Watercolour 5
London, Leading European Global Coastal City

Chapter 5
Cities and the Creative Blue Green Economy

Abstract Coastal cities are privileged crossroads of exchanges on a globalising chessboard, the very places where many diverse value chains on land and sea interact and economic flows can be converted and intensified to better satisfy the expectations of citizens, business and organisations. Since 90 % of the total volume of the world trade is done by sea, port cities by definition are the cities through which most of the world's wealth moves. However, they are not just "passage" cities. Brainports and well-functioning harbours can reinforce global value chains and can generate sustainable value and employment. Their competitiveness depends on the strength of their functions, their maritime links and their hinterland connections. Sustainable infrastructures can help reconcile ports and cities with the oceans and the planet.

This chapter highlights the capacity and achievements of coastal cities as strongholds of the coastal, blue and green economies. In times of uncertainty, multiple dividend innovations are essential for creating new assets, often out of liabilities, and capturing synergies. Industrial symbiosis in ports is critical for the creation of thriving maritime clusters and high value services. Eco-responsible blue green businesses have a key role to play in creating sustainable value out of values and leading corporate action for responsible cities and global ocean governance.

5.1 Port Cities, Competitiveness and the Polyphony of Value Chains

Globalisation and socio-economic waves of change have placed cities and metropolitan areas at the forefront. It seems that cities will lead and governments will follow in grasping the noble opportunities of the twenty-first century (Katz and Bradley 2013). Cities are not only the stages of socio-economic operations and environmental impacts, but genuine players in the theatre of nations and the journey to sustainability. Coastal cities are very intense places where many diverse value chains interact and precious synergies can be generated and harvested through the mutual reinforcement of activities which cluster together on land and sea.

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Cities could be seen as the brains of the global economy, which provides many more actors the opportunity of becoming parts of a world conglomeration. Strong urban infrastructures and leading-edge institutions can greatly improve the position of cities in an equitable globalisation horizon. Conversely, shortcomings in urban hardware and software are important constraints, whose cumulative effects could drain the potential for sustainable development.

The World Economic Forum (WEF) highlighted the leadership role that cities are taking in stimulating competitiveness and proposed a four-fold taxonomy for city competitiveness, including institutions, policies and regulation of the business environment, hard connectivity and soft connectivity. The WEF Future of Urban Development initiative has developed a strong brand. It focuses on the transformation of cities to enhance their chances. In the first 2 years (2012–2014), the initiative worked hand-in-hand with the Cities of Tianjin, Dalian and Zhangjiakou to address the most pressing urban challenges. During the third year, the initiative is cooperating with the Government of India in the development of its planned 100 Smart Cities.

A city cannot thrive if it cannot offer citizens and investors convincing security and credibility, infrastructure and services, and quality of work and life. Cities seem on orbit to continue to be essential to the future growth and competitiveness of territories, especially in emerging economies. Key drivers of change include demographics megatrends, urbanisation and the emerging middle class, inequality, strategic resource scarcity, deficit of global democratic governance and declining trust in public authorities (Gore 2013; WEF 2014).

Democratic cities are stepping up to re-conceptualise sustainable development and create a resilient recession-proof economy and society in balance with the environment. Networking with their stakeholders and among themselves is of the utmost importance. Especially in times of global democratic deficit, visions, ethics and actions for sustainability offer cities the opportunity to perform as sustainable democratic spaces between the world macro-regulations and the micro-regulations of the local communities (Gore 2013; Mega 2013).

Cities have long been the world's economic turbines. The collective GDP of the world's top ten cities exceeded the total GDP of 162 countries combined, with Tokyo alone generating a larger GDP than Canada. Tokyo is the world's largest urban economy, followed by New York, generating more wealth than India or Mexico. National economies become networks of metropolitan economies which produce disproportionally more wealth than their population share. The top 50 metropolitan areas in the EU host 36 % of its citizens, but generate 43 % of its GDP. In the US, 388 metropolitan areas host 84 % of the population and generate 91 % of the GDP (Katz and Bradley 2013).

Many emerging metropolitan areas are dynamic hubs of production, consumption, and trade, even in an uncertain period for the global economy. An analysis of per capita income and employment changes during the year 2010–2011 for 200 of the world's largest metropolitan economies, which account for 14 % of global population but almost one-half of global output, reveals that 90 % of the fastest-growing metropolitan economies among the 200 were located outside North America and the European Union. In almost all regions, metropolitan areas generated disproportionately larger shares of wealth and employment. Most of them significantly

outperformed the national average on income growth, while several others significantly underperformed on employment growth (Brookings Institution 2012).

As emerging world cities enter the stage of intensive growth, their contribution to the global wealth is impressive. Through a combination of investment in physical and built capital and consumption, rising cities could inject up to $30 trillion a year into the world economy by 2025, also integrating growing parts of informal markets. The 600 cities making the largest contribution to a higher global GDP, the "City 600", including over 440 cities in emerging economies, the "Emerging 440", could generate nearly 65 % of world economic growth by 2025. The Emerging 440 could account for close to half of overall growth (MGI 2011, 2012).

A crucial part (61 %) of the world's total gross national product comes from areas within 100 km of the coastline (GPO 2013). Maritimisation is a prime form of globalisation which intensifies exchanges among world citizens and socio-economic actors. According to estimates by the United Nations Conference on Trade and Development (UNCTAD), owners from five countries (Greece, Japan, China, Germany and the Republic of Korea) accounted for 53 % of the world tonnage in 2013. Among the top 35 ship-owning countries and territories, 17 are in Asia, 14 in Europe, and 4 in the Americas. The multiple interactions between local and global flows and dynamics, which led to the term "glocalisation", rely on cities as privileged chain links. The strength of the future world will, however, only be as strong as the weakest link.

Coastal cities are essential drivers of national and regional economies and account for proportionally more wealth than their population share. Many coastal cities and especially ports have historically been strongly linked to global value chains. Port cities operate on a global horizon, competing with other world players for investment and opportunities. Their competitiveness depends on a multitude of endogenous and exogenous factors, including the macroeconomic environment, openness to trade, markets and investment, education, training and skills, ability to create and innovate, flexibility of the labour market, capacity of physical and digital infrastructure, governance and leadership.

Given the concentration of population, economic activities and infrastructure along the shores, coastal cities have to lead the preservation of the integrity of those natural and marine resources that increase the value of these places as being highly-desirable areas in which to live, work and visit. From leisure activities to coastal and marine fisheries and non-conventional security issues of food, water, and energy, ports support an array of activities and are often located in the heart of sensitive coastal and marine ecosystems. Understanding and managing the interdependencies among safe maritime transport, efficient port operations, and coastal and marine stewardship are critical for coastal economies and societies.

The strength of port operations, their maritime links and their hinterland connections can boost the strategic profile of a city. Harbour functions can increase industrial output and trade, generate value and employment, promote innovation and attract leading-edge companies and clusters. Many regional economic benefits associated with well-performing ports often spill over into the larger area or even into other regions. Doubling the port efficiency of two countries is found to raise their bilateral trade volume by 32 % (OECD 2013).

The economy of coastal cities also greatly benefits from efficient links with other sectors operating outside the port region. Sometimes, only a limited part of the linkages with suppliers takes place in the port or the port-region, with a larger share being located in the main economic centre of the country, which could be relatively far from the port, e.g., Greater Paris from the ports of Le Havre and Marseille. In some particular cases, the economic capital city and the main harbour form a bipolar conglomeration, like Athens and Piraeus, with well-defined distinct functions and roles.

The integration of ports in metropolitan areas and the organic inclusion of their functions in sustainable economies are crucial for the mitigation of negative effects, mostly related to the environment, land use and traffic congestion. These impacts can be very substantial in extended ports, such as the port of Antwerp, which occupies more than a third of the surface of the city. In very dense, concentrated ports, like Hong Kong, the majority of SO_2 emissions are related to shipping. Most of the negative environmental impacts take place close to the port area, but some types of pollution, like air emissions, expand on a regional scale. Noise from ships and port operations can also produce a kind of "acoustic smog" expanding beyond the port, while congestion patterns depend much on the local and regional transport policy (OECD 2013).

Many port cities went into years of transition. Usually, port operations include industry and refineries, shipbuilding and repairing facilities, supporting services and passenger and freight transport and transit. They increasingly yield more value as environmental policies, and incentive schemes have reduced a variety of impacts, while transport policies in and around ports address negative impacts, including air pollution, emissions, noise and congestion. Port relocations, often combined with waterfront developments, have freed up central space in many coastal cities for other public and private, residential and cultural functions. Seafront development has frequently managed to capitalise on port and maritime heritage and transform this into a source of urban prosperity.

Maritime industry and services are increasingly organised in formal and informal clusters. Maritime clusters try to attract high value added services related to the maritime industry, such as maritime finance, consulting, law and engineering services. Industrial development related to traditional ports attracts industries highly dependent on imported resources and consumer markets. Port activities attract small and medium-sized enterprises, considered to be propellants of innovation and job creation, and dynamic actors of many urban maritime webs. Their incubation and growth are crucial for the blue green economy. Intelligent micro-enterprises are associated with various goods and services supporting the maritime economy, for example, equipment for offshore energy, yachting and ICT services. Smart and flexible new structures and networks, created in many port cities, provide eco-services for blue sectors.

Clusters can catalyse concentrations of economic activities, stimulate innovations, enable grasping of new opportunities and promote a port city as key anchor in various value chains. They can contribute to a rapid diffusion of best practices and provide incentives to improve performance vis-à-vis local competitors. Clusters can facilitate efficient access to specialised services, skills, information, institutions, training and other public goods, and ensure smooth transactions and exchanges across firms. The presence of multiple suppliers and institutions assists in knowledge

creation and dissemination. The proximity of competing companies encourages strategic differentiation. Last but not least, clusters offer opportunities for new related companies, especially SMEs. Spin-offs and start-ups are encouraged by the presence of other related companies, available skills, commercial exchanges, and value chains (Ecorys et al. 2014).

Policy portfolios for sustainable port cities include a range of policy instruments, such as incentives and free zones, training and education, platform organisations and knowledge transfer and sharing schemes to attract high added value companies that could make the city an international maritime services centre. Singapore is a good example of integrated policies to attract investors. Rotterdam positioned itself as a site for industrial sustainability, and Bremerhaven is trying to become a global leader in renewable energy. Adequate sustainable infrastructure is most necessary to support the sound ecological development of port operations and the prevention and minimisation of waste and pollution. Spatial planning and financial mechanisms for sustainable redevelopment have been applied to multiple waterfronts in order to create a functional mix, including high quality residential places, cultural services and noble public spaces.

Metropolitan port cities with high-quality infrastructure, green and public spaces, a clean marine environment and healthy residential areas have great potential to attract investors, as well as highly qualified professionals and tourists. Effective governance depends on leadership at all levels, from the national government, a government at the metro-regional level, and local authorities and networks that mobilise non-governmental actors, civil society and businesses. To balance the financial needs of harbours with those of other activities, cities can use public-private partnerships to raise funds for public projects that enhance aquatic environmental assets (OECD 2006).

Conscious port cities need a sustainable infrastructure and smart grids to underpin the blue green economy. Public policies and public-private partnerships can be effective in increasing "port-city" sustainability performance. Several ports have also started to monitor environmental trends and impacts and promote balanced environmental and economic development through dedicated sustainability agendas. Transport and land-use policies and city-university-business cooperation can be very influential.

Coastal urban partnerships usually bring together, often in forms of dynamic helices, universities, enterprises and municipal institutions. Cities must lead in defining long-term objectives, businesses must inject vigour, and educational institutions must instil a culture of striving for excellence. Triple helix schemes can better address the demand for natural resources and water, and for new businesses and housing, office buildings and infrastructures.

Maritime clusters have already existed for many years in some industrialised maritime countries. In Belgium, the Flanders Maritime Cluster brings together 80 companies, including port authorities and major dredging companies, as well as the Flemish Institute for the Sea. Four complementary sub-clusters are organised around the four major ports, including the more established ones of Antwerp and Oostende, the growing port of Zeebrugge and the port of Ghent for inland waterways.

The Port of Amsterdam is an example of smart symbioses of different services and utilities which can reduce energy and costs. Industrial symbiosis is especially

focused on synergies between material production, infrastructure, transport and energy. The Port Authority acts as an infrastructure manager for all industries located in the harbour. This approach would allow for a win-win situation since the different sectors operating at the Port could concentrate their activities on core manufacturing activities supported by a specialised infrastructure for the optimisation of incoming and outgoing materials, feedstock, and energy. This would add a new dimension to existing cluster concepts, in particular by encouraging new forms of cross-sectorial cooperation and sharing infrastructure for transport and energy.

Across the Mediterranean and Black Seas, some 600,000–700,000 people are estimated as potentially employed in maritime clusters. A study which analysed the clusters of the region suggests that almost half of the surveyed clusters can be considered growing, while 29 % are mature, and 17 % are emerging. The EU clusters present a more balanced ratio between mature, growing and emerging clusters, while two out of three of the non-EU clusters are classified as growing. This could indicate that much maritime growth in the Mediterranean and Black Sea regions could come from the non-EU side. Innovative maritime sectors are underrepresented in the surveyed clusters which present a concentration typical for the Mediterranean and Black Sea regions around rather traditional activities, such as coastal tourism, cruise tourism, shipbuilding and ship repair, shipping, passenger ferry services, and fishing. Differences among the sub-regions include the particular role of the shipbuilding and oil and gas sectors in the Black Sea area. Tourism, either coastal or cruise, is by far the most common activity of East Mediterranean clusters. The Adriatic-Ionian sub-region demonstrates a greater heterogeneity, with a higher diversification of activities.

Maritime clusters involve a very diverse array of actors and can pursue smart specialisation strategies. Mainstream cluster policy tends to focus on specialisation, while diversification appears to be critical for maritime cluster development. Maritime cluster development touches upon an array of policies, ranging from transport, economic policy, environmental policy and physical planning to skills development, education, employment and safety regulations. Proximity underpins triple helix approaches and business-to-business and research cooperation, but cluster activities can further enhance this process and build new value chains of products and services (Ecorys et al. 2014).

Brest hosts France's largest maritime cluster, the "Pôle de competitivité mer", a network of 300 partners, including large companies, public and private laboratories, and universities located in Brittany. With over 2700 km of coastline and 95 % of the population living less than 60 km from the sea, regional culture, identity, and prospects have a crucial marine dimension. A long-term vision for sustainable development led to regional strength in sea-related activities and created 40,000 jobs, including for 2900 researchers. The cluster intends to respond, through innovation, to the requirements for safety and sustainable development and make the difference in international markets. A certification scheme allows projects to attract capital for innovation. Since 2005, the supported cooperative projects focused on six areas of excellence, including maritime safety and security, naval and water activities, fossil and renewable energy resources, marine biology resources, fishing and aquaculture, and port, infrastructure and maritime transport.

The shipbuilding and repairing sector is the fourth largest industrial sector in Brittany, and involves the construction and repair of navy, military and civilian vessels for fishing, cruising, oceanography and passenger transport. Leading companies anchor the region with world value chains in naval design and construction, equipment and integration of systems, testing facilities and associated services. The sector has experienced many waves of world crises and is searching for a new future in terms of location, resources, functions and markets.

Shipbuilding is being reinvented. Globally, new shipbuilding activity increased in 2014, continuing the trend that began the previous year, after 5 years of decline. New orders for all types of vessel have increased and bulk carriers have tripled in demand, followed by gas tankers and other cargo carriers. Demand for non-cargo carriers has also increased, with more sustainable designs complying with new international and European regulations for safer and cleaner maritime operations (SEA Europe Shipbuilding 2014).

Far Eastern countries continue leading the shipbuilding market thanks to governmental policies, cheaper production costs and availability of financing. China has become one of the most influential shipbuilding countries in the world. In the coming years, the restructuring and upgrading of China's shipbuilding industry is expected to focus on accelerating innovation, promoting high-end products and enhancing the industry's international market share. European shipyards are increasing their activity and maintain a good position in terms of value. The European maritime technology industry continues at the forefront of innovation and excellence, attracting demand for high technology vessels and equipment. European marine equipment providers are market leaders, with 43 % of global shares.

Another extraordinary location for this sector is Gibraltar. Its shipyard and repairing facilities are among the most renowned and extensive. The very location of the rock between the Mediterranean Sea and the Atlantic is an important factor of success. The climate is ideal for year-round work and many shipping lanes organise fast stop-over repairs. Gibraltar claims a broad range of expertise and activities to ensure quality repairs and services.

New generation shipyards for niche markets have emerged in Europe. In the Baltic region, Helsinki, for example, specialises in steamships, car ferries and icebreakers, Gdansk in ship hulls and the Kiel region in container vessels, submarines and luxury yachts. Arctech, Helsinki's shipyard, focuses on vessels equipped to work in ice conditions. Arctech has been using Russian facilities to build most of the blocks before the vessels are assembled, painted and fitted out in Helsinki. Baltika, the oblique icebreaker and oil spill response vessel, is known for its unique aesthetics and its lack of symmetry. Baltika handily combines aesthetics and functionality, as one side of the vessel is an oblique icebreaker, creating 50 m wide channels, while the other side has oil recovery equipment for open seas.

Last but not least, amongst the array of coastal cities, many have to promote regional economies. An example is the city of Heraklion, in Greece, which is the stronghold of the Cretan economy. The surrounding economy exhibits strong specialisations highly dependent on tourism, which accounts for 31 % of employment, and agro-products, 59 % of the exports being primary products. In the agri-food

sector, the Region of Crete has recognisable quality agricultural products, both for domestic and international markets. The Cretan diet, which is a model of the Mediterranean diet, is an "intangible heritage" with a strong potential for exports. The main weaknesses are found on the small entrepreneurial scale, limited standardisation and marketing of products, and little systematic penetration of local products into tourism businesses. Opportunities reside primarily in renewable energies and the gradual transformation of the building stock through bioclimatic architecture. Finally, but still importantly, the rich local marine biodiversity provides many opportunities for new products, services and applications. The Hellenic Centre for Marine Research and its local facilities are investing much in research and awareness projects.

5.2 The Sea as the New Frontier: Emerging Blue Green Activities

Strong sustainability demands the preservation of all urban capital, natural and physical, including marine capital, human, social and cultural, as well as man-made and financial capital. The evaluation of the impacts on all distinct but interlinked capitals highlights the potential benefits of green growth as a shortcut to sustainable development. Investments in port infrastructure may increase manufactured capital, part of the man-made capital, but can undermine overall wealth if negatively impacting marine ecosystems, part of the natural capital, or damaging public health through traffic congestion, part of the human capital (EEA 2012).

Along with green growth, the blue growth concept is also attracting attention. Since the marine environment is already under much pressure, the blue economy needs to be solidly anchored in sustainable development, otherwise it undermines its very foundations. Blue green growth should focus on multi-dividend options beneficial to the economy and the environment, equally profitable for present and future generations. In the long term, economic and social development without sustainable management of natural resources, including from the sea, is brittle. Policy makers should set the ground and establish the framework conditions to allow new breakthroughs to emerge and overcome institutional or socio-economic inertia. Investments in education and innovation are most important and global governance is necessary to prevent the tragedy of the commons.

Blue green growth means fostering economic growth and development while ensuring that natural and marine assets are wisely managed to provide the goods and services on which human well-being depends. To achieve this, a city must catalyse the investment and innovation which underpin sustained growth and give rise to new opportunities. The 2014 European Green Capital provides a good case for green growth. Copenhagen's push to be at the vanguard of sustainable development has yielded many economic benefits. Blue green growth is seen by Copenhagen as an opportunity to empower and resource cities.

The acceptable balance is a fundamental challenge for the twenty-first century political process. More and more citizens want economic growth, but not at an

unacceptable cost to the blue planet. Business as usual is unwise and ultimately unsustainable, involving risks that could impose constraints on further growth and development. Coastal cities are ideal hotbeds for blue green policies, not only through new technologies but also new partnerships and governance models. Risks include increased resource bottlenecks, air, water and soil pollution, and irreversible climate change and even disasters, accompanied by a myriad of ripple effects. The way forward requires a balanced policy portfolio to overcome deeply entrenched behaviours, and develop the financing instruments and indicators to monitor progress (World Bank 2012a).

Blue growth aims to increase food, energy and water security, support sustainable management of aquatic resources and achieve global, regional and national impact. In 2012, the European Commission adopted a Communication on blue growth which aims to develop the potential of the EU's seas, oceans and coasts, create sustainable wealth and employment and promote innovation. Extended arrays of marine and maritime economic activities have been identified as potential drivers of blue growth (EC 2012d).

Most drivers for sustainable development are linked to awareness of climate change and the need for the preservation of the integrity of the ocean ecosystems and habitats. Obstacles mainly involve social and political inertia and a lack of financing instruments. Fiscal instruments, such as environmental taxes, pollution charges, subsidies for renewable energy technologies, including for offshore developments, and tax incentives can play a crucial role in promoting a blue green economy. The political acceptance often depends on effective measures, addressing, in particular, societal impacts.

Blue green growth strategies can help coastal cities to become more resilient as they strive to meet demands for food, water, housing, energy and transport. Sustainability-oriented policies can help mitigate the impacts of adverse shocks by reducing the intensity of resource consumption and environmental impacts, while alleviating pressure on commodity prices. Pioneer cities, which create a culture of change and commit to policy innovations, usually act at the earliest possible stage. The market for blue green goods and services is fast expanding and can offer the multiple benefits of environmental quality and job creation (World Bank 2012b).

Coastal cities are the gates to the seas. They started weaving their nets to grasp new and better opportunities. The blue economy represents 5 % of global wealth and promises much more if well aligned with sustainable development and as ocean science and technology development advance. There is an increasing awareness of the equilibrium needed between resource extraction and resource preservation, be it in sea mining or managing fish stocks. Scarcity of raw materials and energy and the search for new opportunity spaces are a global phenomenon. While matter and energy are abundant on earth and in the universe, scarcities are geostrategic, and they can disrupt, for example, local lives and trajectories.

Crises have the power to stimulate and cross-fertilise ideas and markets and generate growth. Developing new sources of wealth will depend on the intellectual assets needed to conceive, create, promote, diffuse and adopt innovative initiatives. There is no single blue green growth model but various possibilities for reconciling the short

with the long term. Strategies will vary across countries and cities, reflecting local contexts and preferences, but all countries, rich and poor, have chances for growing cleaner without growing slower. There is a growing consensus that green growth should focus on actions in the next 5–10 years to prevent getting locked into unsustainable paths and to generate immediate, local benefits (OECD 2011a; World Bank 2012a).

A blue green growth strategy incorporates a longer time horizon and takes into account the full value of natural capital and terrestrial and marine ecosystems. Diverse port-related activities could create propitious conditions for the development of lean blue green innovative SMEs. The essence of coastal urbanisation, the concentration of people and activities close to the sea, offers a range of diverse resources needed by the green maritime industry and sustainability conscious consumers. The features of a city favourable to green SMEs include access to precious human and natural resources, the availability of other high-quality services, complementary producers and a market for green maritime services. Port cities can also provide the necessary knowledge basis and advanced services and support the generation or integration of innovative green SMEs in maritime clusters.

The EC's blue growth strategy has been developed in the framework of the EU's Integrated Maritime Policy and in support of the overarching European strategy 2020. The strategy aims to harness the potential of the blue economy to create new jobs, foster innovation and contribute to sustainable economic recovery. It underlines the importance of coordinated efforts from the EU, national and regional authorities, business, and civil society on issues such as research and development, access to financing, and promotion of education and innovation. A framework directive adopted in 2014 aims to introduce Maritime Spatial Planning and Integrated Coastal Zone Management to promote the optimal location and distribution of marine activities throughout the blue economy, in a coordinated and coherent way. Spatial planning provides investors and operators with more predictability about future directions and the impact of maritime activities (EC 2012b, 2014e).

Fisheries are the oldest blue activity on earth and have contributed substantially to food security. They continue to be at the epicentre of many world concerns linked to overfishing, described by many as a crime (GOC 2014). The restoration of the fishery stocks through sensible optimal sustainable yield policy options is a must (GPO 2013). Strong international governance systems should ensure that stocks are restored. In the European Union, the new fisheries management framework should redress the overfishing that led to many stocks being depleted. The number of stocks overfished has fallen from 94 % in 2005 to 39 % in 2013, although the situation continues to be critical in the Mediterranean and Black Seas where only a few stocks are assessed.

Aquaculture provides half of the consumed global seafood, and organisations suggest that, by 2030, it could surpass two thirds (FAO 2014d; World Bank et al. 2014). The main challenges for aquaculture include lack of available space, feed, breeding technology, competition in the global market and administrative procedures and constraints. Sustainable aquaculture must also consider potential impacts on wild fish stocks and water quality and ethical considerations addressing, for example, gender issues and the creation of decent jobs. More space for marine aquaculture could be freed up by the development of offshore production systems.

Progress in feed technology could achieve a higher proportion of feed originating from plants, algae, and, if possible, waste. Technical developments suggest that wide-spread automation and control techniques can be instrumental for realising aquaculture potential (OECD–FAO 2014).

Cities have often had to address conflicts among tourism and aquaculture. Coastal cities are gateways to the recreational economy which, if sustainably managed, can provide precious blue green jobs. Traditionally second to shipping, the maritime and coastal tourism has become the largest single maritime economic activity in the EU, the first world destination (EC 2014d).

A healthy land-sea environment is fundamental to blue tourism and favours the growth potential of new forms of sustainable and green tourism in and around coastal cities. Accessible high quality bathing waters and pristine coastal and marine habitats have a high recreation value and contribute to the attractiveness of cities and the potential for activities as varied as nautical tourism and sports, and dolphin, whale or coral reef watching. The sheer variety of blue journeys provides cities with an opportunity to enhance their natural and cultural assets and boost their local economy in partnerships with their seas and their surrounding regions.

Over the past six decades, tourism has experienced continued expansion and diversification, becoming one of the largest and fastest growing economic sectors in the world. Many new destinations have emerged which challenged old patterns and practices. In spite of occasional shocks, linked, for instance, to accidents, economic crises or terrorist events, international tourism experienced considerable growth, with a steadily rising share of the world's emerging regions (UNWTO 2014; EC 2014d).

Sustainable tourism is expanding on all continents. The European Union attracts the majority of tourists. The USA, France, Spain, Italy, and China, the five first world destinations, have exceptional cities that serve as cultural gates for sustainable tourism. Sea basins and coastal regions provide a unique resource of natural and cultural wealth. Worldwide, international tourism rebounded strongly, and the increase more than offset the decline caused by the economic downturn. Recovery was particularly strong in emerging countries, where arrivals grew faster than in advanced ones (UNWTO 2014).

Destination management is important for all cities wishing to attract visitors and create healthy experience economies. There are multiple excellent examples of sustainable tourism activities. Boston is a cultural heritage-oriented destination and is encouraging the tourism industry to improve its operations and services to visitors, including visits to the waterfront and the New England Aquarium. A handful of docking facilities in the Boston Harbour are maintained by private interests and some wharves have been converted into residential or tourist facilities. A multifaceted programme has been established after consultation with all stakeholders promoting Boston as a preeminent destination for eco-tourists (Boston Foundation 2009).

Cruise tourism is developing in most seas. It is a global business, which depends on geopolitical stability and uncertainty. Each cruise is a multi-destination experience which competes with "stationary" tourism on shore and can impact other blue economies, but also threatens the carrying capacity of biodiversity hotspots and sensitive sites such as Venice and Dubrovnik. There are 421 cruise ships world-wide,

carrying from 400 to over 4000 passengers. Despite misfortunes, the sector has weathered crises well and, even in the Mediterranean, 2014 was the only questionable year since 1995. The average growth rate of Caribbean cruising, approaching 3 %, can be reached in the Mediterranean, which accounts for 85 cruise ports in 2015 versus 40 in 2000.

Yachting tourism has also developed for super yachts, of lengths over 30 m. Yachting is expected to grow by 2–3 % a year. EU shipyards and repairing centres have been successful in serving this specialised market, both with large cruise ships and small leisure vessels. According to the European Cruise Council, there were 41 lines domiciled in Europe in 2011, operating 120 cruise ships. Furthermore, 25 non-European cruise lines, operating 76 ships, shared the facilities of 250 European ports. The number of marinas in Europe is estimated at 4500. The Mediterranean is the most attractive region in this regard, with more than 200 super yacht marinas. Cruise terminals try to attract consumers through immersion in the local economy and culture (EC 2014d).

The share of returns from cruise and coastal tourism with local communities is a thorny question. Congestion is the main burden for local communities and time management of ports as "chronotopes" is a key issue. Local authorities typically accuse the cruise lines of unfair sharing of benefits. The data provided by the cruise lines, suggesting that the average cruise passenger spent 75€ per day in each port of call in the Mediterranean in 2015, are considered overestimated by local authorities, who, nonetheless, do everything they can to attract cruise ships.

Energy activity in ports highlights a move towards renewable energies. Bremerhaven port reinvented itself to address the needs of manufacturers and suppliers in the offshore wind industry. Maritime activities were enriched with related cultural and ecological projects, such as the German Emigration Centre and the German Maritime Museum. The Bremerhaven Zoo features Arctic wildlife, both terrestrial and marine. The Lloyd-Werft shipyard is renowned for building and renovating large cruise liners. Every 5 years, the Sail Bremerhaven, a large sailing convention, attracts tall ships from all over the world.

Blue energies have the potential to enhance renewable energy resources, minimise land-use requirements and reduce greenhouse gas emissions. Renewable energy targets and incentives for investments, such as green certificates, have begun to expand rapidly. Wind is the fastest growing world coastal option. Among wind technologies, offshore wind is the most rapidly growing sector, and synergies with other offshore activities are increasingly explored (IEA 2014).

Other offshore renewable energy technologies are still at an early stage of development. Wave and tidal energy appear far more costly to harness. The challenge is to accelerate the commercialisation of ocean energy through technology development and cost reduction. Geographic and oceanographic conditions suit different technologies, which can offer a more predictable base-load supply of electricity and back-up the fluctuating supply from wind. Tidal barrages are used to capture energy from moving water. Wave power devices are currently being demonstrated and underwater turbines driven by currents are close to commercialisation. Ocean thermal energy conversion, which enhances the temperature difference between cooler deep and warmer surface waters, could be another option for tropical territories (EC 2012a, 2014a).

Coastal cities are privileged interfaces between the energy producers offshore, the grid operators onshore and the final consumers. The commercial exploitation of blue energy may require costly investments in grid connections and transmission capacity. Many local partnerships with small businesses and the local society could promote new emerging technologies and smart devices. Good governance architecture is essential for the articulation of needs and solutions at local, regional and national levels of responsibility.

Among the emerging blue activities which will have to pass through the filter of public scrutiny and acceptance, sea mining is boosted by the increase in price of many non-energy raw materials, mainly in emerging economies and the related scarcity risks. Under the 1982 UN Convention on the Law of the Sea, a country has exclusive rights to explore its continental shelf and exploit the natural resources, including mineral resources. Offshore mining is currently confined to shallow-water coastal regions. About 75 % of the world's tin, 11 % of gold, and 13 % of platinum are extracted from near the surface of the coastal seabed. Aggregates, including sand, coral, gravel, and shell, are also important. The United Kingdom, the world's largest producer of marine aggregates, extracts approximately 20 million tonnes per year, meeting around 20 % of the domestic demand. Deep-sea mining operations can also be carried out in the international seabed, outside jurisdictional marine areas. In these areas, the International Seabed Authority (ISA) is responsible for organising and monitoring activities. The world has moved closer to deep ocean mining in 2014, as a Canadian company concluded an agreement with Papua New Guinea to start digging up and extracting precious metals from a depth of 1500.

Seabed mining could have a disproportionate and even irreversible impact on coastal and marine ecosystems and habitats. Present commercial scale seabed mining operations, limited to shallow waters, mainly provide for aggregates, sand and gravel, for the construction industry and the creation of artificial beaches. The technologies most used include dredging, vacuum pumps and remotely operated vehicles. Aggregate extraction has a large environmental footprint and could irreversibly change the seabed in shallow waters and affect other sectors and stakeholders. Social acceptance issues become extremely important and the precaution principle has to prevail when moving into uncharted waters.

Blue biotechnology is another promising blue growth activity with great potential for new products and processes. The biological sciences have demonstrated enormous advances beneficial for health, medicine, food and agriculture. The unexplored nature of much of the underwater world means that the capacity of marine organisms to nurture blue economic activities is just beginning to be discovered, partly through new gene sequencing technologies for living organisms. Exploration of marine biodiversity could help us understand, for example, organisms that can withstand extremes of light, temperature and pressure and can assist us in developing new industrial enzymes or pharmaceuticals.

In the immediate future, blue biotechnology could emerge as a niche market focused on high-value products for the health, cosmetic and industrial bio-materials sectors. By 2020, it could grow as a medium-sized market, expanding towards the production of compounds as inputs for the food, feed and chemical industries. In the

longer-run and subject to technological breakthroughs, the blue biotechnology sector could provide a broad and diverse range of specialised high-added value products.

Coastal cities can also boost the production of food, feed and fuels from algae. The global market for micro-algae-based food and feed supplements is well developed and has a great potential for growth. Micro-algae are currently used both as dried whole algae and for the extraction of high-value food/feed supplements and colorants. Although the total production volumes and market size of food and feed supplements derived from micro-algae are still relatively small, they have increased fivefold since the beginning of the century, and some applications already have a long tradition (EC 2014b).

Bio-based products and sustainable food production systems can help create new markets. Cities could do much to facilitate procurement for bio-based products by adopting specific standards and labels and introducing training for public procurers and incentives and mutual learning mechanisms for improved resource efficiency. The creation of innovative urban markets can help accelerate the commercialisation of bio-inventions. The procurement of bio-based products could also create jobs in rural areas surrounding cities and help foster urban-rural partnerships.

Cities could also play a major role in managing and enhancing the transit of activities taking place offshore. Multi-purpose offshore platforms could act as innovation spearheads for sustainable maritime economies. Some offshore platform consortia are developing innovative design and new business models to become key players in the future cross-sector offshore economy. The governance architecture is trying to generate and capture synergies among diverse economic chains, such as aquaculture and offshore wind energy, facilitated by robotic technologies.

The public and private sectors should work in concert to promote the sustainable blue economy, starting with precompetitive associations, in which competitors pool investments for resources, knowledge, and expertise to learn from successes and failures, to invent, deploy, and scale the cutting-edge technologies that may spark new breakthroughs. This offers the opportunity for coastal cities to organise the conditions for new actors to get into the innovation chains and invest creativity and vigour in alliances to drive emerging and changing blue green growth activities.

Effective public–private partnerships require a convincing policy framework, a trusted leadership and a large number of both public and private actors in cooperation. Policy makers should carefully map and identify relevant local maritime clusters, and put in place instruments and tools to support their emerging phase. A coherent longer-term policy framework is vital for the development of the cross-maritime basis. It is also crucial that governance levels are aligned and that efforts are made towards well-articulated multi-level governance. Equally, policies need to take into account sub-regional specificities.

Maritime partnerships and clusters can be a powerful resource for policy makers, as they are a unique platform for business, education, research and government to connect and engage in substantial dialogue on the future of blue activities. Well-functioning clusters are often engaged in horizon scanning to serve the longer term needs of their members and partners. The blue green maritime sectors are interlinked

with competing economic activities, as well as the marine environment. Benefits from clusters depend strongly on strategies to strike the right balance between local and international activities and care for coastal marine ecosystems. Competency, skills and research are prominent areas for international collaboration (Ecorys et al. 2014).

5.3 Business-Friendly Cities and Ocean Corporate Responsibility

Sustainability and commercial excellence are not mutually exclusive. Reconciling economic objectives with longer term political goals is at the heart of strong sustainability. Urban sustainability implies constant climbing up the scale of values. Innovation and entrepreneurship create sustainable value when moving from low-yield to higher-yield renewable resources. Large enterprises are important for pioneering cities and SMEs have high potential for innovation and for revitalising urban fabrics, including harbours. Coastal cities can create enlightened business environments and establish specialised enterprise areas, start-ups, seed and capital risk companies, innovative clusters and micro-financing mechanisms. They can also partner with their businesses and engage with citizens in ocean corporate responsibility.

Businesses have a substantial role to play in creating substantial sustainable wealth. Socially responsible investing has been gaining ground as decision makers and investors seek to embed sustainability ethos in policies and create collective long-term value out of sustainability values. Various recognitions and awards, like the Sustainable Shipping awards, shed light on best practices and the dedication of business to helping, for example, shipping reduce its carbon footprint, and to encourage other operators to take the sustainability journey.

Public recognition is essential for highlighting the link between sound business ethics, environmentally sustainable operations and positive long-term business performance. But to combine the three requires a great deal of innovative thinking and bold decision making. Before the turn of the last century, the Bremen declaration "Business and Municipality: New Partnerships for the 21st Century" focused on local, national, regional and international frameworks for the sustainable development of communities and economies. It suggested that businesses ask cities for favourable locations and fees, preferential treatment and social recognition as a significant wealth and job generator. Municipalities seek employment for citizens, tax revenues and investment in the local economy from businesses. At the crossroads of these requirements, cross-fertilised investments can be beneficial for citizens and the city (Mega 2010).

Climate change has added a major and most powerful dimension into the social responsibility interactions between cities, business and citizens. Climate change in cities affects the array of blue economy sectors, from shipping and food production to tourism and service industries. The Carbon Disclosure Project suggests that cities recognise and report climate change threats to business. Businesses and cities seem aligned in their recognition of climate change risks, and most of the severe risks from climate change that businesses disclose are also recognised by the hosting cities. City

adaptation actions contribute to business resilience. Cities are providing information, incentives and regulations, as well as investments in infrastructure, that assist businesses in being more resilient to climate change. Other policy actions and services support better resilience for businesses and the wider community (CDP 2014a, b).

A more resource-conscious economy advocates for new ways of designing business, responding to the fundamental needs of all and respecting the availability of terrestrial and marine resources. Scarcity can be turned into plenty when the waste of one product or service becomes the resource providing the input to a new process in the circular economy. Cascading nutrients and energy can become a beneficial process which generates jobs, builds social capital and increases income for all. Coastal cities are best situated to orchestrate such partnerships and processes.

Communication technologies, education and knowledge-sharing, transportation and urban migration are transforming world dynamics and the relative advantages of cities and enterprises. A most interesting world "Vision for 2050", conceived by the World Business Council for Sustainable Development (WBCSD), based on country dialogues with several hundred companies and experts, highlights that humankind can achieve a low-carbon or even zero-carbon society, but all stakeholders have to change their eco-behaviour radically, particularly their interactions with economic and ecological processes (WBCSD 2010a).

This vision of genuine sustainability for 2050 highlights a future world with nine billion people living well and within the limits of the planet. More than two-thirds of humanity lives in cities. Education, cooperation and empowerment of citizens, and especially women, bring more awareness about the socio-economic challenges. The vision for 2050 underlines that conflicts and disasters may not have disappeared, but societies are resilient, able to withstand disruption and recover quickly.

A redefinition of notions and values is a precondition for the success of Vision 2050. Its implementation asks that society redefine the notion of prosperity and well-being and that economic growth be decoupled from energy and material use and ecosystem destruction. Markets have to redefine values, costs and benefits. In a complex, yet interconnected world, nations have to engage in responsible global governance to effectively manage international systems and resources, like climate, water or space.

Humankind can progress to a low-carbon society with a secure and sufficient supply of low-carbon energy and transport. This vision is also shared in the European Union's vision for 2050, "living well within the limits of the planet" enshrined in the Seventh Environment Action Programme (EC 2013). The circular and sharing economy concepts advocate for optimal benefit to all, with zero particles of waste, all of it having been thoroughly turned into resource. The WBCSD suggests that, in concretising this vision, humanity will be using the resources regenerated by just over one planet, versus the impossible equivalent of 2.3 planets needed according to the business as usual scenarios (WBCSD 2010a).

Coastal cities require new or upgraded infrastructure, which may vary among regions and purposes. Cities need to construct floor space and equipment for residential and commercial purposes. The capacity of ports to handle container traffic needs

may have to rise considerably. China may hold a share of nearly 40 % of growth in global demand for urban building floor space up to 2025. Africa and the Middle East will account for almost 14 % of the global rise in municipal water demand in large cities, almost twice their share of urban GDP growth. But cities also have to care about green infrastructures and resource and energy-efficient developments.

Businesses are essential for the development of urban coastal infrastructures, which provide the "hardware", increasingly incorporating "software" for a better performance which depends much of the local context. The main infrastructure, technology, and services to reinforce the sustainable visions and strategies of cities are predominantly developed and implemented by the private sector. The WBCSD's Urban Infrastructure Initiative brought together a diverse group of companies from key sectors, including energy, materials, water, equipment, and support services to help urban authorities develop pragmatic and cost-effective plans for sustainable infrastructures. The case for action can be compelling both for cities and for companies. A sustainable city can use resources more efficiently, thrive economically and create an inclusive community. Urban markets offer companies the opportunity to provide system solutions, products and services for sustainable buildings, energy, infrastructure, and resource and waste management. Working with local authorities, the WBCSD helps translate the identified needs into landscape solutions for sustainable urban development (WBCSD 2010b).

Another related inspiring initiative is the ICLEI Global Town Hall at Metropolitan Solutions, held as part of the 2014 Hannover Fair. This event provided a paramount platform for city-enterprise dialogues on innovative and sustainable urban infrastructure, bringing together businesses, local governments, researchers, and developers for 5 days of face-to-face conversation, trust-building and information exchange. The Global Town Hall provided an excellent opportunity to launch the final report of the WBCSD Urban Infrastructure Initiative and to promote further dialogue on effective city-business partnerships. It seems that there is a shared win-win opportunity to drive transformational global action on climate change through interconnected city and business leadership.

Cities win by getting practical, cost-effective solutions to realise their ambitious sustainability visions. Leading businesses win through growth in the markets for innovative new solutions that are essential for transformational change. The World Business Council on Sustainable Development suggested some key actions for businesses to drive progress towards sustainable development through the market. Its platform, Action2020, helps businesses to define and shape action for sustainable development. Through collaboration toward common shared goals, business can address some of the critical environmental and social challenges while strengthening resilience. Action2020 member companies developed the societal targets, based on a review of the latest scientific consensus led by the Stockholm Resilience Centre. Business solutions must be scalable and replicable by many companies, in multiple sectors, cities and countries, in order to make a global difference (WBCSD 2014).

Once more, evidence confirms that global in nature, grand societal challenges can only be addressed by business, government and society working together. Enlightened

leaders in cities and metropolitan areas will only succeed in reshaping their economies, and thereby the economy of the nations, in concert with companies, universities, citizen associations, labour unions, environmental groups, cultural institutions and philanthropies, working in often overlapping and interlocking networks.

The social responsibility of enterprises is essential for the blue green economy. Cities and enterprises embracing and supporting the sustainability ethos should make optimal use of marine resources and technologies. They have to ensure that the best green products and services come to the market and ultimately improve citizens' and consumers' lives. Enterprises have to deploy their inventiveness and bring to the market blue technologies, products and services.

Improving social and environmental performance of business and disclosure of information on their results is capital. Ethical citizens and vigilant consumers and organisations call for coastal cities and companies to design and prove their contribution to sustainable blue growth. Awareness campaigns try to overcome information deficits and increase consumers' knowledge on the ecological impacts and potential benefits of alternative patterns. Citizen associations and the media tend to create a climate of trust, surrounding sustainable cities and businesses. Companies and cities without a declared commitment to and action for sustainable development could face citizen and consumer boycotts, attacks on fixed assets, failure to attract forward-looking stakeholders, stockholders and employees, restrictions on port operations and obstacles in infrastructure development. Pro-action is a must, since damaged reputation, impaired licenses, disillusioned shareholders and disappointed citizens may impact future investments.

A growing number of cities and companies make public their intentions, plans, actions and results in preparing for the post-carbon age. Corporate codes of conduct have gained momentum. Businesses have adopted a broad range of approaches, from non-reporting to social reporting to increase confidence in their performance. Assessment and public reporting have to be organically integrated components of the business process. The voluntary non-binding nature of most codes is often related to the absence of independent auditing, even if codes spell out the necessity for monitoring, life cycle assessment and reporting.

Eco-responsible businesses are instrumental in creating value out of values and can be precious allies to conscious coastal cities. They increasingly integrate social, environmental, ethical and human rights concerns and principles into their strategies and business operations in close collaboration with their stakeholders. The aim is to achieve results which are beneficial both to society and the economy, and to minimise and prevent negative impacts on the environment, including marine habitats and ecosystems.

Social responsibility can be expressed or mobilised through many diverse schemes. The "Social Return on Investment" initiative in Amsterdam, designed to include social obligations in public contracts, started as a pilot project in 2007 in Amsterdam's South-East District. Contractors are asked to translate profits into employment opportunities for youths usually excluded from the labour market, especially ethnic minorities. The project included the development of guidelines and monitoring instruments (Eurocities 2010).

Corporate engagement for sustainable development is highly promoted by many investors, environmental and public interest organisations and advocacy groups. The Coalition of Environmentally Responsible Economies and Societies (CERES), founded by a small group of investors largely in response to the Exxon Valdez oil spill that occurred in March 1989, wished to bring together environmentalists and capitalists to forge a new sustainable business ethos. The oil spill in Alaska's Prince William Sound devastated one of the world's most pristine habitats. Suddenly and painfully, businesses had to account for the environmental and social impacts of their operations. The CERES brought forward a bold vision of a world in which business and the capital markets jointly promote the well-being of human society and the protection of the precious natural environment. At the heart of the vision, the coalition's Principles proposed a ten-point code of corporate conduct to be publicly endorsed by companies as a sustainability ethic.

The coalition has introduced many innovative instruments to weave environmental and social challenges into company and investor decision-making and the capital markets. The global reporting initiative, launched in 1997, had proposed a harmonised public disclosure to deliver a steady flow of structured verifiable and comparable information. The coalition's sustainability reports enabled organisations to "walk the talk" and serve as a model for other businesses trying to improve the transparent reporting of their actions and outcomes against commitments. Recognising the need to set higher expectations for corporate water management, CERES developed the Aqua Gauge, a free water stewardship assessment tool backed by investors managing $2 trillion in assets. Hundreds of companies in dozens of sectors are using this aqua gauge to evaluate their water performance and set ambitious goals to reduce their impacts.

In 2010, CERES further raised the bar of excellence for corporate sustainability performance with the Roadmap for Sustainability, which outlines meaningful environmental and social improvements that companies have to undertake in order to succeed in the resource-constrained twenty-first century. The Roadmap was intended to bring investors, companies and other key economic players together to find scalable solutions for integrating sustainability across capital markets and the economy. The Roadmap for Sustainability contains 20 specific expectations for corporate performance, broadly divided into four areas of activity, including governance, stakeholder engagement, performance, monitoring and disclosure (CERES 2010). In 2014, CERES launched the Clean Trillion, highlighting the annual global investments needed to limit global warming to 2° C and ensure a clean energy future. Meeting this goal is very challenging, given the current less-than-adequate amount of $300,000 billion in clean investments, and will only be possible if businesses, investors and policy makers join forces (CERES 2014).

Corporate social responsibility is crucial for mainstreaming ethical principles in business activities and catalysing actions in all sectors. It could link different activities of the blue economy and diffuse to a larger scale of initiatives, such as the UN Global Compact, the largest voluntary corporate responsibility initiative in the world. This strategic policy initiative engages businesses which align their operations and strategies with ten universally accepted principles in the areas of human

rights, labour, environment and anti-corruption. A commitment to transparency and disclosure is critical.

The Compact is a conceptual yet practical framework for the development, implementation, and disclosure of sustainability policies and practices. It calls for businesses to support a precautionary approach to environmental challenges, undertake initiatives to promote greater environmental responsibility, and encourage the development and diffusion of environmentally friendly technologies. The Compact is global and local at the same time, private and public, voluntary yet accountable. It seeks to combine the moral authority and convening power of the UN with the private sector's vigour and the contributions of a range of key stakeholders.

Benefits include the sharing of a globally recognised policy framework and governance, the exchange of best practices and world linkages among business units and subsidiaries across the value chain through the Global Compact's Local Networks, including in emerging markets. The Compact also has an accountability policy component, the Communication on Progress. The annual communication is an important demonstration of a participant's commitment to the UN Global Compact and its principles. Failure to communicate may result in the loss of participant status and possible expulsion.

Corporate social responsibility for blue green growth and sustainable development is promoted through the Global Partnership for Oceans (GPO), a growing alliance of governments, international organisations, civil society groups, and private sector interests committed to the health, productivity and resilience of the ocean. The alliance has targeted the problems of overfishing, pollution, and habitat loss which are contributing to the depletion of the natural resource that provides nutrition, livelihoods and vital ecosystem services. The GPO has been established as a platform that can facilitate access to finance and expertise (GPO 2013).

Convened by the World Bank to advise the Global Partnership for Oceans, the Blue Ribbon panel, bringing together CEOs of some of the largest seafood companies in the world, governments and prominent marine ecologists, emphasises that, without action to restore the declining health of the ocean, the consequences for economies, communities and ecosystems will be irreversible. Improving ocean health is a complex process that requires leadership and participation across a broad sphere of communities, industries and governments and the concentrated effort of society, government and science. Fragmented approaches that fail to consider social, political, economic and ecological relationships cannot meet the complex challenges facing ocean health. The panel calls for an integrated approach to ocean investment and emphasises the essential role of public-private partnerships.

Policy options must be multidimensional and dynamic and integrate all aspects of the socio-ecological system. The Blue Ribbon panel's principle-based strategy provides an approach that prioritises action with high impact. The panel recommends five principles to be incorporated into all levels of ocean policy reform, from fishery management to incentives and pollution reduction to habitat restoration. The five interlinked principles include sustainable livelihoods, social equity and food security, a healthy ocean, effective governance systems and long-term viability and capacity building and innovation (GPO 2013).

5.4 Quality of Life in Marine Cities, Magnets of People and Capital

How do coastal cities rank among the best cities to live in and do business? What do citizens and enterprises want from territorial authorities and how can government best respond? Since the last decades of the twentieth century, a concert of surveys and ranking systems conclude with an array of top cities, according to definitions, criteria and assessments. They provide interesting insights into specific essentials of coastal cities and their attraction for people and businesses. Attractiveness of cities may well be in the eyes of the beholder. The most recent surveys include personalised elements in order that citizens and enterprises are enabled to do their own particular rankings according to specific weight given to particular criteria. The "Your Better Life Index" introduced by the OECD is a most outstanding example of such approaches (OECD 2011b).

Coastal cities like Copenhagen, Tokyo, Melbourne, Vancouver, Stockholm, and Helsinki rank high in many traditional rankings according to widely accepted criteria that form the complex term of "quality of life". These criteria include identity and engagement, health and well-being, creativity and recreation, heritage and projection into the future, ideas and perceptions, gender and generations.

Urban liveability is cardinal for all citizens. The Economist Intelligence Unit's 2014 global liveability report ranking cities according to the living conditions that they offer to citizens, mainly safety, healthcare, education, infrastructure and environment, without taking into account the cost of living, suggests that cities in Canada, the EU, Australia, and New Zealand are the best to live in, thanks to widespread availability and accessibility of goods and services. According to this liveability ranking, Melbourne remains the most liveable among 140 cities, followed by Vienna. Vancouver, which ranked as the most liveable city until 2011, comes in third place. It is interesting to note that the top cities have not changed much over time. Over the last year, only 20 out of the 140 surveyed cities have experienced changes in scores and the majority of these changes have been driven by deteriorating scores in fragile regions such as Ukraine. Helsinki is the only EU coastal city to rank among the ten most liveable cities. Furthermore, the two European cities are the only non-English speaking top cities in a ranking often criticised to be too English-centric (EIU 2014).

In 2012, the Economist Intelligence Unit teamed up with data sharing company BuzzData to host a competition offering users the opportunity to make their own ranking by combining data from the Cost of Living and Liveability surveys with other sources. Opening up the concept of best cities to a diverse group generated plenty of innovative approaches. Interactivity allowed respondents to propose elements like connectivity and suggest priorities or weights towards a collective choice of best city. This approach had the dual benefit of allowing citizens to make their own choices and effectively crowdsourcing responses to inform future methodologies (EIU 2012).

The results of this survey included adjusted indexes to define the best city ranking. The report suggests that the top ten best cities include a majority of coastal cities, including Hong Kong, Amsterdam, Osaka, Sydney, Stockholm and Tokyo

(EIU 2012). Notable was the introduction of a connectivity indicator, which was a key factor in moving Hong Kong to the top of the ranking, above cities like Amsterdam, Tokyo and Sydney. Although Hong Kong scored relatively poorly for pollution and cultural assets, the city benefited from strong scores in the natural assets and sprawl categories. Stockholm in the sixth position and Tokyo in tenth place complete the league of the best coastal cities to live in.

The lists of the worst cities to live and invest in can be as impactful as the lists of the world's best cities. It also indicates the cities which present the highest potential for improvement. The Economist Intelligence Unit ranked cities according to the "tolerability" of living in a particular place given its crime levels, threat of conflict, quality of medical care, levels of censorship, temperature, schools and transport services. The list of the cities with the highest potential for improvement was topped by Abidjan, in Côte d'Ivoire, with an overall rating of 45.9 out of 100. Lagos, Karachi, Dhaka and Tripoli were also classified among the cities with the worst living conditions.

The quality and cost of life surveys and the ranking of world cities, conducted by Mercer, international consultancy in human resources, also offer interesting insights and information. These surveys are very useful for governments and companies which have executives working in various cities of the world and have to take into account a series of factors when structuring their remuneration packages. Each survey is based on an array of assets and services reflecting the typical expenditure of the expatriated population. Mercer's Quality of Living list includes more than 200 cities across five continents, ranked against New York as the base city.

Coastal and European cities dominate the Mercer rankings according to the quality of life, with some illustrious exceptions like Vienna, which, followed by Zurich, reconfirmed in 2014 its leading position in relation to the overall quality of life. The bright examples of non-coastal cities include various German and Swiss cities, such as Düsseldorf, Frankfurt, Munich, Geneva and Bern. Vancouver, Auckland, Sydney and Copenhagen complete the league of cities with the best quality of life (Mercer 2014a).

Next to the quality of living surveys, Mercer's cost of living surveys focus on comparative cost of over 200 items in each location, including transport, food, clothing, household goods and entertainment. The cost of housing is also included and, as it is often the most important expense for expatriates, it plays an important part in determining the ranking of cities. New York is used as the base city and currency movements are measured against the US dollar. Recent world events, including economic and political upheavals, have affected the rankings for many regions through currency fluctuations, inflation, and volatility in real estate prices.

According to Mercer's cost of living 2014 survey, two African cities top the list of most expensive cities for expatriates. Coastal Luanda is the world's most expensive city for expatriates, followed by N'Djamena in landlocked Chad. European and Asian cities also continue to dominate as the costliest cities, with Hong Kong in third place, followed by Singapore. Tokyo dropped four spots to rank seventh. Karachi, ranked 211th, is the world's least expensive city, three times less costly than Luanda (Mercer 2014b).

Another survey by the global property service provider Cushman and Wakefield sheds light into European business environments since 1990. Each annual survey is based on the opinions of the senior management of 500 European companies and

the criteria considered important in location decisions. The key factors taken into account by the companies include accessibility to markets, availability of qualified personnel, transport and communications and cost of living and personnel. London was the top rated city, including in regard to transport links with other cities and internationally, ease of travelling within the city, easy access to markets, customers or clients and availability of quality staff and quality of telecommunications and languages spoken. Dublin once more comes out top for the climate created by government, and Warsaw has taken over from Leeds as the top location for value for money in office space. Barcelona and Stockholm retain the top positions for quality of life and the environment (Cushman and Wakefield 2012).

The state of a city and its environment has a strong impact on the state of the citizens' lives. The Veolia observatories of urban lifestyles revealed that cities are sources of intense feelings, much more positive than negative. City residents appreciate urban advantages, but also recognise that their price is often rather high. The most important factors for quality of life are considered to be safety and the cost of acceptable living conditions, followed by the environment, infrastructures, public transport and leisure (Veolia 2008, 2010).

Those best to live and invest in or most expensive cities are not necessarily the most powerful global cities, which are not necessarily the most competitive. Various indexes try to capture the power of global cities, including the Global Economic Power Index by the Martin Prosperity Institute, and the Global Cities Index by A.T. Kearney. It is interesting to highlight that New York, London and Tokyo rank first in all major rankings.

Coastal cities top the ranking of the world's most economically powerful cities by R. Florida after the rankings according to the above-mentioned major indexes on the relative economic strengths of global cities and metropolitan areas. New York stands on top of the global urban hierarchy and its position is proposed as secure, at least for the medium term. It is the world's most open and diverse large city, the only one to come first or second according to all criteria. London is overall second and Tokyo third. Hong Kong is fifth and Singapore, Shanghai, and Los Angeles follow in the race to the top.

London and New York also rank at the top of the 2014 edition of the Cities of Opportunity list established for the sixth time by PricewaterhouseCoopers. These exercises have been instrumental in benchmarking cities from various perspectives, including unmet demand and potential for future growth. The sixth edition analyses the trajectory of 30 cities, all capitals of finance, commerce, and culture, and identifies strengths and weaknesses. The survey is based on the assessment of ten indicators composed out of a number of variables organised in three groups, focusing on quality of life, economics and instruments for a changing world. In the latest edition, six out of the ten top cities of opportunity are coastal cities. London comes first with a good margin and marks the highest scores in technology readiness, economic influence and city gateway, three indicators which reflect its leading position in the global economy. New York displays a balanced performance across domains, while Singapore climbs to the third place as world leader in transport and infrastructure, as well as in enabling business environment.

Australia's largest city scores in the top ten in four indicators and in more than half of the variables. As in 2012, the comparative advantages of Sydney shine in the

three indicators that measure living standards. Sydney ranks first in demographics and liveability, shares the first place with Stockholm in sustainability, and comes second in health, safety and security. The city ranks second for quality of living and lack of traffic congestion and third for relocation attractiveness. This was a new variable of the last survey, in which responses were also provided by 15,000 global staff members of the multinational company (PricewaterhouseCoopers 2014).

This last survey put special emphasis on the connectivity of cities and their role as gateways to territorial economies. Dubai ranked 16th out of 30 Cities of Opportunity in 2014. It ranked first for airport connections to business districts, fifth in most affordable city and eighth in world city as an urban gateway. The city performs remarkably well across several domains, including transportation and infrastructure, potential for future investment growth and safety. It is also very interesting that the survey suggests that the sustainability and intellectual capital of the city hold a high potential for improvement (PricewaterhouseCoopers 2011, 2014).

Is there a Perfect Global City? At A.T. Kearney, the Global Cities Index, which, since 2008, has examined a comprehensive list of 84 cities on all continents, according to their global engagement in business activity, human capital, information exchange, cultural experience, and political engagement, provides an interesting definition. The Perfect Global City could be a composite result out of 16 cities, with New York, Tokyo and London representing 50 % and the other 13 cities the other 50 % of the composed entity (Kearney 2014).

Next to the race for Global Cities, the Emerging Cities Outlook examines 34 cities located in countries classified as low or medium income. The outlook evaluates a city's potential according to its ability to attract, retain, and generate flows of ideas, capital, and people, and the time needed to catch up with the global leaders. The proposed indicators can be grouped into three categories. A first range of indicators includes business activity reflecting the evolution of a city's GDP, changes in its infrastructure, ease of doing business, and perceptions regarding public transparency. A second group focuses on human capital, looking at trends in stability and security, healthcare availability and quality, income equality, and environmental sustainability. Finally, the generation of patent filings per capita, new businesses, volume of venture capital deals, gross expenditure in research and demonstration activities, and access to finance compose the innovation profile of a city as a catalyst to attract business and talent.

Two vulnerable coastal Southeast Asian cities, Jakarta and Manila, head up the list of the Emerging Cities Outlook, including the cities with the highest potential to progress. Jakarta, the beating heart of Indonesia, seems to move up quickly in relation to human capital, but also in addressing income inequality and environmental concerns, as well as across several important innovation indicators. Manila also seems favoured by a relatively sharp increase in human capital, with a particularly notable improvement in healthcare. The Philippine capital, located in the coral triangle, enjoys an extraordinary biodiversity reflected on its seal, a pearl embedded in a shell. Both cities bear witness to ceaseless interactions among people and cultures. They can only progress in harmony with their marine environments and in investing in resilience and sustainable development (Kearney 2014).

References

Boston Foundation (2009) A great reckoning: healing a growing divide. Boston Foundation, Boston
Brookings Institution (2012) Global metro monitor 2011. Volatility, growth and recovery. The Brookings Institution, Washington, DC
Carbon Disclosure Project (CDP) (2014a) Protecting our capital. How climate adaptation in cities creates a resilient place for business. CDP, London
CDP (2014b) Global corporate use of carbon pricing. Disclosures to investors. CDP, London
Coalition of Environmentally Responsible Economies and Societies (CERES) (2010) The 21st century corporation: the Ceres roadmap for sustainability. CERES, Boston
CERES (2014) Investing in the clean trillion: closing the clean energy investment gap. CERES, Boston
Cushman & Wakefield (2012) European cities monitor 2011. Cushman & Wakefield, London
Economist Intelligence Unit (The) (EIU) (2012) Best cities ranking and report. EIU, London
EIU (2014) A summary of the liveability ranking and overview. EIU, London
Ecorys et al (2014) Support activities for the development of maritime clusters in the Mediterranean and Black Sea areas. Brussels
Eurocities (2010) Cities accommodating diversity. Eurocities, Brussels
European Commission (EC) (2012a) Smart cities and communities. European innovation partnership. EC, Brussels
EC (2012b) Blue growth. EC, Brussels
EC (2013) 7th Environment action programme. EC, Brussels
EC (2014a) Blue energy. Action needed to deliver on the potential of ocean energy in European seas and oceans by 2020 and beyond. EC, Brussels
EC (2014b) Micro-algae-based products for the food and feed sector: an outlook on Europe. JRC Science and policy papers. IPTS, Seville
EC (2014c) The future of Europe is science. EC, Brussels
EC (2014d) A European strategy for more growth and jobs in coastal and maritime tourism. EC, Brussels
EC (2014e) Directive of the European Parliament and of the Council establishing a framework for maritime spatial planning and integrated coastal management SWD (2013) 64 final. EC, Brussels
European Environment Agency (EEA) (2012) Urban adaptation to climate change in Europe. EEA, Copenhagen
Food and Agriculture Organisation (FAO) (2014) The state of world fisheries and aquaculture. FAO, Rome
Global Ocean Commission (GOC) (2014) From decline to recovery. A rescue package for the global ocean. GOC, Oxford
Global Partnership for Oceans (GPO) (2013) Fact sheet. GPO, Washington, DC
Gore A (2013) The future: six drivers of global change. Random House, London
International Energy Agency (IEA) (2014) World energy outlook. IEA, Paris
Katz B, Bradley J (2013) The metropolitan revolution. How cities and metros are fixing our broken politics and fragile economy. Brookings Institution Press, Washington, DC
Kearney AT (2014) Global cities index and emerging cities outlook. Global Cities, Present and Future
MGI (2011) Urban world: mapping the economic power of cities
MGI (2012) Urban America: US cities in the global economy
Mega V (2010) Sustainable cities for the third millennium. The odyssey of urban excellence. Springer, New York
Mega V (2013) Quintessential cities, accountable to the future. Innovation, sustainability and leadership. Springer, New York
Mercer (2014a) Quality of living survey. Mercer, New York
Mercer (2014b) Cost of living survey. Mercer, New York

Organisation for Economic Co-operation and Development (OECD) (2006) OECD territorial reviews: competitive cities in the global economy. OECD, Paris
OECD (2011a) Towards green growth. A summary for policy makers. OECD, Paris
OECD (2011b) OECD forum. Better policies for better lives. OECD, Paris
OECD (2013) The competitiveness of global port cities. Synthesis report. OECD, Paris
OECD–FAO (2014) Agriculture outlook 2014–2023. OECD–FAO, Paris
PricewaterhouseCoopers (2011) Cities of opportunity. PricewaterhouseCoopers, New York
PricewaterhouseCoopers (2014) Cities of opportunity. PricewaterhouseCoopers, New York
SEA EUROPE Shipbuilding (2014) Market monitoring. Report 35. June 2014
United Nations World Tourism Organisation (UNWTO) (2014) Tourism highlights. UNWTO, Madrid
Veolia Environnement (2008) Observatoire Veolia des modes de vie urbains 2008. L'état de la vie dans les villes. Étude réalisée par Ipsos. Veolia Environnement, Paris
Veolia Environnement (2010) Cities for living. Veolia Environnement, Paris
World Bank (2012a) Inclusive green growth. The pathway to sustainable development. World Bank, Washington, DC
World Bank (2012b) Toward a green, clean, and resilient world for all. A world bank group environment strategy 2012–2022. World Bank, Washington, DC
World Business Council on Sustainable Development (WBCSD) (2010a) Vision 2050. WBCSD, Geneva
WBCSD (2010b) A world of sustainable cities. WBCSD, Geneva
WBCSD (2014) Action 2020. WBCSD, Geneva
World Economic Forum (WEF) (2014) The competitiveness of cities. WEF, Geneva
WEF (2015) The global risks report 2015, 10th edn. WEF, Geneva

Selected Internet Links

www.weforum.org
www.kobenhavn.dk
www.mind-lab.dk/en
www.rotterdam.nl
www.stockholm.se
www.22barcelona.com
www.aivp.org
www.cici.org
www.mercerhr.com
www.cushwake.com
www.mori-m-foundation.or.jp/english/research/project/6/index
www.arup.com/Publications/SlimCity.aspx
www.CoFoundersLab.com
www.barcelonaactive.cat
www.mckinsey.com
www.theatlanticcities.com
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www.unwto.org
http://ec.europa.eu/maritimeaffairs/policy/coastal_tourism/index_en.htm