

ENERGY AND IDENTITY IN ÅLAND, JEJU AND PRINCE EDWARD ISLAND

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Introduction

The burgeoning literature on energy is often framed with a view to advance material progress and technology. This paper takes a more holistic approach, examining the role that identity plays in creating and solving energy challenges on islands. Since every island has its own identity which is partially in the mind of the beholder, and no two islands are exactly alike, there is a wide variation in how the energy theme is manifested. After placing energy and identity issues in context, three sub-national island cases are compared. Patterns in energy choices and consequences can be teased out by examining not just geographic factors but also social, political, economic and environmental factors related to identity. Finally, recommendations for island energy policy are offered, based on a consideration of identity.

Confronting the Energy Challenge

While most small islands are heavily dependent upon imported fossil fuels at world price, many scientists believe that the continued use of chemical energy from fossil fuels is not environmentally sustainable. Not everyone agrees, arguing that technology can overcome the 'supply problem' (Huber & Mills, 2005). Energy is an invisible lever in the economy and a key to achieving good health, relieving poverty, improving human welfare and raising living standards. On the other hand, there is no energy production or conversion technology without risk or without waste. For most of human history, the key to abundant energy was to burn wood and then to obtain and burn fossil fuels (peat, oil, natural gas and coal). Despite their drawbacks, fossil fuels have high net energy per unit (Heinberg 2003: 152) and are hard to replace because they are so convenient. Almost every aspect of modern life, including the production of electricity, depends upon the easy availability of the chemical energy in fossil fuels.

Although the exact date is subject to interpretation, the volume of cheaply produced oil worldwide has already passed peak production (known as Hubbert's Peak) and is now in decline (Campbell & Laherrere, 1998). The International Energy Agency has just revised its forecast downward of the oil industry's ability to keep pace with soaring demand (Foley, 2008) as a result of rapid economic growth in densely populated areas like India and China which demand equitable development opportunities. A real lack of access to fossil fuels is likely to limit society's ability to produce electricity, desalinate water, drive vehicles, service tourism and maintain air and sea transportation links unless alternative strategies are put in place.

However, that fossil fuels and other forms of energy should be readily available has become deeply embedded in our modern psyche, whether urban or rural. Today's lifestyle of rampant consumerism is taken for granted almost everywhere in capitalist economies. Electrical wires and petroleum pumps are benign and convenient local symbols of a global energy supply; part of the precious flows in such vessels may have come to users over great distances. Many coastal islands are connected by undersea cable to high-voltage transmission infrastructure and mega-generation facilities producing thermal, hydroelectric and nuclear power; noxious emissions from coal and heavy oil may remain far away on the mainland, at least in the mind. Local energy distribution companies, whether owned by municipal, provincial or national governments or privately held by branches of large corporations, are among the more stable commercial ventures in small-scale island economies, and may even reinforce the name of the locale in their corporate identities, as in 'Island Light and Power' or 'Island Petroleum'. These public or private utilities may be vertically-integrated monopolies, albeit regulated, whose stable employees are neighbours, family and friends who take pride in their specialized technological work in the island community. The general public on the island

may feel pride of ownership over 'their utilities', even as prices increase and any profits fly away to shareholders who may be anywhere.

When measuring energy impacts, it must be asked for what purposes are these being described. As McAlpine and Birnie (2006: 82) have stated, "the creation of a set of locally or even globally acknowledged sustainability indicators does little more than establish a dominant view of sustainability for that region". Under capitalism, holistic approaches to examining energy impacts for the purposes of well-being and environmental sustainability are often omitted in favour of a bottom-line approach to economic and technological information. Granted, it is very difficult to overlook the cost of energy in islands, which is generally higher for a complex array of reasons relating to economies of scale, remoteness, supply mode and technological effects (Stuart, 2006: 81). But besides the cost factor, scientists and others are also increasingly concerned about damage to ecosystems and human health associated with fossil fuels as well as the looming threats of climate change and sea level rise.

Island Identity

Islanders prove no exception in wanting 'progress' and materiality, but many also hold on to a strong sense of place which aids in creating their sense of identity. A saying familiar to Prince Edward Islanders is that 'we are so far behind that we are ahead'. One can speculate that place sensibility is derived from immersion in maritime climates and physically working outdoors in the elements, a lifestyle more prevalent in earlier times than it is today. A sense of place perhaps relates us to something more primordial and rural, arising from a kin-ordered agrarian past when householders and extended families obtained all their own energy for heat from woodlots or peat-bogs, mobility from draught animals and slaves, and bodily nourishment and medicines from carefully tended gardens, community-shared commons, and sea foods gathered close to shore. A sense of place, along with grounded local knowledge, may heighten sensitivity to the carrying capacity of a place or solutions that may leave a lighter footprint.

Another factor shaping island identity is the double dilemma of insularity which, in one of its purest forms, translates into resistance to change as islanders try to preserve their traditional ways of life, geography-inspired values and sense of place in the face of heightened global challenges. On the other hand, island societies are, by necessity, highly open, mobile and frequently cosmopolitan, characterized by considerable exchange of people and goods through air and marine industries, international trade and tourism, as well as migration for employment and higher education. Outside solutions are often preferred over those that are homegrown, denying and overwhelming locally-based innovation and entrepreneurship. In energy especially, the capital-intensive infrastructure and supply chain may be continental or global in scope. Large energy companies typically have a high degree of control over investment decisions and programs, employment and tariff setting (Domah, 2002: 9). The corporate culture of utilities tends to be very conservative, reflecting natural monopoly, the current limits of technology, economies of scale and the drive for profitability based on lowest cost solutions (Weisser, 2004: 112; Stuart, 2006: 33). There is usually little incentive for any locally-driven innovation into alternative energy, resonating with islanders' 'inside/outside' dilemma and making the status quo doubly difficult to budge. Island governments may even put legislation on the books to implement 'progressive' ideas to cut energy consumption or enable new technologies based on those elsewhere, but follow-through may be spotty or ignored without local acceptance and a powerful champion (Stuart, 2006). Despite the rising cost of fuel, and the proliferation of large-scale wind farms on windy coasts, almost complete reliance upon imported electricity and fossil fuels remains the norm to satisfy industrial and domestic needs on islands around the world. Therefore, any island that goes beyond the status quo to strive for real reform based on the ideology of sustainable energy production or energy sufficiency would seem to be expressing an exceptional form of identity.

A third and very important aspect of identity is bound up in the notion of jurisdictional autonomy in which an entity has *de jure* or *de facto* capacity to act on its own.

Jurisdiction...suggests a repository of powers that political actors are entitled to use, and which they may misuse, abuse or not use at all. It proffers a series of levers, drivers or tools that allow policy makers to tweak and craft the development trajectory of their land and its citizens in specific directions. In other words, jurisdiction is a resource (Baldacchino, 2008: 24).

Sovereign island nations such as Malta or Iceland are animated by their national identity to the extent that they are recognized in the international system as having the capacity to create, act upon and interpret their own laws without help or interference from another power to achieve their societal goals. Possessing less jurisdictional capacity than a sovereign state but more than just the administrative capacity of a municipality, sub-national island jurisdictions have unique asymmetrical relationships with larger powers. The way in which these islands (more than 125) use their jurisdictional resources has been reviewed elsewhere (Armstrong & Read, 2006; Baldacchino, 2006; Baldacchino & Milne, 2008). The sub-national power can obtain resources, be buffered from destabilizing political and economic events, resist or allow its policies to be shaped to conform to national goals, and be drawn into regional cooperation or conflict. It may have full, shared or very little authority over its capacities in the three branches of government (legislative, executive and judicial), and it may or may not choose to use the full range of its powers (Connor, 2008: 37). How the sub-national island jurisdiction perceives its relationship with its associated national power, whether as an imperial force to be resisted and eliminated, as a benign benefactor with resources, or as an historical legacy to be ignored except in a crisis, has very real consequences for the island's own identity and empowerment.

In this paper, the relationship between island identity and the consequences of energy use is explored in three sub-national island jurisdictions on the peripheries of Europe, Asia and North America, namely Åland, Jeju and Prince Edward Island (PEI). The ways in which these islands are using energy enables and underscores their particular identities. The profiles were developed from secondary and tertiary sources; PEI additionally represents an insider account as it is the researcher's home island and the site of her research on its electricity supply (Stuart, 2006).

Geography, Energy Use and Identity

Situated around the globe between the latitudes of 33 and 60 North, the islands of Åland, Jeju and PEI share some similarities in the ways their political, economic and natural resources are organized. Geographical and demographic information for these islands is presented in Table 1.

PROFILE	ÅLAND, FINLAND	JEJU, SOUTH KOREA	PEI, CANADA
Description	65 inhabited islands	one main island	one main island
Latitude, Longitude	60 N, 20 E	33 N, 124 E	46 N, 63 W
Area	(land) 1,527 km ² (water) 11,820 km ²	1,848 km ²	5,684 km ²
Population	26,200	557,600	138,500
Pop. density (per km ²)	17	302	24
Geology	red granite, chalky soil	volcanic ash soil	sandstone, red clay soil
Distance from Mainland	W 40 km; E contiguous	101 km	14 km
Highest Elevation	129 m	1,950 m (volcano)	152 m
Cultivated Area (km ²)	142 km ² (9%)	681 km ² (37%)	2,615 km ² (46%)

Table 1. Geographic Profile of Åland, Jeju and Prince Edward Island Sources: *Åland in figures 2007*, Statistics Åland, www.asub.ax; *33rd Annual Statistical Review 2006*, Prince Edward Provincial Treasury, www.gov.pe.ca; Jurisdiction Project - Jeju, www.islandstudies.ca.

Prince Edward Island is roughly three times larger in land area than Åland and Jeju, with 46% of the land under cultivation, producing its famous seed and table potatoes for export along with other agricultural and forestry products. The commercial inshore fishery and aquaculture industry also rely upon fossil fuel for mobility. Although the soil and growing conditions are very favourable for agriculture in PEI, the potato crop requires intensive cultivation along with the application of lime, fertilizer and pesticides derived from fossil fuels, changing the soil structure and leading to its erosion. The opening of the Confederation Bridge to the mainland in 1997 reinforced the trend for PEI producers to move away from local marine shipping for their heavy/bulky products. They became more reliant upon the inter-provincial trucking industry to haul heavy produce and seafood longer distances to larger mainland ports and urban markets via all-weather paved highways. Consequently, the agricultural and fishing industries began to focus more heavily on value-added food processing. The government of the day pursued diversity in manufacturing with increased emphasis upon international competitiveness and the development of aerospace and knowledge industries to augment the traditional industry base.

Åland and Jeju also engage in food processing. Jeju has 37% of its land area under cultivation, producing mandarin oranges, semi-tropical fruit and green tea; its remaining small forested area is under great ecological pressure due to industrialization and tourism. The Åland archipelago, with one main island among thousands of smaller ones, has only 9% of its land area under cultivation, of which 10% is used for organic farming. Lindstrom (2000) has noted that pollution in the Baltic from the high volume of marine activity and the lower efficiency of aging vessels in the wake of increasing operating costs and new competition remain critical issues for Åland.

Profile	Åland, Finland	Jeju, South Korea	PEI, Canada
Airport volume (passengers/yr)	64,043	7,640,000	224,840
Seaport volume	9,650 ships per year	berthing capacity 17 ships/day	99 ships per year
Ferry volume (passengers/yr)	1,057,516	2,401,000	504,097
Bridge volume (vehicles/year)	n/a	n/a	1,465,800
Paved roads (km)	912	3,200	5,648
Cars & trucks /1000 inhabitants	604	383	667
Gasoline consumption (2006)	16,939 m ³	125,161 m ³	232,375 m ³
Diesel/Oil consumption (2006)	8,168 m ³	582,437 m ³	106,309 m ³
Heating Oil consumption (2006)	37,540 m ³	Unknown	137,925 m ³
Total Electricity Supply	270 GWh	718 GWh	1,172 GWh
Imported Electricity (GWh)	234 GWh (Sweden) 16 GWh (Finland)	148 GWh (S Korea)	1,139 GWh (Canada)
Own Generation	17 GWh (wind) 3 GWh (oil)	420 GWh (gas) 150 GWh (wind and geothermal)	33 GWh (wind and thermal from waste)

Table 2. Energy Use Statistics, Åland, Jeju and Prince Edward Island - Sources: Åland in figures 2007, Statistics Åland, www.asub.ax; 33rd Annual Statistical Review 2006, Prince Edward Provincial Treasury, www.gov.pe.ca; Jurisdiction Project - Jeju, www.islandstudies.ca.

Table 2 lists energy use related to transportation, heating and the provision of electricity. The population density is much higher on Jeju with 302 persons per km², compared with PEI at 24

and Åland at 17. Jeju is the most isolated, about 100 km from mainland South Korea. PEI has a highway connection via the 12 km Confederation Bridge to its closest neighbour, the Canadian province of New Brunswick, and the Canadian government still maintains summer ferries from PEI to its other provincial neighbours. The Åland archipelago lies about five hours by ferry each way to Sweden on the west and to the Finnish mainland on the east.

Ships and ferries are significant consumers of fossil fuel although statistics on this sector are difficult to isolate for island marine and aviation traffic. Jeju, traditionally agrarian, is strategically situated in the East China Sea between Korea, Japan and China, and its two cities host a significant cargo port, a cruise port and an international airport. More readily available are fuel consumption statistics related to internal highway traffic and agricultural mechanization. While Jeju handles extraordinary amounts of international sea and air traffic, its domestic highway traffic and number of private vehicles are much lower than those on the other two islands. A similar pattern arises in the Baltic: a million passengers sail every year between Sweden, Åland and Finland; as well, Lithuania, Estonia and Latvia provide an additional market for Åland shipping interests (Buchhofer, 1995: 73). Between 2000 and 2005, Åland reported its 20 ferries were carrying over one million passengers annually, and 44 of its 61-vessel merchant fleet were registered under Åland and Finland flags (Statistics Åland, 2006).

Energy use statistics imply that these islands are heavily influenced by their global interconnections, both physical and virtual. Each island is 'plugged-in', receiving a substantial high-voltage electricity supply via undersea cable from mainland sources, supplemented by local generation from wind power and fossil fuels. It is interesting to note that Åland receives 86% of its bulk electricity from Sweden, where it shares historical and cultural affinity, rather than from Finland, its metropolitan power. The three islands, led by Jeju, also produce significant amounts of wind power, with further capacity expected online within the next few years.

Economics, Politics and Identity

Tables 3 and 4 expand upon island profiling by adding selected economic and political descriptions.

PROFILE	ÅLAND, FINLAND	JEJU, SOUTH KOREA	PEI, CANADA
GDP per capita (US\$)	US\$56,123	US\$14,150	US\$31,274
Main Economic Basis	Shipping, tourism, financial services, food processing	Fishing, agriculture, tourism, logistics, electronics, shipbuilding	Agriculture & fishing, tourism, food processing
Main Exports (US\$ million)	Total Exports US\$202.1 manufacturing 72%; transportation 13%; wholesale/retail 7%	Total Exports US\$63.3 manufacturing 54%; marine 28%; agriculture & forestry 18%	Total Exports US\$795.9 Agriculture, fishing & forestry 66%; Indus goods, machinery & equipment 13%; sp transactions 16%
Principal Trading Areas	Exports to Finland 60%, to International 40% Imports from Finland 60%, from International 40%	Exports to South Korea unavailable; Exports to Europe (Portugal, UK, Denmark Italy) 34% Other International 66%	Exports to Canada 45% to International 55%: (US 75%, UK/Europe 8%, Asia 3%, Other 14%) Imports from Canada 61%, from International 39%

Niche Industries	Ferries (100 million people in region); organic farming	Tangerines (22 km ²), conventions, wind farm, ecotourism	Aerospace products, bioscience
Ownership of Production	Electricity company owned by municipality	Electricity company owned by Korean state	Electricity company privately owned

Table 3. Economic Data, Åland, Jeju and Prince Edward Island - Sources: *Åland in figures 2007*, Statistics Åland, www.asub.ax; *33rd Annual Statistical Review 2006*, Prince Edward Provincial Treasury, www.gov.pe.ca; Jurisdiction Project - Jeju, www.islandstudies.ca.

The blunt GDP (Gross Domestic Product) per capita statistic indicates that Åland is one of the wealthiest jurisdictions in Europe. Even though a few firms in high-profile technology, banking and insurance are contributing to a prosperous economy, most companies in Åland, aside from shipping, are small, with fewer than ten employees. Åland maritime success has been attributed to a longstanding tradition of economic networks, entrepreneurship, strategic business knowledge and nearby markets (Lindström, 2000: 115). Though politically a province, Åland is unilingually Swedish, demilitarized and possesses a semi-autonomous relationship to Finland as a result of a formal declaration by the League of Nations in 1921. Using its far-reaching constitutional autonomy and jurisdictional powers ingrained in the Finnish Autonomy Act (1920, 1951, 1993), the Åland government has been able to opt out of international agreements signed by Finland and obtain a special exemption from EU (European Union) tax harmonization and VAT (Value Added Tax) rules. While Åland operates under economic rules that are very much modeled by the Finnish State which collects taxes, duties and fees on goods destined for Åland, sales of goods on the ferries between Sweden and Finland are tax-free provided they stop at its main ports.

PROFILE	ÅLAND, FINLAND	JEJU, SOUTH KOREA	PEI, CANADA
Political Structure	Autonomous province of unitary democracy	Special province of democratic republic	Province of federal democracy
Legislative Structure	Own 30-member Parliament; sends rep to Finnish Parliament	Tax exemptions (including for Koreans)	Own bicameral Parliament; sends 4 reps to Canadian Parliament
Description of Autonomy	Autonomy Act 1920, 1951, 1993; demilitarized	Special Self-Governing Province 2006	Joined Canada 1873
Jurisdiction over Energy	Finnish control; municipal administration	Alternative Energy Promotion Act 1987	Electric Power Act, Renewable Energy Act

Table 4. Political Data, Åland, Jeju and Prince Edward Island - Sources: *Åland in figures 2007*, Statistics Åland, www.asub.ax; *33rd Annual Statistical Review 2006*, Prince Edward Provincial Treasury, www.gov.pe.ca; Jurisdiction Project - Jeju, www.islandstudies.ca.

Jeju, too, is energetically wielding jurisdictional resources to enhance its identity and resistance to South Korean power. It has recently become a Special Self-Governing Province, a low-tax jurisdiction of South Korea, aspiring to becoming the main centre for international tourism, leisure and finance in Northeast Asia. Although this strategy might seem to demand more energy to accommodate growing transportation and tourism services, it builds upon an already significant tourism industry that is creating demand pressure for new generation facilities and the need for increased energy efficiency. Despite the plan of the South Korean navy to establish a major base on Jeju, the island government of Jeju is promoting the island's identity as an international 'Peace Island' and as a demilitarized zone. As Jeju

eagerly seeks to build relationships within the international community, it hopes to combine existing industries with new driving industries that include tourism, health/beauty, biology, digital contents, eco-agriculture and bioengineering industries. Investors are being sought for a residential park that integrates leisure and medical functions, as well as for a park using ecology, mythology and history to revitalize the ecological and cultural values of Jeju (J-Project, 2006). Cultural identity embedded in ancient Jeju myths and characterizations of the wind is also being used as a resource to reinforce local acceptance of energy from wind power.

The landscape of Prince Edward Island still conveys a deep sense of place and an abundance of pastoral beauty from mixed farming, small-scale inshore fishery and tourism, industries that were initially developed by its European settler populations during the 19th and 20th Centuries. The seasonal nature of these industries has traditionally been used to justify federal government transfers of about 35 to 40% annually (J-Project, 2006). Portrayal as Canada's smallest province, related to reliance upon outside financial aid and technical assistance, is a strong element of the PEI identity. Despite this, PEI does possess a vibrant social economy based on community volunteerism and a high level of representation in the Canadian federation as well as on many other national organizations, boards and commissions. With globalization and the impact of federalism, opposition to the status quo and the metropolitan power (Canada) is muted, reducing desire for further autonomy. The dual face of insularity, characterized by parochialism as well as openness, could help to explain the focus in the commercial arena on the world outside, resulting in a high level of international exports, exceeding inter-provincial trade levels in the rest of Canada.

How does identity affect energy in PEI? As a result of the fossil fuel revolution of the 20th century, highway infrastructure and mechanized agriculture now dominate the built environment and the landscape, with personally-owned motorized vehicles numbering almost two per Island household by 2003. However, myths about prosperous colonial times before PEI joined Canada in 1873 influence energy awareness today. PEI had extensive internal steam-powered rail and ferry systems to supplement horses and horse-drawn vehicles during the 19th century (MacDonald, 1998). These nostalgia-rich modes of transport no longer exist although the former rail-bed now forms an extensive bicycle path that runs from one end of the island to the other. A significant grass-roots movement in the 1970s made PEI a leader in North America for its experiments with energy efficiency and renewable energy during that generation, and which still has potential to influence public policy today. As PEI struggles to maintain its rural population base, it is diversifying into cultural tourism, knowledge industries, food processing, wind power technology and aerospace products. For PEI to fully participate in innovation in the global economy, it still needs to intensify its efforts to question the status quo, shape federal transport policy in its favour through the power of jurisdiction, remove Canadian barriers to air and sea access, and create new opportunities through education and incentives for sustainable development.

Table 5 briefly indicates main actions taken in each of these islands over the past three decades to introduce change in their energy portfolios.

PROFILE	ÅLAND, FINLAND	JEJU, SOUTH KOREA	PEI, CANADA
Future Energy Scenario	New investment in wind expected	High growth, strong environmental targets, signed Kyoto Protocol	Growth in wind energy to reduce fuel dependence

Energy Conservation Programs	Finnish commitment to Johannesburg Plan of Implementation over 15 years; Finland rank strong due to water and air quality, private sector initiative, science and technology, international activities, environmental administration and health. But high energy consumption per capita; production of nuclear waste, greenhouse gases, cross-border emissions	Jeju government Declaration of Jeju's Environment; target of 10% decrease CO ₂ emissions by 2012; to add 500MW wind generation by 2020; to increase use of environmentally friendly fuel; to increase bike users to 10%; use geothermal and solar energy in new residential construction; limit gas emissions in residential	PEI Institute of Man and Resources 1973-1990; city district heating from waste; domestic solar water heating 1978; Renewable Energy Act 2005; new public consultation process for energy, 2008; Renewable Portfolio Standard of 15% by 2010; targets expected to be reached sooner; strong public support
Energy Pilot Projects		Traffic demand mgt, GIS initiative, solar panels; R&D biodiesel and bioethanol	Wind farms; wind-diesel; investigating biodiesel
Energy Research Institutes		High Tech Research Inst, Jeju University	Site Canada's Wind Energy Institute
Critical issues	Ferries aging; high vehicular traffic; high personal energy consumption	Energy capacity shortages, population pressure and destruction of habitat	No island-wide public transit; need leadership and R&D; need entrepreneurs and better land-use planning

Table 5. Energy Outlook and Initiatives in Åland, Jeju and Prince Edward Island - Sources: *Åland in figures 2007*, Statistics Åland, www.asub.ax; *33rd Annual Statistical Review 2006*, Prince Edward Provincial Treasury, www.gov.pe.ca; Jurisdiction Project - Jeju, www.islandstudies.ca.

Discussion

Sub-national jurisdictions assert their unique identities to question the status quo from time to time, resulting in new initiatives. Jeju, with its new base of jurisdictional and economic power, grapples with leapfrogging over a competing national agenda to establish a militarized zone on the island. PEI looks for ways to obtain lower cost energy through harnessing its free wind resource, trying to acquire costly new technology appropriate for its geography, its rural population and its connection to the mainland grid. These quests grounded in identity try to lead islands to make decisions that privilege quality of life.

Awareness of energy identity began to happen in Jeju in the 1990s when it realized that it had no other choice—the environment was becoming seriously degraded through its existing agricultural strategy and industrial development. Around this time also, the crisis in the Asian economy was negatively affecting the Jeju economy and reducing demand for its main agricultural crop, mandarin oranges. The jurisdiction had to do something new and burgeoning population growth was forcing its hand. Prince Edward Island had also gone through an equally painful realization two decades earlier, under the influence of the 1970s oil crisis. E.F. Schumacher's work, *Small is Beautiful*, had influenced the PEI government leader of the day. Awareness of identity was also stimulated by a comprehensive, top-down, 15-year development initiative of the Canadian federal government to reform and diversify the PEI provincial economy beyond relative self-sufficiency and what was viewed as rural subsistence and poverty. While the path to more energy-efficient practices remains elusive in many sectors in both these jurisdictions, the public has more or less become engaged in the long-

term development of an energy literacy rooted in identity and culture, although there is still reluctance to change. For Jeju, this means the appeasement of wind gods and the development of eco-tourism, more efficient homes and greater use of bicycles. For PEI, it is the appeal to a sense of place facilitated by an abundance of wind, the use of agricultural and forestry by-products to create energy and the presence of energy-efficient demonstration practices throughout government infrastructure.

Åland, meanwhile, has enjoyed extensive jurisdictional capacity to act under its own constitution for almost a century. It has the entrepreneurial spirit, indeed the *energy* gained from an historic resistance to its associated power, enabling it to act in a concerted way towards a more energy efficient society. Åland has limited agricultural capacity but fully 10% of its farmers are engaged in organic farming (www.aland.ax), a momentum envied on other islands. Jurisdiction over energy policy appears to be completely controlled by the Finnish government, although capably administered by Åland municipalities of which there are sixteen. Despite its profitability, the environmental impact of the shipping industry remains a concern in the fragile archipelago. In other regions of the world, the environmental drawbacks of the mass cruise ship industry have not gone unnoticed. Additionally, questions have been raised about the actual economic impacts accruing locally from irregular bursts of commercial activity downtown as each large cruise ship disgorges its human cargo for just a few hours. Certain large cruise lines have been accused of exhibiting poor corporate citizenship, being deceptively attractive to the local tourism industry while they simultaneously exploit labour, burn fossil fuels and flush wastes in vulnerable waters (Klein, 2006). Due to scale, it is plausible that such mega-ships inflict significant damage on the environment, all the while operating within a regulatory vacuum (Stuart, 2008).

But despite the bad reputation of the largest ocean-going cruise ships, local and regional incentives may reinvigorate a more appropriate vision for this industry based on smaller ships. Today, with renewed environmental awareness, a location in a large body of constantly flushing cold water bordered by areas of sparse population, pristine wilderness and peaceful, small-scale communities along the coast presents an attractive alternative. At the best of such ports in the warmer seasons, in conjunction with regional initiatives, ecotourism is supported and extended with high-tech small to medium-scaled ocean-going floating hotels and sailing ships for passengers mindful of the marine environment, exploring inland waterways. In this era of global warming and the need to control fossil fuel emissions produced by land vehicles, shipping by sea is still considered the most efficient as well as economical mode for transporting heavy or bulky cargoes. At sea as well is a new generation of sailing vessels employing state-of-the-art wind and solar technology. Less harm could be done over the long term by establishing exemplary environmental regulations and attracting vessels of the appropriate size that are owned by responsible corporate citizens with more than just an exploitative interest in the region. It remains to be seen whether the exceptional prosperity that is associated with having control over shipping can be diverted into enviable environmental practices.

The tables herein show that it is possible for modern island economies like Åland, Jeju and Prince Edward Island to build upon marketable niches in eco-knowledge combined with advanced technology. Unique energy relationships underpin endemic flora and fauna in bounded island ecological systems. Privileging such relationships includes protecting and accessing traditional technologies and indigenous knowledge associated with sense of place. Islands which identify with their indigenous resources and biota are frequently incubators of art and culture where resourceful inhabitants are inspired by natural elements at the interface of sea and land. The island microcosm may reinforce holistic visioning and spirituality, connecting us to ancient knowledge and folklore. Sunshine, wind and waves upon the landscape and seascape affect and inspire visual artists, photographers and poets. Is it by coincidence that these are all sources of renewable energy?

Conclusion

This paper seeks to understand the role that identity plays in creating and solving energy challenges in sub-national jurisdictions. It presents anecdotal evidence from three islands that

share some geographic and economic similarities, namely Åland, Jeju and Prince Edward Island. These sub-national island jurisdictions demonstrate a range of drivers that shape energy supply and demand, drivers that are influenced in turn by identity:

- a) Exceptional expressions of identity arise from questioning the status quo and resisting inward insularity. Islands themselves may have significant capability to generate, conserve and export energy but leadership and vision are as important as access to appropriate technology in order to capitalize on energy options over the long term.
- b) Identity is a resource. The experiences of other sub-national island jurisdictions can be instructive. An island can be perceived as an ice-bound, powerless place surrounded by more powerful metropolitan neighbours who have complete control over transportation, access and energy, or it can wield its jurisdictional power to position itself as a dynamic node in any number of alternative systems, including links to more distant destinations.
- c) An island's identity is shaped by how it chooses to employ its energy, including the collective energy of its people. Social and environmental impacts of dysfunctional large-scale transportation and energy systems are eventualities that need long-term planning and avoidance today.

At this juncture in the history of civilization, when signs of collapse in our natural environment are causing alarm, we need to be reminded that energy goes beyond capitalism and fossil fuel technologies created by man: even in the most unlikely places on earth, a simple patch of grass or lichen receives sufficient energy from the sun to thrive and do the work it needs to reproduce. Such abundance in the natural world, at risk of being destroyed by the exclusive pursuit of growth under a capitalist form of economic organization, can surely provide a spark of motivation towards energy literacy and better practice for us all.

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