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The Shifting Flows of Global Energy and Trade: Implications for Latin America

Paul Isbell

Over the past 25 years, two vectors of global change with important strategic implications for Latin American countries have gone by relatively unnoticed – at least until recently. These underlying vectors of global change run against the grain of established conceptualisations and practices – globally, in general, but particularly in Latin America – with respect to regional integration, above all in the areas of energy and trade.

Perhaps the most visible of these changes has been the dual shift in the centres of gravity for global energy supply and demand. While the centre of gravity for global energy demand has moved eastward from the Northern Atlantic into Asia (driven by the emergence of Asian economies and by the increased efficiency of Northern Atlantic economies), the centre of gravity for global energy supply has progressively shifted westward from the Middle East, Central Asia and Russia (the 20th century's traditional hydrocarbon producers) into the Atlantic Basin, driven by an 'Atlantic energy renaissance,' particularly in terms of supply.

The other less visible but nearly simultaneous change has been the shifting gravities of the webs of sub-global regional 'connectedness.' These evolving flow circuit vectors have provoked a slippage of the centres of gravity for regional connectedness – as embodied in energy and total merchandise trade – from the 'continental' landmasses into the ocean basins (which the continents surround as 'rim lands').

In the sections that follow, these recent tendencies shall be examined through a presentation of remapped global energy and trade data, reconfigured into new 'ocean basin regions' and compared to the currently predominant continental conceptions of energy and trade (see Box 1). Key implications for the future of land-based 'continental' integration in both South America and 'Latin America' shall also be reviewed, as well as those particular to some Latin American countries in broader strategic terms.

Atlantic Energy Renaissance

Only a decade ago, international analyses typically pointed ahead to an energy future in which Asia would increasingly rival the Northern Atlantic in terms of demand, and eventually overtake it. Most major international bodies, like the International Energy Agency (IEA) or the World Energy Council (WEC), along with most large oil and gas companies, projected that this increasingly prominent 'Asian demand call' on world supply (along with the net demand call then projected still to come from the Atlantic world) would be met exclusively and indefinitely by the Middle East and, at the margin, by Saudi Arabia.

Earlier than that, however, the actual underlying picture was already suffering a dramatic change. But only in the last ten years has a new picture emerged that more and more are beginning to see: an 'Atlantic energy renaissance' has been unfolding across the 'Atlantic Basin.'[1] The wider 'pan-Atlantic world' is where roughly half of the world's known fossil fuels are located and more than two-thirds of the world's renewable energy is currently generated. The decades of globalisation have witnessed a significant expansion of energy 'resources,' 'proven reserves' and 'production' in a broad range of energy sources and uses within the Atlantic Basin.[2] Today, the Atlantic Basin energy supply is increasingly meeting Asian demand at the margin, reversing the historical net East-to-West direction of global energy flows.[3]

Once highly dependent on significant oil imports from the Middle East and the ex-Soviet Union (i.e., Central Asia and Russia), the Atlantic Basin has been rapidly catching up – in terms of total petroleum resources, 'proven reserves' and production – with the 'Great Crescent' (as the Middle East plus ex- Soviet Union region is sometimes called; see Box 1). A remapping of British Petroleum's (BP) annual global energy data

1 See Box 1 for a deeper discussion of the definitions of the Atlantic Basin used in the analysis of both trade and energy in this paper. Generally speaking, two definitions used: a broader Atlantic Basin (or Atlantic Hemisphere, ie, the four Atlantic continents in their entirety) and a more precise Atlantic Basin, which includes only Atlantic coastal countries and certain landlocked countries. The broader definition has generally been applied to energy stocks, while the later has been applied to energy and trade flows. An important point not to be missed is that the 'Atlantic Basin' is far broader and more inclusive than the traditional 'transatlantic relations' between the US and Europe, as it also critically embraces the 'Southern Atlantic.'

2 The phenomena of the expansion of Atlantic energy supply and the broader 'Atlantic energy renaissance' have been developed previously in Paul Isbell, **Energy and the Atlantic: The Shifting Energy Landscapes of the Atlantic Basin**, Washington, D.C.-Brussels, The German Marshall Fund, 2012; and the Atlantic Basin Initiative (Eminent Persons Group), "A New Atlantic Community: Generating Growth, Human Development and Security of the Atlantic Hemisphere: A Declaration and Call to Action," a **White Paper of the Atlantic Basin Initiative**, Center for Transatlantic Studies, School of Advanced International Studies, Johns Hopkins University, March 2014.

3 The reversal of the historic East-to-West global energy flow circuit has been analyzed previously in Paul Isbell, "Atlantic Energy and the Changing Global Energy Flow Map" **Atlantic Future Scientific Paper** 17, Brussels, 2014, although the analysis is updated and extended here.

and projections reveals that the Atlantic world now engages about half of the broad global supply of conventional and unconventional oil resources, including the key categories of 'proven reserves' and daily production. Most of the fossil fuels discovered in the last two decades have been found in the Atlantic Basin. More than 45% of both proven oil reserves and daily oil production are Atlantic, and these shares are rising. Nearly three-quarters of projected growth in daily oil production up to 2035 is set to take place within the Atlantic Basin.[4]

The Unconventional and Offshore Revolutions

Beyond conventional petroleum, the real value-added contribution of the Atlantic energy renaissance comes from advances along the frontiers of 'unconventional' and 'difficult' hydrocarbons – in shale and offshore above all – and, importantly, from the technological, market and geopolitical 'revolutions' these new energy sources have unleashed. More than any other single factor, the Atlantic Basin shale and offshore revolutions have shifted the global centre of gravity for energy supply away from the 'Great Crescent' and into the 'Atlantic Basin.' Figures 1-9 help tell this story, first in shale and then in the offshore.

In contrast, the Atlantic Basin participates only modestly in the global supply for conventional gas. Only 2% of conventional gas production comes from the 'Atlantic Basin.'[5] However, some two-thirds of unconventional gas reserves (mainly shale) are 'Atlantic,' as is nearly all unconventional gas production (predominantly in the United States). Nearly the same is true of shale oil.[6] Shale production could also begin to spread to other parts of the Atlantic Basin, if an array of pending pre-requisites – ranging from distinct subsoil rights cultures to conflicting energy policy and regulatory regimes – is adequately addressed. All told, two-thirds of the world's estimated shale gas resources and upwards of one-half of all technically recoverable gas reserves are thought to be located within the Atlantic Basin.[7]

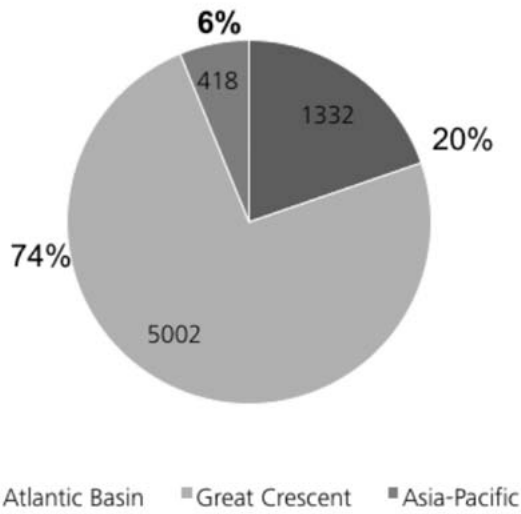
4 The remapping technique, in terms of energy stocks and for both historic and future projections, involves rearranging, or 're-projecting,' of British Petroleum's annual global energy statistics and bi-annual projections forward 20 to 25 years so as to present them in Atlantic Basin terms. (See Box 1) BP Statistical Review of World Energy 2013 and 2014, and author's own elaboration.

5 Ibid.

6 More than two-thirds (70%) of the world's estimated shale oil resources and reserves are located in the broad Atlantic, according to a remapped version of USGS data.

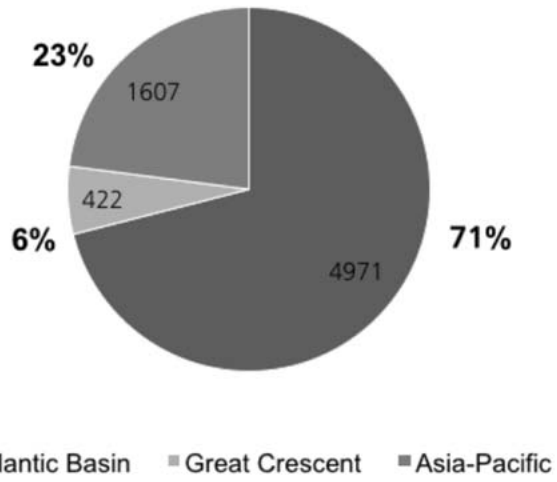
7 Understood in 'pan-Atlantic' terms, and based upon a broad 'Atlantic Hemisphere' 're-projection' of the US EIA's most recent estimates of global shale resources. See Box 1. EIA 2013, BP 2015, and the author's own elaboration.

Figure 1 *Conventional Gas, Proven Reserves, trillion cubic feet*



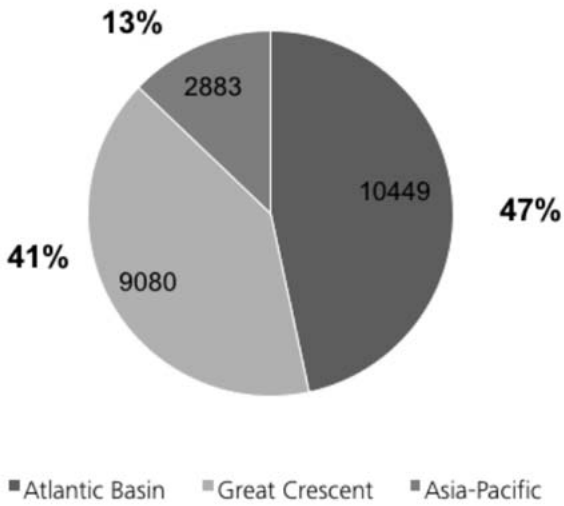
Source: EIA 2013 and own elaboration.

Figure 2 *Shale Gas, Resources (technically-recoverable), trillion cubic feet*



Source: EIA 2013 and own elaboration.

Figure 3 *Total Gas Resources (technically-recoverable), trillion cubic feet*



Source: EIA 2013 and own elaboration.

But Atlantic comparative advantages on the cutting edge frontiers of hydrocarbons are even greater in the realm of the offshore, both for oil and gas – an advantage so strong as to make the Arctic largely irrelevant in terms of global hydrocarbons potential.[8] Already Southern Atlantic offshore oil reserves (130bn barrels) dwarf those of the Arctic (90bn barrels).[9] The Atlantic Basin now produces over 60% of global offshore oil (nearly 30mbd globally) and nearly all (95%) of the world's deep offshore oil.[10] The corresponding numbers for Atlantic Basin offshore gas are 54% and 97%.[11] The only non-Atlantic anomaly is Australia, a potential pole of market share dominance in both offshore gas and liquefied natural gas (LNG). However, at the frontier of the deep offshore horizon, Atlantic Basin dominance is clear, particularly in the Southern Atlantic.[12]

8 Although the Arctic Basin's energy will remain important to a few particular countries and a few particular private companies, in both geostrategic and balance sheet terms, even despite the Atlantic energy renaissance.

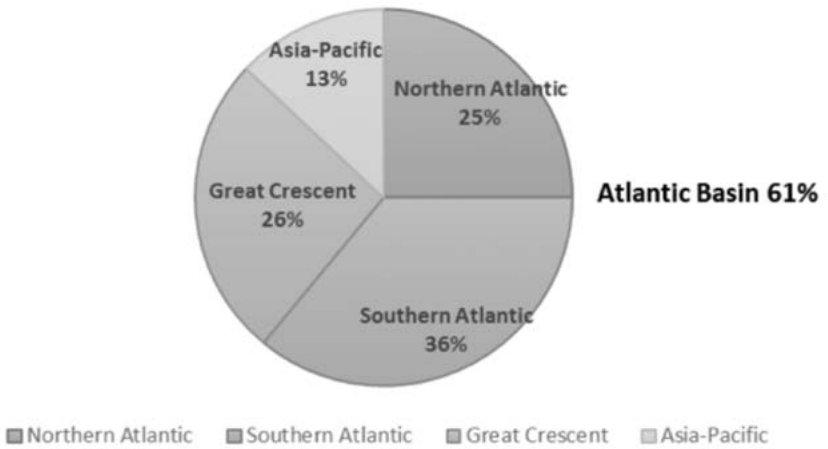
9 IFP Energie Nouvelle, "Panorama 2012: a look at offshore hydrocarbons" 2012.

10 Ibid.

11 Ibid.

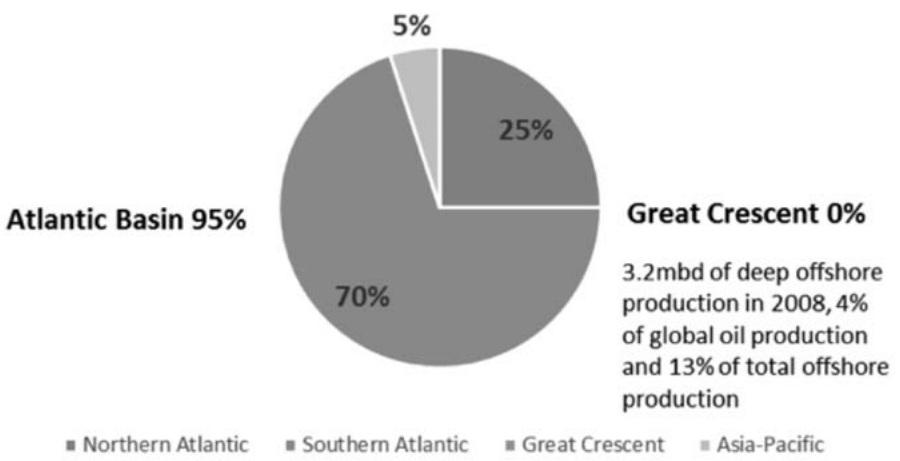
12 Supporting these upstream offshore Atlantic advantages are recent developments and future projections in the areas of offshore discoveries and offshore investment. The Atlantic Basin accounts for over 60% of global offshore oil discoveries from 1995 to 2012 (Deutsche Bank and Wood Mazkenzie, 2013). Approximately US$210bn was invested globally in deep offshore hydrocarbons during 2011-15. Over 80% of this was invested in the Atlantic Basin offshore, and nearly 60% in the Southern Atlantic (Infield Energy Analysts, 2014).

Figure 4 *Offshore Oil Production, by Major Region, 2012*



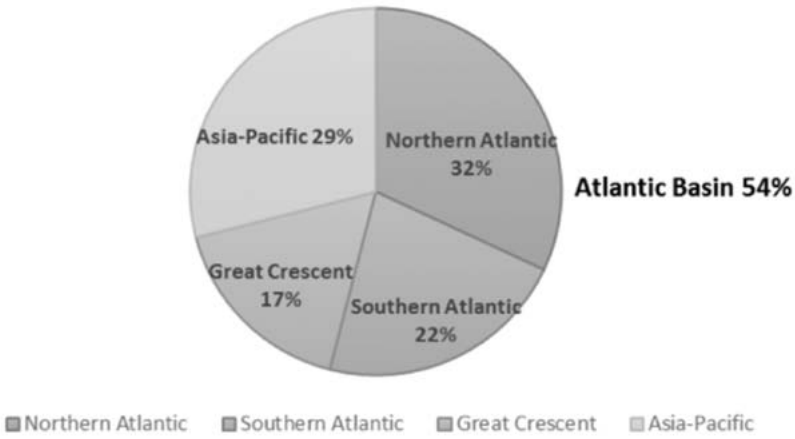
Source: IFP Energie Nouvelle 2012 and own elaboration.

Figure 5 *Deep Offshore Oil Production, by Major Region, 2008*



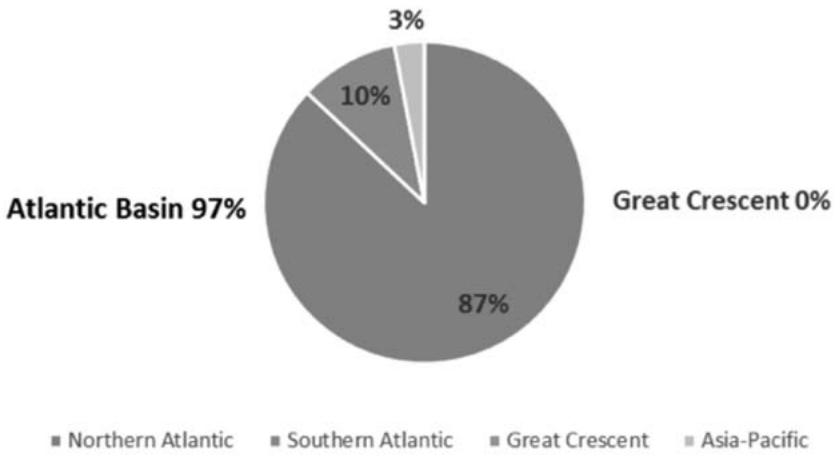
Source: IFP Energie Nouvelle 2012 and own elaboration.

Figure 6 *Offshore Gas Production, by Major Region, 2012*



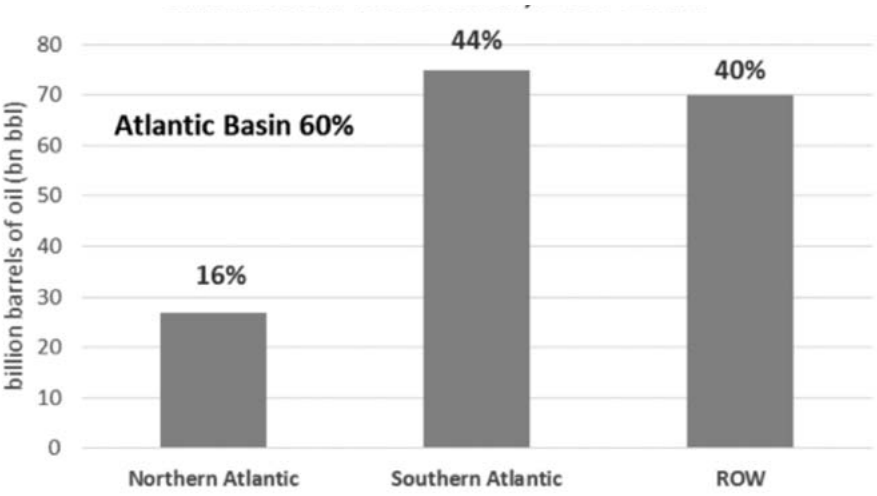
Source: IFP Energie Nouvelle 2012 and own elaboration.

Figure 7 *Deep Offshore Gas Production, by Major Region, 2008*



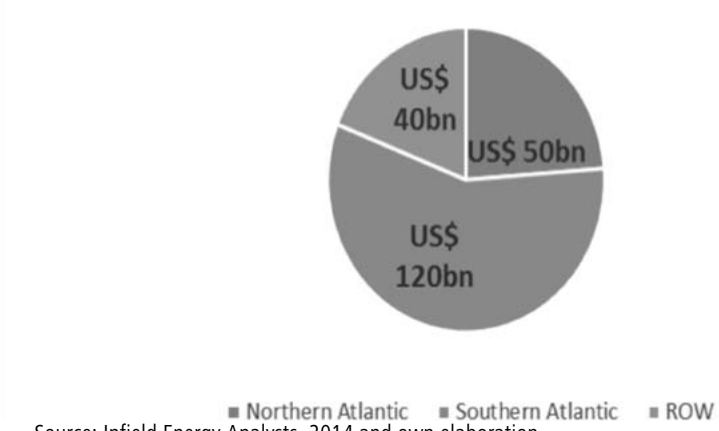
Source: IFP Energie Nouvelle 2012, and own elaboration.

Figure 8 *Offshore Oil Discoveries, 1995-2012*



Source: Deutsche Bank and Wood Mackenzie, 2013 and own elaboration.

Figure 9 *Deep Offshore Oil and Gas Investment, 2011-2015*



Source: Infield Energy Analysts, 2014 and own elaboration.

The Strategic Significance of the Atlantic Energy Seascape

The comparative advantages of Atlantic Basin offshore energy have significant potential implications, particularly in light of the global shift of strategic relevance from the continental landmasses to the ocean basins. Already one-third of global oil production occurs offshore (28mbd in 2010), with 8mbd coming from the 'deep' offshore. Offshore oil production has more than doubled since 1980 – from less than 15% – to nearly one-third – of the global daily total today (rising in absolute daily production terms from 8.9mbd to 28mbd in 2010). Since 1980, offshore oil production has accounted for all of the net increase (20mbd) in global oil production, which grew from 66mbd in 1980 to 86mbd in 2013. Meanwhile, onshore production has fallen from a peak (1970: 60mbd) and now appears to be in long-term decline worldwide – although in the US the shale revolution of North Dakota has partially reversed this trend. This special geostrategic significance of Atlantic offshore oil is nearly just as true of Atlantic offshore gas production – given that current offshore gas production accounts for some 27% of total global gas production[13] and that by 2050 some 85% of all international energy trade will consist of gas flows, of which most will be LNG flows by sea.[14]

In this regard, one of the most far-reaching shifts in the global seascape generated by the Atlantic energy renaissance has been the recent reversal of the net direction of global energy flows – over three quarters of which move by sea.[15] As the centre of gravity for energy supply moves west and the centre of gravity for energy demand moves east, a rising Asian demand call on global energy will be increasingly met by the Atlantic Basin, at the margin, and to the market share detriment of the Great Crescent zone. An increasing amount of this energy, particularly oil and gas, will be transported by sea, and a rising share of this seaborne energy will be moving across the Atlantic Basin energy seascape as a result of the Atlantic energy renaissance and progressive elimination of the historic Atlantic Basin dependence on Great Crescent energy. The Atlantic Basin has already begun to meet Asian demand at the margin – implying the beginning of the net reversal of traditional East-to-West movements of global energy into new West-to-East net energy flows. By 2035 this reversed net global energy flow will meet one-third of the entire Asian demand call, with the Great Crescent falling from recently 100% to two-thirds by the same date, 2035.[16] In gas alone, roughly half of the Asian demand call will be met by the Atlantic (See Figures 10 and 11.)[17]

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13 This global offshore oil picture comes from combining offshore hydrocarbons data from IFP Nouvelle Energie 2012 with offshore production data and total global oil production data from BP Annual Statistical Review of Energy 2013 and 2014.

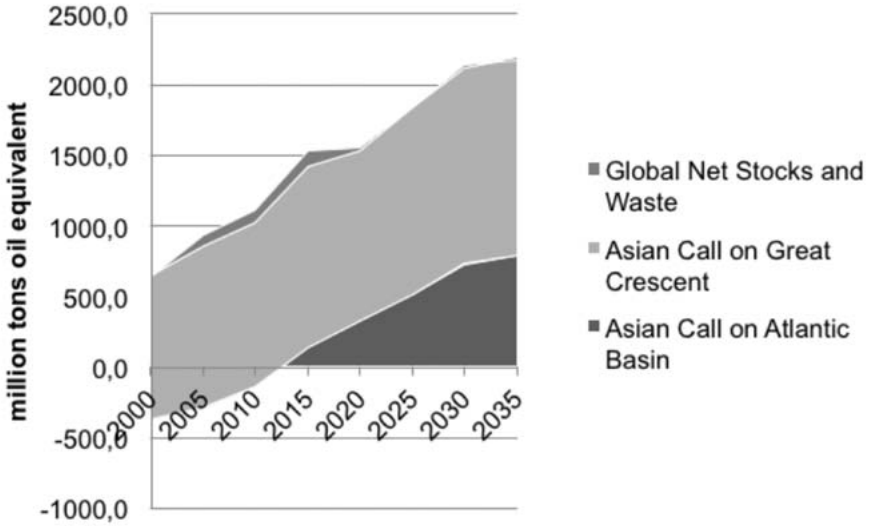
14 Projection derived from the IIASA GEA Model Database and further author elaboration.

15 BP Statistical Review of World Energy (2013). Over 76% (or some 64 million barrels a day of oil equivalent, or mbdoe) of the world's cross-border international energy trade (84mbdoe) travels to its destination by sea. In 2012, the world produced approximately 222mbdoe of energy, but in a typical year as much as 40% of that is traded internationally.

16 According to a re-mapping of BP's global energy projections to 2035. BP 2015.

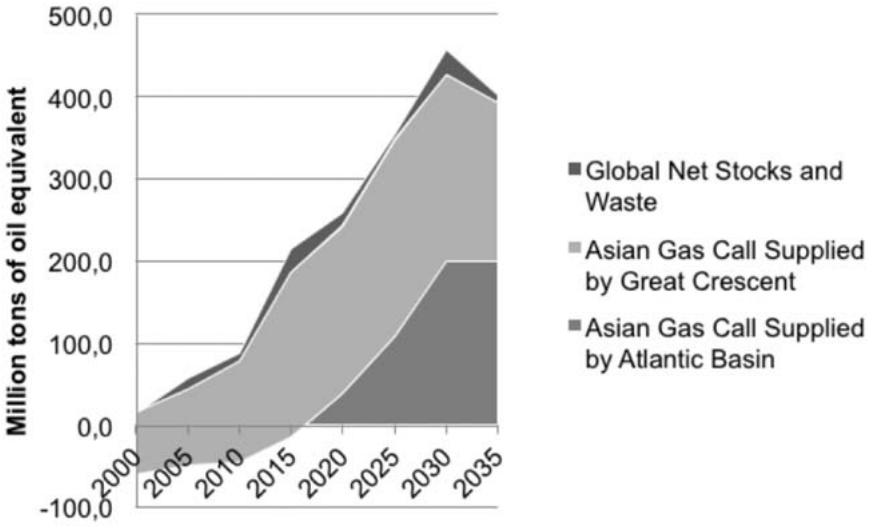
17 There are other trends, risks and opportunities that could change the variables of the analysis given here. Chief among them are the recent and future trends in renewable energy, low carbon technologies and urban electrification. However the scope of this article does not allow for these variables to be fully integrated into the analysis. Nevertheless, one of the great challenges that faces the Atlantic Basin and its individual societies, including those in Latin America is to square the circle of increasing hydrocarbon dominance within an Atlantic Basin which is now 're-carbonizing' with a low carbon transition consistent with sustainable development. Nevertheless, such a challenge could be addressed in a new and innovative way through 'pan-Atlantic energy cooperation (see Box 2).

Figure 10 *The Asian Call on Global Energy Flows, Atlantic Basin vs Great Crescent, 2000-2035*



Source: BP Energy Outlook 2035, and own elaboration.

Figure 11 *The Asian Call on Global Gas Flows, Atlantic Basin vs Great Crescent, 2000-2035*



Source: BP Energy Outlook 2035, and own elaboration.

The Oil Price Fall and the Atlantic Energy Renaissance

Some might question the economic sustainability of the Atlantic Energy Renaissance and its commercial, economic and geostrategic importance in light of the significant drop in the global price of oil over the course of the past year from roughly US$100/bbl in the summer of 2014 to roughly US$50/bbl in the summer of 2015. A survey of recent production cost estimates (and of budget break-even price levels) suggests that by far the largest share of the recent supply boom in the Atlantic will remain economically viable at mid-to-long term prices within a band of US$60/bbl to US$80/bbl – although certain countries, like Venezuela and Nigeria, and possibly a few others, will not clear current budgets unless the sustainable band begins at US$100/bbl.[18]

One provisional conclusion in this regard, then, is that the Atlantic Basin energy renaissance is a sustainable structural change upon the global energy flow map. Although, certain traditional Atlantic Basin energy producers, such as Venezuela or Nigeria, could fall prey to now mounting centrifugal forces, threatening current levels of 'global production' (if 'Atlantic') thereby placing a certain floor with downward resistance beneath the global price of oil, lending it certain upward momentum towards the above-mentioned US$60/bbl to US$80/bbl price band projected for the mid-term. So it is possible that production stagnation or decline in some Atlantic Basin countries could help restrict supply so that the majority of the Atlantic Basin's recent supply boom will continue to be economically viable.

Furthermore, as can been demonstrated historically (at least broadly), times of softer, or even of low, prices typically generate forces which facilitate domestic energy reform as well as international (or 'transnational') energy cooperation and integration. Although the International Energy Agency took shape during a period of high prices, most other international, multilateral or regional energy fora have been initially launched, or initially thrived, in low periods of the global energy price cycle. This is particularly true of Eurasian multilateral energy cooperation that stemmed from the Energy Charter Treaty process, dating from the end of the Cold War at the beginning of the 1990s – a time of low prices. And it is certainly true for most Atlantic Basin domestic energy reforms of the past three decades which involved certain calculated doses of liberalisation and opening (as opposed to reforms of heightening state intervention which tend to come in periods of higher or rapidly rising prices).[19] Higher prices in general have tended to undermine international energy cooperation, at least the official state-driven variety.

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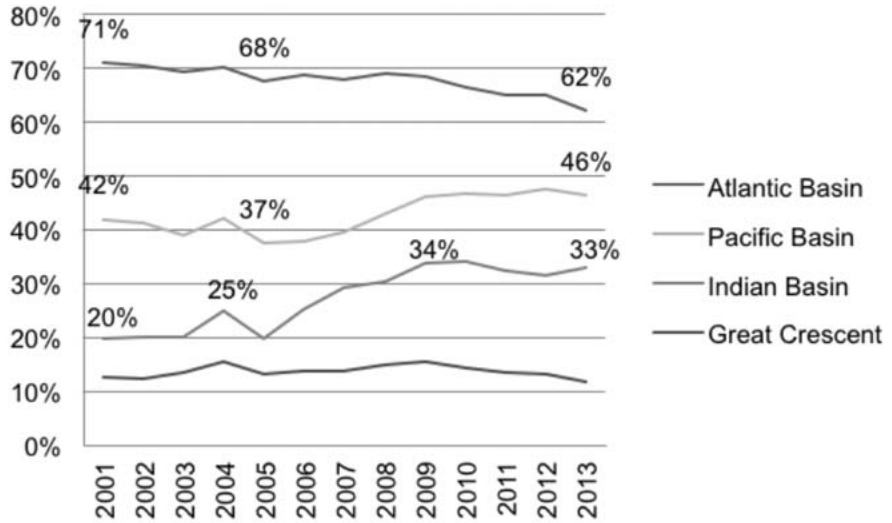
18 This analysis was based on a Google survey for images of 'global oil production costs' which yielded some 20 graphic analyses of global production costs (i.e., 'economic breakeven) by both geographic and oil type (e.g., shale, offshore, arctic etc.) categorisations; and another 20 graphic analyses of the 'political breakeven' oil price level (i.e., the oil price level needed, given a projected export volume, assumed necessary to cover the national budget) were also incorporated into the estimated bands here.

19 Venezuela's energy 'apertura' of the 1990s, Brazil's oil privatisation and liberalisation of the Cardoso era (1997), Spain's energy liberalisations of the post-cold war globalisation period, and Mexico's most recent reforms all fall into this low oil price cycle-reform paradigm, as do Argentina's energy reforms of the Menem 1990s. It is true that some of these reforms are not remembered well, in both senses of the word by many; but this does not change the historical lesson that times of lower oil prices generate opportunities for strategic re-definition and change of trajectory.

Pan-Atlantic Energy Cooperation

So rather than get side-tracked into a likely zero-sum discussion of shifting 'global power', the far more interesting implications of the Atlantic energy renaissance suggest the potential for new forms of transnational cooperation and governance along the strategic horizon for Atlantic actors. New research reveals high levels of intra-regional connectedness in terms of energy trade within the Atlantic Basin.[20] Applying an 'Atlantic Hemisphere projection' (which focusses on a broader, four-continents-version of the Atlantic Basin, see Box 1) to the data-flow map reveals that some 75% of energy trade between the Atlantic continents is 'intra-regional' or 'intra-Atlantic.'

Figure 12 *Intra-regional Energy Trade, Ocean Basin World, 2001-2013*



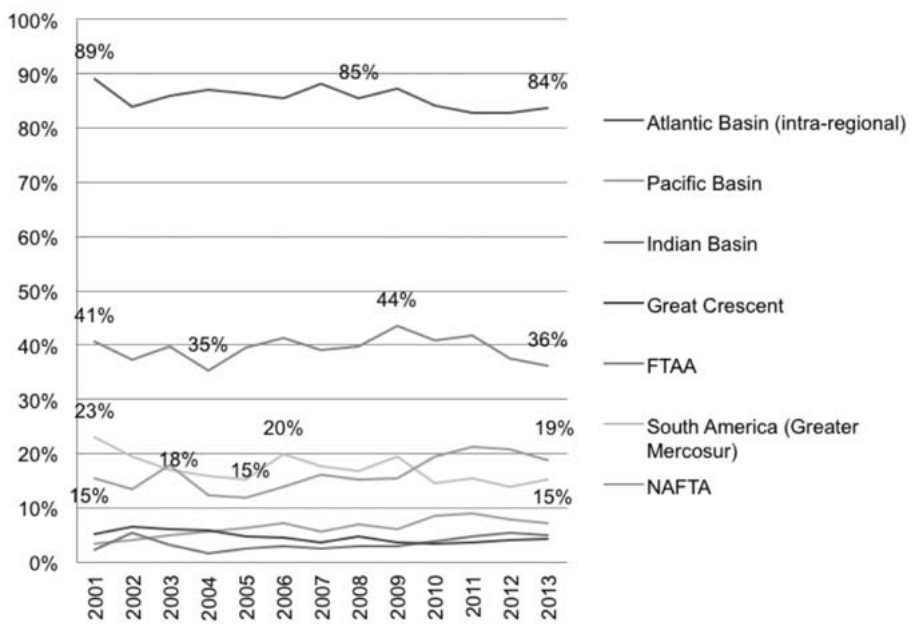
Source: UNCOMTRADE 2015, and own elaboration.

However, if we focus our projection of global data instead on the maritime spaces (rather than on the continental landmasses), we produce a more meaningful, *if not perfectly precise*, notion of an Atlantic Basin space. Such an 'ocean basin projection' (see Box 1) reveals that 62% of Atlantic Basin energy trade (see Figure 12) is 'intra-regional' or 'intra-basin' (although it had long been over 80%, at least until recently when the Atlantic Basin, and particularly the Southern Atlantic, began to serve the role of net supplier at the margin for Asia). The same is true for nearly all Atlantic Basin countries, but particularly for 'Atlantic Latin America.' Under an ocean basin projection, Brazil's energy trade, for instance, is densely engaged with the Atlantic Basin (84%), and Argentina's even more so (87%).[21] (See Figures 13 and 14.)

20 Based on a re-mapping of UNCOMTRADE global bilateral trade data, 2000-2013.

21 'Intra-Atlantic Basin energy trade shares are also notably high for counter-parts in Africa (Nigeria 78%, Morocco 53%), Europe (75%) and North America (US 75%), according to a broad 'Atlantic Hemisphere' projection of the UNCOMTRADE bilateral trade data.

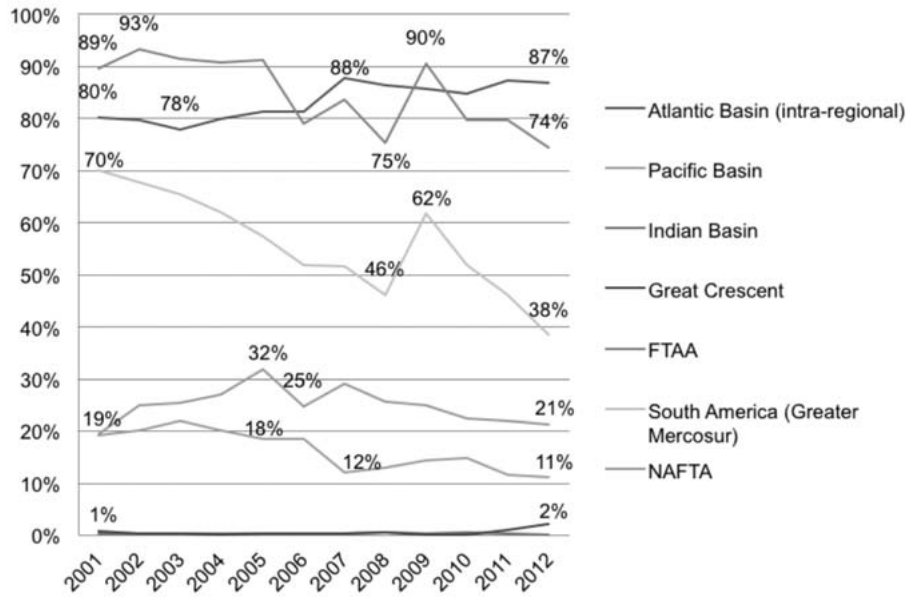
Figure 13 *Brazil, Intra-regional Energy Trade, Ocean Basin vs Continental Projections, 2001-2013*



Source: UNCOMTRADE 2015, and own elaboration.

On the other hand, Brazil's intra-regional energy trade within South America has fallen from 23% in 2000 to 15% in 2013. Argentina's intra-regional energy trade in South America plummeted from 70% to 38% over the same period. And this at the end of a trail of proposed 'continental energy integration' projects. Yet, intra-Atlantic Basin energy trade remained very high in Brazil, and even rose by seven percentage points in Argentina. (See Figures 13 and 14) Anticipating the analytical comparisons to be used in the next section on broader total merchandise trade, if these very high levels of Atlantic Basin intra-regional energy trade are compared with the intra-regional energy trade shares of these countries within the historic space of their aspired 'continental energy integration' – in this case, South America – an argument emerges in favour of focussing upon the Atlantic Basin as a space of both necessity and opportunity for transnational energy collaboration and cooperation.

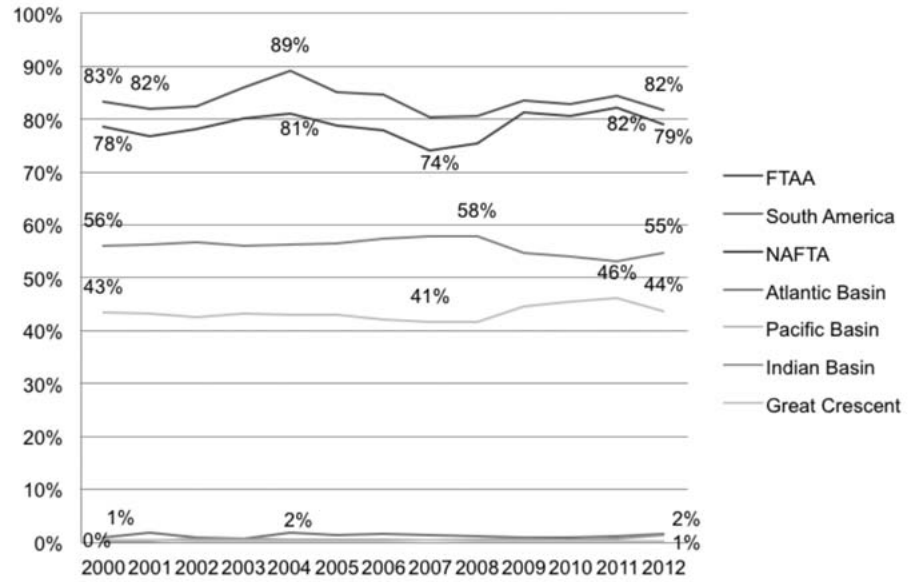
Figure 14 *Argentina, Intra-regional Energy Trade, Ocean Basin vs Continental Projections, 2001-2012*



Source: UNCOMTRADE 2015, and own elaboration.

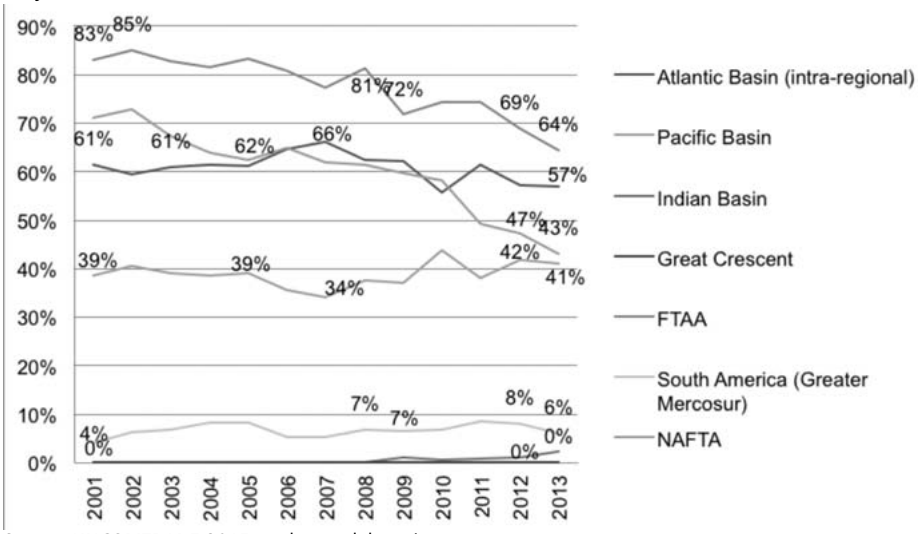
Mexico and Colombia present interesting cases in this regard (see Figures 15 and 16): they are emblematic Latin American 'dual basin' countries (a status that is nearly universal in the Americas north of South America). Both countries began the period with the United States – the dual basin country *par excellence* – constituting their single overwhelming energy trading partner. Both also have a relatively evenly distributed energy trade between the Atlantic Basin (Mexico 55%, Colombia 57%) and the Pacific Basin (Mexico 44%, Colombia 41%), although the Atlantic still exerts a stronger gravity upon both. Meanwhile, their intra-regional energy trade, considering all potential continental spaces conceivable (NAFTA, South America or even the entire 'Western Hemisphere') is far lower, in general, and/or has been on the decline.

Figure 15 *Mexico, Intra-regional Energy Trade, Ocean Basin vs Continental Projections, 2001-2012*



Source: UNCOMTRADE 2015, and own elaboration.

Figure 16 *Colombia, Intra-regional Energy Trade, Ocean Basin vs Continental Projections, 2001-2013*



Source: UNCOMTRADE 2015, and own elaboration.

All of this suggests that horizons for transnational energy cooperation, let alone for any on-going aspirational international energy integration, should be cast like a net across the ocean basin regions of Latin American countries – if not instead of, then at least as new innovative complements to the 'continental' horizons already long in place. Four Latin America countries – Mexico and Colombia, along with Brazil and Argentina – are key to any energy cooperation or integration scheme conceived along regional bases, whether 'continental' or 'ocean basin' based.[22] Collectively – or even just via the channelled interaction of their civil society agents –their strategic power is potentially quite large. However, such potential will likely remain misunderstood and unrealised without 'pan-Atlantic energy cooperation.' This is consistent with the fact that, across the various sectors of official and civil society agents, these countries have shown the most strategic interest in newly coalescing forms of pan-Atlantic energy cooperation.[23]

'Pan-Atlantic energy cooperation' – as opposed to the long-standing mechanisms of 'trans-Atlantic' energy cooperation (US-EU Energy Council) or 'Hemispheric' energy cooperation (e.g., Obama Administration's US-Latin American energy 'partnerships') – would acknowledge the deepening (if shifting) energy linkages across the Atlantic Basin. The east-west links, which criss-cross both north and south, are being facilitated and shaped by the growing strategic importance of the 'seascape' and the 'energy seascape' in particular. These truly pan-Atlantic energy linkages are now beginning to rival the traditional (and continentally-conceived) north-south global flow circuits long-perceived as dominant in the 'Western Hemisphere.'

More than coincidentally, this is occurring just as the Atlantic Basin energy renaissance is helping to reverse historic 'post-World War II, Cold War' Atlantic dependence upon Great Crescent energy and is now pushing back the net global energy flows eastward. All of this points to a very suggestive but material conclusion: the Atlantic Basin energy space, in general, and 'energy seascape,' in particular, is rapidly becoming a key strategic space – representing new forms of risk and opportunity for Latin American countries as well as for their key civil society energy agents – on the newly emerging global flow map, which is increasingly 'ocean basin based.'

In this regard, intra-Atlantic Basin energy flows constitute between two- thirds and 75% (depending on which version of the Atlantic Basin is being considered) (see Box 1) of all Atlantic Basin global energy flows. These same intra-basin energy flows make up nearly two-thirds (42mbdoe) of total maritime energy transportation on the global seascape (63mbdoe). Total Atlantic Basin global energy flows (including both intra- and extra-Atlantic energy trade) constitute over three-quarters of the total use of the global seascape for the transportation of global energy flows.

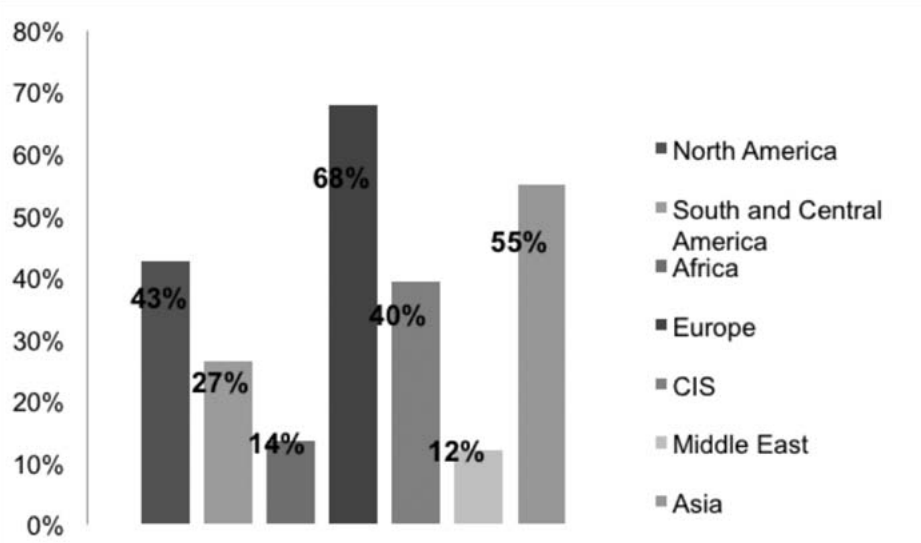
[22] The leadership potential of these societies in the realm of transnational energy cooperation is such that it likely explains, at least partly, why civil society agents of all types from these countries have shown the most interest in the recently established Atlantic Energy Forum (see Box 2), and why Mexico has served as host to repeated summits of the Atlantic Energy Forum.

[23] It should be noted that the same potential in broader economic and strategic terms has already by noticed, and acted upon, by the Pacific Latin American countries, within the Pacific Basin. Chile and Peru have joined with dual basin countries Colombia and Mexico, amongst others, in the Pacific Alliance – which looks increasingly to Pacific Basin ventures like APEC and the TTP. Already, there are calls for inter-regional energy cooperation and integration within the Pacific Alliance. See Christian Gomez, **An Energy Agenda for the Pacific Alliance**, Society of the Americas and Council of the Americas, Washington, D.C. 2015.

Atlantic Basin Merchandise Trade in an Ocean Basin World

This section broadens the above analysis: from the Atlantic Basin energy space conceived as, increasingly, *the* regional energy space of global relevance and reference – to the potential reality of the Atlantic Basin as an increasingly important space of strategic relevance in a broader economic sense. The first point worth mention is the currently low level of intra-regional trade (as a percentage of 'total trade,' with energy trade a subset) among 'continental' groupings, which form the typical aspirational framework of most regional trade agreements (RTAs), particularly in Latin America. Figure 17 presents a comparison of intra-regional trade shares for regions conceived of in sub-continental and continental terms, as per a 'continental projection' of the data (see Box 1) from by the World Trade Organisation (provided in these same categories). Central and South American trade (27%) is rivalled in its low percentage of continental intra-regional trade (a de facto 'ocean basin orientation') only by Africa (14% of the African total).

Figure 17 *Intra-regional Trade of Principal 'Continental Regions'*

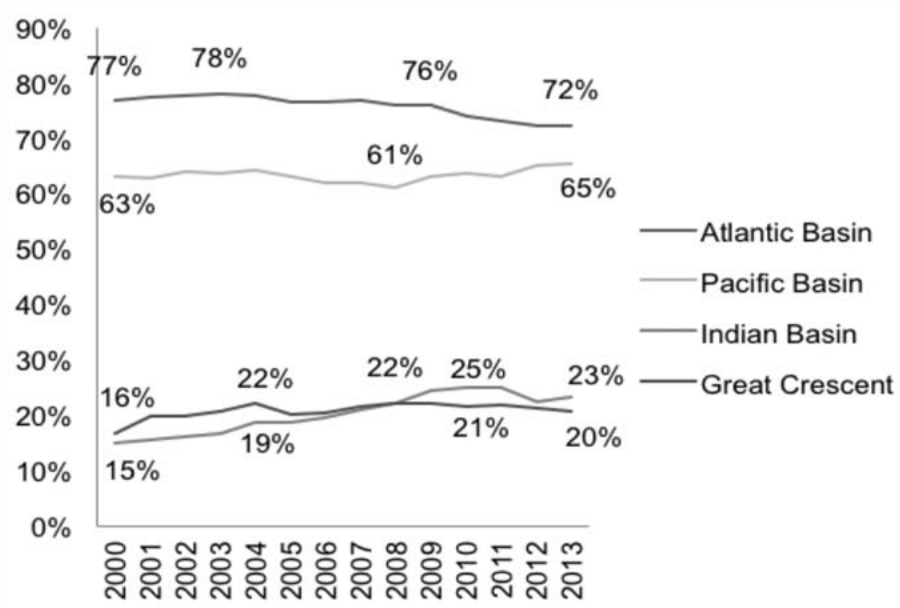


Source: WTO 2013 and own elaboration.

However, as in the narrower case of energy trade, both at the basin and country levels, intra-regional trade is much higher, indeed in general very high – when conceived of as 'intra-basin' trade and cast through the new regional frame of the 'ocean basin projection' (see Box 1). For the Atlantic Basin as a whole (see Figure 18), the intra-regional share for total merchandise trade comes to 72% in 2013 (down from 77% in 2000). This is nearly double the 'continental average' (37%) and still far higher than for Europe itself (68%), the greatest success among all 'continental integration' projects. While it is true that the 'Atlantic Basin' space – in both geographic and global trade system terms – is larger than Europe, it is also true that the currently high levels of intra-Atlantic Basin

trade have yet to experience the densifying catalyst of regional connectedness that generally comes in the aftermath of successful formal regional cooperation or integration (as in the case of the EU, at least up to a certain recent point in its experience).

Figure 18 *Global Intra-regional Total Merchandise Trade, Ocean Basin Projection, 2000-2013*

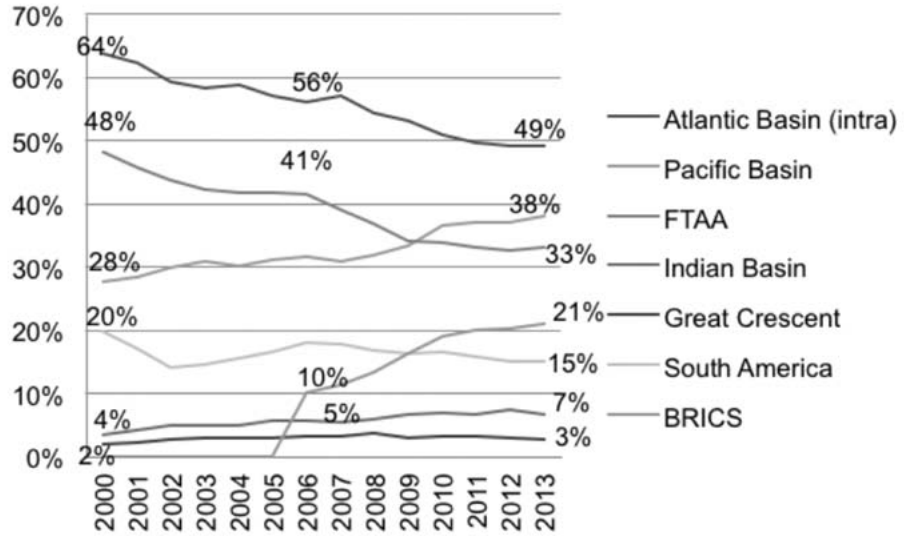


Source: UNCOMTRADE 2015, and own elaboration.

A similar horizon emerges for individual Atlantic Latin American countries (see Figures 19 and 20), including Brazil and Argentina (although, again, as with energy, the same could be said for Pacific Latin American countries with respect to the Pacific Basin). Argentina's Atlantic Basin trade (57%) does not present the same intense Atlantic gravities as in the narrower energy trade field (87%). However, Argentina's Atlantic trade connections remain the strongest of all existing or potential regional gravities of trade connectedness, even despite the strong, one-off gravitational pull of the emergence of Asia into the global economy, and the more direct South-South state diplomacy injected by China in particular, into its trade relations with the countries of the 'Southern Atlantic.' Brazil has been the Latin Atlantic country most significantly affected by the unique one-off China gravities, as its intra-Atlantic trade has suffered a decline during the second decade of the first phase of the 'fin de siècle' epoch of globalisation, falling from 64% in 2000 to 49% by 2013. Nevertheless, Brazil's growth in Atlantic Basin trade continues to make that intra-Atlantic vector its fattest and its fastest growing, in absolute terms.[24]

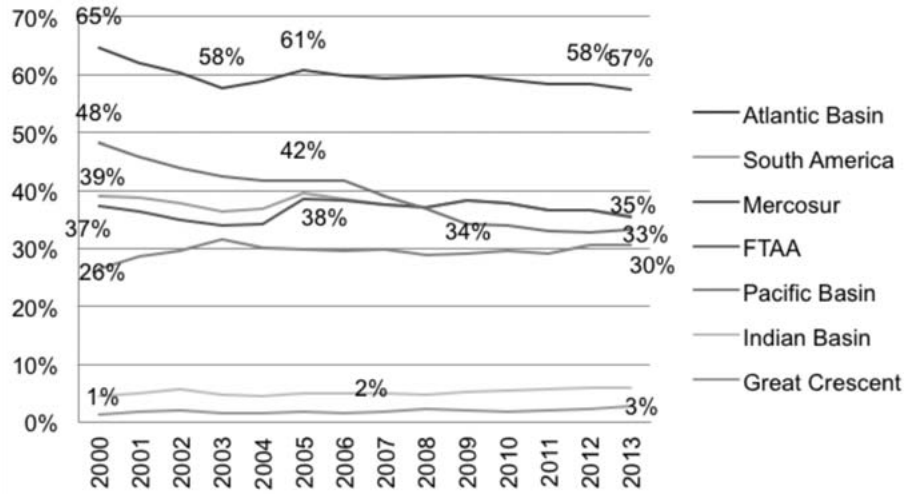
[24] For a more complete discussion of the relevant magnitudes of influence exerted by the emergence of Asia in the global

Figure 19 *Brazil, Intra-regional Trade, Ocean Basin vs. Continental Projections, 2000-2013*



Source: UNCOMTRADE 2015, and own elaboration.

Figure 20 *Argentina, Intra-regional Trade, Ocean Basin vs. Continental Projections, 2000-2013*

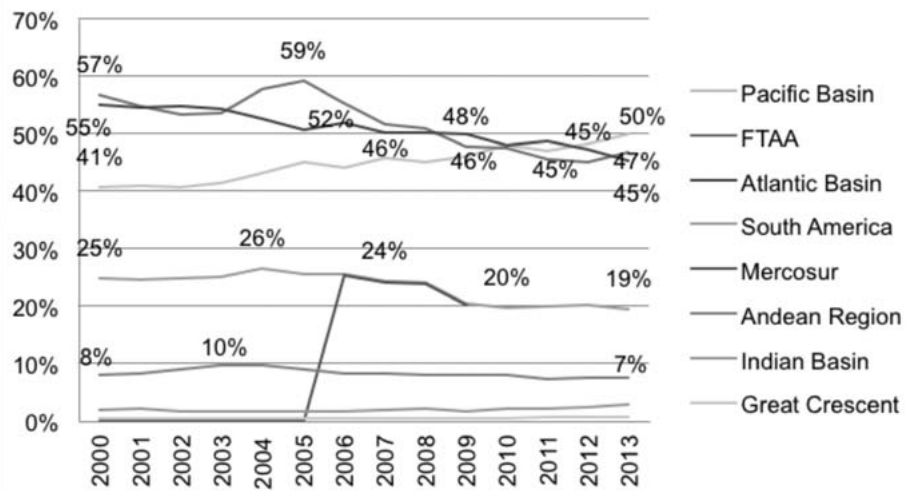


Source: UNCOMTRADE 2015, and own elaboration.

economy on the trade patterns and flows of Brazil and Argentina, and of the Atlantic Basin more broadly (in which the same data is analysed more in depth), see Paul Isbell and Kimberley A. Nolan Garcia, "Regionalism and Inter-regionalism in Latin America: The Beginning or the End of Latin America's 'Continental Integration'," **Atlantic Future Scientific Paper** 20, Brussels, 2015, pp. 24-26.

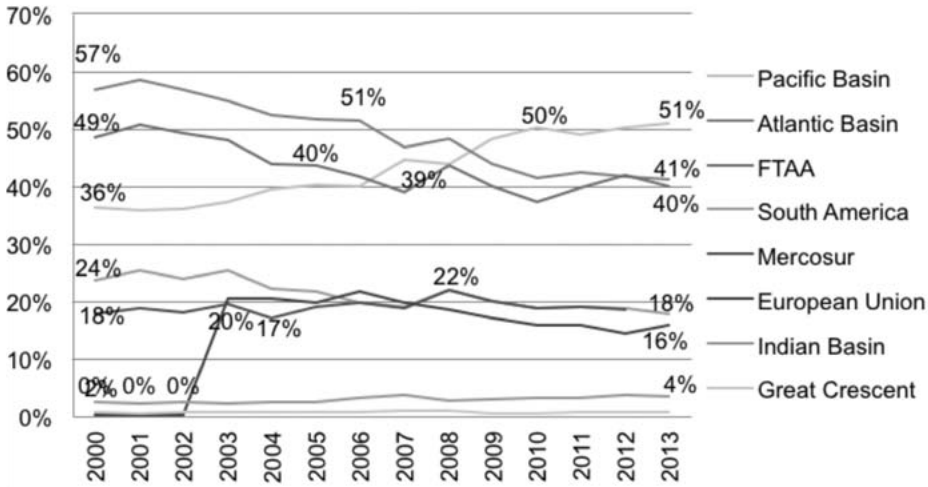
Interestingly enough, not only do the Pacific Latin American countries – like Peru and Chile –register higher intra-regional trade shares (50% and 51%, respectively) within the Pacific Basin than within their traditional 'sub-continental' and 'continental' trade regions, namely the Andean Community (Peru 7%) and 'South America' (Peru 19%, Chile 18%), but their inter-regional trade with the Atlantic Basin (Peru 45%, Chile 41%) nearly matches their intra-Pacific trade. Near-balance in ocean basin trade flows is a trait which these Pacific Latin American countries share (in terms of total merchandise trade) with 'dual basin' countries like Mexico and Colombia.

Figure 21 *Peru, Intra-regional Trade, Ocean Basin vs. Continental Projections, 2000-2013*



Source: UNCOMTRADE 2015, and own elaboration.

Figure 22 *Chile, Intra-regional Trade, Ocean Basin vs. Continental Projections, 2000-2013*



Source: UNCOMTRADE 2015, and own elaboration.

Conclusion

A number of provisional conclusions can be put forward:

1. As regards 'Atlantic Latin American' countries, the case for Atlantic Basin energy co-operation is even stronger than for that of broader Atlantic Basin commercial cooperation – that is, economic, financial and development cooperation – given that the intraregional energy trade of 'Atlantic Latin American' countries such as Argentina (87%), Brazil (84%) and Venezuela (65%) is even higher than their intraregional trade in all merchandise goods (Argentina: 57%, Uruguay: 59%, and Brazil: 49%, respectively).

2. However, the case for such broader Atlantic Basin commercial cooperation is based less on the facts and flows of the map of merchandise trade – a map on which Asia has emerged to provide the gravity of a competitor and where most barriers have already been eliminated through cooperative negotiations – than it is on the stubborn data that reveals that the Atlantic Basin continues to constitute the centre of gravity of the global economy. This is seen through its dominant position in global services, foreign direct investment and other capital flows – the 'invisible' components of the global balance and flow of payments – both in terms of intra- and extra-Atlantic flows.[25]

[25] See Daniel S Hamilton, **Atlantic Rising: Changing Commercial Dynamics in the Atlantic Basin. Washington DC: Center for Transatlantic Relations**, Johns Hopkins University-SAIS. 2015

3. Furthermore, the case for broader pan-basin commercial cooperation in the Atlantic Basin is at least as strong as is the case for Pacific Basin cooperation and integration, following the broad proxy indicator of intraregional trade connectedness. Total intraregional trade within the Pacific Basin for these 'Pacific Alliance' countries (Peru 50%, Chile 51%) is lower than the total intraregional trade shares of the Atlantic Latin American countries within the Atlantic Basin (see above). Nevertheless, APEC and the TTP seem to merit the strategic attention of the Pacific Latin American countries in the Pacific Alliance.

4. These conclusions underline a key new trend also identified above: the rising relative strategic significance of the ocean basin seascapes in general (compared to that of the continental landmasses) and of the Atlantic Basin and its energy seascape in particular. New regional gravities have recently been coalescing within and across ocean basins, as opposed to across continental landmasses, presenting the world's four main ocean basins as the new frontiers for regional cooperation and governance. In the realm of commerce and trade, this new trend can be seen most clearly in the Pacific Basin. Meanwhile, in energy, the Atlantic Basin is now generating the first new ocean-basin based collaborative mechanisms in 'pan-Atlantic' energy cooperation. In the future, it is also possible that the Indian Ocean Basin and the Arctic Basin will also develop deeper basin-based cooperative and governance structures around climate change, sea lane security, marine resources and ocean-based environmental services. Such ocean basin regions might serve as more effective building blocks towards – or at least 'second best' alternatives to – elusive global governance than have our long-standing land-based and continentally-bound regional systems and imagined realities.

Box 1

Geopolitical data cartography

Our approach begins by re-categorising, rearranging and 're-projecting' existing and generally available data. Applying this 'data cartography' to the annual volumes of world trade, we have mapped and 'remapped' the 'intra-regional,' 'inter-regional' and other 'extra-regional' trade flows (in this particular case, of Latin America countries). To chart these 'data maps' we have referred to three different 'cartographic projections' of global data over the course of this analysis: (1) the 'continental' projection; (2) the 'Atlantic Basin' projection (also known as the 'Atlantic Hemisphere' projection); and (3) the 'ocean basin' projection. Each of these projections (or framings) of a global data set implies a distinct manner of focussing and organising the global map in 'regional terms.' Like any cartographic projection of the three-dimensional globe onto the two-dimensional plane of a world map, each of these data projections involves advantages (conveniences), disadvantages (inconveniences) and blind spots (whatever is, or remains, marginalised or obscured as a result of the particular focus) all of which imply trade-offs in revelatory capacity and relevance, depending on the context.

The Continental Projection

The current predominant framing is the continental projection, which organises national and global data in regional terms around categories corresponding to the continental (and sub-continental) landmasses (i.e., North America, Central and South America, Africa, Europe, the Middle East, South Asia, etc.). This is the manner in which most international organisations present most of the world's open-source public data in regional terms. As a result, most analyses of national, regional and global issues tend to rely on 'continentally-focussed' regional data categorisations already received from international institutions. This landmass focus also tends to be evident in the structure, dynamics and aspirations of most of the world's regional organisations, associations and agreements, which appear to justify and confirm the validity of this land-mass centred continental focus. The intra-regional trade data in Figure 17 have been framed according to such a continental projection.

Furthermore, the recent revolutions in the global energy arena have been defined through the lens of this traditional projection of our mental and data maps. This emphasis on national and global categories – notably when structured solely by economic brackets abstracted from the map or by geographic groupings which marginalise the sea – leads to much of the changing regional or other sub-global dynamics to be lost. The continental projection can reveal neither a complete view of global energy supply and demand (stocks) nor an accurate picture of the evolution of global flows and their actual articulation and evolution across the physical relief map of the real world.

The Atlantic Basin Projection

In response to this existing shortcoming, we have generated two alternative projections. The first, the Atlantic Basin projection (or the 'Atlantic Hemisphere' projection), re-cuts the same existing national and global data from the same standard international sources into the following new regional categories, or 'units of analysis':

1. The 'Atlantic Basin' – which incorporates the four Atlantic continents in their entirety, including Africa, Central and South America (and the Caribbean), North America and Europe;

2. The 'Great Crescent' – which groups together the traditional 20th century suppliers of hydrocarbons, including Russia and Central Asia (or the ex-Soviet Union) and the Middle East – a Eurasian region which arcs in a 'great crescent' from Southwest Asia all across the northern half of the Asian 'continent';

3. The 'Asia-Pacific' – already a standard regional categorisation which is comprised of the sub-continental regions of 'South Asia,' 'Southeast Asia' and 'East Asia', together with the islands of the Indian and the Pacific oceans, including Australia and New Zealand.

What the Atlantic Basin projection can reveal (and the continental projection cannot) is the totality of the 'Atlantic energy renaissance,' as opposed to just one of its component dynamics (such as the Brazilian pre-salt, the African energy boom, or the recent setbacks of renewable energy in Europe, or the shale revolution in the US). The Atlantic Basin projection also reveals that the 'global centre of gravity for energy supply' is shifting into the Atlantic Basin and that the centre of gravity of the 'global energy seascape' is also beginning to overlay with the 'Atlantic energy seascape.' This projection also begins to reveal the logic and potentials of pan-Atlantic energy cooperation. More than anything, the Atlantic Basin projection reveals a fresh new view of relative global stocks. The graphic data in the section on the Atlantic Energy Renaissance (see Figures 1 through 11) are presented using an Atlantic Basin projection. Such fully and uniquely Atlantic trends and potentials simply cannot be identified clearly enough while relying only on the predominant 'continental' framing of our currently predominant maps (real and mental).

Yet the Atlantic Basin projection itself remains 'land-based', and only rearranges the groupings of the continents, generating only a partial transformation of our mental and data maps. Although this projection groups together the four Atlantic continents around the Atlantic Ocean into a maritime region, it then divides the rest of the world into the two contiguous landmasses of Asia-Pacific and the Great Crescent. This creates a kind of 'hybrid' (land-based/ocean-based) projection that does begin to reveal 'Atlantic Basin' flows (as opposed to purely 'bi-lateral' inter-continental flows), but it cannot reveal the totality of global flows (including their deepening regional densities).

The Ocean Basin Projection

The third projection is called the 'ocean basin projection.' This is the regional data framing applied in Figures 12 to 16 (in the section on 'pan-Atlantic energy cooperation') and Figures 18 to 22 (in the section on total merchandise trade).

Rather than start with the continental landmasses as the point of departure (and as the defining units of analysis), an 'ocean basin projection' focuses first on the oceans –and only then proceeds to incorporate the 'maritime rimlands' of the surrounding continents. As a result, the ocean basin projection casts the global data into three major ocean basin regions and a residual land-based region: (1) the Atlantic Basin; (2) the Pacific Basin; (3) the Indian Basin and (4) the Great Crescent.[26]

To produce an ocean basin projection of the global geo-economic flow map implies a much larger data and methodological challenge than does the 'Atlantic Basin projection.' Above all, it requires a deeper 're-cutting' of the current data to account for a number of geographical realities of the world's ocean basins. Because the world's continental 'rim lands' collectively surround the world's oceans, continental data categories need to be split between the ocean basins on their shores. In most cases, this merely involves breaking down the continental aggregation of nationally reported data and then re-arranging the national data into new aggregate 'ocean basin' regions. However, this analytical need to 'split the continents' does raise the question of how to meaningfully reflect and properly account for the stocks and flows of the 'land-locked' (i.e. those with no coastline) and 'dual basin countries' (i.e. those with coastlines on more than one ocean basin, like the US, South Africa or Indonesia).

Flow data for a dual basin country in the ocean basin projection is typically split evenly, with each half being identified with one of the country's two basin possibilities. However, in cases where the trade between a dual basin country and another partner (e.g. the US and Nigeria) is clearly all 'intra-basin,' then this entire trade flow vector is accounted for as inter-regional trade within the Atlantic Basin (even though the US is a dual basin country). On the other hand, trade flows which could be reaching a dual basin country via either of its ocean basins (i.e. US-India bilateral flows) are split evenly, with half being accounted for as trade between the Indian Basin and the Atlantic Basin, and the other half as trade between the Indian Basin and the Pacific Basin.

Finally, most land-locked countries are also treated in the same way as dual basin countries. For example, Botswana's flows are split between the Atlantic and the Indian basins. However, in certain cases, geographic constraints and facilitators (i.e. the barriers implied by mountains and the links provided by rivers) provide a reasonable case to include a land-locked country's flows exclusively within one basin (as in the case of

[26] The Arctic Basin is one of the inevitable 'blind spots' of this version of the ocean basin projection. However, we have only ignored the Arctic Basin because of very limiting data and methodological constraints. In particular, to build our regional mapping model of global flows to include the Arctic as the 'fourth basin' would require a category for 'tri-basin countries,' and much more complex structures and coding within the model. Given these short-term limitations, together with the fact that the Arctic has not yet truly opened to global flows, it has been sacrificed in this initial version of the projection.

Paraguay and the Atlantic). In order to affect this re-cutting of 'dual basin' and land-locked countries (and their trade flow 'splits), and then to aggregate country trade flows into our new 'ocean basin regions, we have created an Alternative Regional Mapping Model (ARM) capable of re-mapping the complete annual sets of global national bilateral trade flow data.[27]

Much as a new 'cartographic projection' of the world map takes the same 'data' used in previous projections of the map (i.e. the geographical and positional 'facts' of the planet), but then reveals a new world by altering the formulas of its framing and focus, this new 'ocean basin projection' reveals a fresh vision of the strategic horizon, spotlighting strategic trends – like the Atlantic energy renaissance or the coalescence of ocean basin regions, which cannot be readily identified on the currently predominant and land-dominated versions of our global geopolitical and energy maps simply because their focus and framing do not allow for it.

While the 'Atlantic Basin projection' reveals the potentials of ocean basin regional cooperation in the Atlantic Basin, an 'ocean basin projection' reveals the potentials (or lack thereof) for ocean basin-based regional cooperation in the other basin regions, as well. This 'ocean basin projection' of the data onto the global trade map allows for a maritime-centred conception of regionalism that now is beginning to parallel the actual pattern of globalisation that has been unfolding for the last 30 years through the material expressions of ocean basin-based regional cooperation. To date, such ocean basin cooperation has revolved around trade in the Pacific Basin (as in APEC and TTP), energy in the Atlantic Basin (as in the Atlantic Energy Forum of the Atlantic Basin Initiative), security (in its multi-faceted expressions) through the Indian Ocean Rim Community (IORC) in the Indian Ocean Basin, and ecological and maritime security in the Arctic (as in the agenda of the Arctic Council).

[27] A description of the ARM model, including an explanation of the dual basin and land-locked adjustments, along with a list identifying each country in the world by basin region – can be found in the Annex to Paul Isbell and Kimberley A. Nolan Garcia, "Regionalism and Inter-regionalism in Latin America: The Beginning or the End of Latin America's 'Continental Integration'," Atlantic Future Scientific Paper 20, Brussels, 2015.

Box 2

The high levels of intra-regional energy trade within the Atlantic Basin (visible through both the Atlantic Hemisphere and ocean basin projections) are now paralleled for the first time in the material reality of pan-Atlantic energy cooperation. In January 2014, the Atlantic Basin Initiative (a public-private civil society platform for cooperation and action led by some 50 former presidents and ministers from across the Atlantic space, along with dozens of CEOs, private firms, and strategic thinkers and strategists) met in Veracruz, Mexico to create the Atlantic Energy Forum (AEF). The inaugural meeting of the AEF took place in Cancun, in the state of Quintana Roo (Mexico) in November of 2014.

The AEF is a new form of ocean basin-based transnational energy cooperation which seeks to harness the potentials – and to face the challenges – of the Atlantic energy renaissance now articulating itself through the coalescence of a new 'pan-Atlantic' energy system. The AEF provides the private energy sectors of the Atlantic Basin, along with other agents from civil society, the regular opportunity to collectively review and analyse recent trends affecting the Atlantic energy space, along with projections for the future. The Forum creates a platform for cross-sector industry interaction, in a space in which most Atlantic energy companies find the majority of their global markets, and the most promising alliances for coordinating and influencing the newly developing energy supply chains in the Atlantic, particularly in gas, unconventionals and offshore.

The AEF also channels civil-society driven pan-Atlantic transnational cooperation on energy policy and regulation, generating a propitious strategic space for large-scale discussions between segments of the Atlantic energy system, which at the global level are usually considered to be at odds (i.e. the fossil and renewable sectors, IOCs and NOCs, net importers and net exporters, etc.). Finally, the AEF is both 'pan-Atlantic' and 'pan-ideological' in its membership and agenda, as well as 'pan-energy' in the horizon of its concerns. The AEF is also civil-society driven, and does not necessarily seek (at least not in the short term) the typical regional integration schemes organised around state leadership and participation (although it does actively engage sub-national regional states and cities).

The Atlantic Energy Forum's second annual meeting will take place November 5-6, 2015 in Mexico City, D.F.

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