



Energy and the Atlantic: The Emergence of an Atlantic Basin Energy System¹

Background Paper

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Introduction

Recent changes in global geopolitics — including the emergence of the developing world and structural crises in the northern Atlantic — have collided with ongoing trends in the energy sector to transform the future prospects of the Atlantic Basin. Many of these energy vectors are either unique to the basin or are more advanced in the Atlantic than in the Indian Ocean or the Pacific. The expansion of renewables, the shale gas revolution, the boom in southern Atlantic oil, the dynamism of liquified natural gas (LNG), and the possible emergence of gas-to-liquids (GTL) together have placed the Atlantic Basin at the cutting edge of the energy future.

While the world remains transfixed on China and U.S. foreign policy “pivots” to Asia, the tectonic plates of the global system continue to shift, offering much economic and geopolitical potential for Atlantic countries that can seize the coming opportunities. Indeed, if we were to reframe our traditional energy focus to embrace the entire Atlantic Basin, instead of focusing on North America, Europe, Africa, Latin America, or even “the Americas,” surprising new vectors come into view.

Beyond the headlines of global affairs, an incipient “Atlantic Basin energy system” has begun to quietly coalesce. Fossil fuel supply in the basin has boomed in the last ten years, with a southern Atlantic hydrocarbons ring slowly taking shape, where the energy services sector is also exploding. Meanwhile, a wide range of renewable energies — from bioenergy to solar and wind power — are now rolling out in the Atlantic faster than in the Indian Ocean or Pacific basins. The gas revolution, encompassing unconventional gas, LNG, and GTL, is also increasingly

¹ This background paper is adapted from Chapter One (“An Introductory Exploration of the Atlantic Basin Energy System”) by Paul Isbell, *Energy and the Atlantic: The Shifting Energy Landscape of the Atlantic Basin*, German Marshall Fund, Washington, D.C.-Brussels, December 2012.

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focused on the Atlantic. Although energy demand has moderated in the northern Atlantic, it has been growing rapidly in the south, and is projected to continue to rise, part of a wider realignment of economic and political influence from north to south within the Atlantic Basin. By 2035, the southern Atlantic alone could account for as much as 20 percent of global energy demand, with the entire Atlantic Basin contributing nearly 40 percent.

This nascent Atlantic Basin energy system has already achieved a high degree of specific mass within the global energy economy in terms of supply, demand, critical mass, relative autonomy, and supply chain complementarity. The Atlantic Basin now hosts one-third of global petroleum production, 40 percent of the world's petroleum reserves, more than one-third of global gas production, one-third of global LNG production, 12 percent of the world's conventional gas reserves, nearly 60 percent of the presumed world total of technically recoverable shale gas reserves, and more than 70 percent of global installed renewable energy capacity.

Furthermore, pure intra-Atlantic Basin trade takes up a relatively large share — around 30 percent — of both the global petroleum and liquefied natural gas markets, lending Atlantic Basin markets a certain level of depth and functional autonomy in relation to the overarching global markets. The level of extra-basin energy dependence — 15 percent in petroleum and only 6 percent in gas — is also relatively low in the Atlantic, and is likely to continue to fall. The Atlantic Basin could even become, over the coming decades, a net exporter of many forms of energy to the Indian Ocean and Pacific Basins.

A number of mutually complementary opportunities to develop energy investment and trade linkages — all along the energy supply chain in the various segments of the upstream, midstream, and downstream — have also appeared across the Atlantic space, particularly in the southern Atlantic. One example is the complementary nature of potential Southern Cone shale gas (upstream) with existing South African GTL synthetic fuel technology (downstream). Another is the opportunity for much denser, more efficiency-driven interpenetration among the energy service sectors within and across the Atlantic. Complementary opportunities also exist along the midstream, in the realm of LNG, and in the downstream, particularly with regard to investment and trade in the biofuels sector between Brazil and the Atlantic countries of West and Southern Africa, or in the product markets for transportation fuels (between consumer and producer countries, along both North–South and South–South vectors).

The implications of such shifting energy landscapes are manifold. First, as conventional and new alternative energies expand their supply within the Atlantic Basin, the traditional dependencies of Western countries on Middle Eastern oil, already on an arc of moderation, will weaken further. The new “Great Game” in Central Asia, in which all major world powers are engaged, will become much less significant in Western strategic calculations, as will the geopolitical difficulties presented by Russia. Central Asia and the Middle East will not disappear from Western radars, but their relative weightings within Western strategic equations would be noticeably reduced.

In addition to enhanced energy security, the future development of an Atlantic Basin energy system could help bind the countries rimming the Atlantic more closely together. The deepening density of the Atlantic Basin political economy will reverberate positively upon economic development and facilitate the low carbon transformation of the global energy economy. Mobilizing the untapped potential of underutilized energy trade and investment links, particularly in the southern Atlantic, could help produce a renaissance in the Atlantic Basin, eroding the patterns of traditional economic and political dependence of the south upon the north, and moderating the risks imposed by China's inexorable global emergence and its growing influence in the Atlantic region.

Much is at stake for the northern Atlantic. Not only does the Atlantic Basin, as a region, offer interesting potential to both improve energy security and to help build a bridge to a low carbon future, it also holds one of the keys to transforming and rejuvenating a problematic U.S.-EU relationship, in part by broadening its scope to engage key actors in the southern Atlantic.

The Atlantic Basin and "Atlantic Systems"

The Atlantic Ocean has long been the central crossroads of the Western world. Ever since Columbus landed at Hispaniola (the present-day Dominican Republic), a travel and trade axis has crossed the Atlantic from northeast (Europe) to southwest (Latin America and the Caribbean). As the Spanish and Portuguese colonized what is now Latin America, they generated a return flow of gold and silver. Soon thereafter, as Europeans exploited West Africa for its human labor, the slave trade opened a southeast–northwest axis, delivering human cargoes to the Caribbean and North American colonies. Sugar, rum, tobacco and cotton were carried back to Europe along another burgeoning trade route linking Europe in the Atlantic northeast with North America in the northwest. Textiles, arms, and ammunition were shipped back down to African slave traders and local overlords, deepening the northeast–southeast axis. Finally, a southeast–southwest corridor for transatlantic trade and human trafficking also emerged between current-day Brazil and the Gulf of Guinea.³

For 300 years, the Atlantic's center of gravity remained somewhere between the Tropic of Cancer and the Equator. Lands on both sides of the southern Atlantic were key players in the emerging Atlantic system, even if the power vector ran clearly from north to south. Over time, as the Atlantic Basin became an increasingly integrated and unified economy (even if still essentially colonial), these economic and political connections became ever denser and more complex. By the 19th century, however, the center of gravity had begun to shift clearly northward as the British displaced the Spanish, Portuguese, Dutch, and French empires (all with many of their major colonies concentrated in the southern Atlantic), and as North America became a relatively more strategic economic partner for Europe. Northern trade, investment, and

³ See *Bridging the Atlantic: Brazil and Sub-Saharan Africa, South-South Partnering for Growth*, World Bank and IPEA, 2012.

migration connections linking the United States with Europe came to dominate the Atlantic space, and by the end of World War II, the term “transatlantic relationship” had come to signify, almost exclusively, the economic and political relationship between the United States and European powers. At best, Latin America and Africa served as footnotes to — or even as strategic targets within — the Northern conception of the Atlantic.

In recent years, however, the political cohesiveness of the “transatlantic community” has weakened considerably. The denouement of the Cold War and the unraveling of the Soviet empire loosened the links that once tightly bound the United States and Europe together at the geopolitical hip. Although the economic ties across the northern Atlantic still constitute the single most significant transcontinental economic linkage within the world economy,⁴ the globalizing shocks of the post–Cold War era have catalyzed a number of international shifts in relative power, issuing the first signs of a potential “crisis of the West.” In this context, the Atlantic Basin takes on new meaning as an analytical lens and strategic framework that emerging market countries in the southern Atlantic might leverage to improve their geopolitical flexibility and economic prospects. In the long run, the concept of the Atlantic Basin might even serve as an inspiration for a revived and transformed West, or for at least a reconfigured Atlantic space — perhaps, but not necessarily exclusively, through the expansion of the traditional, institutionalized U.S.–EU transatlantic relationship to include the participation of a broader Atlantic world.

With the coalescing of the BRICS countries (Brazil, Russia, India, China, and South Africa) and the emergence of a “global South consciousness,” not only has the northern Atlantic’s international preeminence increasingly become subject to global questioning — with the moral authority of the West never more in doubt — but so too has the West’s center of gravity, and dynamic internal composition, begun to shift once again, this time from north to south. More and more, the countries and peoples of the southern Atlantic are becoming relevant, if not central protagonists, in the structure and dynamics of geopolitics within the Atlantic space.

Energy and climate issues in particular have become key Atlantic vectors, as the Atlantic Basin re-emerges as an important subsystem within the global political economy alongside the Pacific and Indian Ocean basin-systems. An incipient Atlantic Basin energy system may hold at least one of the keys to any such revival or reconfiguration of the Atlantic world. Although some in the United States have advocated a return to the Pacific as the most effective posture for engaging — or containing — China, others have called for the seduction of Russia back into the Western fold as a key element in a strategy for dealing with the growing global South consciousness among the BRICS, by turning the old transatlantic relationship into a

⁴ See Hamilton, Daniel S., and Quinlan, Joseph P., *The Transatlantic Economy 2011: Annual Survey of Jobs, Trade and Investment between the United States and Europe*, Washington, DC: Center for Transatlantic Relations, 2011.

consolidation – with its old nemesis, Moscow -- of the North.⁵ But the tired references to China and Russia might best be rejuvenated by a renewed focus on the West. In an age of instabilities and transitions in the northern Atlantic world, a broadening of the transatlantic relationship to embrace the energies and ambitions of the emerging, developing countries across the southern Atlantic might develop and consolidate a relatively liberal and democratic space — if the northern countries prove capable of creatively ceding portions of their influence to the large emerging countries in the South that have traditionally remained in the geopolitical shadows.

The Energy Map of the Atlantic Basin

The energy map of the Atlantic world is one that reflects not only the very different real income and consumption levels of the four Atlantic continents, but also divergent energy economies as well as distinct and evolving energy policy environments. Nevertheless, global trends (climate change, intensifying competition for resources, and the imperative to eliminate poverty) are pushing, however hesitantly, in the direction of energy policy convergence within the Atlantic and toward a deepening of transatlantic energy trade and investment driven by comparative advantages, niche markets, technology transfer, and systems linkages.

In North America (where 24 percent of the world's primary energy is consumed in the United States alone), oil has long ruled the road (accounting for some 35 percent of the primary energy mix and well over 90 percent of transportation fuels). At the same time, coal has been king in factories and homes (20 percent of the primary mix and around half of the generation mix).⁶ Meanwhile, natural gas (currently 25 percent of the primary mix) could become the next energy king if the shale revolution survives, deepens, and spreads. Nuclear power (9 percent of the primary mix) has a significant role in the generation mix (accounting for 20 percent of electricity), although its future remains clouded in the wake of the nuclear disaster in Japan.⁷ Biofuels in the United States — mainly ethanol produced from corn — have been subsidized and protected, but they still account for less than 10 percent of all transportation fuels. Renewables in general are growing relatively fast, but from a negligible base and in a policy environment that has recently become hostile to — or at least uncertain for — future investment in renewable energies and other forms of low-carbon energy technologies.

Europe, on the other hand, consumes more oil (41 percent of the primary mix), the same proportion of gas (25 percent), less coal (16 percent), and more nuclear power (13 percent) — although the German government's recent decision to halt the expansion of the country's nuclear energy program, and to plan for the eventual decommissioning of all its nuclear plants, certainly

⁵ See Zbigniew Brzezinski, "Balancing the East, Upgrading the West: U.S. Grand Strategy in an Age of Upheaval," *Foreign Affairs*, January/February 2012.

⁶ Due to the expanded production of shale gas in the past few years, coal's share of electricity generation in the United States has fallen to below 40 percent.

⁷ The energy mix figures referred to in this text come from British Petroleum's *Statistical Review of World Energy 2011*.

casts a cloud of uncertainty over the future of nuclear energy in Europe, even as France recommits itself to dependence on nuclear power. Europe is also slightly more advanced — particularly among the continent’s key Atlantic players such as Germany, Spain, the U.K., and Scandinavia — along the road to a renewable energy and low- carbon economy than is the United States and, for that matter, the rest of the Atlantic Basin.⁸

Latin America, for its part, is excessively dependent on oil (nearly half of the primary energy mix), but due to the region’s relative lack of coal (only 4 percent) and nuclear power (less than 1 percent), hydroelectric power is more dominant here (more than 25 percent) than in any other part of the world, to say nothing of the Atlantic Basin.⁹ Latin America is also a leader in the biofuels terrain — particularly Brazil (where ethanol is produced relatively efficiently and cheaply from sugarcane), traditionally and still often the world’s leading exporter of biofuels, if sometimes now slightly behind its Atlantic Basin ally and biofuels partner, the United States.

In Africa, meanwhile, traditional biomass still contributes a dominant share of the energy mix, and energy poverty registers its highest regional levels. Africa has the lowest electrification rate of all the world’s regions — only 26 percent of households — leaving as many as 547 million people without access to electricity. Meanwhile, some 75 percent of Africans still depend on traditional biomass for cooking and heating.¹⁰ If the United States remains the fossil fuel center of the Atlantic Basin, Europe is the basin’s leader in nuclear power and modern renewables, as is Latin America in hydropower and biofuels. For its part, Africa still looks to eliminate its energy poverty while reducing the carbon intensities of its smaller but growing energy economies. South Africa (a leader in synthetic transportation fuels) and Morocco (a pioneer among developing countries in modern renewable energies) are strategically well positioned to lead the way among the Atlantic countries of Africa.

A Southward Shift in the Center of Gravity of Atlantic Basin Energy

The shifting energy landscape of the Atlantic Basin also reveals relative movement in the center of gravity for both energy demand and supply from economies in the north, in general, down to economies farther south. In 2005 the southern Atlantic accounted for less than 17 percent of total Atlantic Basin energy demand; by 2035 the southern Atlantic’s share will have risen to 25 percent, even as total basin demand rises 30 percent over the same time period.

⁸ The possible exception to this assertion, among significant players, would be Brazil, the country in the Atlantic Basin with the lowest percentage of fossil fuels in its total primary energy mix. While it is true that Brazil has more low-carbon energy sources in its primary mix than almost any other country, making it the “cleanest” country in the Basin, much of this is due to the high dependence on hydropower in the electricity mix (more than 80 percent). On the other hand, Brazil’s largest contribution of greenhouse gas emissions stems from deforestation and changes in agricultural and land-use patterns and, as a result, does not appear in either the country’s energy mix or in its “energy emissions profile.”

⁹ In the rest of the Atlantic Basin (as in the rest of the world), hydroelectricity contributes only 5 percent to 6 percent of the primary energy mix, although it does have enormous theoretical potential in Africa.

¹⁰ “Africa Energy Poverty,” G8 Energy Ministers Meeting, Rome, May 24–25, 2009, World Bank, 2009.

Although Europe and the United States remain the dominant energy players within the Atlantic world, other countries are becoming increasingly significant in relative terms. The Southern Cone and Southern Africa have recently emerged as new centers of gravity within the energy landscape of the Atlantic Basin. In the Western world, at least, it is in these regions of the southern Atlantic where most of the new energy trends are now emerging with the most force and the greatest potential for transformation. If these trends are not yet generating a new Atlantic energy system, then they are certainly laying much of the groundwork for such a system to emerge in an identifiable and useful form in the future.

The most recent and dynamic energy trends are continuing to find more space for development within the southern Atlantic. Such trends include deep offshore oil production, liquefied natural gas (LNG), unconventional (shale and tight) gas, new techniques for synthetic fuels production (gas-to-liquids and coal-to-liquids), and cleaner fossil fuel technology (carbon capture and sequestration, and other clean coal technology), along with traditional (hydropower) and modern renewable energies (wind, solar, geothermal, and tidal power).

South Africa and Brazil (and also, though to a lesser extent, Morocco and Argentina) are now essential case studies within the Atlantic energy space. These countries have developed energy strategies in which many of these same new trends have become central drivers for national development and are key variables in the articulation of their national energy policies — far more so than is the case in the United States, or even in Europe. In many ways, these emerging market powers have become the new energy pioneers of the Atlantic world.

Preconditions for the Emergence of an Atlantic Basin Energy System

An Atlantic Basin energy system, per se, does not yet exist. At present it can only be abstracted from the many overlapping subsets of the global energy system. No formal or informal Atlantic energy organizations currently exist, with the exception of the relatively inactive EU-U.S. Energy Council, a strictly northern Atlantic institution embedded within the U.S.–EU Summit framework. There is still nothing yet anything like an Atlantic Basin consciousness, and only a few policy thinkers have begun to pioneer the concept.

Nevertheless, certain prototype Atlantic “subsystems” already do exist, in the form of regional Atlantic Basin markets for crude oil, LNG, coal, and petroleum-derivative products (gasoline, diesel, etc.) — even in the face of the increasingly globalized dynamics of these markets. Furthermore, most of the preconditions necessary for these subsystems to coalesce into a new Atlantic Basin energy system are either already in place or now emerging. However, certain other important preconditions (particularly those concerning governance, however shallow or informal) are not yet fully in place within the Atlantic world.

An Atlantic Basin energy system could not meaningfully exist without exhibiting a minimally sufficient degree of breadth and depth in its intrabasin energy interactions — both in absolute terms, and relative to the global system (e.g., the global petroleum market) and the other

significant subsystems (such as the Indian Ocean basin and Pacific Rim energy systems). To consider the potential evolution of an Atlantic Basin energy system in the near or midterm future would necessarily presuppose:

- relatively high and/or rising levels of energy demand within the basin;
- relatively high and/or rising levels of energy supply within the basin;
- a relatively high and intensifying degree of independence and autonomy with respect to the extra-Atlantic world; and
- a sufficient degree of geographic complementarity within the basin in terms of supply options, demand preferences, and investment needs (in order to ensure that most of the basin's supply can potentially be deployed to meet most of its demand), opening up the possibility for a progressive deepening of the system's density and relative autonomy (two of the most defining traits for any system).

In addition to such “endogenous” considerations, a number of other “exogenous” factors could either facilitate or hold back the development of an Atlantic Basin energy “space” into an identifiable, meaningful, and sustainable “system.” Exogenous factors like these are often instrumental in allowing for such a system to become more voluminous as well as denser in the networked complexity of its interactions. Increased volume and heightened density of interaction would give rise to more practical economic and security needs — and therefore more demand — for tighter policy coordination and more intensive diplomacy within the Atlantic space. Heightened demand for policy coordination and Atlantic Basin diplomacy would, in turn, generate the possibility for a regional Atlantic Basin “consciousness” to form and grow.

Finally, with the emergence of such a regional basin consciousness — however fragmented and initially incomplete — would come the eventual possibility of girding the energy “system,” complete with its market and technological components, within a functioning (even if informal or shallow) “governance space,” allowing the system's independent actors to secure the maximum overall economic and political benefits.

Key exogenous influences on an emerging system would include:

- the fate of financial and fiscal stabilization in the northern Atlantic, and eventual recovery of stable economic growth rates in the United States and the EU (so as to ensure sufficient financing for investment in new energy supply from within the basin);
- energy and carbon prices high enough to encourage a change in the quality (clean versus dirty, autochthonous versus imported) as well as the quantity (supply in relation to demand) of energy);

- further rationalization and reform of national and international energy and climate policies affecting the economies of the Atlantic Basin (in order to stimulate more cross-Atlantic energy investment and trade in both traditional and new energy sectors); and
- a potentially growing interest in the concept of the Atlantic Basin among both northern and southern Atlantic countries (albeit if, initially, for different political and economic motives) as a potential market with its own technological, diplomatic, and even regulatory frame of reference.

Indeed, the Atlantic Basin could turn out to be the ideal space within which the Atlantic’s many energy economies begin to abandon the chimera of “national energy independence” and pursue instead — through a conscious framing of energy policy and a deliberate recasting of energy relations within the basin — an ultimately more sustainable, and therefore pragmatic, “collective energy security.”

Rising Energy Demand in the Atlantic Basin

The first necessary precondition for an Atlantic Basin energy system — and the one most clearly met — would be robust and rising energy demand in the Atlantic, underpinned by the strong expectation that it will be sustained into the future. At the global level, this is indeed the case. Energy demand in the developing world is expected to rise by 60 percent through 2035, whereas demand growth is projected to be much flatter (0.6 percent annually) within the OECD. Although demand from developing Asia is set to grow at 2.9 percent annually to 2035 — far faster than anywhere else — the southern Atlantic continents of Africa and Latin America are projected to experience rising average annual energy demand of 1.8 percent and 2 percent, respectively — far above the anemic demand growth expected from the northern Atlantic (0.5 percent).¹¹ Total Atlantic Basin energy demand is expected to rise by 30 percent to 2035 — even as northern Atlantic demand grows by only 15 percent (compared to a full doubling of demand in the rest of the world) — with the entire Atlantic Basin still contributing 42 percent of global energy demand by 2035. However, the southern Atlantic alone is projected to increase its share of Atlantic Basin energy demand from 20 percent to 30 percent, and its share of total world energy demand from 10 percent to 12 percent. Not only will this expected boom in southern Atlantic energy demand lend the Atlantic Basin energy space vital critical mass within the global energy system; but also it signals a real need for an Atlantic Basin energy system capable of generating and channeling unprecedented amounts of energy and climate investment so as to ultimately bring forth sufficient supply.

The supply-side investment required to meet this projected demand in the developing world is estimated by the IEA at \$800 billion annually for the next 25 years. Additional investment of \$41 billion to \$77 billion and \$90 billion, respectively, will also be required annually if the world is to finally tackle its modern energy poverty and to achieve both goals in a sufficiently low-carbon

¹¹ U.S. Energy Information Administration (EIA), *International Energy Outlook 2011*, EIA, Washington, DC, 2011.

manner.¹² Anywhere between 30 percent and 40 percent of this \$1 trillion of potential annual energy and low-carbon investment (some \$350 billion annually) could reasonably be expected to occur (to the extent that it actually takes place) within the southern Atlantic. In other words, key forward-looking countries in the southern Atlantic (such as Morocco, Brazil, and South Africa) are now poised — as the potential recipients of enormous inflows of foreign direct investment in traditional and new energy sectors — at the cusp of a potentially epoch-shaping transformation of the Atlantic Basin’s energy space, with enormous implications (opportunities, challenges, and threats) for the region’s economics and geopolitics.

An Atlantic Basin Supply-Side Boom

The second necessary precondition — a significant increase in the available energy supply of the Atlantic Basin — is also now being realized. In recent years, the supply-side energy picture of the Atlantic Basin has been transformed dramatically for the better, both in absolute terms and relative to Atlantic Basin energy consumption. Currently the Atlantic Basin accounts for approximately one-third of global oil and gas production. Meanwhile, more than 40 percent of world petroleum reserves and nearly 12 percent of global conventional gas reserves (according to our adjusted estimates) are located in the Atlantic world. These figures are also likely to rise in coming years, as more unconventional oil (Canadian tar sands and Venezuelan super heavy oil), offshore oil (Brazilian, Argentine, Mexican, Cuban, and African oil, including pre-salt deposits on both side of the southern Atlantic), Arctic oil, and shale gas (especially in the United States, the Southern Cone, and South Africa) is discovered, classified as proven reserves, and eventually brought on line as new production.

The discovery and development of new oil and gas reserves up and down the Atlantic — along with the progressive transfer of new low-carbon technologies and large-scale development and rollout of renewable energy resources, from wind power to bioenergy — could significantly deepen and broaden the interactions underpinning the Atlantic energy markets. Already Brazilian pre-salt exploration has kicked off a deep offshore boom in the southern Atlantic — which has caught on in Angola and Ghana, and could also explode all along the West African Transform Margin — that could potentially coalesce into a southern Atlantic oil ring. This, in turn, could reduce the dependence of many Atlantic Basin countries on Eurasian energy sources, taking pressure off their intensifying competition with China and India (and with Russia, on the upstream and midstream sides) over energy from the world’s most unstable regions in the Middle East and Central Asia.

¹² International Energy Agency, *World Energy Outlook 2010*, IEA, Paris, 2010.

The Relative Energy Autonomy of the Atlantic Basin

The Atlantic Basin not only controls a relatively large share of a growing global energy supply, but also has an already voluminous and dense intra-area energy trade. Pure intra-Atlantic Basin trade takes up a relatively large share — around 30 percent — of both the global petroleum and liquefied natural gas markets, lending Atlantic Basin markets a certain level of depth and functional autonomy in relation to the overarching global markets.

Furthermore, as a basin, the Atlantic is also relatively energy independent. Given current production and consumption levels, only some 15 percent of Atlantic Basin petroleum consumption must be covered, in net terms, with inter-basin imports from the extra-Atlantic world. A mere 6 percent of Atlantic Basin natural gas consumption must be met, in net terms, with inter-basin imports from beyond the basin.¹³

Given its heavy weight in global energy markets, and considering the depth and coherence of the basin markets themselves, the Atlantic Basin now wields substantial critical mass in terms of global market and political influence in the realm of energy.

Indeed, if energy and climate change continue to displace regional integration and free trade agreements on the global policy agenda — as they have for the last ten years — there could well be a resurgence of the geopolitical weight of the Atlantic Basin, based precisely on the size, depth, and dynamism of its internal energy markets. In any event, the growing density of the intra-Atlantic energy trade, combined with the boom in Atlantic energy supply, suggests that an Atlantic Basin energy system might now exist at an incipient stage.

Sufficient Intrabasin Complementarity for Development of an Atlantic Energy System

The trends discussed above point in the direction of a fourth precondition necessary for the emergence of an Atlantic Basin energy system to emerge: the existence of mutually complementary opportunities to develop energy investment and trade linkages across the Atlantic, particularly in the southern Atlantic. A number of opportunities already exist — and others are in the process of materializing — for energy trade and investment collaboration across the southern Atlantic, and not just in the realm of offshore or otherwise “difficult” oil. Opportunities abound in sugarcane based biofuels, shale gas development, gas-to-liquids production, hydropower, and modern renewables. Furthermore, a number of international finance mechanisms have recently been created to facilitate public and private investment in renewable energy and energy efficiency, and to roll out an increasingly low-carbon economy in the

¹³ This low level of external gas dependence for the Atlantic basin as a whole may strike some as surprising, given the prominent place Russian gas exports to Europe occupy in the popular imagination. While the 114bcm of piped gas imports from Russia to the EU represent 25 percent of European gas consumption, they represent only 7.6 percent of Atlantic Basin gas consumption, leaving the “broad” Atlantic dependent on extra- Atlantic gas imports for 8 percent to 9 percent of total Atlantic Basin consumption. The 6 percent figure in the text is an average of the “broad” and “narrowest” categories of the Atlantic Basin.

developing world.¹⁴ Although such mechanisms will likely channel financial flows from North to South — at least initially — it is also probable that eventually they will also stimulate flows from Latin America to Africa, and vice versa.

The energy complementarity of numerous Atlantic Basin countries and sub-regions, particularly in the southern Atlantic, has recently been revealed along the energy supply chain in various segments of the upstream, midstream, and downstream. One example is the complementary nature of potential Argentina shale gas (upstream) with existing South African gas-to-liquids (GTL) synthetic fuel technology (downstream). Another would be the opportunity for much denser, more efficiency-driven interpenetration among the energy service sectors within and across the Atlantic.

Complementary opportunities also exist along the midstream — in the realm of LNG — and in the downstream — particularly with regard to investment and trade in the biofuels sector between Brazil and the Atlantic countries of West and Southern Africa, and in the product markets for transportation fuels (between consumer and producer countries, along both North–South and South–South vectors).

Finally, potential complementarity also exists for profitable and productive investment in the realm of electricity generation from hydropower and other potentially low-carbon sources, transmission and distribution infrastructure (including the potential development of an electric vehicle industry in certain basin countries), international interconnections, and regional electricity market development. In fact, a number of sub-regional complementarities could potentially stimulate a broadening and deepening of international electricity integration around the Atlantic Basin. Any such development would serve as a powerful catalyst for the development of an Atlantic Basin energy system. Examples in the electricity realm include complementarities between:

- Europe and North Africa, where massive solar potential — developed through either the EU’s MedSolar project or the private sector’s DESERTEC — could be combined with investment in a “Mediterranean electricity ring” to help resolve both energy security and climate challenges in this corner of the broad Atlantic Basin.
- The countries of Central America, where a successful future for the SIEPAC regional electricity system could potentially open the door — through the eventual inclusion of Mexico and Colombia into the region’s growing chain of international interconnections — to a partial electricity integration of North and South America.

¹⁴ These include, among others, the World Bank’s Clean Technology Fund, Strategic Climate Fund, Scaling Up Renewable Energy Program in Low Income Countries, the UNDP’s UN-REDD Programme, and the various funds of the Global Environment Facility. For more, see <http://www.climatefundupdate.org/>.

- North America and the island nations of the Caribbean, where investment has already been made into an embryonic network of international interconnections through large capacity subsea cables.
- The nations of Central and Southern Africa, where the potential combination of the nascent Southern African Power Pool with the enormous hydro potential of the Congo River Basin could ultimately transform the electricity supply situation for a large part of sub-Saharan Africa, a development that would certainly facilitate Africa's goal of eliminating energy poverty without significantly contributing to future accumulations of greenhouse gases.

A surge in transnational energy-related investment within the Atlantic world, led by an expansion and deepening of intrabasin energy trade, also has the potential to tip the balance of energy geopolitics back in favor of “the West,” while at the same time significantly reducing the basin's carbon footprint. However, this would have to be a “new energy West,” increasingly influenced and shaped not just by the traditional northern Transatlantic powers (the United States and the EU) but also by the emerging powers of the southern Atlantic (Brazil and South Africa). Such a potential development would also facilitate the efforts of many southern Atlantic countries to wean themselves off the lower-value-added portion of the energy supply chain (crude oil and ethanol feedstock, for example) and even to export, potentially, a whole range of petroleum, bioenergy, and synthetic fuel products — particularly in the light-distillate realm — first to the Atlantic Basin, and then to the global market.

Given the energy issue's centrality — and its interlocking relationship with other key world challenges, such as poverty and climate change — it is poised to become the crucial trade and investment axis upon which a new Atlantic Basin energy system might take shape out of the current Atlantic space. Should this occur, other forms of trade and investment would likely be stimulated as well. These would have the effect of deepening political and cultural linkages across new vectors of the Atlantic, and adding further to the economic volumes and political weight of ever-growing South–South southern Atlantic interaction as well as to the real potential for a more comprehensive form of Atlantic Basin cooperation to emerge.

Currently Unmet Preconditions and Other Key External Influences

A number of other necessary factors — for the most part, exogenous to the functioning of the Atlantic Basin's nascent system — are not yet in place and therefore continue to function as a drag upon the development of an Atlantic Basin energy system.

First, although growth in the southern Atlantic remained remarkably strong in the face of the global financial crisis of 2008 and the subsequent global recession, a notable slowdown now appears likely. Although some private energy investment continued to flow from North to South even during the recession (attracted by relatively strong returns in the emerging markets), the continuing economic crisis of the northern Atlantic will eventually make itself felt around the basin. Until the global economy experiences a sustained recovery, North–South and South–South

energy trade and investment flows are likely to be significantly weaker than otherwise could be the case.

A second key factor will be the evolution of global energy and carbon prices, which will function as either a catalyst for or a brake upon further dynamism within the Atlantic energy space. Energy and carbon prices will need to be high enough to stimulate: 1) sufficient investment (\$800 billion annually, according to the IEA) for supply to continue to meet growth-driven increases in energy demand; and 2) the additional investment needed (\$90 billion annually) to check developing world carbon emissions sufficiently to avoid breaching the 2 degree Celsius temperature increase limit posited by the United Nations Framework Convention on Climate Change (UNFCCC).

The long-term price trend is clearly upward. With global oil prices hovering around \$100/bbl today, the IEA now projects that prices will average \$103/bbl through the midterm to 2015, rising to \$133/bbl by 2035. In recent years, coal prices have risen just as dramatically as have those of oil, and along a similarly volatile pattern. Given coal's still large contribution to the global energy mix — but particularly to the Asian economies, where energy demand is growing fastest — coal prices in all probability will remain strong. Gas prices have moderated considerably, particularly in the Atlantic Basin, but only as a result of the shale gas revolution in the United States — in part stimulated by historically high gas prices previously — which has significantly eroded the once-tight link between oil and gas prices.

The quantity (i.e., production levels) and quality (i.e., carbon content) of the supply-side response to these rising energy price expectations have also evolved generally as expected, only this response has not been nearly as dynamic or as broadly distributed as would be required to meet the energy-poverty-climate challenge effectively. The quadrupling of the world oil price over the last decade has led to an incipient hydrocarbons boom in the Atlantic Basin, while at the same time contributing significantly to the first true global blossoming of renewable energies. Although subsidies and other fiscal incentives as well as price supports have played a large role in stimulating renewable energies, the unfolding global renewables rollout (with its step-jump in scale) has itself contributed significantly to falling break-even prices for most forms of renewable energy. Nevertheless, this decline in production costs has not yet been steep enough to close the cost gap with fossil fuel competitors.

Over the last decade, carbon prices have taken shape with the creation of carbon markets in Europe (ETS) and the United States (the Northeast and Midwest regional markets) and through the growing use of international carbon offsets. Although the ETS carbon price (for the moment, the most significant international reference) has been generally weak to date (\$10–\$20/ton), it is expected to be \$20–\$30/ton over the coming years, with little but upside potential feasible into the future, given that the very real constraints of carbon-induced climate change will continue to impose themselves.

But if energy and carbon prices tend to be volatile over the short run, long-run price projections can also be deceptive — and volatile, plagued as they are by extremely high levels of uncertainty. Oil and gas companies tend to set their long-run price projections — which act as their internal threshold for triggering new investment — relatively conservatively, as do the principal net exporters (only not quite as much) when establishing the projected oil price as a central criterion for their national budgets.

Furthermore, the global energy and carbon markets are almost completely unregulated, insufficiently taxed, and even heavily and widely subsidized (on both the supply and demand sides).¹⁵ With such volatile and unpredictable energy prices — and with the price elasticities of both total energy supply and low-carbon energy supply remaining far too weak — it is difficult to maintain confidence that the new, higher price reality (even if it remains stable) will on its own bring forth sufficient investment in energy supply expansion, to say nothing of investment for lower global carbon intensity. What is missing in the Atlantic Basin is necessary state action, coordinated to a sufficient degree internationally, to facilitate a more rapid and complete reduction in the cost gap between fossil fuels and lower-carbon energy alternatives.

Higher taxes on fossil fuel energies and significant reductions in state subsidies to fossil fuel production and consumption will be required if the end prices of lower-carbon energy sources are to compete more effectively with those of fossil fuels. Far more and more robust regional carbon markets will also be required if average global carbon prices are to be sufficiently high and stable enough to eliminate the rest of this gap (that which is represented by the avoided costs that fossil fuel producers still “externalize” in the form of unregulated and unpaid-for carbon emissions).

Given that upward pressures are most likely to remain strong over the long run, energy prices will continue to serve as a partial and limited driver of expanded and lower-carbon energy supply in the Atlantic Basin. However, the supply and quality response — a key precondition for the emergence of an Atlantic Basin energy system — would be strengthened considerably by the progressive elimination of state-induced distortions to the price of energy and carbon and by the creation of rigorous carbon markets.

Yet another obstacle currently holding back the emergence of an Atlantic Basin energy system is the relatively underdeveloped state of energy policies and regulatory regimes in the region (the EU being the clearest exception). Although this is changing in most parts of the Atlantic Basin (as in Brazil, South Africa, and Morocco, for example), there are a few notable cases in which

¹⁵ The IEA claims that subsidies to support fossil fuel production and consumption totaled \$312 billion in 2009 — even after a previous decline provoked by some initial subsidy reductions in developing Asia before the outbreak of the global economic crisis. This level of global fossil fuel subsidies represents a whopping one-third of the investment required by the developing world alone to continue their economic growth, eliminate their energy poverty, and moderate their carbon footprint enough, as a group, to maintain emissions levels consistent with a global solution to the climate challenge.

weak state institutions or corruption undermine the energy policies and regulatory regimes that do exist (as in Nigeria), or where energy nationalism continues to distort national energy policy altogether (Venezuela and, to a lesser degree, Argentina). However, even in most of the other countries of the Atlantic Basin (from the small developing countries of Atlantic Africa to the United States itself), policy and regulatory frameworks need to be strengthened, rationalized, and more closely coordinated.

An Atlantic Basin energy system will have a difficult time taking shape if nationalist energy policies and competing and internally inconsistent regulatory regimes continue to weaken potential energy supply, distort the functioning of the Atlantic Basin regional energy markets, and block the emergence of an Atlantic Basin consciousness.

A fourth barrier to the emergence of such an Atlantic energy system is the absence of a diplomatic or governance framework of international relations within the Atlantic Basin resilient enough to sustain the shift of relative power from North to South currently under way, while still developing and deepening the Atlantic system. The Atlantic has no equivalent of the Pacific Rim's APEC or the now moribund Energy Charter Treaty in Europe and Eurasia.

Today's politically dominant Atlantic frameworks — such as NATO and the U.S.–EU Summit relationship — essentially embrace only the northern Atlantic, whereas existing North–South Atlantic frameworks such as the Iberoamerican Community of Nations and the EU–Latin America Summit relationship are currently stalled or in a chronic state of crisis. Incipient southern Atlantic frameworks, such as South Atlantic Maritime Area Coordination and the South Atlantic Peace and Cooperation Zone, remain relatively underdeveloped.¹⁶ Nor does this nascent South–South cooperation in the southern Atlantic suggest that there is sufficient inclination to embrace more formal cooperation across the entire Atlantic Basin as an alternative to pursuing a more limited southern Atlantic regionalism. On the contrary, some have even aspired to develop such incipient regionalism into a formal South Atlantic rim community, at least in the areas of maritime collaboration.¹⁷

Developing an Atlantic Basin energy system would certainly require overcoming the political and ideological impasse that still tends to separate the northern from the southern Atlantic. A lingering chauvinistic mind-set in the North continues to interact with the traditional perspective of the “colonized,” still pervasive in the South, to generate a rhetorical symbiosis between northern Atlantic condescension toward the South and southern Atlantic suspicion of the actions and motives of the North. For this reason, further development of an Atlantic Basin energy

¹⁶ “The ZPCSA was an important instrument which contributed to the political approximation of Africa and South American countries with two important results: The South America-African Nations Summit in 2006 and the establishment of the India, Brazil and South Africa Forum Dialogue in 2003.” INSouth: Intellectual Network of the South (http://www.insouth.org/index.php?option=com_sobi2&sobi2Task=sobi2Details&sobi2Id=20&Itemid=68)

¹⁷ See Greg Mills, “South African-Latin American Maritime Cooperation: Towards a South Atlantic RIM Community?” *Diplomats and Defenders*, Monograph No. 9, Institute for Security Studies, Johannesburg, Feb. 1997.

system would probably also require the articulation of at least a proto-Atlantic Basin consciousness, particularly within the southern Atlantic.

An Atlantic Basin Consciousness and the Role of Energy

Nothing even close to an Atlantic Basin consciousness yet exists. Indeed, the major emerging countries of the southern Atlantic have tended to identify with the budding consciousness of the global South, and that of other South–South groupings, such as the BRICS (Brazil, Russia, India, China, and South Africa) or the trilateral IBSA relationship between India, South Africa, and Brazil.¹⁸ Nevertheless, although global South identities and loyalties may generate some initial resistance to the Atlantic Basin concept, it is also just as likely that the key emerging countries of the southern Atlantic will identify the Atlantic Basin as a useful diplomatic device for modifying strategic identities and moderating geopolitical dependencies and vulnerabilities deriving from previously articulated economic, political, and energy relationships with other traditional or rising powers beyond the Atlantic (such as the Arab and Muslim worlds, as in the case of Morocco; China, in the case of Brazil and West Africa; and the Indian Ocean Basin itself, in the case of South Africa). Such a pragmatic engagement of the Atlantic Basin — demonstrating clear marginal geopolitical value added — could go far in underpinning a nascent Atlantic Basin consciousness.

Even more crucially, the discovery and development of substantial new energy resources in the Atlantic Basin could significantly reduce crucial strategic Atlantic Basin interests in the Middle East and the Caspian region, leaving China, India, and Russia to sort out the geopolitical headache of the “new Great Game” increasingly on their own. To be sure, as soon as even a proto-Atlantic Basin energy system begins to deliver such energy security and other environmental and development benefits, a nascent Atlantic Basin consciousness could emerge and begin to spread.

For the moment, however, a number of barriers continue to undermine the development of any such Atlantic Basin consciousness. First, energy nationalism in energy-exporting countries tends to block the development of any consciousness that would incorporate the interests of both producer and consumer states. Energy nationalism could ebb again if prices adjust downward over the midterm (unlikely) or if a double-dip global recession plunges oil prices down once again to anywhere below the \$70/bbl mark, at least for some time. A recession-induced oil price plunge might even deliver a mortal blow to energy nationalism in unstable, imprudent, or maverick energy-exporting states (such as Venezuela, Nigeria, or even Russia) that are not as liquid or solvent as some other countries (Saudi Arabia, for example) that might be able to withstand the pressures of price volatility with their nationalist energy policies more or less intact. Entrenching energy nationalism still further on the producer side, however, has been the

¹⁸ See Joseph Senona, “BRIC and IBSA Forums: Neo-liberals in Disguise or Champions of the South?” SAIIA Policy Briefing, No 24, September 2010.

demonstration of nationalist impulses in the energy policy evolution of the advanced net-importing economies.

A number of other factors reinforce the current dominance of energy nationalism over any policy posture that embraces open and inclusive transnational collaboration or that could ultimately aspire to the pooling — however superficial and limited — of energy sovereignty or even just energy security. A number of key energy actors in the Atlantic Basin (and particularly in the southern Atlantic, including Venezuela, Brazil, Argentina, South Africa, Angola, and Nigeria, to name the largest and most influential) already have competing loyalties to other political, economic, and diplomatic groupings (OPEC, the global South, the BRICS, the trilateral IBSA relationship, the Group of 77, etc.). Yet any geopolitical inclination these southern Atlantic actors might harbor to integrate into overlapping or compatible energy systems (for example, the strategic “hedging” option mentioned above) is further undermined by their relative lack of the critical human resources necessary for effectively engaging even the nascent basin systems that do already exist (for example, bottlenecks in Brazil’s equipment and services sectors), let alone for further participation in the creation and operation of new systems.

However, the potential strategic advantages in terms of energy, economic, and political security, of pursuing an Atlantic Basin strategy are clear: 1) a heightened relative geopolitical autonomy through geopolitical hedging and increased political and economic flexibility in relation to the extra-Atlantic world; and 2) a strong stimulus for low-carbon transformation and the reduction of energy poverty. With time, these advantages are likely to become even clearer. Given the favorable attention that the incipient notion of an Atlantic Basin has received in recent years from many actors around the Atlantic (including the United States, Morocco, Spain, and Brazil) and from among a growing, if still limited, number of policy thinkers, it is plausible that an Atlantic Basin consciousness could begin to take shape over the course of the midterm future.