

---

# Ship & Boatbuilding in Croatia

---

Final Report for Microeconomics of Competitiveness

**Professor / Advisor**

Michael E. Porter / Christian Ketels

**Authors**

Jetemir Balaj, Neil McCullagh, Mirela Mrvelj, Peder Plaz, Malgorzata Steiner

Cambridge, May 8<sup>th</sup>, 2009



## TABLE OF CONTENTS

<b>1 COUNTRY ANALYSIS</b>	<b>2</b>
1.1 NATIONAL ECONOMIC PERFORMANCE	2
1.2 NATIONAL BUSINESS ENVIRONMENT	5
1.3 CONCLUSION	11
<b>2 CLUSTER ANALYSIS</b>	<b>12</b>
2.1 HISTORICAL EVOLUTION	12
2.2 OVERVIEW CLUSTER MAP	13
2.3 CHALLENGES TO CROATIAN SHIPBUILDERS	15
2.4 CHALLENGES TO THE CROATIAN BOAT BUILDERS	20
2.5 CLUSTER DIAMOND	22
2.6 CONCLUSION	25
<b>3 RECOMMENDATIONS</b>	<b>26</b>
3.1 COUNTRY LEVEL RECOMMENDATIONS	26
3.2 CLUSTER LEVEL RECOMMENDATIONS	28
<b>BIBLIOGRAPHY</b>	<b>30</b>

### Overview Products Ship & Boatbuilding Cluster in Croatia

#### Large Ships



#### Medium Size Boats



#### Small Boats



### Disclosure

1. Mirela Mrvelj is Croatian citizen.
2. Nonpublic resources were used.
3. Mirela Mrvelj has traveled to Croatia in March 2009.

# 1 Country Analysis

## 1.1 National Economic Performance

### Overview and Context:

Croatia was part of the Socialist Federal Republic of Yugoslavia until 1991, when the country declared independence. Because Croatia has significant natural endowments and a legacy of successful

Fig. 1: Key Facts on Croatia



GDP/Capita (PPP):	\$16,685
GDP (gross):	\$75.93 billion (08 est.)
GDP Growth:	2.2%
Population:	4,500,000
Size:	56,542 sq km
Median Age:	40.8 years
Unemployment:	14.8% (2008 est.)
Public debt:	48.9% of GDP (2008 est.)
Investment (gross):	31.5% of GDP (2008 est.)

Source: EIU 2009

business in a number of interrelated clusters, it quickly recovered from a four-year regional war. It had sustained GDP growth, managed to attract foreign investment and successfully progressed with efforts to join the European Union. But, Croatia has been unable to convert these advantages to aggressive growth.

**Size, Population and Society:** Croatia is about the size of West Virginia and has 4.5 million citizens. The major urban areas include Zagreb (779,145), Split (188,694), Rijeka (144,000) and Osijek (114,600).<sup>1</sup> 90% of Croatian Citizens identify themselves as ethnic Croats, 5% Serb and 5% other. Croatians are primarily Catholic (88%) and Eastern Christian Orthodox (5%), Muslim (1.5%) and other (5%).<sup>2</sup> Despite society's historical conflict along ethnic lines, modern Croatia enjoys peaceable ethnic relations.

**Politics:** Croatia is a democratic country and has held peaceful elections since 1995. It is a Parliamentary Democracy governed by Prime Minister Ivo Sanader of the Croatian Democratic Union (HDZ). He was elected in 2003 and currently leads a power sharing government. In early 2009, Croatia made good political progress on the international stage: it was admitted to NATO in March 2009 and entered

<sup>1</sup> CIA Fact Book, Accessed 4/28/2009, <https://www.cia.gov/library/publications/the-world-factbook/geos/hr.html>

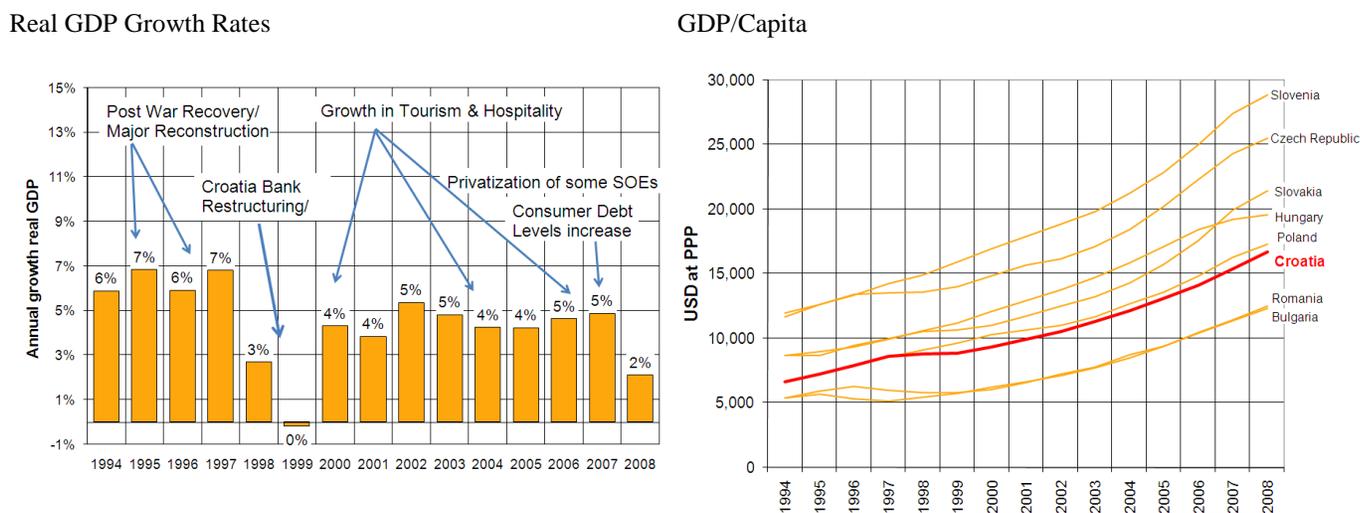
<sup>2</sup> Background Note Croatia, Accessed 4/28/2009, <http://www.state.gov/r/pa/ei/bgn/3166.htm>

into talks with EU assigned panel on unresolved territorial disputes with Slovenia (EIU, 2009).

**Health/Education:** The health of the people is good, with low infant mortality (6.37 / 1000) and a good life expectancy (71 for men and 78 for women). The health care system provides comprehensive universal national health care for citizens. Croatian education system is relatively good and undergoing reforms that will diminish the gap between Croatia and EU countries.

**GDP and Growth:** GDP growth for Croatia over the past 13 years has been steady at an average 4.75% per annum. The growth throughout the period is comparable to neighboring nations and those within Croatia’s competitiveness cohort. Its pre-war competitiveness in the hospitality and tourism industry served the country well as it recovered all of its business and then continued to grow within that cluster. Tourism receipts grew from a little over USD 1 billion in 1993 to over USD 8 billion in 2007 (WTO, 2009). The substantial fall in GDP in the 1999 period is likely related to multiple factors including the restructuring of the banking system in Croatia (Figure 2).

**Fig. 2: GDP Net Growth 1994 – 2008**



Source: The Economist Intelligence Unit

The *per capita* GDP in Croatia has doubled in the last fifteen years. While this is indicative of improving living conditions for Croatians, there is a sustained lag behind Europe of the gross level of *per capita* income (USD 16,695 in 2008). GDP/ capita across the country shows disparate living conditions

country-wide, GDP/capita in Zagreb is 3.4 times higher than in Slavonski Brod-Posavina County (World Bank, 2008). While this distribution is not unlike other European nations, it is an important consideration because it represents a more strained set of living conditions, as the GDP per capita of Croatia is less than half of Western Europe's.

**Economic Profile:** While Croatia has made admirable progress recovering from the 1991-1995 war with steady growth and low inflation, there are persistent challenges faced by the country, including high unemployment, heavy dependence on hospitality and tourism, a growing trade deficit and growing external debt. Services make up 63.6% of the Economy, Agriculture 5% and Manufacturing 31.3%.<sup>3</sup> The service sector has grown marginally over the past fifteen years driven by growth of the hospitality and tourism sector. The country has a relatively non-diverse business environment and few competitive export industries. It has created little new industry, business or significant new employment opportunities in the last fifteen years.

**Productivity:** Strong unions create disincentives for members to pursue new employment and disincentives for large businesses to explore new business. Although total factor and labor productivity have increased steadily over recent years, it lags behind wage increases (EIU, 2009).

**Foreign Direct Investment:** Foreign direct investment in Croatia has increased for the last several years. This investment has largely been attributable to a small number of business investments and privatizations.<sup>4</sup> While the increase in FDI is good, these investments do not appear to be converting into diversification of the economy, the creation of new jobs nor the development of new businesses which create export potential.<sup>5</sup> Relatively few clusters within the Croatian economy are growing. The export clusters that have grown include Croatia's major industry hospitality and tourism (.5% growth), power generation

---

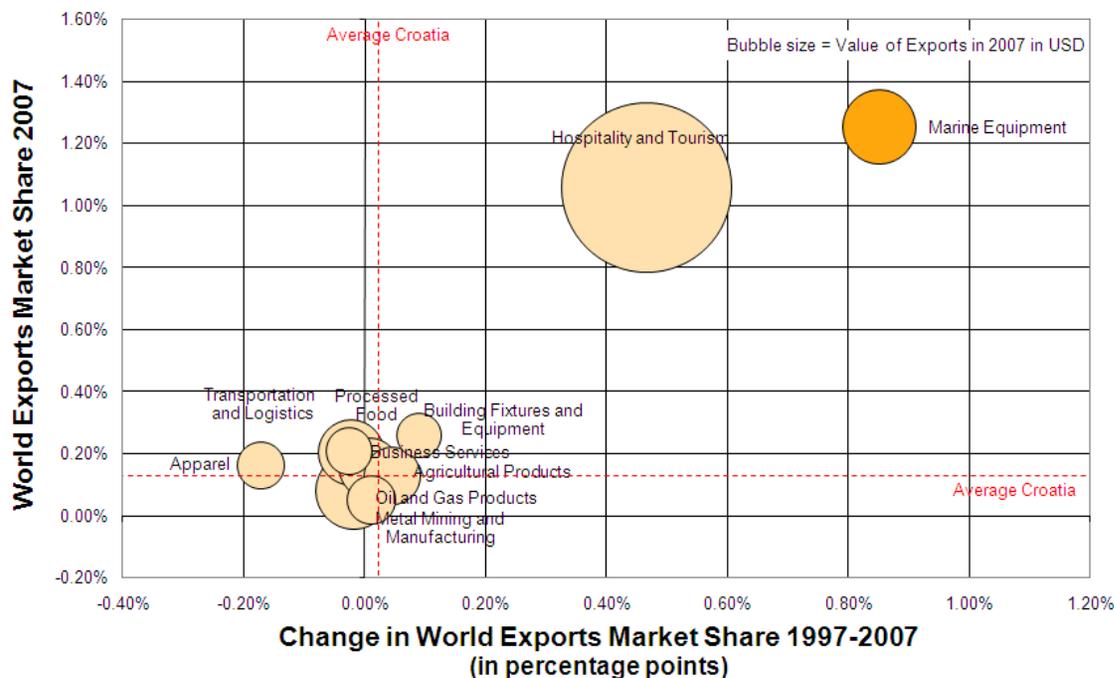
<sup>3</sup> Economic Intelligence Unit, Croatia Data, Accessed March 2009

<sup>4</sup> National oil company INA sold to Hungarian MOL, Telecom HT sold to Deutsche Telecom, Banks: Privredna banka and Zagrebacka banka and notably the pharmaceutical company Pliva to Barr (subsequently to Teva) for \$2.4B in 2006. In 2009, Teva would layoff 1,000 workers from Croatia Operations.

<sup>5</sup> Net news.com, Accessed May 1, 2009, <http://www.ynetnews.com/articles/0.7340.L-3669755.00.html>

(.43% growth), and ship and boat building (1.25% growth).

**Fig. 3: Top 15 Croatian Export Industries by Volume 2007**



Source: Prof. Michael E. Porter, International Cluster Competitiveness Project, Institute for Strategy and Competitiveness, Harvard Business School; Richard Bryden, Project Director.

## 1.2 National Business Environment

Though, Croatia has made progress adjusting its regulations to a market economy and to ‘acquis communautaire’<sup>6</sup>, the business environment needs major improvement. Croatia ranks 106 according to the World Bank and 64 in the New Global Competitiveness Index. Although Croatia continues to improve in its competitiveness rankings, it lags behind comparable countries.<sup>7</sup> The primary reasons are: slow progress on education reform, not evolving to market efficiencies and low technological readiness. However, the preparation for EU accession leads to progress in across the National Diamond (Figure 4).

### 1.2.1 Factor conditions

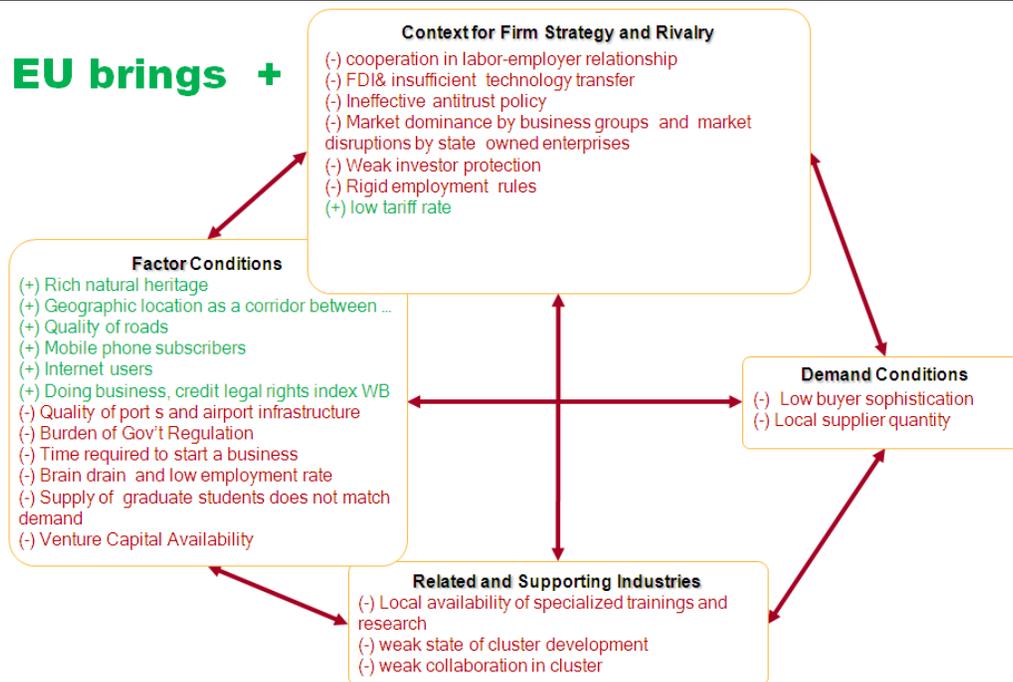
**Natural endowments:** Croatia has a rich natural heritage with a variety of sub-climates and a beautiful Adriatic coastline. The geographic endowments are the foundation for the country’s biggest cluster –

<sup>6</sup> The total body of EU law that needs to be adapted before EU accession.

<sup>7</sup> Estonia, Slovenia, Czech Republic

hospitality and tourism as well as its strength in ship and boat building. Aside from these, Croatia has natural resources including oil, bauxite, iron ore, calcium, asphalt, mica, clays, salt, and hydropower.<sup>8</sup>

**Fig. 4: Croatia National Diamond**



Sources: WEF / NCC / CEC / World Bank

**Infrastructure:** Croatia has constructed and improved a vast network of motorways within a short period. Croatia's location and three Pan-European Transport Corridors providing access between Central European Markets and the East and Far East are assets that further enhance Croatia's position in value-added logistic services (World Bank, 2008). Although the quality of ports is less impressive than the road network, Croatia has launched a number of successful projects that improved port capacity.<sup>9</sup>

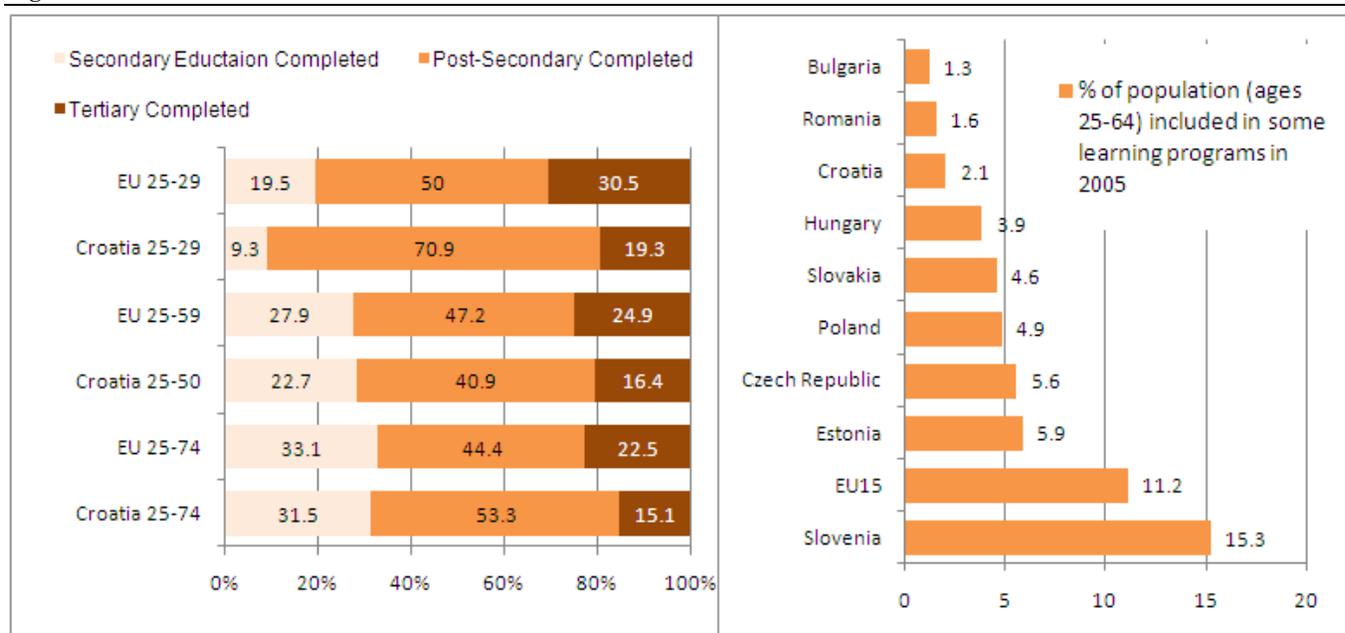
**Labor Force/Education and Training:** Although Croatia has relatively high-skilled labor, the quality of accessible labor is becoming a burden. Three main reasons for that are: low labor participation, the persisting need to increase the quality and the average years of education and the mismatch between the supply and demand for specially trained university graduates (World Bank, 2008). Due to the welfare and

<sup>8</sup> Background Note Croatia, Accessed 4/28/2009, <http://www.state.gov/r/pa/ei/bgn/3166.htm>

<sup>9</sup> Container traffic in major international sea ports increased from 21,000 containers (TEU) in 2002 to 175,000 TEU in 2007 reaching the maximum capacity.

pension programs that do not provide adequate incentives to participate in the labor market, Croatia has one of the lowest employment rates in Europe<sup>10</sup>. This problem will be exacerbated by demographics that project that the economically active group will start to decline by 2010. The average length of schooling of Croatia’s working age population was 9.8 years in 2005, compared to 12 years for EU workers. In addition, the level of tertiary education was below that of its peers (OECD, 2008 I). Whereas the average of students graduating from universities is 2/3 in Europe, it is 1/3 for Croatia (IMD, 2008).

**Fig. 5: Education Levels Croatia and EU**



Source: Eurostat 2007

Croatia has achieved a considerable progress in adjusting its education to the framework of Bologna Process<sup>11</sup> (EC, 2008), but it still does not provide an effective mechanism for quality control at universities. Promotion decisions are not transparent and the quality of teaching does not influence them. Croatian universities produce graduates in humanities and social science, but insufficient numbers of engineers and natural science professionals (OECD, 2008 I). Students are not provided adequate career advice and universities in engineering and natural sciences have insufficient capacity to accommodate students.

<sup>10</sup> 57% as compared to 70% Lisbon Treaty Target

<sup>11</sup> Process that aims at creating the European higher education area by making academic degree standards and quality assurance standards more comparable and compatible throughout Europe.

**Lifelong learning:** Croatia is lagging behind other countries in terms of the percentage of population involved in ‘lifelong learning’. The government has taken initiative to provide incentives for more training. But overall, the Croatian enterprises still have problems in finding qualified and motivated employees that are able to learn quickly, which is necessary for attracting new technologies. Although, financing and banking are well developed, they are geared more towards consumption than businesses (IMD, 2008).

### 1.2.2 Context for Firm, Strategy and Rivalry

The Context for firm strategy and rivalry is not advantageous for businesses in Croatia. Major challenges include inefficient public administration, low level of technology absorption, and unproductive labor-employer relationship. In some areas, there is limited local rivalry due to dominating business groups and state-owned enterprises.

**Inefficient public administration:** Respondents have repeatedly ranked inefficient public administration as the top barrier for doing business in Croatia (WEF, 2008). The proliferation of agencies that enjoy operational autonomy and revenue-raising capability makes coordination and management very difficult. The civil service is too big, inadequately paid and under-qualified. The Croatian state employs 65,000 people. This has been criticized by IMF as significantly too high, but the government still vows to keep public service jobs.<sup>12 13</sup> There are over 600 local government administrative bodies, which is 6 times more comparing to Ireland’s 114 (similar size and governance type).<sup>14</sup>

**Courts:** The quality and efficiency of courts is improving. Court backlogs have been reduced and administrative procedures are becoming faster.<sup>15 16</sup> Despite these improvements, court procedures remain an area for improvement. The root-causes of inefficiencies such as lengthy procedures, high number of

---

<sup>12</sup> <http://www.bankamagazine.hr/Naslovnica/Vijesti/Hrvatska/tabid/102/View/Details/ItemID/51072/ttl/Sanader-Vlada-spremna-na-nove-mjere-protiv-krize/Default.aspx>, Accessed May 5, 2009

<sup>13</sup> Dow Jones Newswires, IMF Urges Croatia to Trim the Government Bureaucracy, [http://forexdaily.org.ru/Dow\\_Jones/page.htm?id=529646](http://forexdaily.org.ru/Dow_Jones/page.htm?id=529646), Accessed April 28th, 2009.

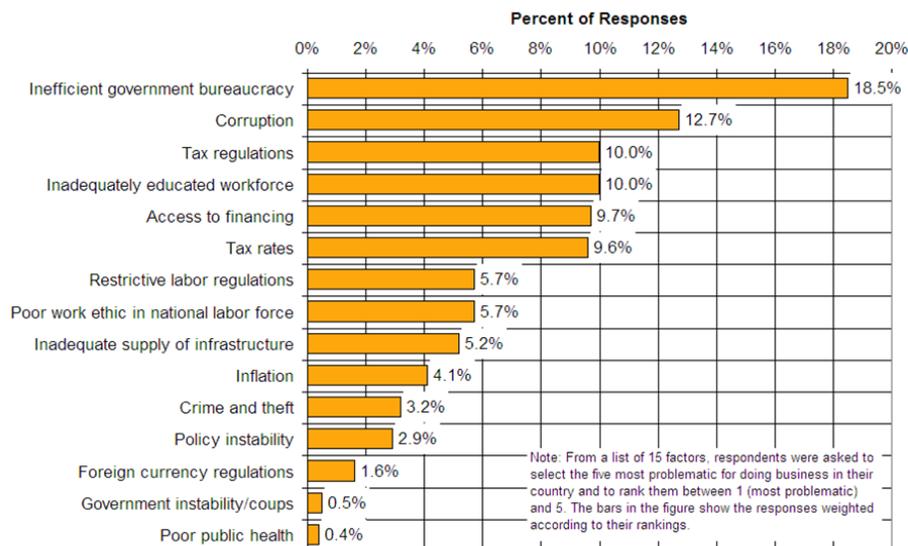
<sup>14</sup> [http://en.wikipedia.org/wiki/Local\\_government\\_in\\_the\\_Republic\\_of\\_Ireland](http://en.wikipedia.org/wiki/Local_government_in_the_Republic_of_Ireland), Accessed May 5, 2009.

<sup>15</sup> <http://eu.mfa.hr/?mv=297&mh=31>

<sup>16</sup> Land Registry case backlogs reduced 60-70%, Ownership registration reduced from 900 to 63 days

courts and inadequate education of judges have not been tackled adequately (EC, 2008). Apart from lack of preparation of judges to tackle complex business cases, business has also criticized the corruption and the still too low independence of the courts (IMD, 2008).

**Fig. 6: Most Problematic Factors for Doing Business in Croatia**



Source: WEF, 2008

**Low level of technology absorption:** Croatia spends 1% of GDP in R&D, higher than countries with similar income levels and enjoys high quality of research. Nevertheless, the application of knowledge remains low. Local innovation relies on public sector research<sup>17</sup>, but universities do not provide research that matches market needs (OECD, 2008 I). Croatia also does not attract technology-relevant FDI (World Bank, 2008).<sup>18</sup> The share of finished manufactured products in Croatian exports is still low compared to peers. Recent progress in strengthening the intellectual property law and law enforcement in this area resulted in Membership in European Patent Office (EPO) and will ease attracting investment.

**Labor-employer relationship:** Croatia has a long tradition of collective bargaining and it is estimated that approximately 45% of the employed are members of one of the existing unions. There are about 600 registered trade unions, out of which 260 are registered on the national level. Croatia's labor

17 85% of researchers are employed by public sector. OECD, Croatia Higher Education Report 2008, p.67-69.

18 The majority of new EU members have restructured their exports by attracting foreign direct investment in high technology industrial facilities - for example, electronics and the automotive industry - Croatia has not been able to achieve that.

laws make it difficult to hire and to terminate employees (World Bank, 2009). Croatia scores in the middle range (50.4 out of 100) on the World Bank Employing Workers scale.

**Lack of an effective national strategy for development:** Croatia made two attempts to develop national competitiveness strategies in recent years and both failed in implementation. Plans were developed by the Central State Office for Development Strategy. The first plan in 2005 was produced without significant consultation with major stakeholders and the second attempt in 2006 involved major stakeholders but its implementation was left to ministries with no clear time-frame or action steps. The Central State Office for Development Strategy merged in 2006 with the State Office for Coordination of EU Funds and is predominantly focused on EU funds coordination<sup>19</sup>. The Croatian National Competitiveness Council (NCC) was created in 2002 in order to help Croatia respond to the challenges of globalized world. Although it produces good analytical reports and brings stakeholders to the table, it is not entirely clear whether and who should be responsible for implementation of outcomes. Lack of a clear vision for Croatia's strategic path, is an impediment to Croatia's development and may account for the difference between potentially fast growth and the stable growth that the country has achieved.

### 1.2.3 Demand Conditions

As a small country, Croatia does not have a large local demand (WEF, 2008). EU accession will improve this component of the diamond, as Croatia becomes part of a market 100 times larger in population.

### 1.2.4 Related and Supporting Industries

The most dynamic clusters in Croatia – tourism, shipbuilding and power generation are linked to one another and to some extent rely on the same suppliers. However, apart from some natural synergies (like tourism driving a part of demand for boats) there is not enough deliberate cooperation within and between clusters. Although Croatia does have institutions that are supposed to improve the competitiveness of specific clusters, the collaboration within clusters remains weak.

---

<sup>19</sup> <http://www.strategija.hr/Default.aspx?sec=2>, Accessed May 5, 2009.

### **1.2.5 EU Accession and Business Environment**

Croatia's business environment has evolved rapidly throughout the accession process. Not only has the EU pushed reform in areas like anti-trust law, intellectual property law, it also provides focus for reform which prevents regressive changes. Through the Instrument for 'Pre-Accession Assistance', Croatia receives financial aid for transition assistance and institution building, cross-border cooperation, regional development, human resources development, rural development amounting to nearly 150 million EUR per year<sup>20</sup>. These funds are widely known to be underutilized with insufficient numbers of public projects to accommodate the resources available.

## **1.3 Conclusion**

Croatia experienced stable growth in the recent years. Despite its endowments, stability since 1995 and its path to certain EU membership, it has not vaulted into the categories of a competitiveness success stories. Apart from following the agenda of the EU negotiations and adapting its legislation to EU standards, Croatia failed to develop an effective national strategy to guide to the government and major stakeholders. Previous attempts to create such a strategy did not have sufficient ownership at the highest levels of government and did not identify appropriate actors, objectives and incentives that would drive change.

Educational programming in Croatia is not aligned with market needs and is creating an un-virtuous cycle of miss-training and brain-drain. Administration needs to be restructured to lower the cost and size of government and to make sure that the civil servants are qualified enough to serve a more competitive economy. The Croatian economy lags behind in terms of absorbing new technologies which is partially due to local research not matching the market needs and inability to attract technology-intensive FDI. Although Croatia has been the recipient of significant FDI in recent years, it has poorly served goals of job creation and innovation. Private sector and government will in coming years need to build the business environment that entices investors in value added industries with export potential.

---

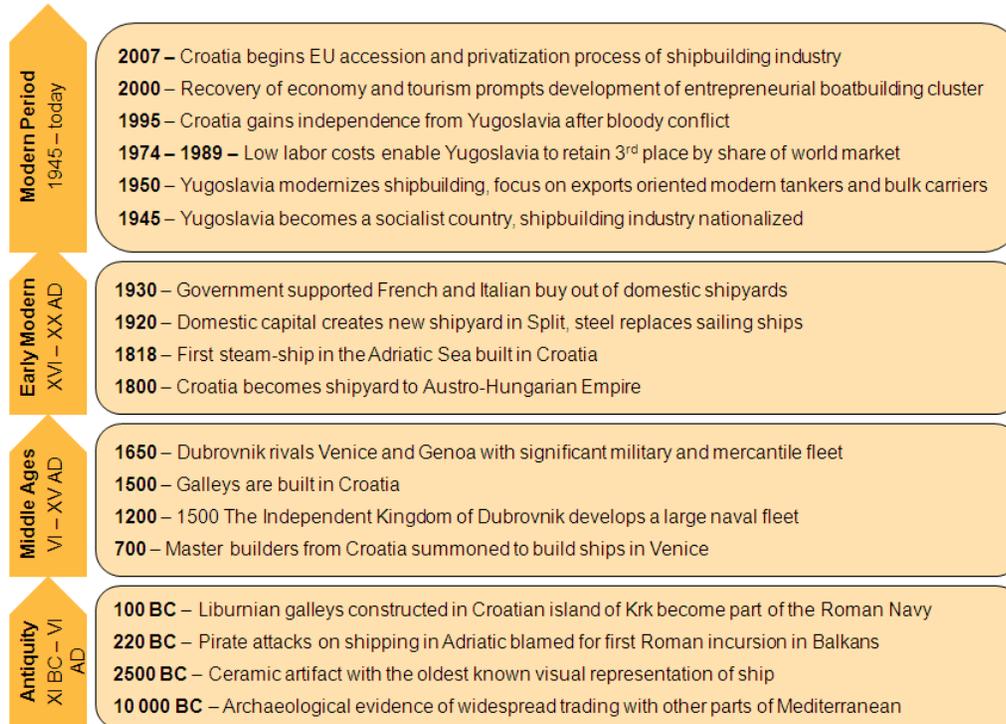
<sup>20</sup> [http://ec.europa.eu/enlargement/candidate-countries/croatia/financial\\_en.htm](http://ec.europa.eu/enlargement/candidate-countries/croatia/financial_en.htm)

## 2 Cluster Analysis

### 2.1 Historical Evolution

Croatia's shipbuilding tradition dates back to the earliest recorded human history (Gabriel 2007).

**Fig. 7: Historical Outline of Shipbuilding in Croatia**



Source: Own compilation from various sources included in bibliography

The 'modern' shipbuilding industry in Croatia traces its roots to the 18<sup>th</sup> century when Croatia became part of the Austrian-Hungarian Empire. Trieste was developed as the main harbor of the Austro-Hungarian navy and new shipbuilding facilities were built in other parts of the Croatian coast.<sup>21</sup> The six shipbuilding companies still existing in Croatia were all incorporated at the end of the 19<sup>th</sup> century.<sup>22</sup> Most companies were established through German and Italian investments although there are exceptions such as the Shipbuilding Yard 'South' in Split, which was established by local investors in 1918. By the 1930s, the shipbuilding industry came to be dominated by French investors who were supported by the government of the Kingdom of Yugoslavia (Zdravka, 2006). After World War II, the communist government of

<sup>21</sup> <http://www.e-brod.com/modules.php?name=News&file=article&sid=1>, Accessed May 7, 2009.

<sup>22</sup> As cited in company web pages on Croatian Shipbuilding Corporation <http://www.hb.hr/introduction.htm>, Accessed May 7, 2009.

Yugoslavia quickly restored the shipyards and the industry was identified as a major ‘foreign currency earner’. By the 1970s, Yugoslavia had transformed its production towards the relatively simple to build but labor-intensive tanker – the dominant merchant ship in demand in the period (Colton, 2002). By 1987, Yugoslavia was ranked third in the world in shipbuilding and the ninety ships planned for export between 1986 and 1990 were to earn about USD 2 billion. Seagoing, river going, fishing and engineering ships went to Liberia, the Soviet Union, Czechoslovakia, Norway, Finland and Sweden.<sup>23</sup>

After the break-up of Yugoslavia, Croatia recognized shipbuilding as one of its strategic industries and launched a program aimed at rehabilitation, restructuring and privatization – in that order. By 2001, Croatia had successfully completed the first two stages and reached the rank of 7<sup>th</sup> in world shipbuilding tables. By the end of the 1990s, Croatia privatized shipbuilding-associated industries. However, shipyard privatization has proven a greater challenge. The industry suffers from high cost inputs, which have to be imported, as well as a “brain-drain” effect causing a lack of skilled labor (Bartlett et al, 2002).

## 2.2 Overview Cluster Map

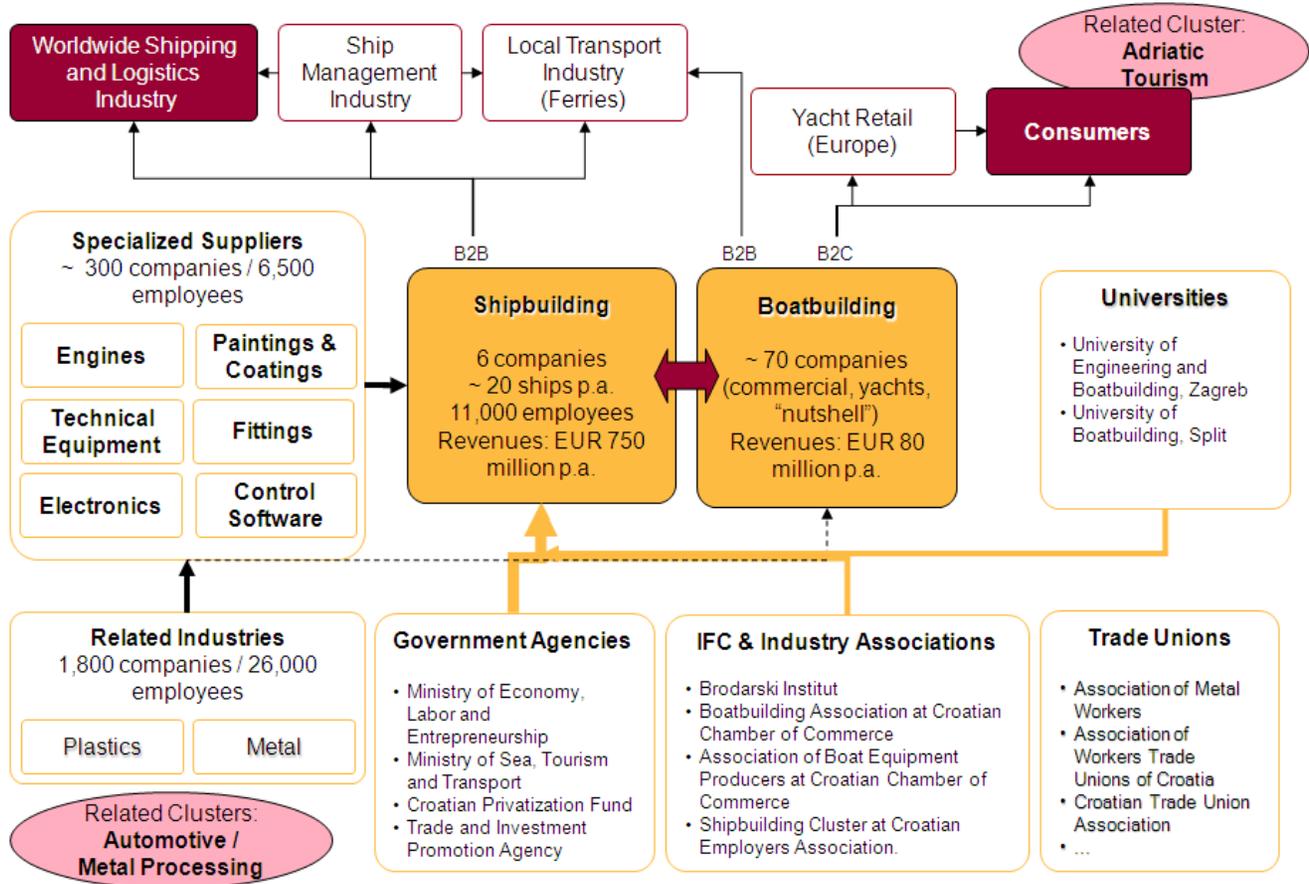
**Cluster core:** The Croatian maritime cluster is comprised of the traditional shipbuilding industry (large ships) and the smaller, recently emerged boatbuilding industry (small and medium size boats). The historical legacy of a controlled economy left shipbuilding dominated by six large companies with significant ‘in-house’ capacities producing mainly peripheral items. The 1995 restructuring plans envisaged ‘spinning off’ the peripheral capacities, thus creating self-standing entities that would continue to supply shipbuilding as well as other sectors of industry in Croatia and abroad (Bartlett et al, 2002). This restructuring created the basis for the dynamic new boatbuilding cluster, which grew into a distinguished industry earning awards such as European Boat of the Year.<sup>24</sup> In terms of scale, the boatbuilding cluster is considerably smaller – generating annual revenues of EUR 80 million compared to EUR 700 million from

23 [http://www.photius.com/countries/serbia\\_and\\_montenegro/economy/yugoslavia\\_former\\_economy\\_shipbuilding.html](http://www.photius.com/countries/serbia_and_montenegro/economy/yugoslavia_former_economy_shipbuilding.html), Accessed May 7, 2009. The information regarding Yugoslavia (former) on this page is re-published from The Library of Congress Country Studies and the CIA World Factbook.

24 <http://www.poslovnahrvatska.hr/login.aspx?ReturnUrl=%2fDefault.aspx&lang=en>, Accessed May 4, 2009.

shipbuilding. Boatbuilding remains intertwined with the specialized suppliers to the shipbuilding industry and may become the possible driver for the future development and diversification of the broader maritime cluster. The ship and boat builders provide more than 11,000 jobs.

**Fig. 8: Croatian Ship & Boatbuilding Cluster Map**



**Suppliers:** The long history of building ships has created a large and complex sector of specialized suppliers, namely: engine manufacturers; specialized painting and coatings; specialized hydraulics and fittings; electrical and electronic equipment; etc. The specialized suppliers provide roughly 6,500 jobs.

**Related Industries and Clusters:** Croatia has 1,800 companies with some 26,000 employees in non-tourism related industries, partially supplying the shipbuilding cluster. On the supply side, the automotive and metal processing clusters provide the common ground of shared technologies used in both clusters. On the demand side, the massive tourism cluster is the main driver for the emerging boat building indus-

try, creating a vigorous demand for smaller cross-island ferries as well as a sophisticated demand for yachts, sail boats and other pleasure craft.

**Government Agencies and Trade Unions:** Overall, the cluster map is quite complete and includes several institutions of collaboration as well as government agencies specific to the cluster. Unfortunately, strong labor unions are becoming a hindrance – they have threatened industrial action and have insisted that future owners continue the activities of the shipyards and commit to retaining current employees.<sup>25</sup>

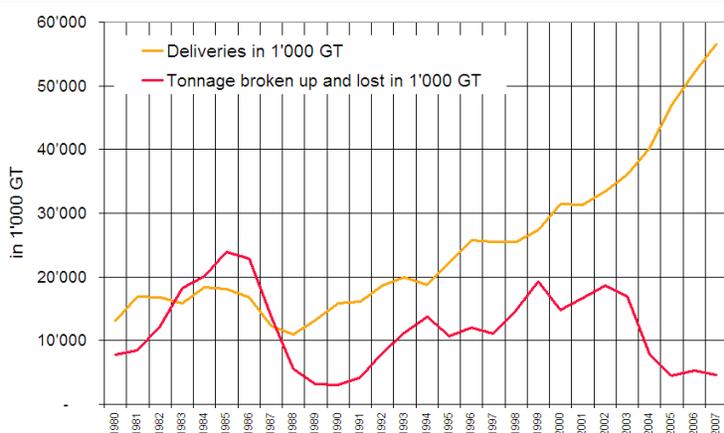
**IFC and Universities:** Access to cluster specific education in Croatia is good. There are two major institutions providing an up to date education in ship and boatbuilding, the University of Engineering and Boatbuilding in Zagreb and the University of Boatbuilding in Split.

## 2.3 Challenges to Croatian Shipbuilders

### 2.3.1 World Demand

The strong growth of world demand for commercial ships over the last 15 years mirrors globalization and the implied increase in global trade (Figure 9).

**Fig. 9: Development of World Shipbuilding and Market Share in World Shipbuilding Industry 2007**



Rank	Country	Region	No.	1'000 GT	Market share
1 (1)	South Korea	Asia	425	20'208	35.7%
2 (2)	Japan	Asia	539	17'326	30.6%
3 (3)	China	Asia	644	10'426	18.4%
4 (4)	Germany	EU	69	1'362	2.4%
5 (8)	Denmark	EU	5	854	1.5%
6 (9)	Italy	EU	25	716	1.3%
7 (7)	Croatia	Europe	25	709	1.3%
8 (6)	Taiwan	Asia	16	671	1.2%
9 (5)	Poland	EU	44	582	1.0%
10 (12)	Turkey	Europe	109	559	1.0%
11 (10)	Romania	EU	43	448	0.8%
12 (11)	Philippines	Asia	10	383	0.7%
<b>Top 10</b>			<b>1'954</b>	<b>54'244</b>	<b>95.9%</b>
<b>World Total</b>			<b>2'689</b>	<b>56'559</b>	<b>100.0%</b>

Source: Lloyd's Register Fairplay

In fact, demand for ships has tripled since the mid 1990s and most shipbuilders have order books gu-

<sup>25</sup> Union of Independent Unions of Croatia [http://www.sssh.hr/en/index.php?option=com\\_content&task=view&id=166](http://www.sssh.hr/en/index.php?option=com_content&task=view&id=166), Accessed May 5, 2009.

arranting full capacity operations for the next three to five years.<sup>26</sup> Furthermore, the annual decline in tonnage broken while shipbuilders operate at full capacity may even create at least a short-term shortage in supply of new ships (Lloyd's, 2009). Nevertheless, orders have declined by 50% in 2008 and the reduced world trade due to the current economic crisis looks likely to trigger at least a short-term drop in demand for ships (Miller, 2009). Despite this, major shipbuilders expect demand in the medium-to-long-term to remain strong. Hyundai Heavy Industries, the largest shipbuilder in the world sees particular a strong demand for tankers and LNG (liquefied natural gas) ships over the next couple of years.<sup>27</sup> Salles Group, a French shipping brokerage firm predicted that 20% of global shipbuilding orders may be withdrawn in the following three to four years and Mr. Liang Zhiyong, shipping analyst at China Securities predicted up to two more rounds of ship cancellations in 2009 and 2010.<sup>28 29</sup>

### 2.3.2 World Shipbuilding Industry

South Korea, Japan and China together produce 85% of all ships worldwide. They are followed by Germany, Denmark, Italy and Croatia, which together produce another 6.5% of global demand. While the Asian shipbuilders produce the largest share of ships and the largest ships (i.e. container ships and super-tankers), European shipbuilders appear to be focusing more and more on smaller but more complex and more expensive ships such as ferries and truck/car carriers. Figure 10 gives a perspective of market share based on export value rather than ship-tonnage. According to these parameters, Croatia's market share of world exports is 1.4% and Croatia is ranked 17<sup>th</sup> worldwide. In addition to new ships built, the export value perspective includes ship repairs and maintenance – a relatively stronger feature of some shipbuilding countries. Overall, we see that Korea is by far the world's number one and still growing. Japan, the num-

---

<sup>26</sup> Our own analysis of the orders placed compared to the current output of ships per year shows that most countries have an order book that last for 3 to 6 years based on current output.

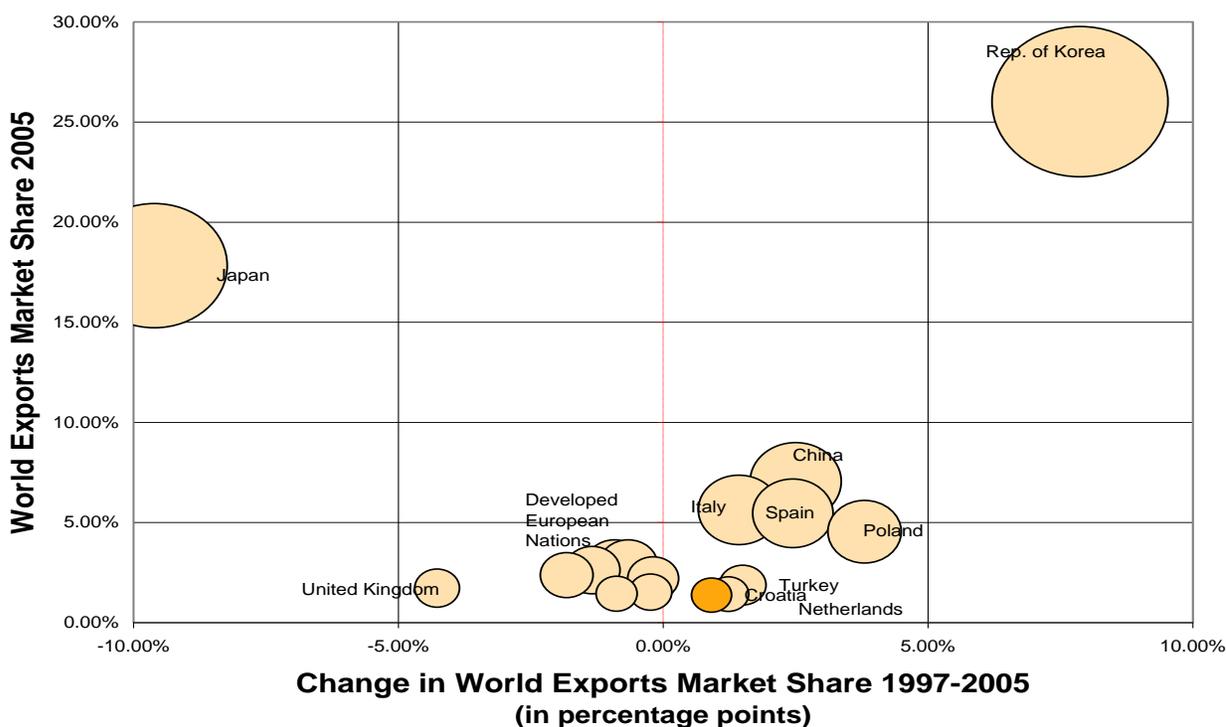
<sup>27</sup> [www.hhiir.com/en/company/busipart\\_01.asp](http://www.hhiir.com/en/company/busipart_01.asp) Accessed May 4, 2009.

<sup>28</sup> <http://www.vinamaso.net/news-events/shipbuilding-repair/massive-order-cancellations-to-come.html>, Accessed May 7, 2009.

<sup>29</sup> Nevertheless, these cancellations have been largely attributed to the shipbuilders' inability to meet orders due to bankruptcy or increased production costs. Another large part of the cancellations is due to a bubble of speculative orders and opportunistic contracting seeking to secure access to the limited capacities in the industry. Almost half of the orders coming from Turkey are considered speculative, while world-class shippers such as the Maersk Shipping Group would most likely postpone orders instead of immediate cancellation.

ber-two shipbuilding nation has declined considerably over the last decade. The more developed European shipbuilding countries have also lost a small part of their share of world shipbuilding markets.

**Fig. 10: World Exports in Shipbuilding and Repairing**



Source: Prof. Michael E. Porter, International Cluster Competitiveness Project, Institute for Strategy and Competitiveness, Harvard Business School; Richard Bryden, Project Director.

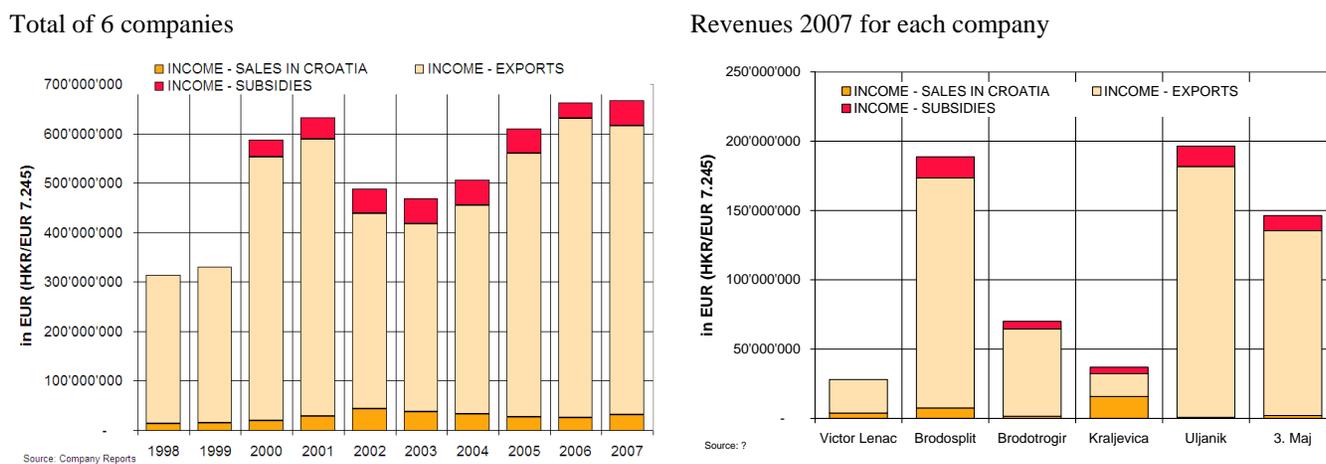
By comparison, Croatian shipbuilding is smaller by an order of magnitude. Nevertheless, Croatia has managed to retain its place while competing alongside China and other lower-cost European nations. Although ship-repair seems to be an important part of the business, annual reports of shipbuilders show that Croatia is currently focusing on new ships and moving away from ship-repair.<sup>30</sup> Nevertheless, this evolution could be due to industry cycles – demand for new ships has been exceptionally strong over the last few years while demand for ship-repair may increase in the future due to the global economic downturn (OECD, 2008 II).

<sup>30</sup> As reported in Croatian Shipbuilding Corporation <http://www.hb.hr/index.htm>, Accessed May 7, 2009.

### 2.3.3 Competitive Position of Croatia's Major Shipbuilders

Croatia's shipbuilding industry comprises six major shipbuilders, five of whom are state owned<sup>31</sup>. Together, these companies produce about 30 ships per year, earning some EUR 700 million in revenues. Currently, Croatia has an order book of approximately 1.2 million Dead Weight Ton (DWT) for delivery in 2008 through 2011, comprised predominantly of oil tankers, bulkers, car-ferries and specialized gas-platforms. In addition to the domestic market, the final destinations for Croatian built ships are Singapore, Italy, Germany, Canada, China, as well as a number of international oil-shipping lines flying flags of convenience.<sup>32</sup> The most sophisticated shipbuilder Ulijanik has upgraded its production to focus on smaller, more advanced ferries and wagon carriers, securing USD 110 million per ship compared to the USD 40 – 50 million for tankers and bulkers. In aiming for the market for more sophisticated vessels, Croatian shipbuilding is competing against other European shipbuilders.

**Fig. 11: Sales of Croatian Shipbuilders**



Source: Annual Reports of Companies

In the segment of tankers and bulkers, the main competitors are South Korea, China, India and other transitioning countries in Europe – namely Romania, Poland and Turkey.

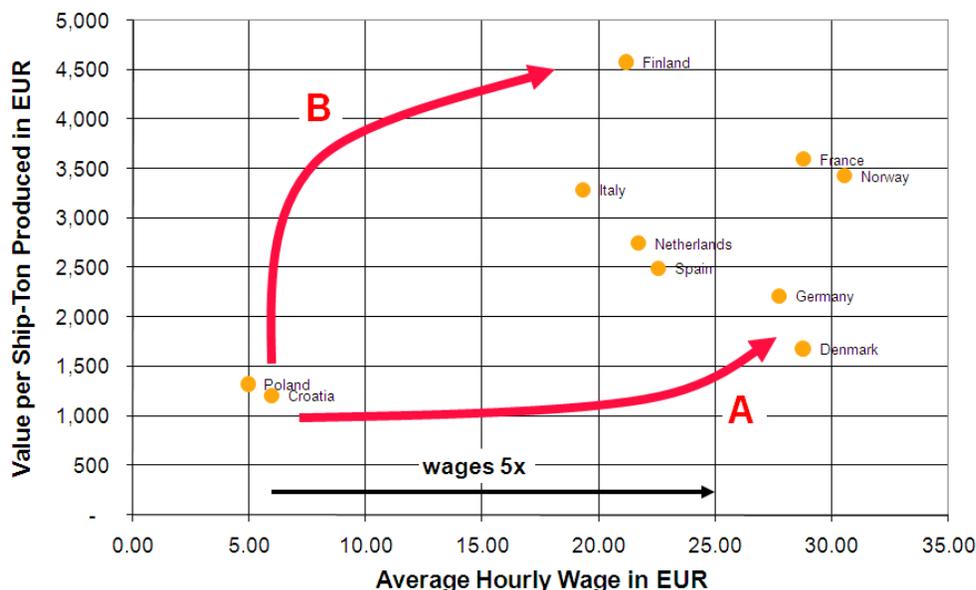
Approximately 5% – 8% of the revenues of Croatian shipbuilding companies are subsidies, the gov-

<sup>31</sup> Ulijanik, 3. Maj, Brodotrogir, Brodosplit, Kraljevica (all state owned) and Viktor Lenac (private).

<sup>32</sup> Quoted from [http://www.hb.hr/great\\_ships.htm](http://www.hb.hr/great_ships.htm), Accessed May 5, 2009

ernment is willing to cover some of shipbuilder's operational costs until the privatization so it controls the process and deals with the labor union issues. Subsidies and government financing for shipbuilding have been common historical practices (Stopford, February 2009) – as late as 2001 the EU introduced subsidies aimed at protecting shipbuilding from what they considered unfair trade practices by Korea.<sup>33</sup> Nevertheless, the EU has recently established rules on state interference in shipbuilding and EU rules of accession require Croatia to comply with those. This leads to substantial changes in the form of state support to the ship building industry. Therefore the question arises whether Croatian shipbuilders can achieve competitive levels of productivity while reducing dependence on state support.

**Fig. 12: Productivity of Shipbuilding Industry in Select European Countries**



Source: Community of European Shipyards Associations, 2009

Data on the European shipbuilding industry in Figure 12 show that most shipbuilders are competitive while paying hourly wages of EUR 20 – 30, which are five times the wages paid in Croatia. There are two basic strategies for the Croatian shipbuilders to improve productivity and competitiveness. **Strategy A – follow similar strategy to Denmark:** keep on producing the same ships and apply European best practices to improve productivity, enabling Croatia to achieve a productivity position similar to Denmark's.

<sup>33</sup> Reported in <http://news.bbc.co.uk/2/hi/business/1310634.stm>. Accessed May 5, 2009.

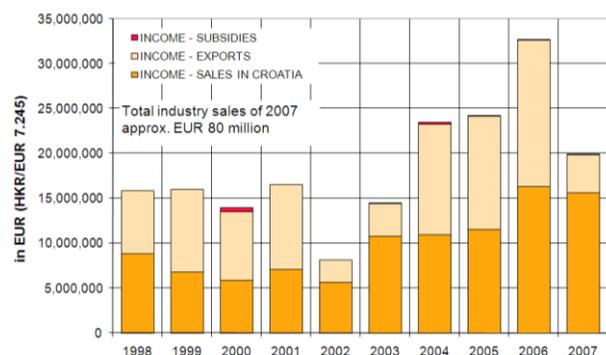
**Strategy B – follow similar strategy to Finland:** Produce more complex ships with more value-added per ton produced like they do in Finland. While both strategies are possible, strategy B is more likely to achieve long-term sustainability and productivity. First, Croatia would compete against European rather than Asian shipbuilders. Secondly, the example of Uljanik, a successfully competitive company in private ownership, shows that the Croatian shipbuilding cluster has already acquired the knowhow required for building such high value ships. Thirdly, the limited ability to physically expand shipyards on the densely populated Croatian coast, forces Croatian shipbuilders to use the limited existing facilities to build smaller ships of greater complexity, thus maximizing the value per ton produced.

## 2.4 Challenges to the Croatian Boat builders

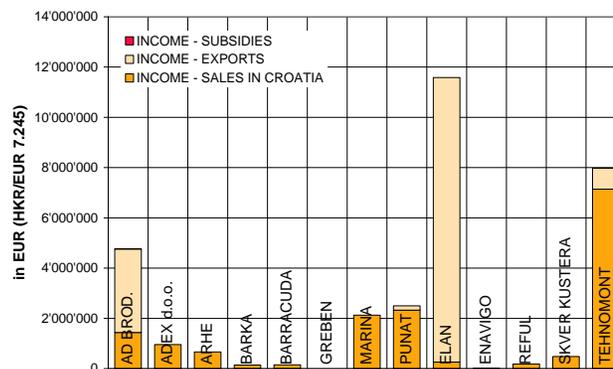
Boatbuilding benefited greatly from the spin-off of peripheral activities of the large state-owned shipyards. In addition, the boatbuilding industry was able to take advantage of the economic development and the growth of the strong tourism cluster. This has created a strong and sophisticated domestic demand. Today, there are some 70 boatbuilding companies in private ownership, building medium and small boats under conditions of free market competition.

**Fig. 13: Sales of Select Croatian Boat Builders**

Cumulative Revenues of Select Boat Builders



Revenues of Select Boat Builders in 2007



Source: Annual Reports of Companies<sup>34</sup>

Figure 13 shows that the combined total sales of the boatbuilding cluster are EUR 105 million – ap-

<sup>34</sup> Data on shipbuilding and boatbuilding companies <http://www.poslovnahrivatska.hr>, Accessed April 25<sup>th</sup>, 2009.

proximately 10% of sales of the shipbuilding cluster. The commercial success of the boatbuilding cluster is evidence of the highly competitive nature of the cluster as well as the entrepreneurial skills of the companies involved. Revenues of boatbuilding companies are typically of SME and are in the range of EUR 0.2 – 12 million (Figure 13). Boatbuilding companies often lack resources for large research and development operations making them more dependent on institutions for collaboration compared to the large shipbuilders.

Another crucial challenge for the boatbuilding companies will be attaining sufficient value-added in order to attract and retain skilled labor essential to their operations. Croatia has two universities offering degrees in shipbuilding, although research shows that higher salaries in neighboring countries are attracting away skilled shipbuilding workers (Skupnjak, 2005). An interim solution to this problem may be provided by the impending privatization of the shipbuilding industry. Thousands of skilled workers are about to be laid off from the large shipyards, providing a pool of skilled labor for the boatbuilding cluster.

The future success of the boatbuilding cluster depends on reaching new export markets and expanding sales beyond the domestic market. This is the case despite the increasing share of export revenues in recent years and this challenge will grow in view of the current global economic conditions. Achieving economies of scale and scope will be crucial to enhancing Croatia's international competitiveness. The challenge implies that current boatbuilding companies will have to grow, either organically<sup>35</sup> or through mergers and acquisitions, until they have attained a critical mass enabling them to successfully compete in the larger European and global markets. A second way to enhance competitiveness is to increase the effectiveness of cooperation between the smaller and medium sized companies in the cluster, especially in areas of research and development and cluster-wide improvements in the business environment. Furthermore, FDI accompanied by management and marketing know-how as well as distribution networks could

---

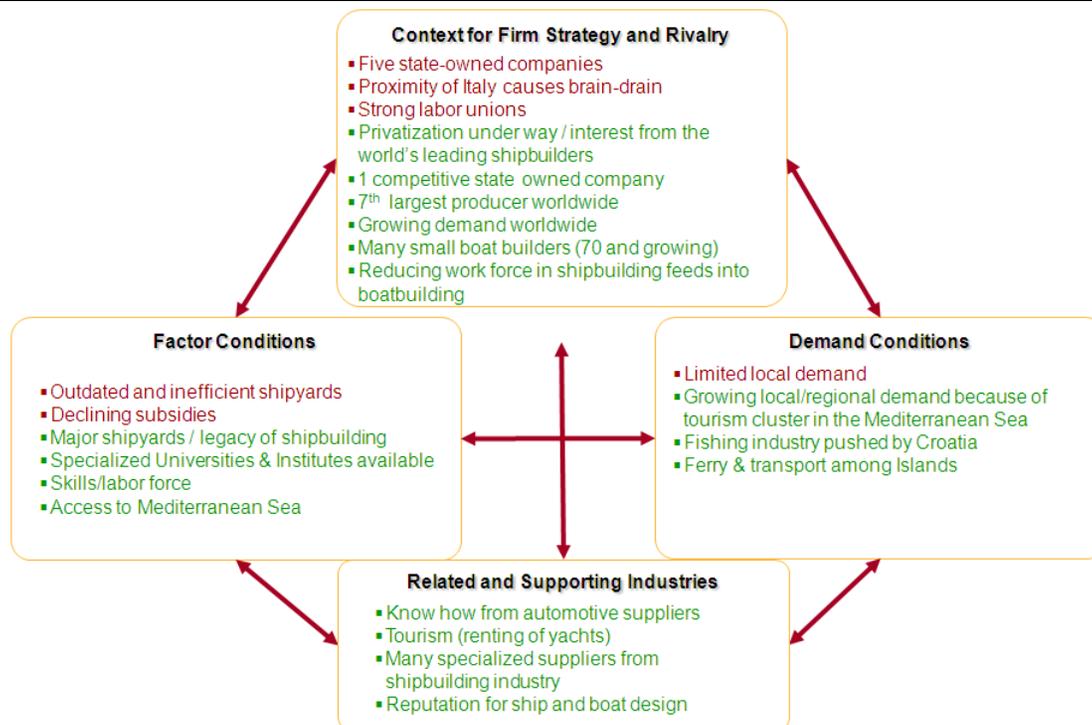
<sup>35</sup> This may prove difficult in the short term due to shrinking global demand and lack of liquidity in financial markets.

boost competitiveness of the boat-building cluster<sup>36 37</sup>.

## 2.5 Cluster Diamond

Overall, the cluster diamond shows a favorable environment for ship and boat builders in Croatia.

**Fig. 14: Croatian Ship & Boatbuilding Cluster Diamond**



**Factor Conditions:** Beginning with the factor conditions, access to the Mediterranean Sea is a crucially important endowment. A long maritime tradition and a history of shipbuilding are other valuable factor conditions. They have facilitated the emergence of a skilled pool of labor, a shipbuilding culture and institutions of education and research. The main challenge for shipbuilding will be the upgrade of Croatia's shipyards and production facilities which are outdated and will require major investments within the next few years in order to reach levels of productivity comparable to European and Asian shipyards

<sup>36</sup> "Elan", one of the greatest exporters and one of the most successful Croatian boatbuilding companies (Figure 13) is a wholly owned subsidiary of the larger "Elan" sports equipment group from Slovenia. In addition to new investments, it has also benefited from the managerial expertise, successful international branding as well as the international marketing experience of the mother company.

<sup>37</sup> Croatia has actively sought to attract FDI in this and other sectors of the economy. The process of EU accession is expected to streamline the business regulatory framework and further improve the local business environment. In addition, the Croatian government offers investment, tax, employment and training credits to investors in the fields of manufacturing, technology and strategic business support services, some of which appear as subsidies in Figure 36. (Trade and Investment Promotion Agency <http://www.apiu.hr/Home.aspx?PageID=1&gohome=true>)

(EUBusiness, 2008). In addition, the Croatian government has already launched plans for the complete privatization of its shipyards as part of restructuring required by its impending EU accession EU.<sup>38</sup> However, restructuring and privatization entail thousands of lost jobs in shipbuilding, a plan strongly opposed by the well organized and politically powerful worker unions (Eubusiness Ltd., 2008).

**Context for Firm Strategy and Rivalry:** In this context, state ownership of shipbuilding companies remains the greatest impediment. Nevertheless, shipbuilding companies competing in a global market and do not enjoy a monopoly position within Croatia. Uljanik, one of the main shipbuilders, is already operating at a profit in a globally competitive environment without state support. The ongoing privatization process is a considerable positive factor. Croatia's position as the seventh worldwide producer gives a high standing and critical mass to the industry. Growing international trade and increasing global GDP looks likely to maintain a healthy global demand for shipbuilding, pushing the cluster to upgrade and improve its competitiveness. A global economic downturn is only likely to increase competitiveness and provide a stronger incentive for improved productivity. On the boatbuilding side, the existence of many small and medium size entrepreneurial companies is a significant advantage. Unfortunately, Croatia's proximity to other shipbuilding centers has aggravated the brain-drain problem characteristic of developing countries. The labor migration started in the 1990s has established a pattern whereby the most skilled shipyard workers migrate to Italy.<sup>39</sup>

**Related and Supporting Industries:** Demand from the shipbuilding cluster has created sophisticated related and supporting industries in Croatia. This has created a regional pool of sophisticated technologies and industrial expertise available to the boatbuilding cluster. In the short term, privatization may have an effect on boatbuilding by disrupting the shared suppliers and associated industries. Nevertheless, in the

---

<sup>38</sup> As quoted in <http://www.eubusiness.com/news-eu/1211385722.23>, Accessed May 5, 2009

<sup>39</sup> Migration is facilitated through Croatian based subcontractors offering work in Italian shipyards. Research by the International Organization on Migration (IOM) shows that 56% workers in Croatian shipyards that have not worked abroad, are thinking about leaving and 43% have already received a job offer in a foreign shipyard. IOM estimates that the actual number of labor migrants ranges between 24 and 56% of the population of the shipbuilding occupations in short supply, i.e. between 1.100 and 2.600 workers (Skupnjak et al, 2005).

medium to long term, strong demand from a possibly smaller but more vibrant shipbuilding cluster will strengthen these associated industries and have a positive effect on the boatbuilding cluster. Furthermore, increased competition could help foster innovation among the specialized suppliers to the ship and boatbuilding industries. Ultimately, increased competitiveness and productivity will further strengthen the reputation that Croatian ship and boat designers have earned over the years, opening the way for the entire cluster to eventually brand their products.

**Demand Conditions:** Croatia's hundreds of miles of coastline will always provide a kernel of domestic demand for ships and boats. The strong tourism cluster is an additional demand driver, especially in the areas of motor and sailboats as well as other sightseeing and pleasure craft. The Croatian government gave boat builders the opportunity to expand their portfolio by ordering 10 new ferryboats worth EUR 130 million and 50 new fishing boats worth EUR 45 million from domestic manufacturers. The Croatia Boat Show, an international exhibition of nautical manufacturers and associated industries regularly attracts some 1,400 exhibitors and 50,000 visitors annually, further strengthening the image of a globally competitive Croatian boatbuilding cluster.<sup>40</sup> Besides being part of the Mediterranean region, Croatian shipbuilding does not enjoy a particular advantage in terms of demand. Shipbuilding clients are global and the shipping companies are often domiciled in Asia and Northern Europe. Global trade, in turn driven by global GDP, drives the global demand for shipbuilding. From this perspective, Croatia will face difficult times in the next few years – a prolonged drop in global demand may lead to significant excess capacities, leading competing shipyards to accept orders at or even below cost. Such demand conditions could prove detrimental for Croatia, however the significant number of orders already placed and comparatively lower labor costs may enable the Croatian shipbuilding to weather such difficulties.

---

<sup>40</sup> <http://www.croatiaboatshow.com/>, Accessed May 5, 2009

## 2.6 Conclusion

Coming out of a central planned economy, Croatia's shipbuilding companies are still state owned, with inefficient shipyards, low productivity and a strong influence of labor unions. Overall, proficiency of ship design and architecture appears to be strong and could help propel the cluster into a competitive environment. Over the last decade, an entrepreneurial boatbuilding cluster has emerged under the wings of the old shipbuilding industry. A fast growing tourism cluster has buoyed boatbuilding demand. Both ship and boat building clusters are intertwined and draw from the same suppliers and knowledge providers.

Despite considerable challenges, some indicators lead us to believe that shipbuilding has a future in Croatia: (1) Croatia's order books contain sufficient orders to weather the current economic crisis. (2) In the medium to long term, global demand for new built ships and fleet replacement remains strong. (3) Examples of other European shipbuilding nations show that it is possible to build ships competitively in Europe while paying much higher salaries than is the case in Croatia. (4) International shipbuilders such as Hyundai Heavy Industries and Samsung have recognized Croatia's shipbuilding potential and at least expressed some interest in a possible acquisition of Croatian shipyards. Despite such interest, it is conceivable that some shipyards may be converted to other uses after privatization (i.e. port, marina). This could be a unique opportunity for the boatbuilding cluster to establish an 'industrial park' and combine it with marine tourism operations. Such a 'themed industrial park' would enable small entrepreneurial companies to take advantage of potential economies of scale and scope deriving from physical proximity (i.e. innovation, exchange of skilled labor on short term, commonly usage of special machines and tools, etc).

### 3 Recommendations

We identified the following main challenges and provided recommendations on how to address them.

	CHALLENGES	RECOMMENDATIONS
COUNTRY	LACK OF NATIONAL STRATEGY	<ul style="list-style-type: none"> <li>▪ Build and support nationally recognized structure – Central State Office for Strategy to coordinate competitiveness strategy and implementation</li> <li>▪ Make Prime Minister the champion of competitiveness</li> </ul>
	GAP BETWEEN EDUCATION OUTPUT AND ECONOMY NEEDS	<ul style="list-style-type: none"> <li>▪ Create a System for Education-to-Employment Transition Monitoring (SEETM)</li> <li>▪ Establish a National Education Competitiveness Team</li> <li>▪ Launch a campaign to increase government and private sector spending on applied R&amp;D and education and create incentives for private sector to actively participate</li> </ul>
	INEFFICIENT GOVERNMENT ADMINISTRATION	<ul style="list-style-type: none"> <li>▪ Reduce size of public administration, and automate procedures and institute performance measures and increase performance incentives</li> <li>▪ Establish a Center for Education in public policy and administration</li> <li>▪ Revive the Regulatory Guillotine Project on a yearly basis</li> </ul>
CLUSTER	UNDERPERFORMING STATE-OWNED SHIPYARDS	<ul style="list-style-type: none"> <li>▪ Privatize economically viable shipyards</li> <li>▪ Convert economically not viable shipyards</li> </ul>
	FRAGMENTED INDUSTRY WITH LITTLE ECONOMIES OF SCALE AND SCOPE	<ul style="list-style-type: none"> <li>▪ Establish a ‘center of excellence’ dedicated to boat building</li> <li>▪ Restructure existing institutions for collaboration</li> <li>▪ Secure access of Croatian ship and boat builders to EU funds</li> </ul>

#### 3.1 Country Level Recommendations

While Croatia has made significant progress over the recent years, the country has not coalesced around a strategy or commitment to achieving high-powered growth. Actions were more reactive than strategic. One clear priority for Croatia is accession to the EU. The following section reviews recommendations, which respond to critical challenges within the country and within the cluster.

##### 3.1.1 Challenge – Lack of National Strategy

**Build and support nationally recognized - Central State Office for Strategy** to develop, implement and annually revise competitiveness strategy. Former efforts to launch initiatives have failed because of insufficient national support, authorization to monitor implementation, and lack of accountability.

**Make Prime Minister champion of National Competitiveness Initiative** – Experience indicates

that successful and influential initiatives are driven by high-level champions. Previous efforts have largely failed because of lack of ownership by senior level officials. Having the Prime Minister champion Croatian Competitiveness should motivate government and private stakeholders to participate more seriously.

### **3.1.2 Challenge – Gap between education output and economy needs**

**Create System for Education-to-Employment Transition Monitoring (SEETM)** - Because educational Institutions and businesses are out of synch, SEETM will assess efficiency of institutions by monitoring percentage of graduate students employed or enrolled in continued education after graduation. SEETM will introduce pay for performance incentives for institutions to reward high performing institutions with improved funding opportunities. With increased funding, successful education institutions will be able to increase capacity to accommodate curricula contributing to Croatian competitiveness.

**Establish an Education Competitiveness Team** – The link between business and educational institutions is so critical that a concerted cross-sector team should be dedicated to forecasting future business requirements and making recommendations for matching education system output and the economy's needs. This cross-sector team of ministerial representatives, business representatives, education institutions and trade unions will focus on analyzing the gap between available skills and evolving business needs and will provide annual recommendations on bridging this gap.

**Government should launch a campaign to increase private sector commitment to spending on applied R&D and education** - Croatia has good levels of investment in R&D, but efforts must be redoubled to ensure practical partnering between business and research and development institutions yields results that are more relevant to business. Additionally, businesses must commit efforts to training staff. Government should align incentives to ensure that private sector is actively engaged in applied research with a diverse group of higher learning institutions and institutes and that business is increasing competitiveness through training at the company level.

### 3.1.3 Challenge - Inefficient Government Administration

**Reduce size of public administration, automate procedures, and institute performance measures and incentives** - Croatia's public service sector is vastly over staffed, restructuring will most certainly create efficiencies. Automating procedures wherever possible will advance efficiency of government and technology adoption. Croatia is criticized for a non-responsive administration by instituting performance measures and incentives within the framework of a powerful national competitiveness body quality of administrative work should advance.

**Establish a Center for Education in public policy and administration** – Education and improvement of government administrative staff itself provides an opportunity. There is significant demand from neighboring countries for improved government services and because of similar language, a regional center of education could scale to serve more than just Croatia. Furthermore, this center could provide a platform for regional networking and cooperation.

**Revive the Regulatory Guillotine** – This project was implemented as a one-time project which dedicated intensive resources to rapidly removed onerous and unnecessary regulations. It was an effective means of removing laws that slowed business and destroyed productivity. We recommend assigning the Government Legislation Office to incorporating these efforts into their regular operations.

## 3.2 Cluster Level Recommendations

The major challenges identified on the cluster level are: (A) The state owned shipbuilding industry has to be transitioned into an industry which is able to compete on free markets. (B) The major foreseeable constraint to growth of the Boatbuilding industry is its fragmented structure, which will make it hard to reach economies of scale and scope without intense collaboration. However, we identified a number of indicators for both industries, which show potential for a further development of the cluster.

### 3.2.1 Challenge – Underperforming state owned shipyards

**Privatize economically viable shipyards** by offering them for sale exclusively to strategic investors

(namely shipbuilding companies) to attract industry-specific FDI. The shipyards should be sold to the strategic investor with the best overall offer, considering buying price and investment plans. Sizable investments and sustainable business plans should be emphasized over the actual buying price.

**Convert economically not viable shipyards** that fail to attract interest from strategic buyers into more useful purposes.<sup>41</sup> The central and the affected municipal governments should sit together and define which dispositions are economically promising for the deserted shipyards and assign a development company with the search for potential investors.

### 3.2.2 Challenge – Fragmented Industry with little economies of scale and scope

**Establish a ‘center of excellence’ dedicated to boat building** to help tenants achieving economies of scale (i.e. jointly used resources like expensive machines, specialized workers, stocks) and economies of scope (i.e. research and development, marketing and joint distribution channels). The tenants of the industrial park should comprise boat builders, institutions of research & development, possibly some outlets of the two leading universities and specialized suppliers. The government should start the initiative, find an adequate location for such a project and help setting up the development company.

**Restructure and refocus existing institutions for collaboration** to foster the impact of these institutions. In particular, strong institutions for innovation should emerge out of the restructuring process.<sup>42</sup> The government should address the issue and kick off such a consolidation and refocusing project by providing adequate incentives (i.e. financial help for the restructuring process, contributions based on performance, reduce support for institutions which fail to perform).

**Secure access of Croatian ship and boat builders to EU funds LeaderSHIP<sup>43</sup>** by establishing simple administrative procedures and matching funds if needed.

---

<sup>41</sup> For example, the Rijeka shipyard may be used to expand the port, while the shipyard in Trogir may be assigned for nautical tourism development.

<sup>42</sup> Examples for tasks performed by such IFCs would be: Organizing once a year the already established boat fair, provide support to apply for funds of the LeaderSHIP program which is an EU program for innovation in shipbuilding, organizing programs for the continued education, jointly establishing a brand-value for Croatian built ships and many more.

<sup>43</sup> The EU has initiated a program called LeaderSHIP to foster innovation and collaboration in the European shipbuilding industry.

## Bibliography

- Bartlett, W./ Bateman, M. / Vehovec, M. (2002). Small enterprise development in South-East Europe, Kluwer Academic Publishing, Springer.
- Bertelsmann Stiftung (2008). BTI 2008, Croatia Country Report, Munich.
- Colton, T. (2002). A Brief History of Shipbuilding in Recent Time, Page 16
- Commission of the European Community (2008). Croatia 2008 Progress Report, Brussels.
- Community of European Shipyards Associations (2008). Annual Report 2007-2008, Brussels.
- Community of European Shipyards Associations (2009). Various Statistics, Brussels.
- Economist Intelligence Unit (2009). Monthly Report February.
- EUbusiness Ltd. (2008). Croatian shipbuilders protest EU-required reforms, <http://www.eubusiness.com/news-eu/1229959022.03> accessed 03/02/2009
- European Community (2003). Background report, Overview of the International Commercial Shipbuilding Industry.
- Eurostat (2009). Various statistics.
- Gabriel, R. (2007). Masters of the Mediterranean, in: Military history, issue December 2007, Weider History Group, Pennsylvania, USA.
- IMD (2009). World Competitiveness Yearbook, Lausanne.
- Institute for Strategy and Competitiveness (2009). Various statistical data from Prof. Michael E. Porter, International Cluster Competitiveness Project, Harvard Business School, Cambridge MA.
- Lloyd's Register Fairplay (2009). Various statistics.
- Miller, J. (2009). The Mega Containers Invade, in the Wall Street Journal, page B1, January 26th, 2009, New York.
- National Competitiveness Council (2006). Annual Report on Croatian Competitiveness 2006, Summary, Zagreb.
- National Competitiveness Council (2007). Regional Competitiveness Index Croatia 2007, Zagreb.
- OECD (2008 I). Croatia Higher Education Report, Paris.
- OECD (2008 II). The Interaction between the Ship Repair, Ship Conversion and Shipbuilding Industries, Paris.
- Skupnjak-Kapic, S./ Milas, G./ Mustapic, M./ Karajic, N. (2005). Cross-border Labour Migration Flows Croatia – Italy: Focus on Shipbuilding”, International Organization for Migration; Zagreb.
- Tholen, J. / Ludwig, T. (2006). Shipbuilding in Europe, Structure – Employment - Perspectives, Institute Labor and Economy, University of Bremen, Bremen.
- Verband für Schiffbau und Meerestechnik (2008). Jahresbericht 2007, IV. Entwicklung der Weltschiffahrt und des Weltschiffbaus, Hamburg.
- Veza, I. (2008). Restructuring of the Croatian Shipbuilding Industry, Discussion Paper, Economic Research Center, Graduate School of Economics, Nagoya University.
- World Bank (2008 I). Report No. 44879-HR. International Bank for Reconstruction and Development Country Partnership Strategy for the Republic of Croatia for the Period of FY09-FY12.
- World Bank (2008 II). Doing Business 2009, Washington.
- World Economic Forum (2008). Global Competitiveness Report, 2008–2009, Geneva.
- World Tourism Organization (2009). Various Statistics.
- Zdravka, J. (2006). The Ownership Structure of Split Ship-Building Yard "South" from 1918 to 1931, Summary, Journal of Contemporary History 3/2006.