

Ad hoc Expert Group Meeting
Domestic Requirements and Support Measures in Green Sectors:
Economic and Environmental Effectiveness and Implications for Trade

13–14 June, 2013
Salle XXI, Geneva

Conference Room Paper

Note

The paper is meant as a guiding tool for participants in the *ad hoc* expert group meeting. It is far from an exhaustive examination of the issues in question—for example, it does not deal with government procurement or investment. The omission of these matters should not be interpreted as a judgment that they are peripheral or secondary in importance. In many areas, the paper is speculative, aimed at raising questions and suggesting areas where experts may consider undertaking further analysis. Nothing in this paper should be considered as a judgment that any actual or potential measure of any particular government violates WTO rules.

The paper does not necessarily reflect the views of UNCTAD or its member states. It has been issued without formal language editing. The designations employed and the presentation of the material do not imply the expression of any opinion whatsoever on the part of the United Nations Secretariat concerning the legal status of any country, territory, city or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries.

Introduction

Among the sustainable development goals increasingly sought by policymakers is the support of *green economy*, which is described in its simplest terms as low-carbon, resource efficient, and socially inclusive.

The emphasis of green economy policies and measures can and does vary. A growing number of countries put a premium on the socially inclusive employment effects, and for a reason—the building of a green industrial base, including renewable energy, manufacturing processes based on sustainable practices, recycling of materials, and retrofitting or upgrading existing infrastructure can create significant dividends to employment, estimated by UNEP in the tens of millions worldwide, and production.¹

Clearly, it is markets rather than trade that inform the core of policy concerns relating to green economy. However, trade and trade policy are relevant. Trade has an important role to play in opening up new paths for sustainable development and in ensuring that green economy is inclusive within and across countries. No longer confined to tariffs and quotas, trade policy is increasingly linked to a nation's environmental and social policies, as well as the country's overall development strategy.

One of the most critical questions concerns the ways governments pursue green industrial policy and steer their economies towards competitive production of new green goods and services. Given the lack of coordinated multilateral progress on key global environmental issues, bottom-up, national policy approaches are bound to prevail. This may be appropriate, since each country faces distinct development circumstances. However, these approaches may become a source of tension as quite costly, differentiated policies take hold and have competitiveness consequences.

Localizing an increasing share of value-added along a supply chain is an important part of sustainable development and diversification. More and more manufacturing activities and many services industries nowadays are characterized by supply chain production, and nearly all supply chains embody an international dimension.

Policies and measures that lead to shifts in (parts of) the supply chain prompt other members of the chain to reassess their existing links. This increases the scope for trade implications and renders these policies and measures more multilateral than it was the case with simpler—arm's length—trade patterns. Local content requirements (LCRs) are one of those policy instruments that exert direct influence on supply chains.

Policy makers, particularly in developing countries, argue that LCRs create "policy space" for infant industries. And green industries such as renewables can be considered infant industries. Importantly, LCRs may serve as a counterpoint to subsidies in other countries.

Financial support to renewable energy may be unacceptable to the public if there are no local benefits attached to it. And without an adequate financial support, renewable

¹ Green Jobs: Towards Decent Work in a Sustainable, Low-Carbon World, UNEP, ILO, IOE, ITUC, September 2008.

energy risks losing its investment appeal. Problems relating to deployment of renewable energy maintain a spotlight on subsidies to fossil fuels.

The financial crisis has prompted a significant increase in the use of LCRs. According to some estimates, more than a hundred new LCRs have been imposed since early 2008. Taken together, they may have influenced US\$ 2.7 trillion of world trade, i.e. about 17 per cent of world trade in goods and services. Influenced does not mean necessarily reduced, of course. However, certain "back of the envelope" calculations indicating that the actual reduction may be roughly equivalent to the potential gains from the Doha Round, i.e. US\$ 200 billion to US\$ 300 billion annually. There are experts who tend to blame on the LCRs the poor trade performance in 2012 (less than 4 per cent growth) and the bleak outlook for the year 2013 (3.3 per cent growth).²

Objective evidence may help explain how recent changes in the trading environment such as the expansion of global production sharing, green economy, climate change, financial constraints and unemployment affect the use of domestic requirements and support measures. Objective evidence may also promote a better understanding of the relationship between international trade and national value content. This is all the more important if the multilateral trading system were to deal with global challenges which are either not or are insufficiently addressed under existing rules.

Economic and environmental effectiveness of localization

There is now an extensive body of literature analysing the resource allocation and welfare effects of local content requirements (LCRs).³ The main finding of these studies is that LCRs increase demand for intermediate goods and pushes up intermediate goods prices, which negatively affects domestic final goods producers.⁴

In recent years, attempts have been made to refocus the analysis of LCRs on value-addition and competitiveness, and not just ownership, control and financing. The international fragmentation of production processes offers opportunities, in particular for developing and least-developed countries. However, enterprises have to know how to make use of those opportunities. For their part, governments have to be willing to create an enabling environment for the engagement of enterprises in supply chains.

² 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, cited by Sherry Stephenson, Addressing Local Content Requirements in a Sustainable Energy Trade Agreement, forthcoming, May 2013.

³ Early work was inspired by the frequent use of LCRs in developing countries and focused on the resource-allocating effects of LCRs aimed at developing the local intermediate goods industry (Corden, 1971, Grossman, 1981, Dixit and Grossman, 1982, Mussa, 1984, Vousden, 1987). The use of LCRs in developed countries has given rise to another line of research focusing on the strategic profit shifting effects of LCRs in imperfectly competitive industries (Davidson et al., 1987, Richardson, 1991, Lopes-de-Silanes et al., 1996, Belderbos and Sleuwaegen, 1997). The growing importance of rules of origin with the creation of regional trade agreements provides an example of such LCRs.

⁴ The price increase may either stem from larger factor costs in a competitive intermediate goods industry (Richardson, 1991, Lopes-de-Silanes et al., 1996), or from enhanced market power of an oligopolistic intermediate goods industry (Belderbos and Sleuwaegen, 1997). The output reducing effects of LCRs can be avoided in case of cooperative bargaining between the final goods and intermediate goods industries (Beghin and Sumner, 1992).

Higher levels of local content do not necessarily bring about economic benefits. There are trade-offs to be understood and managed, especially when local content levels reach the point where domestic suppliers are unable to win contracts on the basis of an internationally competitive tender. When that happens, any achievements in terms of new jobs and filled order books may come at the expense of loss in competitiveness, higher costs to investment projects, or reduced government revenues.

A number of conditions have to be met for LCRs in renewable energy to be economically effective: *the size of and demand in the local market; the level of LCRs; accompanying support measures; company-driven strategies, transfer of technology and know-how, and governance.*⁵

The size of and demand in the local market are essential for investment in renewable energy manufacturing as the higher costs incurred to produce locally have to be offset by constant demand and industry growth. For smaller economies, the solution sometimes may lie in the aggregation of demand within or across sectors, or in establishing regional trade regimes with sufficiently large markets to make such investments commercially viable.

It seems almost intuitive that the effective level of LCRs should correlate closely with the size of the market and be phased in gradually. However, the empirical base supporting these points is rather limited.⁶ In reality, there is a tendency to introduce rather high LCRs. There have been attempts to gauge the optimal level of LCRs, but there are no definitive guidelines at present.

The jury is still out regarding the most effective type of support measures to accompany LCRs—subsidies, fee-in tariffs, tax credits, soft loans, grants, capital subsidies—or the part of value chain the support these measures should target. Obviously, the choice depends on a particular jurisdiction, technology and value chain.

Evidence seems to suggest that the combined effects of incentives and performance requirements tend to cluster at two extremes. Failures are associated with sub-optimal economic size and shelter from competition, with subsidies making up for permanent high costs. Successes are associated with economies of scale and competitive conditions, with incentive measures aiming to overcome corporate reluctance to bear transitional and re-engineering costs and manage uncertainties.

Alongside the issues concerning regulations sit corporate local content strategies and practices. These may be designed explicitly to comply with host country regulations, or they may be freestanding—a demonstration of a company's commitment to the national economy or local community, or part of the business development strategy. Most countries are in the very early stages of corporate strategies and practices intentionally linking bottom-line decisions and local content policies with sustainable development.

It is not uncommon for multinationals to campaign for the removal of performance requirements. Nevertheless, interviews with corporate decisions makers reveal that companies often accept these requirements and incorporate them successfully in their

⁵ Local Content Requirements and the Renewable Energy Industry - a Good Match? Jan-Christoph Kuntze and Tom Moerenhout, ICTSD, 2013, upcoming.

⁶ See, for instance, Veloso (2001) and Lewis and Wiser (2005).

decision making. Sometimes the companies report that particular performance requirements fit well with their overall business strategy.

LCRs may or may not promote access to technology, particularly the *know-how*. Foreign manufacturers can meet LCRs by developing a manufacturing base without necessarily involving locally-owned firms in design and assembly activities, and consequently can maintain control over key intellectual property and *know-how*.

It is important to support those local companies that innovate in the value chain segments in which the country has a comparative advantage. However, this approach may not help address the imbalance between first movers and latecomers, between developed and developing countries. It is also unlikely to speed up deployment of renewable energy in resource rich but know-how poorer countries, especially if additional incentives are needed to encourage industrial growth.

Obtaining the intellectual property associated with advanced designs is a key priority for some governments as they develop new policies to support local manufacturers. Some have proposed, for instance, that new projects may need to meet not just LCRs, but also a local intellectual property requirement. The idea is to require that the majority of the intellectual property rights (IPRs) associated with a particular industrial design have to be in the hands of a locally-owned or majority locally-owned company. This could be achieved through local firms taking a leadership role in developing IPRs for this particular design, by purchasing IPRs through licensing arrangements with foreign firms, or through the outright acquisition of those firms. The "working the patent" requirements can also be used.

Poor governance of localization may lead to double failure—a conventional market failure compounded by the failure of government intervention to fix the market failure by applying LCRs. When this happens, premiums and delays become the norm, low labour productivity is locked in, capital investments fail to materialize, infant industries never grow up.

By far the most common stakeholder concern about governance is the perceived narrowness in the process by which local content regimes are devised. Quite often foreign operators feel that neither their input nor potential trade- and competitiveness-related impacts have been fully considered by the government, leading to unrealistic expectations and policy distortions. There are also concerns about the potential for intra-governmental conflicts, vague provisions and the opportunities for corrupt behaviour in the public and private sector.

These concerns translate into calls for regulations driven by competitiveness and based on best practices, which include internationally benchmarked domestic-only tender lists; minimum local content targets; minimum targets for enhanced competitiveness of suppliers; minimum targets for leveraging inward investment in local supplier development; full, fair and reasonable access to opportunities for domestic firms, which may require some unbundling; and tender evaluation criteria for major contracts designed to drive supplier development.

An important guideline for both governmental regulations and business strategy is the principle that runs through the discipline of procurement, namely that contracts should be awarded on an internationally competitive basis. There are of course some very good reasons why in some cases this principle of awarding contracts on an internationally competitive basis might be temporarily or selectively waived. Yet the guiding principle remains, providing a benchmark for determining the viability of

local content policies as well as the efficacy of company local content strategies and investment plans.

Local content and the deployment of renewable energy

The development of renewable energy could take place along two quite different paths. One path would see the bulk of demand for *renewables* met by finished products exported from a handful of developed and large developing countries to the developing country markets. The other path would see an increasing allocation of at least a portion of the component manufacturing to developing country industries, with those components then used in the final assembly of the renewable generation technology. Either of the paths could supply the necessary generation, but their development effects are likely to be quite different.

In principle, the developing countries offer two very substantial assets towards the competitiveness of renewables: regions with very strong renewable resources and, in many cases, a lower costs profile for the production of equipment, components and bio-fuels. Renewables in developing countries have lower CO2 reduction costs than in developed countries owing to the cost-competitiveness of renewables in decentralised energy applications. Furthermore, renewables in developing countries have the potential for a wide range of additional social, economic and environmental benefits, most importantly helping to extend affordable, reliable and clean energy access to the 1.5 bn people in rural areas of the developing world without grid access.

The new IEA-led report that measured the scale of meeting twin challenges of energy poverty and climate change finds that renewables need an additional US\$ 174 bn per year, and this investment must be accompanied by a comprehensive package of policy measures, including fiscal, financial and economic incentives, phasing out fossil-fuel subsidies, and pricing of carbon.⁷

LCRs for renewable energy production serve several objectives, which include energy security, job creation, especially in the manufacturing sector, and turning an infant industry into an internationally competitive one. The levels of LCRs and accompanying support measures differ greatly across countries.

In Turkey, the current legislation, introduced in 2010 and amended in 2011, provides for a feed-in tariff of 7.3 US cents per kWh for wind power. This is relatively low and only represents a progress as compared to the previous legislation if the local content requirement is factored in. Unlike in some other cases, this requirement is not based on a percentage but associates the local production of key components with a premium. A support of up to 3.7 US cents per kWh is given to the plants for the utilization of domestically manufactured technical equipment.⁸

In Ukraine, the legislation, introduced in 2009, provides for a feed-in tariff of 0.113 Euros/kWh and is valid until 2030. It is combined with a local content requirement, which was set to increase from 15% from January 1st 2012 to 30% on January 1st 2013 and 50% on January 1st 2014.⁹

⁷ Global Tracking Framework, May 2013.

⁸ Briefing on Local Content Requirement in Turkey - December 2011, European Wind Energy Association.

⁹ Briefing on Ukraine Local Content Requirement - January 2012, European Wind Energy Association.

Wind projects in China from 1996 to 2000 were required to source at least 40 percent of their content from local manufacturers, which was increased to 50 per cent in 2003, and then to 70 per cent in 2004.¹⁰ This requirement was discontinued in 2009: it was no longer needed as most turbines exceeded the LCRs.¹¹

In 2010, the Indian government launched its most ambitious renewable energy programme: the Indian Jawaharlal Nehru National Solar Mission (JNNSM). To have been selected in the first round (2010-11), projects based on crystalline silicon technology had to use modules manufactured in India. This requirement was strengthened in the second round (2011-12) in which all eligible silicon PV projects must use cells and modules manufactured in India. 30 per cent of a project's value in solar thermal projects must be sourced locally. A requirement to source solar inverters from local production could soon be introduced. The government has also altered customs and excise duties in order to make imports of wind turbine components and local assembly more attractive than imports of assembled turbines.

Since 2005, Brazil has required that at least 60 per cent of the total cost of wind energy projects is sourced from Brazil. This requirement increased to 90 per cent in 2007¹². Its main rationale is to encourage the domestic manufacturing of 1.5 MW turbines or larger. Complying with the LCR is a condition to access subsidized loans from Brazil's National Development Bank which is the most important lender in almost all wind energy projects. It is because of the LCR attached to these attractive loans that foreign manufacturers such as Gamesa, General Electric, Kenersys and Sinovel are keen on building local factories.

In Spain, LCRs have been in use since at least 1995. A number of regional authorities continue to require local content as a pre-condition to granting concessions for wind power. Spain's domestic content requirements are believed to have been instrumental to the creation and success of Gamesa, which is currently in the top ten world's wind turbine manufacturers.¹³ Conversely, in the Spanish solar industry, which had no LCRs, most equipment was imported from China or Germany.¹⁴

In Quebec, two large tenders for wind power (1,000 and 2,000 MW) required that bidders attain 60 per cent local content to qualify, and scored bids higher if domestic content was above 60 per cent.¹⁵ The LCRs facilitated the establishment of a General Electric manufacturing plant, with around 450 employees in an economically-depressed area of the province.

¹⁰ Lewis, J., 2007. A review of the potential international trade implications of key wind power industry policies in China. Energy Foundation China Sustainable Energy Program.

¹¹ Bradsher, Keith, December 14, 2010. To Conquer Wind Power, China Writes the Rules. New York Times, <http://www.nytimes.com/2010/12/15/business/global/15chinawind.html?pagewanted=all>.

¹² Lewis, J., Wisser, R., 2007. Fostering a renewable energy technology industry: An international comparison of wind industry policy support mechanisms. *Energy Policy* 35 (3), 1844-1857. Cavaliero, C., Da Silva, E., 2005. Electricity generation: regulatory mechanisms to incentive renewable alternative energy sources in Brazil. *Energy Policy* 33 (13), 1745-1752

¹³ Bayar, Tildy, August 4, 2011. World Wind Market: Record Installations, But Growth Rates Still Falling. *Renewable Energy World*, <http://www.renewableenergyworld.com/realnews/article/2011/08/world-wind-market-record-installations-but-growth-rates-still-falling?cmpid=rss>.

¹⁴ Sills, Ben, October 18, 2010. Spain's Solar Deals on Edge of Bankruptcy as Subsidies Founder, <http://www.bloomberg.com/news/2010-10-18/spanish-solar-projects-on-brink-of-bankruptcy-as-subsidy-policies-founder.html>.

¹⁵ Lewis, J., Wisser, R., 2006. Supporting localization of wind technology manufacturing through large utility tenders in Quebec: lessons for China. Energy Foundation China Sustainable Energy Program.

Ontario's domestic content requirements under the feed-in tariff program, which forms part of the Green Energy and Green Economy Act of 2009, vary by technology type. Though the programme encourages the development of various renewable technologies, including biogas, biomass, and landfill gas, the LCRs apply only to wind and solar projects.¹⁶

In Denmark and Germany, soft loans were provided to support projects with local content, alongside customs duties that favoured the import of components over fully assembled turbines, to support a local assembly. Both these countries have maintained a spotlight on the development of an export market, by providing export credit assistance and aid loans to less developed countries that are purchasing wind technology.

For smaller countries, regionally coordinated LCRs offer a distinct advantage. For example, in the Middle East and North Africa, a World Bank report suggests that a careful introduction of LCR in concentrating solar power tenders could be beneficial in the creation of a long-term demand, renewable energy deployment and technology transfer. The report goes as far as to suggest that LCRs are critical to developing a stable market that signals the viability and value of long-term investments.¹⁷

The report makes an important distinction between local content *requirements* and local content *targets*. Targets as opposed to requirements put an emphasis on promoting backward linkages without increasing costs or limiting competitiveness. And, according to the study, while targets can certainly serve as an effective vehicle for achieving that objective, requirements are much less likely to be one.

In some case, regional LCRs may present difficulties though, especially when the capacity to enact LCRs does not coincide with the competence to follow through with accompanying measures, including financial support. For instance, the only way for the EU member states to enact LCRs is to make it "made in the EU" requirement. The fiscal competence rests with the member states though. This may lead to a situation where some member states, with a large market but low fiscal potential may end up promoting manufacturing activity in countries with more fiscal strength and a well-established renewables industry.

Turning green growth into green jobs

For countries seeking to jump-start employment, energy-based local content requirements are particularly attractive. The Green Jobs Report (2008) estimated that by 2030 – with strong policy support – up to 12 million people could be employed in biofuels related agriculture and industry, up to 2.1 million could find work in wind energy, and up to 6.3 million could be employed in solar PV.¹⁸

A number of countries have established some form of local content policies, arguing that the politics of accommodating the higher cost of renewable energy demand a

¹⁶ Ontario Power Authority, 2010. Feed-In-Tariff Program: Program Overview, http://www.fit.powerauthority.on.ca/Storage/102/11160_FIT_Program_Overview_August_new_price_version_1.3.1_final_for_posting-oct_27.pdf.

¹⁷ Middle East and North Africa Region Assessment of the Local Manufacturing Potential for Concentrated Solar Power (CSP) Projects, World Bank, Energy Sector Management Assistance Programme, January 2011.

¹⁸ Green Jobs: Towards Decent Work in a Sustainable, Low-carbon World. United Nations Environment Programme (UNEP); International Labour Organization (ILO); International Organization of Employers (IOE); International Trade Union Confederation (ITUC), 2008.

clear-cut avenue towards job creation. For instance, South Africa's Industrial Policy Action Plan for 2011-2013 represents an outcome of the “social dialogue” the Government conducted with labour, business, public sector and civil society stakeholders, leading inter alia to a Green Economy Accord aimed at creating 300,000 green jobs by 2020.¹⁹

Not only do *green* or *clean* activities and jobs related to environmental objectives pervade a growing number of sectors, they remain tricky to define and isolate—and count. It is not entirely clear what “additionality” in employment is gained from the LCRs.

Some experts argue that bidding up the price for domestic goods and services, particularly in the short run, increases production costs, which then lead to higher prices, lower demand, reductions in new orders and ultimately lower employment, which is known as the *output effect*. However, LCRs could also raise the demand for labour in the generation sector to the extent that renewable energy producers can substitute labour for more expensive equipment—the *substitution effect*.

The net outcome of these effects is ambiguous. Generally, the negative effects of LCRs tend to occur over the short-term. In the longer term, LCRs have a better chance of increasing employment, although policy-makers need to be aware of the various factors at play that may have an impact on the actual outcome. In particular, if the LCRs push equipment prices up significantly, they are more likely to cause a net reduction in green employment.

The renewable energy sector has four major elements to its value chain: equipment manufacture and distribution, project development, construction and installation, operations and maintenance. The patterns of employment in manufacturing and distribution are broadly similar to those in other capital goods industries. The patterns of employment in project development and in construction and installation, however, are quite different, in that work is project based, and so continuity of employment depends on a fairly steady flow of projects.

The high technological content of the renewable energy sector implies that the labour intensity and thus employment impact is likely to be much higher in the initial construction stages than the long-term operations. This is in contrast to traditional targets of local content policies, e.g. automobile manufacturing, which are labour intensive over the whole life of the given project. The patterns of employment in operations and maintenance are more stable. Total employment tends to increase in jumps, when a significant new installation is commissioned.

Moreover, the skills differential between the construction and operational phases—given that many renewable projects use sophisticated electronic platforms—implies that companies may easily achieve employment targets in the initial phase, but then struggle to find the requisite high-skilled local labour in the operational phase, particularly in a developing-country setting with several sectors competing for scarce high-skilled locals.

An estimate for the South African wind industry shows that 97 per cent of the estimated job creation will occur in the construction phase, with the remaining 3 per

¹⁹ Local Content Requirements & the Green Economy, Special Report for UNCTAD Series on Green Economy and Trade, WTI Advisors, Oxford/Geneva, February 2013.

cent in the longer-term operational phase.²⁰ In the US, green-power companies have received more than \$4 bn to build wind farms as part of the job-stimulus programme. A recent investigation found that those projects created a total of 7,200 temporary construction jobs and only 300 permanent jobs.²¹

The employment impact also varies significantly between different technologies. For instance, wind and solar—the high-profile technologies in green economy initiatives—have, particularly during their operational phases, relatively low employment impacts *vis-à-vis* other renewables, such as waste-to-energy, with a much longer, more varied and less technology-intensive production chain.

The green jobs created in the services sectors up and down the wind or solar chain may actually produce more domestic jobs. Job creation effects are especially noticeable in R&D, installation, maintenance, repair, system design, and project management.

In the US, for example, the National Solar Jobs Census 2011 Report by the Solar Foundation states that the job growth potential for installation and sales and distribution jobs far exceeds manufacturing job opportunities, which are increasingly automated.²² In India, stakeholders have expressed doubts that the current LCRs focused on cell and module manufacturing will be effective enough to drive job creation. In the German solar industry, for every firm involved in solar module manufacturing, there are more than six services firms working in the other parts of the solar industry.²³

A study of job creation effects from solar PV manufacturing in the province of Ontario suggests a total, direct and indirect, employment boost of 10 jobs per MW during PV production, which translates to a multiplier effect of 5-10 indirect jobs for each green manufacturing job.²⁴

Another study, commissioned by foreign renewable energy manufacturers seeking entry into the Ontario market, found that the domestic content rules for solar will lead to increased costs, 9,000 fewer jobs and \$2 bn less in investment than would occur without the content rules.²⁵

It is true that in some countries, employment gains, whether additional or not, and the localization of value-added brought about by LCRs have been extremely encouraging. It is also true that LCRs cannot be seen as a “magic bullet” to reverse wide-ranging and deep-seated structural problems in the economy.

²⁰ Local Content Requirements & the Green Economy, Special Report for UNCTAD Series on Green Economy and Trade, WTI Advisors, Oxford/Geneva, February 2013.

²¹ Cost of \$10 Billion Stimulus Easier to Tally than New Jobs, World Street Journal, February 24, 2012.

²² National Solar Jobs Census 2011: A Review of the U.S. Solar Workforce, Washington, October 2011.

²³ Cited from intervention by Doaa Abdel Motaal at the 2nd annual conference of the Green Growth Knowledge Platform (GGKP), held at the OECD, in Paris on 4-5 April 2013.

²⁴ D’Aliesio, Renata, In Ontario, gloomy skies for solar power, August 10, 2011, <http://www.theglobeandmail.com/news/national/ontario/in-ontario-gloomy-skies-for-solar-power/article2125904/page2/>.

²⁵ McCarthy, Shawn, Oct. 20, 2010. Solar rules will hurt Ontario, group warns, <http://www.theglobeandmail.com/report-on-business/industry-news/energy-and-resources/solar-rules-will-hurt-ontario-group-warns/article1766007/>.

Greening the value chain: trade and trade-offs

The dominant theoretical framework presumes that performance requirements such as LCRs by their very nature can lead to no other outcome except distortion. This conclusion, however, is based on the assumption of perfect competition and equality among investors. Once this assumption is lifted, there are a number of effects that can benefit domestic industries. Thus, LCRs can (i) raise employment levels; (ii) promote or protect vertically integrated domestic industries; (iii) induce inward FDI in intermediate goods production; (iv) shift profits to domestic firms.²⁶

From the trade policy perspective, LCRs are deployed as a vehicle for import substitution or rent-based investment. Serving essentially as *import quotas* on particular goods and services, they ensure that within certain sectors, such as renewable energy for instance, domestic goods and services are drawn into the industry, substituting local value-addition for imported inputs.

Whether and how trade is affected depends on the market and the particulars of each scheme. In industries with extensive and dispersed global supply chains, support measures may lead to increased imports of parts and components. By contrast, in industries that depend strongly on locally produced inputs, these measures are likely to increase production from local suppliers. In both cases, a trade impact may occur through lower-than-otherwise imports of *finished* goods.

A lack of clear empirical evidence mars our understanding of the effects of LCRs on trade. This is partially due to the difficulty of conducting proper tests to measure performance requirements and their impact on key variables. Besides, as these policies are often coupled with tariffs, quotas and other measures, it is difficult to differentiate each individual effect.

In principle, the tariff policy can be set to replicate the effects of the performance requirements should the government choose to give the tariff revenue back as a subsidy. As the prices do not change, the welfare effects of the two policies will be equivalent.

However, by imposing the requirements and relying on the firm to make its own decisions about how to comply, the government may benefit from the firm's ability to minimize potential negative impacts on its cost structure and, by extension, on the whole economy.

On the contrary, a uniform tariff penalizes all components, even those that have the largest gap between local and foreign production costs. This extra, unnecessary cost creates an additional welfare burden on the local economy.

Governments may try to mitigate this problem by establishing selective tariff policies, with differentiated levels depending on the component. The problem is that governments may not have the necessary information to establish the appropriate targeting. And even if the government did have such information at one point in time, market conditions tend to change at a faster pace than the governments can follow. So, as a practical matter, it is virtually impossible to use tariffs as an alternative to content requirements without further reducing welfare.

Certain elements in LCRs can be seen as protectionist: blanket minimum local content targets; domestic-only tender lists that are not internationally benchmarked;

²⁶ DeSilanes, Markusen and Rutherford (1993).

price advantage on contract award; advance payments to domestic suppliers; reduced pre-qualification criteria for domestic firms; minimum levels of national equity; mandated international or domestic consortia or alliances; and contract award veto for authorities.

Policies aimed at turning green growth, particularly in the renewables, into a competition over green jobs have led to multiple disputes between countries in and outside the WTO. Local content requirements are common to most of these cases. In other cases, governments have resorted to anti-dumping duties or countervailing measures to protect domestic industries.

There is growing realization that addressing these and other, related issues in the WTO, particularly though dispute settlement is fraught with risks and can lead to disputes that are not about whether the rules are followed or not, but whether the rules are right or not. There is a trend set by some major trading nations to solve the problems "through conversation" and to avoid triggering damaging trade wars.

Arguably, policies designed to create green jobs by supporting local production or by penalizing imported green goods go against the logic greater economic integration, undoing, inadvertently or on purpose, the efficiency gains from greater specialization at the international level.²⁷

For instance, silicon modules labelled "made in the US" are largely made of materials imported from other countries. The glass, the encapsulant, the backsheet, and the junction boxes that go into these modules are sourced from China, Japan and Europe. The PV cells that are labelled as "made in China" or "made in Taiwan" are manufactured using the equipment imported from Germany, Switzerland and the US.²⁸

Is there anything special about renewables that makes them a special case for support measures such as LCRs? The advocates suggest countries may have good grounds for wanting to ensure their security of a domestic supply of alternative energy technologies in the future.

There might be a plausible argument, which is that some countries' demand for clean energy is so important that it would be irresponsible for these countries not to take measures to ensure they have an adequate domestic industry. In this line of argument, much depends on the existence of exceptional facts about the countries in question, and not only their status as a developing country with limited possibility for technology transfer, but their exceptional demands for alternative energy, and the life and death environmental situation behind those demands.²⁹

Other experts disagree and point out that applying an environmental exception to generally applicable trade rules may lead to the somewhat perverse policy conclusions. Indeed, it could imply that the WTO is predominantly concerned with trade policy, to the detriment of other non-economic considerations.

The fact that performance requirements such as localization are coupled with incentives contributes to the ambivalence. Is a particular programme in place to ensure a mix of renewable energy and to secure a sufficient and reliable supply of

²⁷ Cited from intervention by Doaa Abdel Motaal at the 2nd annual conference of the Green Growth Knowledge Platform (GGKP), held at the OECD, in Paris on 4-5 April 2013.

²⁸ Ibid.

²⁹ Robert Howse on 30 March 2011, at the expert panel "Climate Change, China and the WTO", Columbia University Law School, New York, NY.

electricity, which is a legitimate governmental purpose? Or, is the programme's rationale to promote explicitly investment in renewable energy generation?

A rather ambitious proposal has been advanced for the creation of a comprehensive sectoral energy agreement in much the same way as the Uruguay Round produced a special agreement on agriculture.³⁰ Even if implemented, the proposal does not necessarily prevent future deadlocks. Not to mention that it can take a very long time to negotiate.

Finally, there is a proposal to engage specialized intergovernmental organization that can provide an adequate forum for discussing science, technology and environmental policies, and how these may be accounted for in the multilateral trading system.³¹

Diverse as these proposals are, they all have one point in common. It is the realization that, in trying to make the most of the sustainable development opportunities arising from greening global value chains, it is essential to look beyond traditional trade policies. Investment policy is crucial, for example. The same is true for policies associated with technology, innovation and intellectual property. Success in fostering sustainable development in the longer run will increasingly be influenced by factors more remote from trade, such as education and the existence of social safety nets.

Special measures are going to be needed for the deployment of renewable energy and mitigation of climate change. Yet these measures affect competition and the temptation is to countervail them. Already they are an important part of the green economy debate. And ways must be found to accommodate the need for well-designed policies and measures that can effectively address the problem of market failures or missing markets.

As various countries converge in a number of green areas such as renewable energy, there may be a need to take a more granulated approach to different sectors and population groups within economies. The Report of the Panel on Defining the Future of Trade argues for a dynamic approach, which should target specific challenges, and not focus only on categories of countries, be time-specific and supported by appropriate capacity-building programmes, with constant monitoring of the manner in which special measures are helping countries advance progressively towards convergence.³²

Questions

Quite apart from some very ambitious proposals, with systemic implications, there are practical questions better posed in the context of commercial diplomacy and business practice and with a view to promoting consensus, avoiding disputes and pre-empting dispute-induced compliance. After all, while a particular policy or measure may be prompted or rationalized by green economy, its acceptance or non-acceptance by trading partners may have little to do with green economy or WTO compliance.

³⁰ Thomas Cottier et al, "Energy in WTO Law and Policy" in Cottier (ed), *The Prospects of International Trade Regulation: From Fragmentation to Coherence* (Cambridge University Press Cambridge 2011), 211-44.

³¹ Daniel Peat, "The wrong rules for the right energy: the WTO SCM Agreement and subsidies for renewable energy", *Environmental Law and Management* 3 (2012).

³² *The Future of Trade: The Challenges of Convergence*, Report of the Panel on Defining the Future of Trade convened by WTO Director-General Pascal Lamy, 24 April 2013.

- What do we know about the effectiveness of performance requirements, particularly local content, in promoting environmentally sustainable and socially inclusive development?
- Does local content strategy provide a compelling business case with short-and long-term returns?
- Are there any upsides for developing countries in a world where local content requirements are extensively used?
- Is there anything unique about renewables that makes them a special case for local content requirements?
- Does the politics of accommodating the higher cost of renewable energy demand a clear-cut avenue towards job creation through localization?
- What are the effects of localization on competitiveness and trade?
- What is it that makes local content policy contentious in some cases and innocuous in others? Is there need to outline the terms and conditions of "acceptable" LCRs?
- Would it be desirable to conduct systematic assessment of localization, its objectives, economic and environmental effectiveness and trade impact? Who should do this? How? What role should experts play in this assessment?
- Is transparency a value? What is its importance with respect to LCRs? What difficulties do trading partners face in ensuring transparency? And how about sensitive information, particularly the trade impact, whose notification may be perceived as self-incrimination?
- Which local content regulations are particularly instrumental to competitiveness? Internationally benchmarked domestic-only tender lists? Minimum local content target? Minimum targets for growing competitiveness of suppliers? Full, fair and reasonable access to opportunities for domestic firms? Tender evaluation criteria for major contracts that drive supplier development?
- Is it possible to formulate and agree on best practices with a view to ensuring LCRs regulations drive supplier competitiveness and avoid unnecessary protectionism?
- Since local content policies in general and local content in green sectors in particular fall within the purview of various intergovernmental organizations, e.g. World Bank, IMF, UNCTAD, OECD, IEA regional organizations, how one could make the most of the various data and expertise?
- Is there a need for a common institutional framework to share scientific evidence among institutions concerned, including their experts panels, and to control conflict of interests of experts and expert bodies and panels providing scientific environmental and economic assessment of localization.
- What is the role of environmental, social and economic impact assessment studies as a vehicle for identifying opportunities to enhance local content and develop local suppliers?
- How public and private corporations might go about modifying their policies, organisational structure and resourcing in order to effectively manage local content?
- What is the role of the public sector in providing the incentives and investment to support local content and supplier development?
- Do the geopolitical and economic realities bode well for building regional markets for renewables?

