently lower green technology costs. Opponents of LCRs in renewable energy policies point to the economic costs – inefficient allocation of resources, higher retail power prices, a negative impact on trade – and question as well the environmental gains in the medium-term and the ability of LCRs to create green jobs.

Two illustrative cases involving LCR use are reviewed: one involving the Canadian provinces of Ontario and Quebec, which have both imposed an LCR requirement to accompany other policies for the promotion of wind and solar energy production. In another case, related to India, the government has imposed an LCR as part of its policy to promote solar energy output.

Given the potential trade distorting effects of LCRs and their questionable status under WTO rules, this paper puts forward options for achieving the sustainable energy use that LCRs are called upon to address. These include enhancing physical infrastructure, promoting government-sponsored financing, taking better advantage of progress in renewable energy production, and promoting innovation and training for green jobs. In addition, the paper argues that countries concerned about this policy tool might agree to focus their WTO disputes on LCRs outside the renewable energy sector.

The paper concludes by advocating a sustainable energy trade agreement (SETA) as an attractive solution to coordinate national policies with the goal of lowering the cost of renewable energy policies. Suggestions for what could be negotiated in a SETA with respect to LCRs are set out, including non-renewable time limits for existing LCRs, a moratorium on the adoption of future LCRs, the capping of LCR percentages and an agreed 'phase-out' period during which countries might agree to include their partners in a 'regional content requirement' so that such cumulation would reduce the trade distortive impact of these measures.

Chapter 1

Introduction

The financial crisis of 2008 heralded a more discrete, yet more pernicious form of protectionist trade policies: local content requirements (LCRs). At the same time, governments are placing greater importance on green policies to achieve sustainable economic growth. The global shift to green industrial growth was the overarching issue at the Rio + 20 summit in June 2012. However, stalled international climate negotiations and Doha trade talks within the World Trade Organization (WTO) are not fostering a transition to green growth. "Trade preferences for climate-related goods are supposed to increase exports of related products from developing countries and at the same time contribute to their dissemination in targeted developing countries due to building-up or strengthening local environmental industries as well as cost and efficiency gains arising from economies of scale."[3] Such anticipated effects both domestically and abroad are steps toward greener economies. However, the combination of the financial crisis and inadequate international policy momentum is contributing to the popularity of LCRs devised at the national level as a tool of green growth policy.

Local content requirements are policy measures that typically require a certain percentage of intermediate goods used in the production processes to be sourced from domestic manufacturers.[4] Local content requirements in renewable energy policy tend to take one of two forms: a precondition to receive government support, such as tariff rebates; or an eligibility requirement for government procurement in renewable energy projects.[5] LCRs are usually coupled with other policy measures to encourage green growth.

Despite agreed WTO disciplines to promote freer trade, developed and developing countries increasingly use LCRs in their renewable energy policies. Since the financial crisis, public financing for low-carbon energy policies has been squeezed. At the same time, climate change and environmental degradation concerns are pressing. It is against this backdrop that the effectiveness of LCRs in achieving green industrial growth as well as the legal aspects of LCRs must be addressed.

From the economic side, in the short term LCRs increase production costs, which then inflate retail energy prices. From the legal side, LCRs are highly questionable under WTO law. Nevertheless, governments are continuing, and are increasing, the use of LCRs. This paper outlines some basic conditions for LCR effectiveness in expanding local manufacturing, creating associated jobs and lowering retail energy prices, as suggested by Kuntze et al.[6] These conditions include: a stable and sizable market with potential for growth; a percentage of LCR that is not too restrictive; cooperation between governments and energy firms; and a baseline of current knowledge to facilitate further technology knowledge transfers.

Relatively little has been written on the topic of LCRs. Of the existing literature, earlier work has tended to monitor the frequency of LCRs for renewable energy and their overall effectiveness. This paper offers more pointed policy recommendations in the context of sustainable energy trade agreements. It draws and builds on the work by Jan-Christoph Kuntze and Tom Moerenhout, authors of a recent ICTSD-issues paper[7] as well as the work by Gary C. Hufbauer and other economists at the Peterson Institute for International Economics.[8]

The first part of this paper contains an overview of LCRs in renewable energy and then assesses the rationale and effectiveness of LCRs. The second part of this paper presents two case studies of LCRs in renewable energy – wind energy in two of Canada's provinces (Ontario and Quebec), and solar energy in India. The third part of this paper analyses LCRs in the context of a proposed sustainable energy trade agreement (SETA), as well as alternatives to LCRs and lessons learned for future trade agreements.

Chapter 2

The Breadth of LCRS

According to one set of estimates,[9] 107 new LCRs have been imposed since the onset of the financial crisis early in 2008. All together, they may have adversely impacted USD2.7 trillion of world trade, or about 11 percent of world commerce in goods and services. 'Impacted' does not mean reduced; however, the authors offer a speculative guess that the new LCRs may have reduced world commerce byUSD200-300 billion annually, about the same amount as the potential estimated gains from Doha Round trade liberalization.[10] If this guess is near the mark, LCRs have significantly retarded world trade, and are partly responsible for the mediocre global trade performance in 2012 (under 4 percent growth) and the subpar outlook for 2013 (3.3 percent growth).[11]

Of course the great majority of LCRs are aimed at sectors other than renewable energy. Scanning the available data, it appears that perhaps 20 new LCRs affect the renewable energy sector.[12] Most of these are contained in broader mandates imposed on government procurement or government support of industry. A few of them single out renewable energy. Collectively, LCRs in the renewable energy space probably impact over USD 100billion of trade annually, but the available data do not permit an estimate of trade stifled by LCRs.

Table 1 in the Annex, extracted from the database assembled by Hufbauer et al (2013), identifies LCRs that affect renewable energy projects. Some are specifically targeted to wind turbines, solar panels or biomass. In other cases, renewable energy projects are swept up in LCR measures that affect all government procurement or all government-financed projects. Very likely the original database missed many LCRs in the renewable energy space, since it was designed to cover just new LCRs introduced since the Great Recession of 2008-2009. However the examples cited in Table 1 illustrate the flavour of LCRs that are applied in the renewable energy area.

Chapter 3

The Rationale for LCRS

3.1. Arguments in Favour of LCRs

Moerenhout and Kuntze (2013) find that, LCRs in green industrial policies are generally promulgated for four reasons. First, the political economy argument is made that LCRs augment public support for renewable energy projects. Second, proponents point to the classic case for protecting infant industries, especially in developing countries, until they can compete on the international market. Third, and, quite importantly, the creation of "green" jobs, especially in developed countries, is put forward as a justification for the use of LCRs. Fourth, proponents point to the potential environmental benefits of greater competition between renewable energy firms over the medium-term.[13]

Political economy argument

Renewable energy generally costs more, per kilowatt hour (KWh), than coal-fired power. One way to enlist public support for the extra costis to tie renewable energy projects to domestic innovation and job creation through LCRs. A worthwhile research project would investigate whether countries with 'strict' LCRs in fact use renewable energy for a larger fraction of their power supply than countries with 'relaxed' LCRs (or no LCRs). The proposed investigation is well beyond the scope of thispaper, but the findings would make a valuable contribution to understanding the strength of the political economy nexus between LCRs and renewable energy.

Infant industry protection

Policy makers – usually in developing countries – contend that LCRs protect infant industries from foreign competition. LCRs present an attractive solution to allow infant industries to become internationally competitive in their renewable technology and manufacturing capability. Proponents argue that while the GATT 1947 reflected Keynesian precepts and was somewhat tolerant of government supervision of markets, the conclusion of the Uruguay Round and the creation of the WTO marked a shift towards neo-liberalism and a heavy preference for market outcomes. This framework, it is argued, is not amenable for developing countries to master advanced technologies and enjoy economies of scale.[14] By contrast, LCRs afford a certain 'policy space' to develop infant industries. In addition LCRs may counteract government subsidies in other countries. According to this line of argument, LCRs provide incentives for local firms to produce and eventually innovate in the most promising green energy sectors and to lower their production costs over time.[15]

Green job creation

In industrialized economies, the same economic arguments for LCRs in terms of the infant industry rationale are not applicable. Instead, proponents of renewable energy LCRs in developed countries point to the creation of green jobs. By requiring firms to use a certain percentage of local inputs, demand for domestic cleaner industries will increase, spurring green job creation in the short-term.[16] In the long term, proponents argue that there are economic benefits to be gained from "learning by doing" and from increasing the supply of renewable energy.[17]

Policymakers find it politically compelling to push forward green industrial programmes with LCRs, given the anticipated economic gains in employment and growth of the green sector. Both developed and developing countries implement LCRs with the two-pronged goal of achieving a robust renewable energy industry that will be competitive in international markets, and securing associated local job creation. In addition, it is sometimes argued that an expanded domestic manufacturing industry could entail a larger tax base for governments. An increased tax base allows governments to enjoy more revenues without raising tax rates.[18] However, it has not yet been demonstrated that the financial investment and incentives needed to expand

the green manufacturing industry would be more than offset by the anticipated gains from a larger tax base.[19] Companies may also decide to settle in a location for reasons other than tax incentives, including the attractiveness of the overall business environment.

Environmental benefits

In the environmental arena, proponents of LCRs point to the positive spillover effects for the environment in the mediumterm. By increasing the number of players in the international market, proponents of LCRs contend that,in the mediumterm,greater competition will spur innovation in the renewable energy sector and consequently lower green technology costs. Competition and innovation should reduce the time it takes for renewable energy to compete with fossil fuels and nuclear energy.[20] Following this environmental line of argument, the medium-term benefits will compensate the short-term disadvantages in terms of greater production costs. In addition, proponents claim that, by promoting thetransfer of technology, LCRs foster sustainable practicesworldwide.

In theory,LCRs can also facilitate a transfer of technology from learning by doing and building local capacity.The LCR forces firms to transfer technology so that the final quality of the product is maintained. As already mentioned, these positive spillover effects remain theoretical and have yet to be proven. [21] Such an LCR requirement may in fact make it even less interesting for companies to establish a productive base, thwarting the transfer of technology altogether.

3.2. Arguments against LCRs

Opponents to local content requirements in renewable energy policies point to the economic costs – inefficient allocation of resources, higher retail power prices, negligible employment gains and a negative impact on trade – and question the environmental gains in the medium-term. [22]

Inefficient allocation of resources

Opponents hold that LCRslead to an inefficient allocation of resources by distorting the operation of comparative advantage. “In practice, LCRs are discriminatory and can, like tariffs, constrain effective organization of sustainable energy supply chains.”[23] LCRs require or create incentives for enterprises to inefficiently invest their resources in local inputsto artificially improve the competitiveness of local products, making foreign products less attractive to potential buyers.[24] In the absence of LCRs, the same resources would be invested in other sectors more efficiently. The impact of LCRs is similar to that of subsidies – through an inefficient allocation of resources, local products become more competitive and foreign products less so.

Proponents of LCRs argue that LCRs are a short-term policy, put in place to protect infant industries and businesses only for the amount of time needed to play ‘catch up’ with foreign economies by producing to scale the same products with greater efficiency, creating capacity to compete ininternational markets. In the long-term the need for LCRs will be obsolete, once enterprises are able to compete with foreign firms. Opponents point out that in reality, subsidies such as LCRs are politically sensitive. Once LCRs become a mainstay and expectation of businesses, withdrawal of government support will often be met with fierce resistance.[25] In addition, even if subsidies and LCRs are implemented with the intent of being temporary, it is possible that the relevant manufacturing sectors will never attain the level of efficiency necessary tooperate without government support. Infant industries may never become competitive enough to export their renewable energy products on the international market and instead require continuous government support. In such circumstances LCRs would become a policy of permanent protection.[26]

Higher power prices

In the short term, LCRs inflate power costs. Since firms are required to purchase local inputs that are likely to be more costly than foreign ones, their manufacturing costs are increased. Producers eventually offset the higher manufacturing costs by passing these on in the form of increased power prices to domestic consumers.[27] LCR proponents contend that in the medium and long-term, greater competition and innovation will

eventually lower manufacturing costs, and hence consumer power prices, but this seems far from certain.[28]

Green job creation doubtful

Although one of the intended benefits of LCRs is job creation in the green industrial sector, it is not certain that LCRs create additional jobs. Two opposing effects are at play. On the one hand is the output effect: LCRs increase the cost of renewable energy production through higher input prices. As such, less renewable energy is produced, resulting in zero job creation and possibly job losses in the green industrial sector. However, it is also possible that there is job creation but lower returns to other factors.[29] Since LCRs require firms to source componentslocally, employment will increase in the component industry.The net effect for job creation of higher input prices and hence less renewable energy production combined with greater demand for component manufacturing is difficult to pinpoint.[30] The outcome depends on specific policies.

To make the story more complicated, countering the output effect is the substitution effect. The degree of local content required can affect whether jobs are lost or created. If the percentage of local content required is very high, then renewable energy production will be reduced, accompanied with net job losses. However if the amount of local content required is not very high, then firms might increase their employment to offset higher prices for local material. This substitution effect assumes that labor can serve as a substitute for the local material.[31]

Negative impact on trade

LCRs negatively impact trade. LCRs require firms to use material that is made locally and more expensive than foreign inputs. In the absence of LCRs, enterprises would opt for foreign-made material when that is the cheaper option. Like a subsidy, the effect of LCRs on trade is to discourage foreign imports and to stifle competition between domestic and foreign firms – by making locally produced material a requirement in theend product. The impact on trade of LCRs varies, depending on the percentage of local content required and the efficiency of existing firms. In an economy with inefficient firms, a high degree of required local content obviouslythwarts competition. The LCR becomes a very high non-tariff barrier. However, the negative impact of a high LCR on competition is lessened in an economy with more efficient firms.

In addition to the economic and environmental benefits and drawbacks set out above, LCRs may have a negative impact on the services portion of renewable energy production, as well as innovation and quality.[32] In focusing on the manufacturing segment of the value chain, LCRs do not affect the services portion of the renewable energy sector. In the short term, LCRs drive up production costs for renewable energy, but might not encourage the services components of renewable energy production. However, knowledge and technology transfers are essential for sustainable green growth. When they target manufacturing, LCRs do not take advantage of the employment gains to be made through investment in the services portion of the value chain,such as in engineering, installation and maintenance.[33] Given the critical nature of efficient services to the operation of value chains, any LCRs that target or impact services performance will have particularly detrimental cost and efficiency implications for the final products.

In addition, LCRs might hamper innovation and quality in the renewable energy sector. With a restrictive LCR in place, investors might be deterred from investing in the renewable energy sector owing to higher input prices. Meanwhile, the higher the LCR, the more the renewable energy sector will be protected from foreign competition, resulting in lower quality and higher prices.Over time, this may impact the quality of foreign direct investment (FDI) attracted to the sector and encourage rentseeking, less efficient FDI rather than cutting-edge, innovative FDI focused on both the domestic and world markets.

Chapter 4

The Effectiveness of LCRS

Little has been written on the effectiveness of LCRs generally and empirical studies on the impact of LCRs for renewable energy are especially limited. Nevertheless, Kuntze and Moerenhout outline five agreed-upon preconditions for LCRs in renewable energy production to have a beneficial impact for the domestic economy:

1. Stability and size of market
2. Restrictiveness of LCR
3. Cooperation between government and firms
4. Accompanying subsidies
5. Technology and knowledge transfers

First, LCRs in renewable energy must be introduced in a stable and sizablemarket that has potential for growth. In the absence of a stable market with growth potential, firms will be deterred from investing in renewable energy manufacturing.[34] Ultimately, investors are concerned with whether the higher costs incurred to produce local material will be more than compensated for through stable demand and industry growth. The larger the market, the more chance there is that welfare gains can be reached through LCRs. In addition, a large and stable market encourages transfers of knowledge and technology through learning by doing. If the existing industry and market potential are small, the LCR is unlikely to yield much in terms of welfare benefits to the host economy.[35]

Second,the impact of LCRs depends largely on the percentage of local products required. To add value to the host economy, the LCR should be phased in gradually, and the percentage of local content required should not be too high. When LCR percentages are overly stringent, the LCR is more likely to damagethe local economy. When the level is more appropriate, according to jurisdiction specifics, the increased cost of production may be offset by the gain in jobs or expansion of green manufacturing, for example. However, beyond a certain LCR percentage, the higher cost of production is greater than the value gained for the local economy. The appropriate LCR percentage depends on the size of the green industrial sector and the opportunity cost of capital.[36] Some economists have tried to model what this percentage would be, but there seems to be no definitive guide for this at present. However, it seems clear that an overly restrictive LCR is likely to be damaging.

Third, in setting the LCR rate, governments have much to gain from cooperating with local businesses.[26] Supply chains with numerous producers supplying components for intermediate goodsare complicated. For example, solar photovoltaic cells consist of many components – cells, modules, etc. – that are potentially manufactured by different producers. Cooperation between governments and businesses increases information on both sides. This facilitates determining an appropriate LCR rate and efficiently combining various elements in the supply chain.

Fourth, Kuntze and Moerenhout find that a precondition for LCRs to be valuable to the host economy is ensuring that the subsidy to which the LCRs are to be coupled is sufficient to maintain market attractiveness.[37] There is still much research to be done on the appropriate type of subsidy for firms when introducing LCRs – for example, tax credits, soft loans, grants, capital subsidies – and which part of the value chain the subsidy should target.[38] This also depends on jurisdiction specifics, and the technology and value chain. Some form of financial support is intended topromote technology transfers. However, there remains a large gap in the research concerning the best type of financial support.

Fifth, proponents of LCRs point to the positive spillover effects – in terms of greater efficiency – that come only with time and

experience. There is still much uncertainty in as to whether the greater efficiency in the long-term will be sufficient to offset the higher production costs.[39] Velosso shows that when there is already a certain level of local knowledge about the technology in question, the LCR will be more effective.[40] LCRs are less likely to bridge a wide knowledge gap between local and foreign businesses; LCRs may, however, bring added technology knowledge where a foundation has already been laid. An LCR will be more valuable if there is a high learning-by-doing potential. LCRs will yield more value to the host economy if they do not overemphasize manufacturing portions of the value chain, but also target training-by-doing to establish high-skilled workers.

Despite these five identified preconditions to gauge whether LCRs will have a positive welfare effect on the host economy, much remains uncertain. For instance, the appropriate LCR percentage will vary and depends on local market, technology, etc. There also remain questions in terms of the best subsidy – type, targeted value chain, duration and size. A misallocated subsidy could entail an additional cost and not an added benefit for the local economy. In addition, one of the chief and compelling arguments against LCRs is that they can easily become a permanent policy on account of the unwillingness of local firms to give up an obvious advantage. Thus an additional precondition is a clear timeframe for the term of the LCR, beyond which it would not be renewed.[41]

Chapter 5

Two Illustrative Cases Involving LCR USE

The two illustrative cases discussed below provide a flavour of the type of products and services that governments are choosing to impose LCRs in the name of sustainable development and clean energy.

5.1. Wind Energy in Canada

Wind energy capacity worldwide has grown at an incredible pace – doubling every three years according to the 2011 World Wind Energy Report. At the end of 2011, wind turbines accounted for roughly 3 percent of the world's electricity consumption.[42]

Wind energy has grown especially in Canada, with the country becoming one of the top 10 producers in 2010. Thanks to a wealth of natural resources, electricity prices in Canada are the fourth lowest among OECD countries, following the United States, Mexico and Korea. After hydropower, which provides 60 percent of Canada's electricity, wind energy is one of the major renewable energy sources in Canada. The Canadian Wind Energy Association (CanWEA) intends to provide 20 percent of Canada's electricity with wind energy by 2025.[43]

Regulation over Canada's electricity market varies between its 10 provinces and 3 territories, where different jurisdictions are in place. Wind energy projects almost all require municipal approval, while licensing and regulatory issues are handled at the provincial level. As a result of the federal system, the price of electricity in Canada varies considerably between regions. In Ontario, five discrete legal bodies adjudicate matters concerningelectricity generation, transmission and distribution. Nevertheless, the Province of Ontario indirectly provides over 70 percent of Ontario's electricity through the Ontario Power Generation Inc., which it owns.

Ontario

In 2009, Ontario passed the Green Energy and Green Economy Act, aiming to expand the renewable energy sector and create green jobs. Ontario's market for renewable energy is sizable and has considerable growth potential.As already mentioned, one of the conditions for LCRs to be potentially beneficial to the local economy – in terms of job creation and for green industry expansion – is existing market size coupled with capacity for growth.

As part of the Green Energy Act, Ontario introduced a feed-in-tariff (FIT) programto encourage investment in renewable energy. To spur investment in local manufacturing, and hence create green jobs, the FIT programme is coupled with an LCR. Under the LCR, firms are required to use a certain percentage of locally manufactured material for wind and solar projects in order to receive government support. The level of LCR varies depending on the type of renewable energy – wind, solar, etc. – as well as the size of the project. For wind and solar projects over 10 kilowatts (kW), the local requirement was 25 percent and 50 percent from 2009-11, respectively, and 50 percent and 60 percent from 2012 onward.[44] If the LCR is not met, firms are not eligible for FIT benefits.[45] In addition, the Act sets out specific percentage values for activities and materials that can be used in fulfilling the LCR. For example, local steel used to produce turbine towers earn a value of 9 percentage points, and turbine towers that are made locally earn 4 percentage points.[46] The benefit of allocating different percentages to different activities and materials is that it gives policymakers flexibility in targeting green development or job creation.

This is the first time that a LCR has been introduced in Ontario, and it was not phased in gradually. As a result of Ontario's Act and associated LCR, retail electricity prices increased by more than 17 percent in 2010 and are expected to continue to increase.[47] At the same time, however, Ontario's government said that the Green Energy Act led to the creation of 20,000 jobs. Ontario's FIT scheme does not pay enough attention to investing in training to increase workers' skills or setting renewable energy targets, which would incentivize investors based on perceived guaranteed demand.[48]

Japan,later joined by theEuropean Union (EU), filed a WTO complaint against Canada's FIT scheme largely because of the LCR.The plaintiffs argued that the LCR connected to the FIT violated three different sets of WTO rules: the Agreement on Subsidies and Countervailing Measures (SCM), the national treatment requirement of Article III of the GATT and the Agreement on Trade-Related Investment Measures (TRIMS).[49] Wilke writes: "It is not the FIT-programme as such, but a controversial 'local content' provision of Ontario's FIT that landed Canada at the WTO. The 'made-in-Ontario' requirement demands that up to sixty percent of all green energy project inputs (goods and services) be manufactured or provided for in the province."[50] Canada defended Ontario's FIT programme arguing that since the FIT programme aims to expand renewable green energy, GATT Article XX (General Exceptions) comes into play and protects the programme from other GATT disciplines as well as the TRIMS. With respect to the SCM, Canada countered that the FIT programme involves government procurement, making it exempt from the agreement, as Canada had not included renewable energy products among its list of procurement items.

In December 2012, the WTO panel concluded that Ontario's LCR, as a part of its FIT programme, was in violation of provisions in the GATT and the TRIMS. However, the WTO panel rejected the claim that the scheme constituted an'actionable subsidy' under the SCM (FIT porgramme being directed at domestic usage rather than exports). In early February 2013, the Canadian government appealed the decision, putting the case before the WTO Appellate Body. The Appellate Body in May 2013 agreed with the WTO panel and ruled that the LCR in Ontario's FIT programme for renewable energy was inconsistent with WTO rules, namely in violation of the national treatment obligation (GATT Article III) and prohibited in the illustrative list of measures under the TRIMS Article II (i.e. policy requiring the purchase or use of products from domestic sources).[51]

Quebec

WhileOntario implemented an FIT programme, Quebec introduced a request for proposal (RFP) scheme. However, each scheme was coupled with an LCR.

In 2011, 97 percent of Quebec's electricity was hydro generated.[52] In its most recent energy strategy document, the government of Quebec made it a goal to build 4 gigawatts (GW) of wind power by 2015 as a complement to hydro energy. Although Quebec has a stable market, its wind energy market potential is considerably smaller than Ontario's – 4 GW compared with 24 GW.

In Quebec, new wind energy plants are built through RFPs. An LCR requirement for wind energy has been in place in Quebec since 2003. To date, Quebec has issued three wind energy RFPs. The first RFP in 2003 required that the initial 200 megawatts (MW) of wind energy have 40 percent local content, the next 500 MW have 50 percent and the remaining 700 MW have 60 percent. The second RFP in 2005 required that 60 percent of the 2 GW of wind energy be sourced locally, with 10 percent from the Gaspesie region. The third RFP in 2010 was almost identical in structure to the second. Despite these requirements, firms were not deterred from investing.[53]

In July 2012,the government in Quebec outlined the most recent RFP to increasewind energy capacity by 700 MW, coupled with an LCR. Under the LCR, 30 percent of the turbine costs had to be spent in the Gaspesie and Matane municipalities, and 60 percent of the overall costs had to be spent in Quebec.Both

the 30 and 60 percent LCRs had additional stipulations. For example, in the case of the 30 percent requirement, the following costs were exempt:wind turbine warranties; transportation of wind turbines; building, testing and commissioning of the turbines; and maintenance and operating costs.[54] Meanwhile the 60 percent LCR included the following costs: initial development costs; the cost of wind turbines; and construction and transportation costs. The LCRdid not, however, include maintenance and operating costs, warranty coverage costs, or payments to landowners.[55] Reading beyond the fine print, Quebec's LCRprogramme points to the policymakers' goal of increasing capital investment in plant manufacturing and creating jobs.

Canada's approach to meeting growing electricity demand and expanding the renewable energy industry has varied between provinces, with Ontario's (FIT programme and Quebec's RFP approach. As with any trade barrier, LCRs in the cases of Ontario and Quebec increase the cost of producing renewable energy. The higher cost of renewable energy production from wind turbines will be passed on to consumers through higher electricity prices.In a study by economists at the Peterson Institute, it is estimated that the LCRs in Canada resulted in an additional USD386 per kW of installed capacity. At this rate, the additional cost incurred for the 800,000 kW of wind power installed in Ontario since 2009 amounts to over USD300 million. And for Quebec, where more than 500,000 kW have been installed since 2009, the additional costs amount to nearly USD200 million.[56]

5.2. Solar Energy in India

India's electrical infrastructure is outdated and unreliable. Existing energy resources have not kept pace with India's growing electricity demands. In July 2012, India experienced the largest power outage in its history. Over 620 million people — roughly 9 percent of the world population — were affected.

In 2010 India launched the Jawaharlal Nehru National Solar Mission (JNNSM).[57] The JNNSM, overseen by the Ministry of New and Renewable Energy, aims to increase solar power by installing 20GW of grid capacity by 2022 in three phases: Phase 1) 1000 MW by the end of 2013; Phase 2) an additional 3000 MW by the end of 2017; and Phase 3) an additional 16,000 MW by the end of 2022. India's solar subsidy programme was enacted to increase domestic manufacturing capacity and green jobs, promote sustainable growth, and reduce energy costs. Although the JNNSM scheme was devised in 2010, the 2012 power outage catalysed momentum to establish India as a leader in solar energy manufacturing and deployment. As part of the Indian government's policy in the area of solar energy, an LCR was introduced in 2010.[58]

Like Canada's FIT and RFP programmes, subsidies are propelling the renewable energy industry in India's JNNSM scheme. Solar energy is distinct from other types of renewable energy industries worldwide in that it receives a disproportionate amount of subsidies. In 2011, the subsidies towards solar energy constituted nearly 30 percent of total global subsidies for renewable energy.[59] Without subsidies, solar power is rarely viable and would not be the renewable energy of first choice. As such, it is hard to estimate an international price for solar-generated electricity, since each country has in place different subsidy schemes and incentives. Solar technologies, or photovoltaic (PV) systems, consist mostly of cells and modules.

An LCR is part of the JNNSM scheme,under which solar developers must purchase domestically manufactured crystalline silicon (CSi) modules. While the JNNSM mandates that solar producers purchase CSi modules that are manufactured domestically, solar developers using thin film technology are exempt from the LCR. In response to the LCR, the majority of solar developers in India have turned to imported thin film technology. Worldwide, only 11 percent of PV deployment uses thin film, and the remaining 89 percent is in CSi.[60] However,as a result of India's LCR, more than 70 percent of solar developers have opted for cheaper imported thin film technologies rather than local CSi modules.[61]

India is the only PV market in the world where thin film is the dominant solar energy technology.[62] Solar developers tend to prefer CSi modules because of their efficiency – between 12 and 24 percent of solar radiation is converted to electricity in comparison with between 4 and 12 percent for thin film.[63] However, in India, thin film technology is preferred to CSi modules, because the LCR on domestically manufactured CSi modules makes the thin film a much cheaper option.

An additional reason solar producers in India prefer thin film technology is the better international financing options for solar energy projects not having anLCR, i.e. thin film. For example, both the Export-Import Bank of the United States(Ex-Im Bank)and the Overseas Private Investment Corporation have offered low-interest loans to solar energy firms provided they use thin film produced in the United States (US). In 2010 and 2011, the EX-IM Bank lent USD 248 million to Indian firms that bought thin film modules.[64] Such a condition has increased Indian demand for US thin film, while in India there has been an overproduction of silicone PV cells and modules. The Ex-Im Bank financing distorts the impact of the LCR by lowering the cost of electricity through loans with low interest rates, and by shifting solar developers' module purchases away from domestically manufactured ones to imported ones.

The application of the JNNSM LCR exemption for thin film has shifted the solar technology market in India from CSi to thin film. As a result, domestic manufacturing has made negligible gains, and the LCR has slightly increased the cost of PV systems. Domestic manufacturers have scaled back the operations of their solar plants, operating below capacity or closing down altogether. In addition, the shift to thin film deployment has undermined anticipated economic and job growth from the JNNSM.

Without the LCR in place, solar developers in India would be able to import CSi modules and cells. Thin film modules are slightly cheaper than CSi on a per-watt basis. However, thin film modules have a lower efficiency, which translates to added costsfor the developer. As such, even though thinfilm modules might have a lower price per KWh than CSi modules, the overall cost might be higher once efficiency differences are taken into account. It has been suggested that an additional reason for the thin film preference of Indian solar developers is that the hot climate provides ideal conditions to maximize thin film efficiency.In the aforementioned study by economists at The Peterson Institute, it is estimated that India's LCRtranslates to a price increase of up to 12 percent for PV modules and 3 percent for PV systems for the solar developer.Meanwhile, the LCR has resulted in an estimated 3 to 7 percent additional growth in domestic manufacturing of modules, compared withthe market without the LCR.[65] It is expected that the price of CSi modules on the international market will decline because of technology advancements. As the price falls, the effect of the LCR will be greater.

Although global prices for CSi modules and cells continue to fall, owing to improved technology, Indian manufacturing competitiveness for CSi technology has not kept pace. The LCR is likely to discourage innovation in the solar energy industry and impede manufacturing competitiveness. The LCR might boomerang India's solar manufacturing and electricity goals.

Before the JNNSM program was introduced, India's manufacturing sector for solar cells and modules was relatively small and relied on exports; between 70 and 80 percent of locally manufactured solar material was exported.[66] However, there are several obstacles hindering India from being a hub of renewable solar energy manufacturing and deployment and from being internationally competitive. First, thereis an unfavourable business environment, in whichIndian banks and international lenders are reluctant to finance solar energy projects that are perceived to be a high risk.Second, there are lacking economies of scale.India's current infrastructure lacks the capacity to produce solar modules and cells to meet the target goal of JNNSM. While foreign solar module manufacturing tends to produce 75 MW of capacity per line, India's infrastructure produces only 10-20 MW.[67] To increase solar

energy production, India would first have to invest in fixed infrastructure.

Third,India's solar technology and knowledge is lacking in comparison withforeign competitors. Greater investment is needed in fixed costs – infrastructure – as well as the services portion of solar energy production, namely trainingof workers.India's LCR targets the manufacturing of solar modules rather than the services segment of the renewable solar energy sector. Manufacturing accounts for only 25 percent of jobs on the solar electricity value chain. The majority of jobs require more training in installation and sales.[68] The narrow focus of the LCR limits its capacity to create jobs. Shifting the focus of the LCR more downstream to the services portion of the value chain would promote greater transfer of renewable energy technology and knowledge, and increase the long-term capacity for green job growth.

The aim of the LCR is to facilitate domestic solar producers to overcome the above domestic obstacles to develop solar energy infrastructure and technology capacity to eventually develop economies of scale, and become competitive enough to export solar technology on the international market. However, the LCR in India's solar technology area has resulted in higher costs for PV modules and cells, which have been passed on to the consumer.

In February 2013, the US formally brought a complaint against India's subsidies before the WTO.[69] Indian policymakers contend that the JNNSM programmeshould not come under WTO scrutiny, because India is not developed like Canada and it does not have a large market share in renewable energy products. This is not unusual. Policymakers in developing countries have proposed special treatment with regards to regulation of non-tariff barriers for environmental goods and services, such as greater time allowance for implementation and fewer reductions.[70] In addition, the Indian government defends the JNNSM – and its associated LCRs – on the grounds that the programme consists of government procurement, since solar power is first purchased by the public National Thermal Power Corporation.[71]

Chapter 6

Options and Alternatives for Dealing With LCRS

Although LCRs are prohibited under the WTO, both developed and developing countries use LCRs in renewable energy policies. Despite concerns about the consistencyof LCRs, they need to be considered in the broader context, given the legitimate environmental concerns they are presumably set to address and the fact that renewable energy is essential to mitigate climate change and environmental degradation. Monkelbaan writes: “Environmental goods and services have become subject to special attention as sectors with potential win-win outcomes for both trade and the environment. Climate-friendly goods, technologies and related services can be a meaningful component of climate change mitigation strategies.”[72] However, further technological innovation for renewable energy is costly, requiring considerable government support. To sustain a permanent shift towards green industry and renewable energy, positive and well-directed incentives are needed.

In the interests bothof the global economy and efficient renewable energy production by developing as well as developed countries, less distortingoptions and alternatives for dealing with LCRs should be considered. Less distorting options would put less stress on the multilateral trading system and would serve to address the legitimate concern that countries have when they try to stimulate employment while pursuing climate and energy policies. Such suggestions include, in particular, investment in infrastructure, promotion of government financing for infrastructure investment, creation of a better and more conducive business environment for firms in which to innovate toward more green technologies and targeted and well-adapted training programmes for workers to allow them to develop skills for the energy sector with environmentally friendly technologies. Addressing conditions that are hinderingthe development of competitiveness in renewable energy manufacturing and services should be a high priority, together with providing a better enabling environment for firms to operate.

6.1. Enhancing Physical Infrastructure

An important factor in contributing to the progress of renewable energy is the enhancement of physical infrastructure. In this context, working toward the goal of achieving economies of scale, governments should prioritize infrastructure investment.

6.2. Promoting Government-sponsored Financing

In the context of the development of physical infrastructure, financing is often a big constraint for developing countries. Regardless of the extent of renewable resources, or the potential for market growth, developing countries often lack the financial capacity to subsidize renewable energy or the political capacity to impose carbon taxes – arguably the best policies to foster renewable energy. Therefore, they resort to LCRs. To address this constraint, government-sponsored financing should be promoted, such as loan guarantees for developers of alternative, green energy.[73]

6.3. Taking Better Advantage of Progress in Renewables

The advent of new technology and the rapid increase in production capacity in renewable energy resources, such as solar and wind, have made them more competitive against conventional technology in energy. Other sources of clean energy, including geothermal and biomass, are becoming more attractive and provide a huge potential for electricity production. Mandatory biofuels for transportation and less polluting energy use should be refined so as to be in balance with the need to preserve the biodiversity and lands needed to produce food resources. Policies such as FITs and other incentive mechanisms to stimulate investments in renewable energy may be continued and enhanced as long as they are also required to ensure a healthy

growth of renewable deployment that will further provide attractive returns to investors.

6.4. Promoting Innovation and Training for Green Jobs

Focusing on innovation in green energy requires adapted training programmes for domestic workers. Such training programmes should be designed with sustainable energy development and use in mind. To be most effective, these should be integrated with green industry needs, and periods of on-site training should be incorporated into the university curriculum or training programmes. Targeting all portions of the energy value chain rather than imposing an LCR aimed at domestic manufacturers should prove tobe a better and less distorting way of expanding output in the green energy sector. It would have the added benefit of creatingassociated green jobs.[74]

6.5. Focusing WTO Disputes on LCRs Outside Renewable Energy

Since many LCRs have nothing to do with renewable energy, countries that are rightly concerned with the use of this policy tool might focus their WTO disputes on LCRs outside the renewable energy space. In the past two years, LCR disputes have squarely focused on wind and solar projects in Canada, India and the EU. Other LCR targets can certainly be found, which would lower trade tensions around 'green' or sustainable development issues and leave the question open as to the legitimacy and effectiveness of the application of LCRs in the area of renewable energy.

Chapter 7

Growing Internationa Attention on LCRS

Governments have begun to examine the merits of recourse to LCRs more critically. A major step was taken in 2011 when leaders from the 21 members of Asia-Pacific Economic Cooperation (APEC)(representing 54 percent of world economic output, 40 percent of world population and nearly half of world trade) highlighted the objective of advancing green growth in their Honolulu Declaration by"…. speeding the transition toward a low-carbon economy in a way that enhances energy security and creates new sources of economic growth and employment." In this context they pledged that APEC economies will "…… eliminate non-tariff barriers, including local contentrequirements that distort environmental goods and services trade.."[75] In an Annex of the same declaration, APEC Leaders also pledged to refrain from adopting new LCRs in the green energy area.

Subsequent work on LCRs within APEC featured these as the subject of a Trade Policy Dialogue conducted by the APEC Committee on Trade and Investment held in April 2013. The latter Dialogue provided an opportunity to better understand LCRs, the domestic policy objectives they try to address, their regional economic and commercial impacts, the impacts on economies using them, the impacts on economies subjected to them and ways APEC economies can seek to achieve domestic economic policy objectives through measures that achieve the same results but without distorting international trade and investment. Leaders of APEC economies have agreed to consider a list of alternative policies and measures to LCRs at their next meeting in July 2013. APEC members are also considering the possibility of having case studies carried out on how LCRs external to them are impacting their trade and investment interests.[76]

LCRs were also featured in the International Chamber of Commerce 8th World Trade Agenda Summit in Doha in April 2013, as part of the discussion on how to stimulate trade in environmental goods and services and what potential gains could be achieved from liberalization in this area.[77]

Chapter 8

Addressing LCRS Within a Seta

A SETA presents an attractive solution to coordinate national policies with the aim of lowering the cost of renewable energy policies.[78]

Negotiating a SETA would provide an excellent way to address renewable energy concerns in a trade-friendly manner. To avoid the curse and cost of permanent protection, countries might agree within a SETA a non-renewable time limit, say of 10 years,for their existing LCRs. To allow for an orderly transition and avoid litigation, signatories to a SETA could agree on a 'peace clause', so that they would not risk being taken to the WTO Dispute Settlement Body for existing LCRs during this agreed phase-out period.

Governments might also consider agreement on a moratorium or standstill on the adoption of future LCRs within a SETA. This was done by the Group of Twenty (G20) with respect to trade protectionist measures during the economic recession of 2008-2010. To backstop such commitments, concerned countries might call upon the WTO Secretariat, through its Committee on Trade and Environment, to launch a surveillance programme of LCRs in the renewable energy space. The programme would report on instances of adoption of LCRs and, where possible, assess their effectiveness. Reaching such an agreement in a SETA would reduce the risk for repeated trade disputes at the WTO and provide more clarity and certainty for business as well.

Under a SETA, countries might agree to include their partners in a 'regional content requirement' (RCR)rather than using LCRs, at least for scheduled projects during the agreed phase-out period in the renewable space. For example, the scheduled RCRs might refer to certain wind turbine components. This effective 'cumulation' of the LCR within the region constituted by the members to the SETA would effectively dilute the restrictive impact of the measure. Although an RCR might create some trade diversion, it would be less than that created by LCRs imposed purely at the national level. This trade diversion would have to be weighed against the environmental objectives.

Bearing in mind the scholarly literature on LCR effectiveness, countries might agree within a SETA to cap their LCR percentages at a moderate level, appropriate for the sector in question.Such a cap could be either maintained throughout the agreed phase-out period or could be agreed as a permanent deviation from existing rules. The former would likely be a more easily acceptable option. This limit might be best negotiated in the context of a SETA, against other trade-offs in the environmental area. Although such a cap could also be carried out unilaterally, the SETA would provide a vehicle to specifically address the cost-benefit analysis of the recourse to LCRs in order to best evaluate how well such measures work in practice to meet the shared objective of moving toward a 'greener economy' in light of their trade-distorting effects.

Moving forward with negotiating a SETA could serve to facilitate alternative or innovative approaches to liberalizing sustainable energy goods and services. It could provide a framework conducive to assessing the linkages between sustainable energy goods and energy services, and serve as a useful 'laboratory,' where rules and disciplines pertaining to sustainable energy could be clarified and take shape.

Endnotes

1. Kuntze, Jan-Christoph and Tom Moerenhout. “Local content Requirements and the Renewable Energy Industry – A good match?” ICTSD Issues Paper.

2. Kuntze, Jan-Christoph and Tom Moerenhout. Forthcoming. “Local content Requirements and the Renewable Energy Industry – A good match?” ICTSD Issues Paper

4. Monkelbaan, Joachim. December 2011. “Trade Preferences for Environmentally Friendly Goods and Services.” ICTSD Working Paper. Page 25.

5. Kuntze, Jan-Christoph and Tom Moerenhout. “Local content Requirements and the Renewable Energy Industry – A good match?” ICTSD Issues Paper. Page 4.

6. Kuntze, Jan-Christoph and Tom Moerenhout. “Local content Requirements and the Renewable Energy Industry – A good match?” ICTSD Issues Paper. Page 5.

7. Ibid

8. In particular, the paper by Gary Clyde Hufbauer, Jeffrey Schott, Martin Vieiro and Erika Wada, “Local Content Requirements: Report on a Global Problem”, Peterson Institute for International Economics, forthcoming summer 2013

9. Hufbauer, Gary Clyde et al. 2013. “Local Content Requirements: A Global Problem.” Peterson Institute for International Economics, forthcoming 2013.

10. Hufbauer, Gary Clyde, Jeffrey J. Schott and Woan Fong Wong, ”Figuring out the Doha Round”, Peterson Institute for International Economics, June 2010, p. 108.>>The estimates in this volume are considered to be conservative and have been superceded by new research on the payoff from greater trade facilitation. A recent World Economic Forum – World Bank report entitled Enabling Trade: Valuing Growth Opportunities, (2013), shows even larger estimates for payoff from a dramatic (but) feasible reduction in trade transactions costs, of 5% of global GDP and 15% gain in global trade, when these costs are brought down halfway to the level of the world’s best practice.

11. Straits Times, “WTO cuts 2013 trade growth forecast to 3.3%”, April 11, 2013. P. A24.

12. This estimate is based on an examination of Appendix A in Hufbauer, op cit.

13. Kuntze, Jan-Christoph and Tom Moerenhout. “Local content Requirements and the Renewable Energy Industry – A good match?” ICTSD Issues Paper.

14. Moon, Gillian. “Capturing the Benefits of Trade? Local Content Requirements in WTO Law and the Human Rights-Based Approach to Development.” 2009. Page 13.

15. Kuntze, Jan-Christoph and Tom Moerenhout. “Local content Requirements and the Renewable Energy Industry – A good match?” ICTSD Issues Paper.

16. Farrell, John. “Maximizing jobs from clean energy.” The New Rules Project. 2011. Page 28.

17. Kuntze, Jan-Christoph and Tom Moerenhout. “Local content Requirements and the Renewable Energy Industry – A good match?” ICTSD Issues Paper.

18. Lewis, Joanna and Ryan Wiser. “Fostering a Renewable Energy Technology Industry.” Environmental Technologies Division, Ernesto Orlando Lawrence Berkeley National Laboratory. 2005.

19. Kuntze, Jan-Christoph and Tom Moerenhout. “Local content Requirements and the Renewable Energy Industry – A good match?” ICTSD Issues Paper.

20. Kuntze, Jan-Christoph and Tom Moerenhout. Forthcoming. “Local content Requirements and the Renewable Energy Industry – A good match?” ICTSD Issues Paper. Page 5.

21. Ibid.

22. Ibid.

23. “Fostering Low Carbon Growth: The Case for a Sustainable Energy Trade Agreement.” November 2011. ICTSD Issues Paper. Page 41.

24. Tomsik, Vladimir and Jan Kubicek. 2006. “Can local content requirements in international investment agreements be justified?” NCCR. Page 18.

25. Kuntze, Jan-Christoph and Tom Moerenhout. “Local content Requirements and the Renewable Energy Industry – A good match?” ICTSD Issues Paper; and Moon, Gillian. 2009. “Capturing the Benefits of Trade? Local Content Requirements in WTO Law and the Human Rights-Based Approach to Development.” Page 13.

26. It may also be true, however, that if no LCRs had been put in place, there may not have been any renewable energy production at all, so the two objectives – economic efficiency and environmental sustainability – must once again be evaluated together.

27. Jie-A-Joen, Clive, Rene Belderbos and Leo Sleuwaegen. “Local content requirements, vertical cooperation, and foreign direct investment.” Faculty of Economics and Business Administration, Maastricht Univeristy. 1998. Page 34.

28. Kuntze, Jan-Christoph and Tom Moerenhout. “Local content Requirements and the Renewable Energy Industry – A good match?” ICTSD Issues Paper.

29. Ibid.

30. Ibid.

31. Kuntze, Jan-Christoph and Tom Moerenhout. “Local content Requirements and the Renewable Energy Industry – A good match?” ICTSD Issues Paper.

32. Monkelbaan, Joachim, “Services in a Sustainable Energy Trade Agreement”, ICTSD, forthcoming 2013.

33. Brewer, Thomas and Andreas Falke. 2012. “International Transfers of Climate-Friendly Technologies: How the World Trade System Matters.” Low Carbon Technology Transfer: from Rhetoric to Reality. By David Ockwell and Alexandra Mallet. Routledge.

34. Lewis, J., and Wiser, R. 2005. “Fostering a Renewable Energy Technology Industry.” Ernesto Orlando Lawrence Berkeley National Laboratory, Environmental Energy Technologies Division.

35. “Fostering Low Carbon Growth: The Case for a Sustainable Energy Trade Agreement.” November 2011. ICTSD Issues Paper. Page 40.

36. Kuntze, Jan-Christoph and Tom Moerenhout. Forthcoming. “Local content Requirements and the Renewable Energy Industry – A good match?” ICTSD Issues Paper. Page 8.

37. Veloso, F. 2001. Local content requirements and industrial development: Economic analysis and cost modeling of the automotive supply chain. Massachusetts Institute of Technology, Engineering Systems Division.

38. “Fostering Low Carbon Growth: The Case for a Sustainable Energy Trade Agreement.” November 2011. ICTSD Issues Paper. Page 41.

39. Kuntze, Jan-Christoph and Tom Moerenhout. “Local content Requirements and the Renewable Energy Industry – A good match?” ICTSD Issues Paper.

40. Veloso, F. 2001. Local content requirements and industrial development: Economic analysis and cost modeling of the automotive supply chain. Massachusetts Institute of Technology, Engineering Systems Division.

41. Kuntze, Jan-Christoph and Tom Moerenhout. “Local content Requirements and the Renewable Energy Industry – A good match?” ICTSD Issues Paper.

42. Hufbauer, Gary Clyde et al. Forthcoming 2013. “Local Content Requirements: A Global Problem.” Peterson Institute for International Economics. Page 44.

43. Veloso, F. 2001. Local content requirements and industrial development: Economic analysis and cost modeling of the automotive supply chain. Massachusetts Institute of Technology, Engineering Systems Division.

43. Hufbauer, Gary Clyde et al. Forthcoming 2013. “Local Content Requirements: A Global Problem.” Peterson Institute for Internatinal Economics. Windvision 2025 Powering Canada’s Future. Available at: http://www.canwea.ca/windvision_e.php

44. Wilke, Marie. 2011. “Feed-in Tariffs for Renewable Energy and WTO Subsidy Rules.” International Center for Trade and Sustainable Development. Page 5.

45. Ontario Power Authority. 2010. “Feed-in Tariff Program FIT Rules Version 2.0.” Available at: http://fit.powerauthority.on.ca/august-10-2012-final-fit-20-program-documents-posted

46. Kuntze, Jan-Christoph and Tom Moerenhout. “Local content Requirements and the Renewable Energy Industry – A good match?” ICTSD Issues Paper. Page 17.

47. Hao, May et al. 2010. “Local content requirements in British Columbia’s Wind Power Industry.” Faculty of Business – Pacific Institute for Climate Solutions. University of Victoria. Page 26.

48. Marion Fraser, Fraser & Company. 2009. “Developing Ontario’s Green Energy and Green Economy Act to its Full Potential.” Fraser & Company. Page 20.

49. Hufbauer, Gary Clyde et al. Forthcoming 2013. “Local Content Requirements: A Global Problem.” Peterson Institute for International Economics.

50. Wilke, Maria. 2011. “Feed-in Tariffs for Renewable Energy and WTO Subsidy Rules.” International Center for Trade and Sustainable Development. Page vii.

51. The report of the Appellate Body supported the panel’s conclusions that local content requirements accord preferential treatment to products made in Ontario by requiring the purchase or use of products from domestic sources, which is prohibited in the illustrative list of the TRIMS Agreement, and therefore places Canada in breach of its national treatment obligation under GATT Article III and TRIMS Agreement Article II. The WTO appellate judges also rejected Canada’s

rebuttal that the local content requirements should be considered as government procurement which can be exempted from the national treatment obligation," the findings continued, referring to one of the main arguments that Ottawa had made in its case. See Bridges Weekly Trade News Digest •Volume 17 • Number 16 • 8th May 2013 and earlier, Bridges Weekly, 19 December 2012 and 20 February 2013

52. Hufbauer, Gary Clyde et al. Forthcoming 2013. "Local Content Requirements: A Global Problem." Peterson Institute for International Economics. Page 48.

53. Hao, May et al. 2010. "Local content requirements in British Columbia's Wind Power Industry." Faculty of Business – Pacific Institute for Climate Solutions. University of Victoria.

54. "Resources naturelles." Quebec Energy Strategy 2006 to 2015. http://www.mrn.gouv.qc.ca/english/energy/strategy/index.jsp

55. M. Sherrad and Thomas J. Timmins. "Canada: Quebec Announces Procurement of 700 MW of Wind Energy." Gowlings Knowledge Centre.

56. Hufbauer, Gary Clyde et al. Forthcoming 2013. "Local Content Requirements: A Global Problem." Peterson Institute for International Economics. Page 54.

57. Ministry of Natural Resources and Environment, Government of India (MNRE). 2009. "Jawaharlal Nehru Solar Mission: Towards Building Solar India." http://www.mnre.gov.in/file-manager/UserFiles/mission_document_JNNSM.pdf

58. The Government of India also recently introduced an LCR for thin film.

59. Hufbauer, Gary Clyde et al. Forthcoming 2013. "Local Content Requirements: A Global Problem." Peterson Institute for International Economics. Page 71.

60. Shiao, M.J. 2012. "Thin Film Manufacturing Prospects in the Sub-Dollar-Per-Watt Market." Greentech Solar.

61. Bridge to India. 2012. "The India Solar Handbook: November 2012 Edition." http://bridgetoindia.com/our-reports/the-india-solar-handbook.

62. Deign, J. 2012. "What is behind India's love affair with thin film?" PV Insider.

63. Mat Dirjish. 2012. "What's the Difference between Thin Film and Crystalline Silicon Solar Panels," Electronic Design. http://electronicdesign.com/article/components/whats-difference-thinfilm-crystallinesilicon-solar-panels-73937.

64. Hufbauer, Gary Clyde et al. Forthcoming 2013. "Local Content Requirements: A Global Problem." Peterson Institute for International Economics. Page 79.

65. Ibid., page 69.

66. Ibid., page 72.

67. Jah, Vyomi. 2011. "Cutting Both Ways: Climate, Trade and the Consistency of India's Domestic Policies." CEEW Policy Brief. New Delhi: Council on Energy, Environment and Water.

68. "Laying the Foundation for a Bright Future: Assessing Progress under Phase 1 of India's National Solar Mission." 2012. Council on Energy, Environment, and Water; Natural Resources Defense Council.

69. Inside US Trade. 2013. “U.S. Seeks WTO Consultations With India Over Solar LCRs, Subsidies.” Available at: http://insidetrade.com/Inside-US-Trade/Inside-U.S.-Trade-02/08/2013/us-seeks-wto-consultations-with-india-over-solar-lcrs-subsidies/menu-id-172.html

70. Monkelbaan, Joachim. December 2011. “Trade Preferences for Environmentally Friendly Goods and Services.” ICTSD Working Paper. Page 4.

71. Kuntze, Jan-Christoph and Tom Moerenhout. “Local content Requirements and the Renewable Energy Industry – A good match?” ICTSD Issues Paper. Page 22.

72. Monkelbaan, Joachim. December 2011. “Trade Preferences for Environmentally Friendly Goods and Services.” ICTSD Working Paper. Page 2.

73. An Asian Development Bank (ADB) project is doing just this, offering to guarantee a maximum of $150 million in loans to Indian solar developers. See ADB, “India Solar Generation Guarantee Facility,” http://www.adb.org/site/private-sector-financing/india-solar-generation-guarantee-facility.

74. It should be noted that if all countries adopt LCRs as part of their environmental policies, then these measures will simply negate each other, as LCRs to be effective rely on technology transfer from the more mature technology locations.

75. More specifically, Annex C of the APEC Leaders Honolulu Declaration is on “Trade and Investment in Environmental Goods and Services”. In the paragraph devoted to LCRs, APEC economies commit to ..”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” See APEC Leaders Honolulu Declaration in date of 13 November 2011 at http://www.apec.org/meeting-papers/leaders-declarations/2011/2011_aelm.aspx.

76. See paragraph 8 of the CTI Chair’s Report, prepared for the Second Senior Officials’ Meeting of APEC Economies, Surabaya, Indonesia, 18-19 April 2013, in document 2013/SOM2/016.

77. The ICC World Trade Agenda Summit was held prior to the ICC 8th World Chambers Congress on 24 April 2013 attracting over 1,000 business leaders and representatives from 12,000 chambers of commerce worldwide. The Congress participants approved a set of five recommendations for a meaningful interim Doha Round package, to be presented to the G20 Meeting in Saint Petersburg and the Bali 9th Ministerial Conference in December 2013. The ICC World Trade Summit discussed a Peterson Institute study showing that potential gains to be had from a WTO agreement on liberalizing trade in environmental goods and services could produce $10.3 billion of additional exports See http://www.ameinfo.com/icc-global-trade-deals-generate-exports-338858

78. The idea of a SETA was already proposed in the study by the ICTSD on “Fostering Low Carbon Growth: The Case for a Sustainable Energy Trade Agreement.” November 2011. ICTSD Issues Paper. Page xiii.

References

Brewer, Thomas and Andreas Falke. 2012. "International Transfers of Climate-Friendly Technologies: How the World Trade System Matters," In Ockwell, David and Alexandra Mallet (eds)*Low Carbon Technology Transfer: from Rhetoric to Reality.* Routeledge, New York, NY.

Cosbey, A. (Ed.). (2008). Trade and Climate Change: Issues in Perspective.

Winnipeg: International Institute for Sustainable Development.

Deign, J. 2012. "What is behind India's love affair with thin film?" *PV Insider.*

Dirjish, Mat. 2012. "What's the Difference between Thin Film and Crystalline Silicon Solar Panels."*Electronic Design.*

Farrell, John. 2011. "Maximizing jobs from clean energy." *The New Rules Project.*

"Fostering Low Carbon Growth: The Case for a Sustainable Energy Trade Agreement." November 2011. ICTSD Issues Paper.

Hao, May et al. 2010. "Local content requirements in British Columbia's Wind Power Industry." Faculty of Business – Pacific Institute for Climate Solutions. University of Victoria.

Hufbauer, Gary Clyde et al. 2013."Local Content Requirements: A Global Problem." Peterson Institute for International Economics.

"Japan Challenges Canadian Sustainable Energy Incentives at WTO." 2011.*Bridges Trade BioRes* 10 (17). Geneva: ICTSD.

Janssen, Ron. 2010. "Harmonising Energy Efficiency Requirements - Building Foundations for Cooperative Action. Environmental Goods and Services Series." ICTSD Issues Paper.

Jha, Veena. 2009. "Trade Flows, Barriers and Market Drivers in Sustainable energy Supply Goods: The Need to Level the Playing Field. Environmental Goods and Services Series." ICTSD Issues Paper.

Jha, Veena. 2008. "Environmental Priorities and Trade Policy for Environmental Goods: A Reality Check." ICTSD Issues Paper.

Jha, Vyomi. 2011. "Cutting Both Ways: Climate, Trade and the Consistency of India's Domestic Policies." *CEEW Policy Brief*. New Delhi: Council on Energy, Environment and Water.

Jie-A-Joen, Clive, Rene Belderbos and Leo Sleuwaegen. 1998. "Local content requirements, vertical cooperation, and foreign director investment." Faculty of Economics and Business Administration, Maastricht Univeristy.

Inside US Trade. 2013. "U.S. Seeks WTO Consultations With India Over Solar LCRs, Subsidies." available at http://insidetrade.com/Inside-US-Trade/Inside-U.S.-Trade-02/08/2013/us-seeks-wto-consultations-with-india-over-solar-lcrs-subsidies/menu-id-172.html

"International Trade and Climate Change: Economic, Legal, and InstitutionalPerspectives."2007. Washington, D.C.: World Bank.

Kuntze, Jan-Christoph and Tom Moerenhout. Forthcoming."Local content Requirements and the Renewable Energy Industry – A good match?"ICTSD Issues Paper.

Laborde, David and Csilla Lakatos. 2012."Market Access Opportunities for ACP Countries in Environmental Goods." ICTSD Issues Paper.

Lako, Paul. 2008."Mapping Climate Mitigation Technologies and Associated Goods within the Renewable Energy Supply Sector. ICTSD Programme on Trade and Environment." ICTSD Issues Paper.

"Laying the Foundation for a Bright Future: Assessing Progress Under Phase 1 of India's National Solar Mission." 2012. Council on Energy, Environment, and Water; Natural Resources Defense Council.

Lewis, Joanna and Ryan Wiser. 2005. "Fostering a Renewable Energy Technology Industry." *Environmental Technologies Division, Ernesto Orlando Lawrence Berkeley National Laboratory.*

"Liberalization of Trade in Environmental Goods for Climate Change Mitigation: the Sustainable Development Context." August 2008. ICTSD publication together with the Germany Marshall Fund of the U.S. and the International Institute for Sustainable Development.

Marion Fraser, Fraser & Company. 2009. "Developing Ontario's Green Energy and Green Economy Act to its Full Potential." Fraser & Company.

Meléndez-Ortiz, Ricardo. Editor. 2013. "Global Challenges and the Future of the WTO." ICTSD Issues Paper.

Monkelbaan, Joachim. December 2011. "Trade Preferences for Environmentally Friendly Goods and Services." ICTSD Working Paper.

Moon, Gillian. 2009. "Capturing the Benefits of Trade? Local Content Requirements in WTO Law and the Human Rights-Based Approach to Development," University of New South Wales Faculty of Law. Available at SSRN: http://ssrn.com/abstract=1392049 or http://dx.doi.org/10.2139/ssrn.1392049.

Rivers, Nic and Randy Wigle. 2011. "Local content requirements in renewable energy policies: Ontario's feed-in tariff." Stockholm.Paper presented at International Association for Energy Economics, Stockholm, Sweden.

Selivanova, Yulia. 2007. "The WTO and Energy: WTO Rules and Agreements of Relevance to the Energy Sector." ICTSD Issues Paper.

Shiao, M.J. 2012. "Thin Film Manufacturing Prospects in the Sub-Dollar-Per-Watt Market." *Greentech Solar.*

Tomsik, Vladimir and Jan Kubicek. 2006. "Can local content requirements in international investment agreements be justified?" *NCCR.*

Veloso, F. 2001. *Local content requirements and industrial development: Economic analysis and cost modeling of the automotive supply chain*. Massachusetts Institute of Technology, Engineering Systems Division.

Wilke, Maria. 2011. "Feed-in Tariffs for Renewable Energy and WTO Subsidy Rules." *International Center for Trade and Sustainable Development.*

"World Investment Report 2010: Investing in a Low-Carbon Economy." 2010. UNCTAD. Geneva: United Conference on Trade and Development.

Annex

Country & Case #	Date Announced; Current Status	Affected Sectors	Size of Affected Domestic Sectors	Affected Trade	Description of LCR Measure
Aus-1	Jun. 2009; LCR rejected	Labor Markets			The government of New South Wales included a "Local Jobs First Plan" in its stimulus package, providing a price preference for Australian and New Zealand content.
Aus-2	July 2009; LCR remains in force	Government procurement	$A32.6 billion in total federal government procurement in 2010	Only $A2.3 million in federal procurement contracts awarded to overseas vendors in 2010	Australia provided $2.5 million over four years to apply theNational Framework of the Australian Industry Program (AIP) to federal, state, and local governments. The AIP program requires applicants for government tenders to give details on the participation of Australian companies in projects exceeding threshold levels.
Bra-2	2010; LCR remains in force	Public procurement			Procurement law no. 12.349/2010 establishes a 25 percent margin of preference for manufactured goods and national services in compliance with Brazilian technical standards.
Bra-4	Jul. 2010; LCR remains in force	Public procurement, ICT,			The Buy Brazil Act (law no. 12.349/2010) establishes preferences for Brazilian goods and services in government contracts, to be determined by the president, though not in excess of 25 percent above the price of foreign goods and services. For strategic IT and communications technology contracts, tenders will be restricted to goods and services developed with national technology. The procurement rules were further tightened as part of the Brasil Maior plan.

Country & Case #	Date Announced; Current Status	Affected Sectors	Size of Affected Domestic Sectors	Affected Trade	Description of LCR Measure
Can-2	Feb. 2009; LCR remains in force	All government procurement	$16 billion in federal procurement in 2010	$171.7 billion in products imported by Canadian government in 2010	The Canadian Products Promotion Act (CPPA) alters public procurement decisions to favor goods that contain at least 50 percent Candian content (except for natural resources, for which the test is 75 percent Canadian content) and limits the percentage of provincial purchases from abroad to no more than 50 percent of the total amount spent on Canadian products in a given fiscal year. Products from NAFTA countries are not counted as imports under these spending caps.
Can-3	Oct. 2009; LCR remains in force	Electrical machinery		$1.0 billion in provincial imports in 2010	Ontario's Feed-in-Tariff program requires developers to acquire a certain percentage of their project costs come from Ontario goods and labor. The local content requirements differ by technology, project size and project timing. For wind projects over 10 MW, the LCR is 25 percent for a commercial operating date (COD) before January 2012, and 50 percent with COD after January 2012; for solar projects over 10 kW and less than 10 MW, the LCR is 50 percent for a COD before January 2011, and 60 percent with a COD after January 2011. The program is now the subject of dispute-settlement in the WTO, after failed consultations with Japan.

Country & Case #	Date Announced; Current Status	Affected Sectors	Size of Affected Domestic Sectors	Affected Trade	Description of LCR Measure
Chi-1	Oct. 2009; LCR remains in force	Wind turbines	$5.2 million in 2010	$11.5 million in imports in 2010	At the 20th US-China Joint Commission on Commerce and Trade meeting in October 2009, the Chinese government agreed to drop its local content requirement for wind turbines. Previous to the agreement, the Chinese government demanded that local governments to source more than 70 percent from domestic sources when planning wind power projects. However, China requires wind turbine imports to meet local test certification by the National Energy Administration.
Chi-2	Nov. 2008; LCR in force	Energy			In November 2008, China implemented a $586 billion economic Stimulus Package, allocating a major portion of the government spending to renewable energy projects. A circular jointly released by nine government organizations requires that preference be given to domestic products. This combination of measures virtually ensures a massive volume of sales of domestically-manufactured renewable energy equipment.

Country & Case #	Date Announced; Current Status	Affected Sectors	Size of Affected Domestic Sectors	Affected Trade	Description of LCR Measure
Chi-3	May 2009; LCR remains in force	Metal ores, textiles, basic chemicals, basic metals, fabricated metal products, machinery, office equipment, electrical machinery, communication equipment, precision instruments, transport equipment		$11 billion in imports in 2010	The Ministry of Information Industry's planning release entitled "Restructuring and Revitalization of Planning for the Equipment Manufacturing Industry" encourages state bodies to ensure that domestic industries meet the requirements of the national market, particularly with respect to power generation and capital equipment. The Ministry recommends measures that encourage the use of Chinese-made equipment, including insurance policies that favor local technologies and equipment. The Release also calls for an increase in the export-tax rebates granted to producers of high-technology and high-value added equipment and the abolition of import tariffs on key components of these technologies and on related raw materials.

Country & Case #	Date Announced; Current Status	Affected Sectors	Size of Affected Domestic Sectors	Affected Trade	Description of LCR Measure
Chi-4	May 2009; LCR remains in force	Public procurement	Approximately $127.6 billion in central government procurement in 2010		The National Development and Reform Commission (NDRC) implemented measures to ensure that local content would be prioritized in government contracts. The extent to which the Government Procurement Law governs procurement of renewable energy services and equipment by state-owned-enterprises (SOEs) is ambiguous. By its terms the law applies to purchases of goods and services by numerous SOEs; the firms reportedly apply LCR principles when making procurement decisions. The buy national principles set forth in the Government Procurement Law are most rigorously applied to procurement of equipment for projects that are funded by government investments. Projects requiring imported products need prior approval from relevant government authorities.
Ind-1	Aug. 2009; LCR remains in force	Energy		$295 million in wind turbines exported in 2010; $426.9 million imported; 20%	To introduce newer wind turbine models (or to modify existing models), the new models have to be registered with the Centre for Wind Energy Technology (C-WET), which requires establishing an assembly facility in India. Third-party certification is required in addition to the design assessment. State agencies require C-WET certification for allowing connection to the grid.

Country & Case #	Date Announced; Current Status	Affected Sectors	Size of Affected Domestic Sectors	Affected Trade	Description of LCR Measure
Ind-6		Energy		$672.3 million in semiconductor devices used to generate solar power imported in 2010; 50%	India's Ministry of New and Renewable Energy released guidance providing that project developers "are expected to procure their project components from domestic manufacturers, as far as possible" as part of the country's Jawaharal Nehru National Solar Mission. For photovoltaic projects based on crystalline silicon technology, the guidelines require that all project developers uses modules manufactured in India; for such projects selected in FY 2011-12, developers must use both modules and cells manufactured in India. For projects based on solar thermal technology, the guidelines require 30 percent local content in all plants and installations (under the Jawaharlal Nehru National Solar Mission - Batch 1 and 2).
Indo-4	Dec. 2009; LCR remains in force	Energy			Indonesian regulation PTK No. 007 Revision-1/PTK/IX/2009 requires local and foreign bidders for energy service contracts to use a minimum of 35 percent domestic content in their operations.
Indo-8	Jan. 2011; Rule implementation LCRs being drafted	Government procurement			"Article 98 of Presidential Decree 54/2010 gives a public procurement preference to goods and services with a minimum of 25 percent local content (even where the bid is 15 percent higher in price) and applies to bids over $550,000. Article 97 of the decree awards additional preference points to vendors with investments in Indonesia and partnerships with local small and medium-sized enterprises.

Country & Case #	Date Announced; Current Status	Affected Sectors	Size of Affected Domestic Sectors	Affected Trade	Description of LCR Measure
Kaz-1	May 2009; LCR remains in force	Public procurement, construction			Kazakhstan adopted changes to the law on public procurement to include a "local clause" in public procurement for goods (20 percent) and services (15 percent). Companies with more than 50 percent foreign shareholding are considered foreign unless they fulfill three criteria for qualifying as a "national producer."
Mex-1	Oct. 2010; LCR remains in force	Government procurement			"In October 2010, Mexico published new regulations to national content for government procurement. These regulations establish a minimum national content of 60 percent in 2011 and 65 percent for 2012 (but exceptions of 30-35 percent for some light manufacturers and automobiles). The federal regulations only apply when federal funds are used, but the Mexican states develop their own rules.
Par-1	Feb. 2009; LCR remains in force	Glass products, construction, public procurement			Paraguayan public bodies that spend national stimulus funds must give a minimum 70 percent preference to national goods and services.

Country & Case #	Date Announced; Current Status	Affected Sectors	Size of Affected Domestic Sectors	Affected Trade	Description of LCR Measure
Sau-1	Mar. 2010; LCR remains in force	Government procurement, transport, aviation			South Africa merged its National Industrial Participation Programme (NIPP) with its Competitive Supplier Development Programme (CSDP), which controls contracting by South Africa's nine State-Owned Enterprises (SOEs). South African state-owned-enterprises are now required to demand 30 percent local purchases for any outlay of funds over US$10 million, disporportionately affecting government contracts in the energy, rail, and aviation sectors.
Tur-1	Dec. 2008; LCR remains in force	Government Procurement			Turkey's public procurement legislation allows for a 15 percent price preference in favor of domestic suppliers when participating in tenders are set asides for Turkish goods and suppliers. A Prime Minister circular of December 2008 encouraged Turkish contracting authorities to apply those provisions more rigorously
Tur-2	Dec. 2010; LCR remains in force	Wind turbines		$1.3 billion in wind turbines imported in 2010; 25%	Turkey implemented local content bonuses for different components of a wind turbine (tower, blade, mechanical, and electrical equipment). The bonuses increase the wind feed-in-tariff by up to 50 percent.

Country & Case #	Date Announced; Current Status	Affected Sectors	Size of Affected Domestic Sectors	Affected Trade	Description of LCR Measure
Ukr-1	Jan. 2012; LCR remains in force	Electricity derived from renewable sources			Ukraine introduced local content requirementsunder for obtaining a specific feed-in tariff for electricity produced from renewables. The Law stipulates that government incentives for electricity production from alternative energy sources shall apply on condition that at least 15 percent of the cost of the construction of the respective facility producing electricity must be comprised of materials, works, and services of Ukrainian origin.
USA-11	Jun. 2011; LCR rejected	Government procurement			The US House of Representatives passed the "Department of Homeland Security Appropriations Act, 2012" (H.R.2017) by a vote of 231-188 on June 2, 2011. The bill provides $40.6 billion for operations of the Department of Homeland Security (DHS) in Fiscal Year 2012. In the course of its debate, the House rejected two efforts to attach Buy-American provisions to the bill. The bill was signed by the president on November 18, 2011 and became Public Law no.112-33.

Source: Measures - Global Trade Alerts (http://www.globaltradealert.org/). Size of Dometic Market and Affected Trade - Authors' own calculations. See Appendix for