Bachelor Thesis
Bachelor of International Marketing
Norsk Hydro ASA: Recycled Aluminium in Asia
In cooperation with

[Image of Nanyang Technological University]

and

[Image of Hydro]

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“This paper is done as a part of the undergraduate program at BI Norwegian Business School. This does not entail that BI Norwegian Business School has cleared the methods applied, the results presented, or the conclusions drawn.”
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Secondly, we would like to show our appreciation for the help and advices received from our supervisor Associate Professor Sharon Ng Sok Ling. Professor Sharon has always been available for meetings when needed, and been providing us with constructive critique, which has driven us forward.

Lastly, we would like to thank everyone who has been helping us and supporting us throughout this work. Especially Sales Director at Norsk Hydro, Florian Starnitzky, and Director of Distribution in South East Asia at Sapa, Xavier Courboin, for their insight and views of recycled aluminium.

Singapore, April 2013

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Executive Summary

The purpose of this study is to investigate the opportunities for Norsk Hydro ASA to introduce recycled aluminum as a part of their product portfolio to their customers. Our focus will be the automotive industry in Japan and South Korea. We have based our thesis on primary research with a questionnaire distributed to Singapore, South Korea, Japan, India, and Hong Kong. Additionally, in-depth interviews with experts within the aluminium industry in Asia have been conducted. There has also been collected secondary research to create a further understanding of the market, and to supplement our primary research.

To be able to create a solid recommendation, the authors have conducted internal analysis to investigate the resources and capabilities. We have found that Hydro inhabits several important capabilities required for recycling aluminium. Hydro has more than sufficient experience from Europe and USA to initialize sales of recycled aluminum. The findings suggest that the environmental consciousness among Asian consumers will increase within the next 10 years. In the analytical part, we conclude that marketing of recycling to already existing customers could be beneficial. Through the external analysis, we have found that the government plays an important part of environmental awareness and initiatives, and that the demand for aluminum is increasing substantially. We have also found that the competitive rivalry within the industry has not yet been extensively developed, thus, the possibilities for Hydro are highly obtainable.

Therefore, suggestions have been made, in order to make this concept successful. These suggestions will be:

1. Create and maintain an environmentally focused organizational culture
2. Create Hydro Recycling Program
3. Create a unique-selling-proposition
# Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>ASEAN</td>
<td>Association of Southeast Asian Nations</td>
</tr>
<tr>
<td>ASEM</td>
<td>Asia-Europe meeting</td>
</tr>
<tr>
<td>CAGR</td>
<td>Compound Annual Growth Rate</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>GPA</td>
<td>Global Program of Action for the Protection of the Marine Environment from Land-Based Activities</td>
</tr>
<tr>
<td>HRP</td>
<td>Hydro Recycling Program</td>
</tr>
<tr>
<td>IEA</td>
<td>International Energy Agency</td>
</tr>
<tr>
<td>IF</td>
<td>Investment Fund for Pollution Reduction in the Large Ecosystems of East Asia</td>
</tr>
<tr>
<td>IMF</td>
<td>International Monetary Fund</td>
</tr>
<tr>
<td>IPCC</td>
<td>Intergovernmental Panel of Climate Change</td>
</tr>
<tr>
<td>PEMSEA</td>
<td>Partnership In Environmental Management for the Seas of East</td>
</tr>
<tr>
<td>UNFCCC</td>
<td>United Nations Framework Convention on Climate Change</td>
</tr>
<tr>
<td>USP</td>
<td>Unique-Selling-Proposition</td>
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<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
<tr>
<td>WRI</td>
<td>World Resource Institute</td>
</tr>
<tr>
<td>WSSD</td>
<td>World Summit on Sustainable Development</td>
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<td>WTO</td>
<td>World Trade Organization</td>
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</table>
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Analytical Part

Chapter 1 - Introduction

1.1 Introduction

This study is conducted to see if Norsk Hydro ASA can benefit from recycling their current customer’s aluminium production scrap in the automotive industry in South Korea and Japan. They have extensive experience with recycled aluminium from six countries in Europe, as well as in USA. In cooperation with Norsk Hydro’s headquarters in Singapore, and our supervisor, we came up with the idea to write this thesis on recycled aluminium. This thesis is based on the expectation that in the nearest future, the demand from consumers for environmentally friendly vehicles will increase. To become more environmentally friendly, an important step for automotive manufacturers is to increase the use of aluminium in the car production. However, by being a part of the recycling of aluminium, companies can improve their environmental friendly image even further.

1.2 Norsk Hydro ASA

Norsk Hydro is a Norwegian company, established in Norway in 1905, with annual revenue of 10,727 billion USD in 2013.¹ Norsk Hydro is one of the largest global aluminium companies with production, and takes part in all the activities within its value chain. The Norwegian Government owns 40.62% of the company.² In 2007 Norsk Hydro merged their oil and gas business with Statoil and is now fully concentrated in aluminium production, and can benefit from a high brand equity in the industry. Today, 109 years after the establishment of Norsk Hydro, they are still prospering with 12,564 employees involved in activities in more than 50 countries worldwide and represented on all continents.³ The largest industries for aluminium are the construction industry, automotive industry and food and beverage industry. Hydro’s total market share of
aluminium products in Asia in 2013 was reported to be 5-6%, by Managing Director at Hydro Aluminium in Singapore, Einar Glomnes. Hydro’s main products are sheet ingot, extrusion ingot, foundry alloys and P1020, and within these categories they have 15-26% market share.

Norsk Hydro is represented with a sales and marketing office in Singapore. This office is mainly responsible for selling aluminium products to the Asian (with the exception of China) and the Oceania countries. Their most sold products are sheet ingot, extrusion ingot, foundry alloys and P1020, produced in Australia and Qatar. Within the automotive industry Norsk Hydro is a major contributor in Asia with customers like Toyota and Hyundai Kia, as well as several subcontractors especially in South Korea and Japan. Norsk Hydro is represented with sales offices throughout Asia, as well as being a part of a joint venture with Norwegian Orkla, called Sapa.

Aluminium has a high value, due to its incredible ability to maintain its characteristics in the remelting process and its long lifespan. In the process of recycling aluminium, only 5% of the energy of what they originally used when producing primary aluminium is required. However, the recycled aluminium is still sold at the same price as primary aluminium to customers, which gives Norsk Hydro a better profit margin. In other words, it is not only environmentally friendly, but also more cost efficient to recycle aluminium than to produce primary aluminium from bauxite. Norsk Hydro’s goal is to be climate neutral by 2020, and their main focus for the future according to Einar Glomnes, will be to sustain their current customer portfolio due to the fact that Norsk Hydro is selling at full capacity.

Norsk Hydro ASA will from now on be called Hydro.
Chapter 2 - Problem Area

2.1 Problem Definition

Hydro has given us the freedom to develop a problem definition, and we have not been presented with any apparent issues or problems. Our problem definition is created to further understand the environmental consciousness of automotive consumers in Asia. We are going to investigate whether or not this segment is environmentally conscious, and willing to pay extra. This will give us an indication if the automotive manufacturers could benefit from including the use of recycled aluminium in their production.

Many factors were considered in the process of developing the problem definition. Factors such as increasing environmentally consciousness, the fact that Hydro is selling at full capacity today, the success of introducing recycled aluminium in Europe, and the fact that the automotive industry is one of the largest industries for aluminium today. Furthermore, we have mentioned that Hydro has large customers in the automotive industry, such as Toyota and Hyundai Kia. With South Korea and Japan being two of the largest automotive manufacturing countries in the world, there are good opportunities to introduce recycled aluminium in these markets. With guidance from our supervisor and representatives from Hydro in Singapore, decided to focus our thesis on a future opportunity for the company. We believe that the idea of using recycled aluminium is, and will be, more important in the nearest future, considering the growing awareness of environmental issues and consumer’s demand for green products and companies. In order to elaborate further on this issue, we have decided to formulate our problem definition as the following:

“Due to the increasing demand for aluminium in the automotive industry, could it be beneficial for Norsk Hydro ASA to market recycling of aluminium to their customers in the automotive industry in South-Korea and Japan, and will this create extra value for Hydro’s customers?”
2.2 VRIO - Analysis

A VRIO-analysis will help us analyze the internal resources and capabilities of Hydro, and provide an indication of the competitive implications for the company.\(^7\) We will conduct a VRIO analysis of Hydro’s internal resources and capabilities regarding the recycling of aluminum.

<table>
<thead>
<tr>
<th>Factors</th>
<th>Valuable?</th>
<th>Rare?</th>
<th>Costly to Imitate?</th>
<th>Exploited by Organization?</th>
<th>Competitive Implications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminium Recycling</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Competitive Parity</td>
</tr>
</tbody>
</table>

Table 1 - VRIO-analysis

**Valuable:** The resources and capabilities Hydro has regarding recycling of aluminium in Europe and USA, will be extremely helpful if they decide to introduce the same concept in Asia. The resources and capabilities are valuable. This is because the expertise from the European and the US market can help neutralize the power of possible competitors in the Asian market. Additionally, it is valuable because recycled aluminium is a factor that can differentiate Hydro from the competitors, and increase the perceived customer value.

**Rare:** Considering the fact that there are many companies that have similar resources and capabilities within the aluminium recycling industry in Europe and USA, it is not rare. However, the capabilities and resources within recycled aluminium for Hydro in Asia are less extensive, because they currently do not have a recycling plant in Asia. We assume that for a company to attain this capability, they must be able to attain people from their offices in Europe or USA that have great knowledge in this area.

**Costly to imitate:** Resources and capabilities in the recycling of aluminium industry are based on experience. To gain experience within this industry, companies must establish themselves, which creates high entry
barriers due to the high initial investment needed. Hydro has developed these skills over time from their experience in Europe and USA, which for other companies are not impossible, but costly to imitate. This applies especially to intangible and tangible resources such as expertise within the area and remelting plants within Asia.

**Exploited by organization:** Both in Europe and USA, the organizational structure needed for effective recycling is exploited by the firm. Hydro has the capabilities related to recycling in Europe and USA, and we assume that the organizational structure has been successful. This means that if Hydro would commit to recycling within Asia, they would be able to effectively initiate the organizational aspects, considering they already have knowledge of the area from other parts of the world. Additionally, Hydro has experience with remelters in Asia from several years ago, but due to complications, the remelting plant was sold.

**Competitive Implications:** We can conclude that these competencies are of great value for Hydro. They are able to answer possible threats from competitors, as well as exploiting opportunities in the market. When it comes to rarity, we can see that the largest companies within the industry are the ones who have the resources and capabilities to initiate recycling. At the same time, these companies are currently focusing most of their resources and capabilities on producing aluminium, instead of recycling. Therefore, we see capabilities related to recycling as rare in Asia, but more extensive in Europe and USA. Moreover, there are high entry barriers in the market, as well as the resource being already exploited by Hydro in Europe and USA. We see the resource as more rare in Asia, but not rare enough to be a temporary competitive advantage for Hydro. We conclude that because of the ease of access to resources and capabilities from Europe, there is competitive parity.
2.3 Project Limitations

We have decided to limit the scope of our bachelor thesis to focus on recycled aluminium towards automotive manufacturers in Japan and South-Korea. We will only look into whether or not Hydro can benefit from marketing the recycling of aluminium to their existing customers within these two countries. Furthermore, we will focus on Hydro collecting aluminium production scrap from their customers in the automotive industry in Japan and South Korea (Appendix – Collection of Production Scrap). We define aluminium production scrap as all excess aluminium scrap from the automotive production. We will not focus on collecting aluminium from scrap yards or end of life vehicles. Hydro is operating at full capacity today; therefore, attaining new customers is not relevant. The main reasons for why we limit our paper to these areas are because of the need for in-depth knowledge and research required, as well as limited amount of resources, time and capacity.

2.4 Japanese and South Korean Automotive Industries

Japan is currently the third largest car producer in the world with a total production of 8,554,219 passenger cars and an export volume of 4,196,094 passenger cars in 2012. The largest car manufacturers to origin from Japan are Honda, Mazda, Mitsubishi, Nissan (Datsun) and Toyota.

South Korea is the fifth largest automotive market in the world by both production and export volume. In 2013 they produced 4,521,429 vehicles. The largest manufacturers from South Korea are Hyundai Kia, Renault Samsung motors, Tata Daewoo and SsangYong motor company.

Other important players in the automotive industry are the subcontractors to the manufacturers. The subcontractors, such as Songwoo, Enkei Wheels, Maxion and Kosei are some of Hydro’s customers, who
produce smaller automotive parts.

2.5 Environmental Focus and Development in Asia

Environmental focus and development in Asia is the most important factor for us, due to the fact that our research is mainly based on the environmental consciousness among Asian consumers. This is because different types of environmental self-identity seem to be related to some pro-environmental actions, such as eco shopping, energy conservation, recycling and environmental activism. In other words, this means that people that are environmentally conscious will most likely consume environmental friendly products. We can see that competitors of Hydro are aware of this trend, and have exploited this opportunity. Novelis establishing a remelter in South Korea is a good example.

Research shows that if car manufacturers remove 0.45 kg of steel and use aluminium, they can save between 0.91 kg and 1.13 kg of cast iron. This will make the vehicles lighter, which lead to less fuel consumption, and more environmentally friendly vehicles. The Asia pacific region has 50% of the worlds demand for recycled aluminium. The industry is expected to grow by 4 to 5% annually for the next decade. It is reported that the automotive industry will be the largest contributor for the increase in demand for recycled aluminium.

Moreover, it is reported that due to the more restrictive CO2 standards from the United Nations, the emission is expected to decrease in the future. According to international council of clean transportation, the emission is expected to be 105 g/km in Japan in 2020 and 150 g/km in South Korea in 2020. This shows significant lower emissions from 2000 when Japan was at 170 g/km, and South Korea was on 230 g/km. This development tells us that there has been a shift in consumers’ attitudes.
2.6 Justification

We have chosen to do our surveys in Singapore, Japan, India, South Korea and Hong Kong. We believe that these countries are most suitable for our research, because they have features such as high GDP per capita, advanced infrastructure and high purchasing power.\(^\text{14}\) These are all important factors because research shows that there is a positive correlation between environmental consciousness and wealth. Furthermore, research has shown that there is a correlation between wealth in Asian countries and environmental awareness.\(^\text{15}\) We have also decided to include India in our research because of the total market size, but also because this is an emerging market.\(^\text{16}\) The markets are somewhat homogeneous, even though India might stand out from the rest of the markets we have chosen. However, India has potential to be the world’s third largest automotive market by 2016.\(^\text{17}\) As mentioned above, China is not included in this research, because of the presence of Sapa in China.

We have found it necessary to research on aluminium because the data is to a much larger extent available, than what research is on recycled aluminium. Managing Director at Hydro, Einar Glomnes informed us that the correlation between an increase in aluminium is high with regards to the use of recycled aluminium. If the use of aluminium increases in Asia, it creates a solid foundation for recycled aluminium, because it will increase the total demand. Einar Glomnes informed us that the aluminium industry is carefully controlling the amount of aluminium in the market, to make sure that the aluminium price is stable. The cheapest, and easiest way to attain new aluminium will be by recycling old primary aluminium. According to Einar Glomnes, 25% of all aluminium in the market comes from recycling, and this increases with the total demand for aluminium.
2.7 List of Information

This is the list of information required to resolve our problem definition and create recommendations:

**Primary data:**

- We need information from end-users in the automotive industry (B2C-market).
- We need information from experts and employees in the aluminium and automotive industry (B2B-market).

**Secondary data:**

- Environmental trends in the automotive industry.
- Development in the aluminium industry.
- Use of primary and recycled aluminium in the automotive industry.

We need above mentioned information to be able to come up with recommendations that has a solid foothold in reality, and that are based on respectable information so Hydro can use this research in their future operations. Furthermore, we believe that all this information will give us a better understanding of the environmental consciousness of end-users in the automotive industry, as well as the point of view of experts. By supplementing the secondary research on environmental trends in Asia and the development of recycled aluminium with our primary research, we are confident that our recommendations will be based on the necessary information listed above.

Furthermore, an analysis of the competitive environment in the industry (Porter’s five factors analysis) combined with an analysis of the external factors such as the political, environmental, economic, social, technological and legal factors (PESTLE-analysis) are required.18
Chapter 3 - Research

3.1 Research Methodology

A well-planned methodology is critical when conducting a research, because choosing the correct method will help us collect the necessary data to answer our research objectives and create valuable recommendations. We have decided to use both explorative and descriptive design, which will include questionnaires and in depth interviews.

The reason for why we will conduct a questionnaire towards end-users is because we will be able to analyze the environmental awareness in Asia. If the demand and willingness to pay is satisfactory, we can present this to Hydro. This information can be utilized by Hydro to show their customers the advantages of using more recycled aluminium in the production of their vehicles.

3.1.1 Research Objectives

Based on the problem definition, we will answer these four research objectives. This will be used as a foundation for our questionnaire as well as the depth-interviews:

**Main-objective for individual depth-interviews (B2B):**

1. Identify the different perceptions and prediction that experts in the *automotive industry* have about recycled aluminium.
2. Identify the different perceptions and prediction that experts in the *aluminium industry* have about recycled aluminium.

**Main-objectives for individual questionnaires (B2C):**

1. Understand the *environmental attitude* and *perception* of Asian consumers.
2. Understand the *environmental predictions* of Asian consumers, and their *willingness* to pay.
By unveiling the predictions and perceptions of experts in the aluminium industry and automotive industry, we will be able to analyze the potential for applying the use of recycled aluminium, and see where the industry is headed. With answers from consumers we will be able to see if there is an actual interest and preference for environmentally friendly companies and vehicles.

3.2 Research Design

We will be using a combination of descriptive design and exploratory design. This will be done by using secondary research, individual in-depth interviews and questionnaires. First, we will conduct a questionnaire aimed towards consumers in India, Singapore, Hong Kong, Japan and South Korea between the ages of 18 to 65 years old. This will be used to identify their environmental attitude, perception, prediction, as well as the willingness to pay an extra amount for environmentally friendly produced vehicles. Combined with secondary research on environmental trends in Asia, we will conduct individual interviews with Hydro staff and representatives from the aluminium industry in Asia.

3.2.1 Exploratory Research Design

The purpose of using exploratory design is to enlighten a subject area with few existing researches and studies. Our expectation is that experts in the aluminium industry and representatives at Hydro are able to predict the use of recycled aluminium in the future. This will further help us understand the development of using recycled aluminium in the automotive industry to create more environmentally friendly vehicles.

3.2.2 Descriptive Research Design

The purpose of a descriptive study is to describe the situation within a specific area. Secondary data will be important for us to understand and to see the development of the environmental focus in Asia. Important
sources of secondary data will be previous research that has been published by reliable sources. Secondary research will provide us with information related to the environmental trends in Asia, the car industry, Hydro’s competitors, and other relevant information. Furthermore, we will conduct a questionnaire to help us see if there is a covariance between Asian’s environmental consciousness and the potential for an environmental trend.

3.2.3 Research Design Limitations

Primarily we wanted to conduct interviews with car manufacturers represented in Japan and South Korea, where Hydro’s customer’s headquarters are located. This task proved to be impossible given our resources and capabilities, and we therefore settled with interviews from experts within the aluminium industry located in Singapore. We also limited our research area to include Singapore, Hong Kong, India, Japan and South Korea because we believe these 5 markets can be representable for the Asian continent. These five markets represent a total of approximately 36% of the entire Asian population, which is 4.164 billion.\(^\text{19}\) We had difficulties collecting data from countries outside Singapore, but this issue was solved by using online panels, and by using our contact network to obtain the necessary amount of respondents.

3.2.4 Reliability and Validity

One of the key factors when doing research is to make sure the data samples are reliable as well as valid. A data sample is valid only when the survey measures what it is aimed to measure. On the other hand, reliability means how stable and consistent the data is. In order for any information to be valid, it has to be reliable first.\(^\text{20}\) Therefore, we were quite critical when making the questions for the survey, such as deleting questions that were too complicated, too leading, and making sure that there were no spelling errors in the questionnaire. To make sure a solid reliability for the data, we decided to distribute the survey to 5 major
countries in Asia, so that it represents a large amount of the Asian population.

3.3 Research Method

3.3.1 Data Sampling

For our survey, we used a mixed data sampling strategy with both convenience sampling and a panel audience. Considering our use of convenience sampling, there are several weaknesses that might reduce the representability of the population, such as the representativity of our respondents that were chosen through our contact networks. Out of our 274 respondents, 35% respondents were from 18-25. This shows an unequal distribution of the age of the respondents. When it comes to the panel audience, we used a company called Research Panel Asia to gather 50 respondents from South Korea, 25 respondents from Japan, and 43 respondents from Hong Kong. This was done as a supplement to the respondents gathered from our contact network and personal handouts.

Further on we wanted to conduct in-depth interviews with experts in the automotive industry in Japan and South Korea, as well as interview experts in the aluminium industry. Due to the limitations with time and resources we only managed to interview experts from the aluminium industry in Asia. Our interview objectives gave us permission to name them in this thesis, and include their opinions. We have interviewed Florian Starnitzky, Sales Director at Hydro Aluminium Singapore, who provided us with valuable information based on his extensive expertise and background in the aluminium industry. And Xavier Courboin, Director of Distribution in South East Asia at Sapa, who provided us with another perspective because of his expertise within the construction industry.
3.3.2 Research Development

Before we distributed the survey to the respective markets, we did a trial run to receive constructive feedback from the B2C market, and our supervisor. The trial run was conducted by ten respondents, two from each market, and we adjusted the survey after their suggestions. For the Japanese, Indian and South Korean market, we used our network to translate the survey in order to reduce the likelihood of language barriers.

3.3.3 Data Collection

We accomplished our goal to reach 60 respondents in each of the five markets with a total of 300 respondents. After the data cleansing we ended up with a total of 274 respondents. The data cleansing was conducted to remove extreme values and answers, which did not match predefined answers. When the data were collected, we analyzed the responses to our questions and grouped them into five different categories:

- Question 1, 3, 4, 5, 7, and 13 are called attitude
- Question 2, 6, 11, and 12 are called perception
- Question 8 and 9 are called prediction
- Question 10 is called willingness
- Question 14, 15, 16, 17, and 18 are called demographics

3.3.4 Benchmarking

Benchmarking is normally used to compare one's performance with the competitors’, to see whether or not you are performing better, and possibly discover areas to improve. In this case, we will be using a benchmark as a neutral point, in order to compare it with the mean from each question associated with our objectives in our SAS JMP analysis. Since most of our questions are based on scales from one (strongly disagree) to five (strongly agree), we have chosen 3 as our benchmark. To be able to answer our research
questions, we have initiated several analyses of the different questions.

Due to the difference in the structure of the answers, question number 10 (Appendix – Survey: Environmental Sustainability in Asia) will need to have a different benchmark value. The main purpose for this benchmark is to find out what the customers would be willing to pay for a more environmentally friendly car, in addition to the price of a normal car. To make a representable benchmark for this question, we researched the most recent prices on Toyota Corolla Altis, Honda Civic, and Hyundai Elantra in the five representative markets. Furthermore, we calculated the average car price, and discovered that there is a significant difference between the countries. Therefore, we decided to have one benchmark for each of the five countries using their average car price. The benchmarks are: Singapore with US$49,333, South Korea with US$20,500, Japan with US$18,467, Hong Kong with US$22,333 and India with US$20,900. However, we have to bear in mind that even though prices for the vehicles above are obtained from local car dealers in each country, it might not represent the price for the whole country. We will compare the markets, using a percentage of the price the consumers are willing to pay as a premium.

Chapter 4 - Findings

4.1 Questionnaire Findings

Based on our questionnaire, we have done analysis on the different markets, and have chosen to present these with the results from our ANOVA-tests (Appendix – ANOVA-tests for all surveys). These tests are conducted, to find significant differences, and similarities between each market. We will present the most interesting information gathered, and further connect the findings to our other primary research done with several experts within the industry, as well as secondary sources.
**Attitude**

*Q1:* The respondents from India and South Korea seemed to agree with our statement with a mean of 3.67 and 3.5, and these two markets were significantly different from Japan. Japan had a mean of 3.16, which tells us that most of the respondents within this question were neutral to the statement.

*Q5:* Our respondents from South Korea seem to be much more concerned about the environmental factors, when they are about to buy a new car. Japan are however not especially concerned about this issue, and these two markets seem to be significantly different.

*Q7:* What we find interesting is that our Japanese respondents tend to see themselves as less environmentally conscious, as well as not being particularly focused on environmentally friendly factors when buying a new car. They do however clearly agree to our statement about environmentally friendly companies, and tend to prefer to buy from companies that are more environmentally friendly. All the markets within this question seemed to agree with our statement, but Japan are significantly more positive towards this.

When analyzing the total attitude of our respondents from the five different markets, we identified the actual mean to be 3.34 for all the markets combined. This mean was somewhat lower than expected, but can be explained by the relatively high mean within the predictions about whether people will be more environmentally conscious within the next 10 years. Additionally, we also believe that there are different perceptions, regarding how individuals in the different markets see themselves considering environmentally consciousness. This might be because of different factors, such as education related to the environment, and differences in infrastructural standards. 22
**Perception**

*Q2:* A tendency among all our respondents seems to be the fact that most of them are quite neutral or slightly disagree with the statement that Asian consumers are environmentally friendly. Japanese respondents are the only ones that are significantly different from all the other markets, and perceive other consumers as not especially environmentally conscious.

*Q6:* All the markets seem to agree on the statement about the need for more focus on environmentally friendly cars from companies. This question has the highest total average mean throughout all the markets, and all the questions, with a mean of 3,93. This tells us that the consumers really believe that companies should put more focus and effort into producing environmentally friendly cars.

**Prediction**

*Q8:* Singapore and India are two of the markets that have a high mean, and agree upon the fact that people will become more environmentally conscious within the next 10 years, as well as South Korea and Japan. Our respondents from Hong Kong on the other hand, are more neutral to this statement.

**Willingness**

<table>
<thead>
<tr>
<th>Country</th>
<th>Average Car Price</th>
<th>Willing to pay extra</th>
<th>%, Premium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Singapore</td>
<td>US$49,333</td>
<td>US$2,350</td>
<td>4,7%</td>
</tr>
<tr>
<td>South Korea</td>
<td>US$20,500</td>
<td>US$2,350</td>
<td>11,46%</td>
</tr>
<tr>
<td>Japan</td>
<td>US$18,467</td>
<td>US$1,900</td>
<td>10,28%</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>US$22,333</td>
<td>US$2,350</td>
<td>10,52%</td>
</tr>
<tr>
<td>India</td>
<td>US$20,900</td>
<td>US$1,850</td>
<td>8,85%</td>
</tr>
</tbody>
</table>

*Table 2 - Willingness to pay a premium*
When comparing the different markets, and their willingness to pay extra for an environmentally friendly car, we found that South Korea, Japan and Hong Kong are the markets that would be willing to pay the highest premium. Basically, table shows that all the countries are willing to pay a premium on top of the original price of the car if it is more environmentally friendly.

4.1.1 Research Critique

During our trial run for the survey, we received feedbacks that some of the survey questions regarding environmental consciousness could be confused with the general environmentally friendliness in terms of car emissions. To solve this issue, we wrote a clear introduction, where we explained that we were not only focusing on car emissions, but the main focus of the survey is recycled aluminium in the production of cars. Further on, during our analysis, we noticed that our question regarding willingness to pay more for a environmentally friendly car, were not especially fair. We had no alternative, which was “I am not willing to pay extra”, which should have been included. We did however see that there were just a small amount of respondents that chose the minimum option “1500 or less”.

4.2 PESTLE

We have decided to carry out a PESTLE analysis in order to have a better understanding of the external environment in which Hydro is operating. Furthermore, relevant information within the represented areas will not only give us an in depth knowledge about the present and future external environment, it will also be helpful with any future development plan for Hydro.

4.2.1 Political & Legal

In 1996 there was a conference held for the ASEM countries, where they amongst other discussed
environmental protection. Following this, there was the WSSD where they highlighted the essential role of public involvement, as well as good environmental governance.\textsuperscript{23} The government in Japan works to accommodate the trade goals of WTO to ensure that lucrative trade agreements throughout the markets are being upheld. As well as being an important part of the WTO, Japan and South Korea are also members of a sub-group of ASEAN, ASEAN Plus Three.\textsuperscript{24} This includes the latter mentioned countries and China, and makes sure that all trade agreements within ASEAN are conducted properly. These three countries work as observers, but are also cooperating together on important factors, such as trade and investment. South Korea has openly claimed to be against protectionism, and supports free trade through their participation in the Uruguay Round of multilateral trade negotiations.\textsuperscript{25}

Especially in the automotive industry it is becoming more common to have regulations on how much emission each vehicle is allowed to produce. Asian countries such as South-Korea, Thailand and Kazakhstan have released caps on how much emissions they allow. Asia is in fact leading on world carbon emission,\textsuperscript{26} and China is proving to be a leading country in the region.\textsuperscript{27} PEMSEA together with the IF and the GPA, are investing heavily in activities to reduce land-based pollution.\textsuperscript{28} Carbon Forum Asia states that “governments across the region are seeking greater renewable-sourced energy contributions to ensure security and reduce reliance on imports”.\textsuperscript{29}

Corruption is also an important factor to consider. This is because there are large differences within Asia. Our research has shown that the countries that are less developed seem to have higher levels of corruption.\textsuperscript{30} We have been informed by Einar Glomnes that black market trade of scrap aluminium have occurred in Asia, and may be highly connected to the corruption levels in some countries.
From our primary research, both experts clearly stated that governmental involvement is an important factor to educate the people and improve the environmental consciousness in Asia. A statement Florian Starnitzky introduced us to was that “the government has to educate the people”, which also Xavier Courboin seemed to support (Appendix – Interview With Starnitzky and Courboin) We can see an example of this in Japan, where 95% of all used beverage cans are recycled annually, and that recycling is a part of primary school curriculum.\(^{31}\)

### 4.2.2 Economical

According to the world economic outlook database from IMF, the GDP growth in most part of Asia in 2014 is projected to grow with a higher percentage than the year before. In developing Asia, GDP is expected to grow with 7.5%, 0.4% higher than in 2013. In ASEAN the growth will be at 5.7%, which is 0.2% higher than the year before\(^{32}\). Furthermore, Japan is projected to have a growth of 0.7%, down from 1.2% in 2013.\(^{33}\) South Korea on the other hand is expected have a growth of 3.7% in 2014, up from 2.8% in 2013.\(^{34}\)

Based on an article from Wall Street Journal about aluminium use in cars, metal analyst O’Carroll says that the total value of the body sheet aluminium market is worth about $300 million a year, with the possibility of reaching $7.5 billion by 2025 if other car manufacturers goes all in on aluminium. At the same time, car manufacturers are trying to increase the investments from aluminium companies to push more aluminium into the car industry.\(^{35}\)

Datamonitor made an overview of new cars in Asia-Pacific in 2011, with a forecast of market value and market volume until year 2015\(^{36}\) (Appendix – PESTLE: Economical) The market value forecast shows an stunning increase of 76.8% from 2010 to 2015, with a CAGR of 12.1% the same period. At the same time, the
market volume forecast shows an increase of 65.8% of produced cars from 2010-2015, with a CAGR of 10.6% the same period. In other words, the market is in a steady growth with possibilities for the aluminium-based industries to invest in.

When a company recycles aluminium, they only use 5% of the energy it takes to make primary aluminium from bauxite. In other words, with the same energy that is required to make one beverage can, the company can make 20 new recycled beverage cans.\(^{37}\) It is considerably more energy efficient and cost efficient to recycle aluminium, than it is to make it from the primary resource bauxite; not to mention that aluminium has an unlimited life cycle.\(^{38}\) It is projected that the demand for aluminium by 2020 will reach approximately 97 million tonnes, and 31 million tonnes is estimated to be recycled aluminium.\(^{39}\) In 1970 there was about 90 million tonnes of aluminium in use globally. In 2020 it is forecasted that the global aluminium in use will be about 1 billion tonnes in total, where the transport industry will represent 28% of this use.\(^{40}\)

Furthermore, in Japan there is a growing demand from the transportation industry for aluminium. If we compare January 2013 with January 2014 we can see that there has been an increase in aluminium demand of 15 thousand metric tons or 12.2%. In addition we can see that the transportation industry is the largest industry for aluminium in Japan.\(^{41}\) Within South Korea the expected growth in the aluminium industry is expected to account for 5.9% until 2025.\(^{42}\)

4.2.3 Social

According to WRI, there is a concern for the lack of available data on environmental issues and trends in Asia, as well as the nature of the environmental trends being highly unpredictable.\(^{43}\) However, based on examples from secondary sources, we assume that the environmental awareness is growing. An example is
The Cool Biz program in Japan, which started in 2005. This is a program where people are encouraged to leave their suit and tie when coming to work, in order to reduce the power used to generate air conditioning, thereby reducing CO2 emission. Another example is the list of countries in Asia that have signed both the UNFCCC, and Kyoto Protocol through the years. These agreements are intended to reduce the CO2 emissions in countries that have signed the agreement.44

From our in-depth interviews we have gathered information from experts in the aluminium industry. Both experts agree on the fact that environmental awareness and focus will increase in the next 10 years in Asia, and that the government has to be the leading factor to educate the people. They believe that as the changes on the environment becomes more visible, people will become more environmentally focused. The experts expressed that cars are still seen as a status symbol in a large part of Asia. In their opinion, an important social factor is a well-developed economy, and that this is highly linked towards environmental awareness.

They seem to agree that the automotive industry will become very important for aluminium companies, especially given the fact that the aluminium used in the construction industry has a lifespan of 30 to 50 years. We have not been able to collect information on available production scrap in the construction industry, and therefore do not include this as an opportunity for Hydro. However, in the automotive industry the aluminium scrap is available continuously as the manufacturers produce vehicles.

On the basis of our questionnaire, we have found some tendencies regarding environmental issues among the 274 respondents from the 5 markets. In general we can see that people tend to view the Asian consumer as non-environmentally conscious, however they view themselves as environmentally friendly and expect the environmental focus to increase in the next 10 years. The respondents also felt that the automotive industry
should put more effort in producing more environmentally friendly vehicles. Further on, we found that in all the 5 markets, people are willing to pay more for a vehicle that is seen as more environmentally friendly. Moreover, our survey respondents seem to have the same opinion as our interview respondents, on the fact that governments play an important role in increasing environmental consciousness.

4.2.4 Technological

The recycled aluminium industry is constantly exploring how they can reduce emissions in the aluminium remelting process, how they can make it more efficient, as well as how to maintain the high quality.\(^{45}\) The increasing production of hybrid and electric cars makes it necessary for the manufacturers to decrease the total weight of their cars, so that the battery performance of the electric cars can improve. This has been a trend for most manufacturers in Europe, as well as some large manufacturers in Asia. In Europe, companies are currently investing large amounts in R&D to improve the weight reduction, and researching to find ways to combine the use of steel and aluminium. This is mainly used within the production of the body, and other components of the car, which normally is produced using steel.\(^{46}\)

The recycling of aluminium has almost quadrupled from 1980, till today.\(^{47}\) One example of the increasing use of aluminium in production of vehicles is the Audi A8 that in 1997 was produced with an all-aluminium body, together with all the engine components that were a mix between steel and aluminium. The weight of the Audi A8 was drastically reduced with 239 kg, almost a quarter of a ton.\(^{48}\) This was uncommon at the time, and aluminium were only included in the production of high-end cars. Before aluminium were used within the production of consumer vehicles it were used only for professional drivers to keep the weight as low as possible. It is clear that manufacturers today prioritize to decrease vehicle emission, and think of aluminium as an important part of this.\(^{49}\)
4.2.5 Environmental

A new report released by WHO the 25th March 2014, reveals some interesting numbers. According to the report, 7 million people died in 2012 due to air pollution exposure, with Southeast Asia and Western pacific accountable for the highest number of 2.6 million death affected by outdoor pollution. This report confirms that air pollution is now the most significant environmental health risk.  

Furthermore, according to the IEA, Asia’s share in global energy related CO2 emissions could increase from 35% in 2013 to about 45% by 2030, unless actions to improve energy efficiency, and better use of renewable energy is implemented. Moreover, it is projected that Asia will account for 31% of the total worldwide transport-sector related emissions.

As we have mentioned earlier, when aluminium is recycled, only 5% of the energy required for primary energy is used. There is no doubt that this will help improve the energy efficiency, which further decreases the energy related to CO2 emissions. Previously we also brought up that vehicles made by aluminium is lighter, and this feature will decrease the use of fuel, which will minimize the CO2 emissions related to the transportation sector. According to AluminumTransportation.org, a reduction of 10% in vehicle weight can result in a direct fuel efficiency gain of between 5-7%.

It is said that the global climate change is mainly caused by increasing levels of greenhouse gases due to the constant increase in population, and CO2 emitted by burning fossil for transport and heating. If this is the case, according to the IPCC, immediate powerful actions are necessary in order to avoid damaging consequences caused by natural disasters in the future. Unfortunately this has already affected people. In 2010 and 2011 more than 42 million people in Asia and the pacific were displaced due to extreme weather.
disasters. All these facts and explanations indicates that there are and will be a critical need for more and more environmental friendly products in the future. Thus, we strongly believe that Hydro will benefit a great deal by taking the above-mentioned factors into consideration.

4.3 Conclusion of the Analytical Part

Our findings suggest that there will be more vehicles with higher quantities of aluminium on the roads in the future; hence the available aluminium scrap will increase. There are financial benefits for Hydro by implementing recycled aluminium. The company can save up to 95% energy, and since the end user are willing to pay a premium for more environmental vehicles, we see that the customers of Hydro also can benefit from this.

There is an increasing tendency among Asian countries to have stricter regulations on emissions, and our respondents predict environmental awareness to grow significantly over the next ten years. They also prefer companies that are environmentally friendly, and also believe that automotive producers should put more focus and effort in producing more environmentally friendly cars. Therefore, automotive manufacturers should be looking for more environmentally friendly solutions such as recycled aluminium, in order to stay competitive, socially responsible, and to satisfy customers needs.

To conclude, we believe that marketing recycled aluminium to their customers in the automotive industry in Japan and South Korea could be beneficial for Hydro, and that it will provide extra value to their customers.
Strategic Part

Chapter 5 - Strategic Part

5.1 SWOT:
This SWOT-analysis is conducted on the basis of our findings in the analytical part. It will highlight Hydro’s strengths, weaknesses, opportunities and threats related to the recycling of aluminium market.

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
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<tbody>
<tr>
<td>- Knowledge and expertise from recycling</td>
<td>- No remelting plant in Asia</td>
</tr>
<tr>
<td>- Global presence and reach (12,564 employees in 50 countries)</td>
<td>- Lack of recycling culture in the Asia office</td>
</tr>
<tr>
<td>- Strong financial background</td>
<td>- No clear differentiation strategy for recycled aluminium</td>
</tr>
<tr>
<td>- Norwegian government owns 40.62% of Hydro</td>
<td></td>
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<tr>
<td>- Well established relationship with their customers</td>
<td></td>
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<tr>
<td>- Produces high quality products</td>
<td></td>
</tr>
<tr>
<td>- High brand equity</td>
<td></td>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Opportunities</td>
<td>Threats</td>
</tr>
<tr>
<td>- Available aluminium scrap will continue to grow</td>
<td>- Corruption related to scrap procurement</td>
</tr>
<tr>
<td>- Growing aluminium demand</td>
<td>- Substitute products (e.g. steel, carbon, etc.)</td>
</tr>
<tr>
<td>- Asia pacific region has 50% of the worlds demand for recycled aluminium</td>
<td>- Increasing energy prices</td>
</tr>
<tr>
<td>- Growing automotive industry</td>
<td>- Uncertainty in global economy</td>
</tr>
<tr>
<td>- Increasing environmental focus among Asian consumers</td>
<td>- Governmental regulations</td>
</tr>
<tr>
<td>- Consumers prefer green companies</td>
<td>- Novelis’ establishment in South Korea</td>
</tr>
<tr>
<td>- Continuous research in technology</td>
<td></td>
</tr>
<tr>
<td>- No aluminium companies currently recycling production scrap within the</td>
<td></td>
</tr>
<tr>
<td>automotive industry</td>
<td></td>
</tr>
</tbody>
</table>

Table 3 - SWOT-analysis of Hydro

5.2 Strategic problem definition
Based on the findings we have gathered from both primary- and secondary research, we conclude that it can be beneficial for Hydro to market recycling of aluminium to their customers in the automotive industry in
Japan and South Korea. Additionally, we have discovered that the end-users are willing to pay a premium for recycled aluminium, which will create extra value for Hydro’s customers. Furthermore, the findings indicate that Asian consumers are just above neutral when asked about their attitude towards environmental awareness. However, our research also suggests that this is to increase significantly over the next ten years. Therefore, we see that it can be beneficial if done with the right approach. Our strategic problem definition is the following:

“*How should Norsk Hydro ASA market and sell recycled aluminium to their customers in the automotive industry in South Korea and Japan?*”

5.3 Goals

Hydro should develop short- and long-term goals to market and sell recycled aluminium. Thus, we will suggest specific goals for the next five years, which can help Hydro to solve the strategic problem at hand.

5.3.1 Short-term goals (Year 1-3)

*Year 1*: Market/Educate 100% of customers in Asia about the importance and benefits of aluminium recycling in the automotive industry in Japan and South Korea.

*Year 2*: Finalize recycling agreements that account for 25% of total revenue generated from the customers in the automotive industry in Japan and South Korea.

*Year 3*: Finalize recycling agreements that account for 40% of total revenue generated from the customers in the automotive industry in Japan and South Korea.

5.3.2 Long-term goals (Year 4-5)

*Year 4-5*: Finalize recycling agreements with customers that account for 60-70% of total revenue for Hydro,
in the automotive industry in Japan and South Korea.

5.3.3 Critical Success Factors

- **Internal:**
  - Approval from management to introduce recycling programs to the Asian market
  - Work towards a common goal and vision
  - Experts within aluminium recycling and customer insight to educate customers and employees
  - Create mutually beneficial contracts
  - Maintaining a good relationship with their customers

- **External:**
  - Companies’ willingness to supply aluminium scrap
  - Increase in environmental awareness among Asian consumers
  - Stability in the Asian economy

5.4 Competitor Analysis

The industry scope is the recycled aluminium industry in Asia. We are therefore analyzing competitors that are, and can be, a threat for Hydro. We have chosen to elaborate on Novelis and Alcoa. Novelis is the global leader in recycling of aluminium, while Alcoa is a major global competitor throughout the entire value-chain.
5.4.1 Novelis

![Table]

**Novelis**

<table>
<thead>
<tr>
<th>Revenue: $9.8 billion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global Leader in Recycling</td>
</tr>
<tr>
<td>Vision: To Make the World Lighter, Brighter and Better</td>
</tr>
</tbody>
</table>

*Figure 1 - Novelis*

Novelis is Hydro’s main competitor within recycling, and was established in 2005. Novelis is established with production, and recycling in Asia, Europe, North- and South America. Novelis has a total revenue of 9.812 billion USD. They are world leading within rolled aluminium products, and are focused heavily on recycled aluminium. Their main short-term goal is that 50% of all of their aluminium products should come from recycled aluminium within 2015. Within 2020 Novelis wants 80% their total aluminium production to come from recycled aluminium. As of the fiscal year of 2013, Novelis managed to achieve 43% recycled aluminium in their production. They currently have customers like Coca Cola, BMW, Jaguar and Samsung.

In Asia, Novelis newly opened a remelting plant in Yeongju, South Korea, with focus on recycling of aluminium cans. In addition, they also have a recycling plant in Ulsan, South Korea, and a plant in Changzhou, China, for finishing automotive sheets.

**Strengths**

With a global presence in 10 countries, Novelis are spread throughout the world. Novelis benefits from the high availability of recycled aluminium, especially from aluminium cans in North America, South America, Europe, Middle East, North Africa, and Asia. From their total annual revenue, Asia accounts for US$1.762 billion. Further on, Novelis has a diverse portfolio of customers. Their customers requires everything from...
packaging materials, car parts, building materials, consumer goods, industrial aluminium, and even printing and lithography. Another strength is that Novelis holds strong capabilities in R&D. In 2013, Novelis used US$46 million on R&D, which is an increase of US$2 million from 2012. These expenses were mainly for plants and facilities.

Weaknesses

One of Novelis’ weaknesses is their high debt. Their long-term debt in 2013 was US$4,464 billion, which is a 2.76% increase from 2013. Their total debt ratio in 2012 was 54.38% with an increase in 2013 to 57.87%, and a 12.74% decrease in profitability in 2013. Another weakness of Novelis is that they are indirectly owned by Hindalco. This means that Hindalco still can interfere with Novelis’ decisions throughout the company. Since Hindalco operates in the aluminium industry, they can make decisions, which can, indirectly or directly, affect Novelis.

5.4.2 Alcoa

Another large player in the aluminium market is the US based Alcoa. Over 100 years of experience have made Alcoa one of the most sought companies in the aluminium industry. The company has been operating with recycled aluminium since 1888, when they invented the melting process. With more than 200 locations, Alcoa operates in China, Singapore, Japan, South Korea, India and 25 other countries around the world.
Furthermore, with a vision to create innovative and sustainable solution, Alcoa has shown many achievements throughout the years, and has been named as one of the worlds top green companies. A more clearly defined internal goal for the company is to reach 90% global recycling rate within 2030. To achieve this goal, they constantly take initiatives to educate end users about the importance and advantages of recycling activities.

**Strengths**

The company is, according to Fortune Magazine the most admired metals company in the world. Alcoa has the world's largest light metal research facility, as well as high focus on product innovation through customer intimacy. The company has vertically integrated operations that make them highly adaptable. One of their key strengths lies in their strong financial performance with an increasing profitability from 2012 to 2013. They are also benefiting from diverse operations with presence in 30 countries.

**Weaknesses**

Alcoa is involved in legal proceedings with the US government with allegations of corruption when dealing with officials from the Bahrain government, and Alba. This can affect negatively on the companies’ reputation, and the company might risk losing business because of it. They are also experiencing decreasing revenues. According to Einar Glomnes, this is due to the intensifying competition within certain areas of the aluminium industry, which have lead Alcoa to shut down some of their operations. Furthermore the company is experiencing an increasing debt ratio from 65.5% in 2012, to 67.1% in 2013.

### 5.4.3 Competitor Summary

Novelis is the current market leader within recycling in both the B2C and B2B market. Novelis is currently
focused on consumer goods, especially cans, but not heavily invested in recycling of production scrap in the automotive industry. However, Novelis is a very strong competitor when it comes to recycling, and if the automotive industry were to be a key area for Novelis, it could be a possible strong competitor.

Alcoa is a highly adaptable company due to their vertical integration, and they could easily adapt and change according to market trends. As of today, Alcoa seems to be focusing more on the mining part of the aluminium industry. However, in the long run they are seen as a potential threat if they were to focus on recycling in automotive industry.

5.5 Porter’s Five Forces

Porter’s five forces is a model that will help us to understand the competitive rivalry within the recycling of aluminium, in the automotive industry in Japan and South Korea. We will use this model to assess the competitive landscape of the market and evaluate its attractiveness.

5.5.1 Bargaining Power of Suppliers

Considering the fact that we are focusing on the aluminium recycling industry, we define the suppliers as Hydro’s customers in the automotive industry in Japan and South Korea. However, we have decided to limit the scope of Hydro’s suppliers. This is because the thesis is focusing on the possibilities that Hydro can retrieve the aluminium needed in recycling from their customers in the automotive industry in Japan and South Korea. Consequently, the number of suppliers will be highly related to the number of customers Hydro has in the automotive industry in these markets.

Suppliers such as Toyota and Hyundai Kia are retained by several other aluminium companies alongside
Hydro. This gives them more power, because they are in a position to choose whom to supply their production scrap to. Current companies in the market are all big scrap suppliers within Japan and South Korea. However, there are other companies that can recycle the aluminium, and there are other companies that can supply the scrap. According to Einar Glomnes, 60% of all aluminium bought is being utilized in production, which means that 40% of all aluminium sold, comes out as production scrap. The high quantity of aluminium scrap being produced by automotive manufacturers is highly valuable, and desired by many because of the quantities and the premium quality. Therefore, if the supplier is already a part of a scrap-disposal agreement with any third parties, the threat of suppliers will be significantly higher. All the above-mentioned factors make the bargaining power of suppliers moderate to high.

5.5.2 Bargaining Power of Customers

We define customers as Hydro’s existing customers in the automotive industry in South Korea and Japan, which are companies that will buy what Hydro has recycled and implement it further in their production.

Customers are using several aluminium manufacturers within their production, which means that other aluminium manufacturers are easily accessible. However, there are currently just a few suppliers of recycled aluminium in Asia. This leads to customers being more dependent on the suppliers that can supply recycled aluminium. The already existing agreements between Hydro and their customers is based on annual contracts with quarterly price adjustments, with a minimum of US$2.5 million purchasing quantity, which we assume are quite similar across the industry. This creates difficulties for the customers to switch, and creates an extra benefit for them to include their recycling business with Hydro. All the above-mentioned factors indicate that there is a low level of bargaining power of customers.
5.5.3 Threat of New Entrants

We define new entrants as aluminium companies that have the resources and capabilities to enter the aluminium recycling market within the automotive industry in Asia.

First of all, to start up a recycling business in the aluminium industry a company needs to have remelting facilities, relevant skills and scrap aluminium to recycle. Therefore, we assume that a significant amount of financial investment is required. It is also important to bear in mind that these investments are long term oriented, and normally take years before they can be profitable. Furthermore, factors like knowledge about the general aluminium market, the Asian business culture, as well as access to potential buyers of the recycled aluminium, are essential in order to enter this market. All of the above mentioned factors make it hard for companies to enter this market. However, there are a number of aluminium companies out there that have the required resources, capabilities and experiences to enter the recycling aluminium market. Consequently, we concluded that the threats from new entrants are moderate.

5.5.4 Threat of Substitute Products

Substitutes for recycled aluminium in the automotive market are for example steel, carbon, or magnesium. Steel is a cheaper metal, and still the most used metal in car production. However, steel is not the most environmentally friendly material to use in cars, considering its weight and the high level of emissions it causes compared to aluminium. Carbon is another lightweight material, mainly used in sports cars and other high-end vehicles in body sheets and interior. Another potential substitute is magnesium. This material is closest to the properties aluminium possesses. On the other hand, the amount of magnesium extracted each year are fairly low compared to aluminium and steel. Magnesium possesses many advantages because it is light, strong, and its resistance against corrosion. However, magnesium is not yet used as a clean material in
cars, and carbon is not common in car production as of yet. We still have to consider steel as a major substitute because of its characteristics, price, and use in cars compared to aluminium. The threat from substitute products is low to moderate.

5.5.5 Competitive Rivalry Within the Industry
In Asia, the aluminium recycling related to the automotive industry is still at a low to moderate level. However, it is expected to increase due to the advantages of using recycled aluminium in automotive production, and because of the expected growth in environmental awareness in Asia. Moreover, there are high entry and exit barriers, so companies must have a long-term focus and high amount of capital if they are entering the market. Automotive makers can use other metals in their production, but as of today, there is no other metal that is as environmentally friendly and affordable as recycled aluminium. Given the fact that recycled aluminium is a commodity product, it is hard for companies in this business to differentiate their products. We conclude that the rivalry within the industry is moderate.

5.6 Strategy Implementation
We will use the marketing mix to show Hydro how they should market and sell the recycled aluminium to their already existing customers in the B2B market by differentiating recycled aluminium as a product. The marketing mix will focus on four of the seven P’s; Product, Price, Promotion, and People.83

5.6.1 Marketing mix

Product: The physical product that Hydro supplies to its customers is recycled aluminium. There will not be any changes done to the product, which makes the quality as good as primary aluminium. Hence, recycled aluminium will not only satisfy the needs of customers at the same level as primary aluminium, it will also
give them the benefit of being a green company. However, in order to make the recycled aluminium more attractive and to differentiate themselves from possible competitors, Hydro needs to create additional value.

**Price:** Due to the fact that recycled aluminium has the exact same features and characteristics as primary aluminium, the price for primary aluminium is approximately the same as recycled aluminium. Hydro must be able to show their customers the additional value of using recycled aluminium, through the willingness of end users, and the percentage they are willing to pay as a premium.

**Promotion:** Considering the fact that Hydro is going to sell recycled aluminium to the existing customers in the automotive industry in Japan and South Korea, the promotional activities will mainly consist of face to face meetings, where marketing and education of the concept will be the key topic. Furthermore, we emphasize the importance of a well-developed unique selling proposition, so that Hydro will be able to differentiate their product.

**People:** To be able to initiate a successful launch of the marketing and sales of recycled aluminium, Hydro has to create a universal culture, which applies to every section of the company. The skillset people must inhabit is the ability to be professional, persuasive and show commitment to Hydro’s environmental efforts. A key will be to build and maintain the relationships with the customers.

**5.7 Conclusion**

In the analytical part we concluded that it will be beneficial for Hydro to market the recycling of aluminium to their existing customers, and that end users are willing to pay a premium for cars that have been produced environmentally friendly. After conducting several external analyses of the market and competitors, we have
found that there are companies with resources and capabilities that can become a possible competitor. Based on these findings, we have developed several recommendations for Hydro to take advantage of their strengths, explore the opportunities, neutralize the threats and eliminate the weaknesses. Furthermore, these recommendations will answer our strategic problem definition on how Hydro should market and sell the concept.

5.8 Recommendations

We have divided the recommendations into three different sections for Hydro to successfully implement concrete actions. These are; educate and maintain an environmentally focused organizational culture, create Hydro Recycling Program and develop a unique selling proposition. Our main recommendations are:

1. Create and maintain an environmentally focused organizational culture

Hydro has to create a universal organizational culture that will permeate the whole business. This culture has to reflect the importance of the environmental factors and the advantages of recycling aluminium. This will be the foundation throughout the entire process. First of all, Hydro has to educate the employees to make sure they have the correct attitudes to create the ideal culture. This can be done by using the already existing employees of Hydro from the European offices, which have insights into how recycling is conducted. These experts must also have knowledge about the Asian environment, and the current aluminium trends. Furthermore, considering that this concept is a long-term strategy, the culture must be maintained and continuously developed in order to make sure that the employees do not lose focus on what they are trying to achieve. This can be done through follow-up seminars, where the employees attend smaller trial-cases, and their knowledge is being stimulated.
2. Create Hydro Recycling Program (HRP)

As we have mentioned earlier during the marketing mix, in order to differentiate the product, Hydro needs to create extra value for the customers. We suggest that this can be done by creating a customized program, called Hydro Recycling Program. This program will be created primarily to ensure that Hydro can constantly receive aluminium scrap from its customers, while at the same time creating extra value for the participating customers. When a customer is a part of the program, they have the obligation to supply Hydro with aluminium production scrap, and in return they will receive the Hydro Certification. In addition to the Hydro Certification, Hydro will be able to match the market price for their scrap, and offer the best terms of trade. The certification will be a part of the HRP program, and is a way for Hydro to apply more value to their recycled products. This is mainly so end-users will recognize the customers of Hydro as an environmentally focused company. The Hydro Certification must initially be marketed towards the end-users, and by using innovative marketing, to create awareness around the certification.

Further on, this program will make the logistics beneficial for both parties. It will make it possible for the suppliers to supply production scrap to Hydro, when shipments of primary aluminium are delivered. This way, customers, such as Toyota and Hyundai Kia will be able to avoid any third parties, and make their logistics more valuable and effective. However, any customer can buy recycled aluminium from Hydro without being part of the HRP, but to be awarded with the certification, they must supply Hydro with their aluminium production scrap.

3. Create a unique-selling-proposition (USP)

For Hydro to be able to effectively market and sell HRP to their existing customers, we recommend Hydro to develop a unique selling proposition to sell the program. The purpose of the proposition is to convey the
specific benefits within the program in a unique manner, so that the customer is shown the advantages of the program clearly. From the USP model we have chosen the relevant aspects, and will highlight how using recycled aluminium affects the customer (Appendix – Unique-Selling-Proposition).

Hydro Certification benefits: According to our primary research, it is clear that customers are more willing to buy from a more environmentally friendly company. This will be more obvious for an end-user when the Hydro Certification is in place. This will additionally create a more socially responsible image for any participating customer.

Economical impact: The economic impact of this will benefit the customers. The B2B customers can sell their cars to an average of 5-11% higher price, because our respondents suggest that they are willing to pay a premium for more environmentally cars.

Differentiation: When it comes to whether or not the product is different from others, we know that there is no other program that serves the same purpose within the aluminium industry. The program is unique to Hydro’s customers, because it can not yet be found in the market. However, if there is to be any other supplier that wants to attain any production scrap, the Hydro Certification makes sure that the HRP is the most beneficial. Since aluminium is known to be a commodity product, Hydro can differentiate themselves from any competitor by implementing the HRP.

Problem solved today: Today, most of the aluminium scrap coming from production is being sold to third parties. With the HRP the customers will be able to implement more efficient logistic. As we have mentioned above, customers now will be able to send the scrap to Hydro in empty containers that are already paid for,
saving them the cost to transport the scraps to a third party.

**Trends, opportunities, and issues:** In our findings, we concluded that end-users are likely to become more environmentally conscious in the future. This is something every manufacturer must be aware of, and take advantage of. By joining HRP, the customers are being proactive in regards to the upcoming opportunities and trends. HRP helps the companies to be more environmentally friendly, and this will prove to be an issue, if not addressed. Being a part of a green global industry is an increasingly important factor for both the environment and the consumers.

In summary, the main parts of the *value proposition* in the USP includes:

- Hydro Certification
- Stable and Strong Supplier
- Seizing an Opportunity
- Customer Environmental Awareness
- Customer Premium
- Increased Corporate Social Responsibility Image
- Simplified Logistics
- Unique Program
Appendix

Survey: Environmentally Sustainability in Asia

To clarify: “Environmentally friendly” is in this context NOT meant as only emissions or CO2 consumption. We are talking about using recycled aluminium in the production of cars and thereby decrease emissions and CO2 consumption.

**Question 1:**
I consider myself to be environmentally conscious

1 2 3 4 5

Strongly disagree Strongly agree

**Question 2:**
Do you believe Asian consumers are environmentally conscious?

1 2 3 4 5

Strongly disagree Strongly agree

**Question 3:**
I consider environmentally factors when buying a new car

1 2 3 4 5

Strongly disagree Strongly agree
**Question 4:**

How important is it for you that your car is environmentally friendly?

1  2  3  4  5

Not important  Very important

**Question 5:**

Which of these factors are most important to you when buying a new car?

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**Question 6:**
I believe that the automotive industry needs to put more focus and effort in producing environmental friendly cars

1 2 3 4 5

Strongly disagree  Strongly agree

**Question 7:**
I prefer to buy from environmentally friendly companies

1 2 3 4 5

Strongly disagree  Strongly agree

**Question 8:**
In the next 10 years, I believe people will become much more environmentally conscious

1 2 3 4 5

Strongly disagree  Strongly agree

**Question 9:**
Do you agree on the following statement? “Younger generations are more environmentally conscious than the older generation”

1 2 3 4 5

Strongly disagree  Strongly agree
**Question 10:**
If you were about to buy a new car, how much more would you be willing to pay for a car that was more environmentally friendly?

- US$1500 or less
- US$1500 – US$2000
- US$2100 – US$2600
- US$2700 – US$3200
- US$3300 – US$3800
- US$3900 – US$4400
- US$4400 or more

**Question 11:**
I believe environmentally consciousness is a trend and it will be over sometime in the future

1 2 3 4 5

Strongly disagree Strongly agree

**Question 12:**
I believe the government plays an important role to increase environmentally consciousness

1 2 3 4 5

Strongly disagree Strongly agree
**Question 13:**

I would feel much better knowing that my car was made of recycled aluminium

1 2 3 4 5

Strongly disagree                      Strongly agree

**Question 14:**

Occupation?

Student

Part-time employed

Full-time employed

Unemployed

Self employed

Retired

**Question 15:**

Age?

18-25

26-35

36-45

46-55

56-65
Question 16:
Gender?
- Female
- Male

Question 17:
Education?
- Middle-school
- High-school
- College/University

Question 18:
Monthly income after tax?
- No income
- US$1500 or below
- US$1600 – US$2500
- US$2600 – US$3500
- US$3600 – US$4500
- US$4600 – US$5500
- US$5600 and above
SAS JMP 11 - Analysis

By using Cronbach’s alpha, we will see if the questions regarding attitude is consistent or not. The closer the Cronbach’s alpha is to the value one, the more reliable the questions are.

Reliability:

*Cronbach's alpha – Hong Kong:*

Attitude – 0.8978

*Cronbach's alpha – India:*

Attitude – 0.7804

*Cronbach's alpha – Japan:*

Attitude – 0.8507

*Cronbach's alpha – Singapore:*

Attitude – 0.8195

*Cronbach's alpha – South Korea:*

Attitude – 0.9087

*Cronbach's alpha – All markets:*

Attitude – 0.8638

Questions:

Attitude:

1. I consider myself to be environmentally conscious

3. I consider environmentally factors when buying a new car

4. How important is it for you that your car is environmentally friendly?

5. Which of these factors are most important to you when buying a new car?
7. I prefer to buy from environmentally friendly companies

13. I would feel much better knowing that my car is made of recycled material

**Perception:**

2. Do you believe Asian consumers are environmentally conscious?

6. I believe that the automobile-industry needs to put more focus and effort in producing environmental-friendly cars

11. I believe environmentally consciousness is a trend and it will be over sometime in the future

12. I believe the government plays an important role to increase environmentally consciousness

**Prediction:**

8. In the next 10 years, I believe people will become much more environmentally conscious

9. Do you agree on the following statement? “Younger generations are more environmentally conscious than the older generation”

**Willingness/Creating Value:**

10. If you were about to buy a new car, how much more would you be willing to pay for a car that was more environmentally friendly?

**Demographics:**

14. Occupation?

15. Age?

16. Gender?
17. Education?

18. Monthly income after tax?

**Summary:**

**Hong Kong:**

**Attitude:**

*Question 1:* With the mean of 3.54, we see that people tend to be environmentally conscious because it is a significant difference from our benchmark on three.

*Question 7:* With the mean of 3.67, we see that the citizens of Hong Kong tend to buy from environmentally friendly companies.

*Question 13:* With the mean of 3.39, we see that people are quite neutral when it comes to buying cars with recycled aluminium.

With all the questions, the mean for attitude ended at 3.53, which tells us that respondents from Hong Kong has a positive attitude towards the environment.

**Perception:**

*Question 2:* It does not seem like people in Hong Kong believe that Asians are generally environmentally conscious, with a mean of 3.24.

*Question 6:* On the other hand, it seems like they think that the automotive-industry needs to put more focus in producing environmental-friendly cars, with a mean of 3.77.
**Prediction:**

*Question 8:* Our respondents from Hong Kong seem to agree somewhat to the statement that people will become more environmentally conscious, but there is also a fair part of the respondents that is neutral to this statement. The mean is 3,45.

**Willingness:**

*Question 10:* It seems like the average Hong Kong population in this survey would be willing to pay between US$2100-2600 and US$2700-3200 extra for a environmentally car, with a mean of 3,54.

**India:**

**Attitude:**

*Question 1:* The respondents from India tend to agree to the statement with 3,66 in mean.

*Question 7:* The respondents tend to be quite agreeable to the statement with 3,52.

*Question 13:* The tendency our Indian respondents is that they will feel better with a car made out of recycled aluminum with a mean of 3,41.

The average mean from all the six attitude questions ended at 3,36.

**Perception:**

*Question 2:* The Indian population of the survey does not perceive the Asians as being environmentally friendly, with a mean of 2,60.

*Question 6:* At the same time, it seems like they think that the automotive-industry needs to put a lot more focus in producing environmental-friendly cars, with a mean of 4,41.
Prediction:

**Question 8:** It seems like the Indian population of this survey agree to the statement that people will become more environmentally conscious in the next 10 years, with a mean of 4,08.

Willingness:

**Question 10:** The Indian population in the survey seem to be less willing to pay an extra amount for a environmentally friendly car, the mean are however 2,75. This indicated that they would be willing to pay between US$1500-200 and US$2100-2600.

Japan:

Attitude:

**Question 1:** With the mean of 3,16, we see that people tend to be neutral to the statement “I consider myself to be environmentally friendly”.

**Question 7:** With the mean of 4,01, we can see that the Japanese tend to agree to the statement considering buying from environmentally friendly companies.

**Question 13:** People tend to be neutral to the statement regarding whether or not they would feel better when owning a car produced out of recycled aluminum, with a mean of 3,21.

The average mean from all the six attitude questions ended at 3,26.
Perception:

Question 2: It seems like the Japanese population in our survey does not perceive the Asians as environmentally friendly, with a mean of 2.14.

Question 6: They are also quite positive to the fact that the automotive-industry needs to put more focus and effort in producing environmentally-friendly cars, with a mean of 3.80.

Prediction:

Question 8: It seems like the Japan population of this survey agree to the statement that people will become more environmentally conscious in the next 10 years, with a mean of 3.73.

Willingness:

Question 10: The Japanese respondents seem to be willing to pay around US$2100-2600 with the means of 2.87.

Singapore:

Attitude:

Question 1: People generally tend to agree to the statement that they are environmentally conscious, with a mean of 3.4.

Question 7: From the Singaporean respondents we can analyze that people prefer to buy from environmentally friendly companies, with a mean of 3.58.

Question 13: People seem to be more neutral towards the statement that considers the feeling when owning a recycled car, with a mean of 3.26.
The average mean from all the six attitude questions ended at 3,28.

**Perception:**

*Question 2:* It seems like the Singaporean population in our survey does not perceive the Asians as environmentally friendly, with a mean of 2,62.

*Question 6:* At the same time, it seems like they think that the automotive-industry needs to put a lot more focus in producing environmental-friendly cars, with a mean of 4,10.

**Prediction:**

*Question 8:* Our respondents in Singapore shows us that they agree to the statement that people will be much more environmentally conscious in the next 10 years. The mean within this category is at 4,12. (HIGH?)

**Willingness:**

*Question 10:* It seems like the Singaporean population in this survey would be willing to pay quite the amount extra for a environmentally car, with a mean of 3,58. They would be willing to pay bewteen US$2 100 - 2 600 - US$2700 - 3200

**South Korea:**

**Attitude:**

*Question 1:* This indicates that the respondents see themselves as more environmentally conscious, than not, with a mean of 3,44.

*Question 7:* We can analyze that the respondents agree to their first statement, and see themselves as someone who would prefer to buy from a environmentally-friendly company, with the mean of 3,43.
**Question 13:** Takes in account whether or not people agree that they would feel better if their car was produced with recycled aluminum. Here we can see that the respondents tend to disagree more than they agree to the statement, with a mean of 2,82.

The average mean from all the six attitude questions ended at 3,30.

**Perception:**

*Question 2:* We can see that the majority of respondents in South-Korea seem to be less confident in each other than themselves, we can see this from the mean of 2,8

*Question 6:* It seems as though the respondents generally feel believe that the automobile-industry should increase their efforts in producing environmentally friendly vehicles. 3,7

**Prediction:**

*Question 8:* It seems like they believe that people will become more environmentally conscious in the next 10 years, with a mean of 3,59.

**Willingness:**

*Question 10:* Overall, it seems like the Singaporean population of this survey is willing to pay between US$2100-2600 and US$2700-3200 for a more environmentally friendly car, with a mean of 3,25.
All markets:

Attitude:

*Question 1:* In general we can see that people from the five markets are quite neutral when it comes to be environmentally conscious, with a mean of 3,43.

*Question 7:* People in the five markets tend to buy from environmentally friendly companies, with a mean of 3,64.

*Question 13:* It seems like people are quite neutral to feel better if they knew their car was made of recycled material, with a mean of 3,19.

The average mean from all the six attitude questions added up to 3,34.

Perception:

*Question 2:* It does not seem like the respective markets in the survey believe that Asians are generally environmentally conscious, with a mean of 2,68.

*Question 6:* In general it seems like most of the markets represented in this survey agree upon the fact that the automobile-industry should increase their efforts in producing environmentally friendly cars, with a mean of 3,93.

Prediction:

*Question 8:* It seems like the markets in general believe that people will become more environmentally conscious in the next 10 years, with a mean of 3,77.
Willingness:

*Question 10:* The total population in all the five markets seem to be quite willing to pay an additional amount, considering the mean is at 3.25, they would pay somewhere between US$2100-2600 and US$2700-3200
ANOVA-tests for all surveys

Attitude:

Question 1:

In this question we look if there is any significant differences if people consider themselves to be environmentally conscious by country. We can see that Hong Kong and Singapore are not significantly different from India, South Korea and Japan. India and South Korea are however different from Japan. This means that respondents from Japan tend to look at themselves significantly less environmentally conscious.

![Oneway Analysis of I consider myself to be environmentally conscious By Country](image-url)

Positive values show pairs of means that are significantly different.

![Connecting Letters Report](image-url)

Levels not connected by same letter are significantly different.

![Ordered Differences Report](image-url)

Levels not connected by same letter are significantly different.
Question 3:
From the ANOVA analysis that was done, we can see that Japan and Singapore are not significantly different from Hong Kong, India and South Korea. India are however different from Hong Kong and South Korea, and it seems there are fewer people that agree to the statement in India, than there is in Hong Kong, as well as South Korea, where people tend to agree to the statement that they consider environmental factors when buying a new car.
Question 4:

In this question we look if there is any significant differences if it is important for people that their car is environmentally friendly by country. As we can see, India, South Korea and Singapore are not significantly different from Hong Kong and Japan. On the other hand, Hong Kong and Japan seems to be significantly different from each other. Respondents from Hong Kong tend to emphasize the fact that their cars are more environmentally friendly than the respondents from Japan.

![Oneway Analysis of How important is it for you that your car is environmentally friendly? By Country](image)

### Means Comparisons

**Comparisons for each pair using Student’s t**

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Positive values show pairs of means that are significantly different.

### Connecting Letters Report

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Levels not connected by same letter are significantly different.

### Ordered Differences Report

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Question 5:

When asking for what factors that were the most important when buying the car, we observed that the respondents from South Korea think that when buying a car, environmental friendliness a very important point, compared to all the other countries. South Korea are different from all the other countries, and very different from Japan. Japan and Singapore are not different, while Hong Kong, India and Singapore are not significantly different.
Question 7:

In this question we will try to find out if there is any significant differences if people prefer to buy from environmentally friendly companies by country. As we can see, Japan is significantly different from all the other countries and they tend to prefer to buy from more environmentally friendly companies than the other respondents from the other countries.
Question 13:

In the last question we can see that the Indian respondents are the ones who agree the most to the statement, and that the South Korean respondents are quite neutral to the statement. These two countries are significantly different from each other, while all the other countries seem to not be significantly different.
Perception:

**Question 2:**

In this ANOVA-test we look at if people believe Asian consumers are environmentally conscious by country. As we can see, South Korea, Singapore and India have a quite similar perception of Asian consumers. At the other hand, Hong Kong and Japan are significantly different from each other, where our Japanese respondents seem to have a quite bad perception towards Asian consumers.

![Table and graph](image-url)
Question 6:

In this ANOVA-test we look at if people believe the automotive-industry needs to put more focus and effort in producing environmental-friendly cars by country. As we can see, India and Hong Kong are significantly different from each other. On the other hand, Singapore, South Korea, and Japan are less significant different and share a more collective approach towards this question.

<table>
<thead>
<tr>
<th>Levels</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>4.4059462</td>
</tr>
<tr>
<td>Singapore A</td>
<td>4.1153846</td>
</tr>
<tr>
<td>Singapore B</td>
<td>3.8333333</td>
</tr>
<tr>
<td>Singapore C</td>
<td>3.8057144</td>
</tr>
<tr>
<td>South Korea A</td>
<td>3.5740741</td>
</tr>
</tbody>
</table>

Levels not connected by same letter are significantly different.
Question 11:

There is a great difference when it comes to the question whether or not they believe that being environmentally conscious is a trend, and that it will be over sometime in the future. The one country that really is different from all the rest are South Korea. South Korea disagrees, with a mean of 2.01. They are significantly different than all the others. Hong Kong on the other side are the opposite of South Korea, and tend to believe that environmental consciousness is something that will pass in the future with a mean of 3.61.
Question 12:

In this ANOVA-test we look if people believe that the government plays an important role to increase environmentally consciousness by country. As we can see, Singapore and India are quite significantly different from all the other markets with respective 4.42 and 2.91 in mean. On the other hand, Hong Kong and South Korea are more alike, while the same applies to South Korea and Japan.
Prediction:

Question 8:

Our respondents from India and Singapore agree on the statement that people will become much more environmentally friendly in the next 10 years. Hong Kong and South Korea are not as agreeable as Singapore and India regarding this matter, but they are however positive, with a mean of around 3.5.
Question 9:

As of this ANOVA-test, we look at if people agree to the statement that the younger generations are more environmentally conscious than the older generation by country. Here we can see that India and Singapore are significantly different from Japan. At the same time, Hong Kong and South Korea are sharing a more collective perception.
**Willingness:**

**Question 10:**

In this ANOVA-test, we look if people are willing to pay a higher amount of money for a environmentally friendly car by country. As we can see, Singapore, South Korea and Hong Kong are three markets that seem to be willing to pay a higher price than Japan and India. This means that they are significantly different from each other.
### PESTLE - Economical

**Market value forecast of new cars in Asia-Pacific: 2010-2015**

<table>
<thead>
<tr>
<th>Year</th>
<th>$ Billion</th>
<th>% Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>443.3</td>
<td>15.2%</td>
</tr>
<tr>
<td>2011</td>
<td>464.0</td>
<td>4.7%</td>
</tr>
<tr>
<td>2012</td>
<td>543.0</td>
<td>17.0%</td>
</tr>
<tr>
<td>2013</td>
<td>611.2</td>
<td>12.6%</td>
</tr>
<tr>
<td>2014</td>
<td>692.3</td>
<td>13.3%</td>
</tr>
<tr>
<td>2015</td>
<td>783.8</td>
<td>13.2%</td>
</tr>
</tbody>
</table>

**Market volume forecast of new cars in Asia-Pacific: 2010-2015**

<table>
<thead>
<tr>
<th>Year</th>
<th>Thousand units</th>
<th>% Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>21,429.3</td>
<td>14.8%</td>
</tr>
<tr>
<td>2011</td>
<td>22,018.2</td>
<td>2.7%</td>
</tr>
<tr>
<td>2012</td>
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<td>16.9%</td>
</tr>
<tr>
<td>2013</td>
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<td>11.4%</td>
</tr>
<tr>
<td>2014</td>
<td>31,923.9</td>
<td>11.4%</td>
</tr>
<tr>
<td>2015</td>
<td>35,520.3</td>
<td>11.3%</td>
</tr>
</tbody>
</table>
Collection of Production Scrap – Norsk Hydro ASA

This figure shows where Hydro should go in and collect the production scrap from their customers:
Unique-Selling-Proposition
Interview with Florian Starnitzky, Sales Director at Norsk Hydro

Introduction
“First of all we would like to thank you for your contribution to our Bachelor thesis. Before we get started, there are two matters we want to ask you: Would it be okay for you if we were to take a recording of this interview? It will only be used for the purpose of this thesis, and will be deleted after the intended use. We also want to ask you if it would be alright if we refer to you in our paper with regards to your responses in this interview?”

*Which company do you work for, what is your official position and what is your main responsibilities?*

“I am representing Hydro Germany rolled products and is the intermediate between the customers in the region (Asia) and Hydro. My official position is Sales Director. My main responsibility is the beverage can industry in Asia, where we sell aluminium to the can-makers.”

*What other companies do you believe to be tough competitors in the recycled aluminium industry? And can Hydro compete with them?*

“The company that is most active with recycled aluminium is Novelis with their activities in South-Korea. Recycling is not really a factor that is influencing my customers.”

*Could using recycled aluminium create a competitive advantage for Hydro? Please give arguments for why or why not.*

“The customers that I am responsible for in Asia is not demanding recycled aluminium. The most important factors for the customers is quality, price and delivery time. It is not a big issue, or relevant sales factor as of right now.”
Which industries do you believe use the highest amount of recycled aluminium (today)?

“The biggest industries has to be the can industry, flexible packaging, computer industry, construction industry and the automotive industry, in the mentioned order.”

Which industries do you believe has the highest potential for adapting recycled aluminium?

“The automotive industry, because they use a higher amount of aluminium in each car. Next on the list would probably be the construction industry. The can industry and flexible packaging would be more difficult because it is more difficult to separate the materials.”

What would you predict the use of recycled aluminium in the automotive industry in Asia compared to Europe?

“The use of recycled aluminium is connected to how developed the countries are. Europe has come further than Asia on environmental matters, so it would be natural for Europe to have a higher use of recycled aluminium in the automotive industry. The most important factors for most manufacturers is production capacity and that they can produce a high amount to low cost.”

Do you believe Asian consumers are environmentally friendly? If not, do you think it will change in the nearest future (in 10 years)?

“In my opinion they are mostly not environmentally friendly. There are no recycling of garbage, you simply dump it. It is when the results starts becoming visible that the consumers in Asia will start acting environmentally friendly. For instance with the growing fog or haze the public will put pressure on the government for tougher legislation. The costs of being environmentally friendly is also an important factor.”
Do you think Asians consider environmental factors when buying a car? And how will the younger generations be compared to the older?

“No, other factors such as status is much more important. You can actually compare how Europe was before, when cars were an important status symbol and that the environmental issues were not important at all, similar to how Asia is today. These factors will be more important when we see the results of our behaviour on the environment, with fog and haze for instance. The younger generations aren't any better, they are just as focused on status, they simply don't care until it becomes visible.”

What do think is the main reason for the difference between Asians and Europeans environmental consciousness?

“The main difference is to have something to do with how developed the countries are. I think that the environmental consciousness in Asia is shifting because of the visible changes on the environment.”

Do you believe that the automotive industry is putting enough effort in producing environmental cars? If not, should they put more effort?

“They are not doing enough, just take a look on how much time the industry has taken to develop the electrical car. It doesn't seem like they are interested in actually implementing new technology to create more environmentally friendly vehicles. The industry by itself is probably reluctant to change, so the change has to come from pressure from governments, and an increase in demand for environmentally friendly vehicles.”

What do think about the statement “government plays a significant role in environmental consciousness”?

“Absolutely. They government has to educate the people. If the government doesn’t care, why should I care?
An idea would be to give tax relief for more environmentally friendly vehicles, and encourage environmentally friendly behaviour.”

_How do you predict the environmental consciousness to develop in the future?_

“I think that it will become more important the more visible the effects are. China is a good example, people have to wear masks because of the bad pollution. Therefore they will be asking questions and demanding for implementations regarding the environment.

_Do you think the sub-contractors are willing to switch from other materials to using recycled aluminium?_

“If the car manufacturers say they want it, they have no other choice. Governments should be involved and should give an advantage for the use of recycled aluminium because of the environmental advantages.”

_Finally, in your opinion, will there be an increase in demand for recycled aluminium in the automotive industry in the future? And should Hydro consider investing in this?_

“The potential for applying recycled aluminium in the automotive industry in Asia is definitely present because of the growing focus on the environment. An issue is that customers really doesn't care that they are using recycled aluminium, they want the effects of it which is a more environmentally friendly vehicle with lower CO2 consumption and gasoline usage. The people that buy vehicles that is made with recycled aluminium has to receive some sort of an advantage. They need an incentive because who would choose a recycled car over a new car for the same price? The potential is present, but the question is, when?”
Interview with Xavier Courboin, Director of Distribution in South-East Asia

Introduction

“First of all we would like to thank you for your contribution to our Bachelor thesis. Before we get started, there are two matters we want to ask you: Would it be okay for you if we were to take a recording of this interview? It will only be used for the purpose of this thesis, and will be deleted after the intended use. We also want to ask you if it would be alright if we refer to you in our paper with regards to your responses in this interview?”

Which company do you work for, what is your official position and what is your main responsibilities?

“I work at Sapa. My official position is Director of Distribution in South-East Asia, and my expertise and responsibilities is within the construction industry.”

What other companies do you believe to be tough competitors in the recycled aluminium industry? And can Hydro compete with them?

“The main competitor in my opinion is Alcoa. In a long term, yes. But it will take investments from Hydro’s side, e.g. in plants.”

Could using recycled aluminium create a competitive advantage for Hydro? If so, why or why not?

“Yes, I think it can. The effects of using recycled aluminium is more environmentally friendly products so as the environmental awareness grows, I think the use of recycled aluminium will grow with it. It is also important to take a look at the cost of the energy being used in creating recycled aluminium compared to the costs of producing new aluminium.”
Which industries do you believe uses the highest amount of recycled aluminium as of today?

“It is probably the automotive industry. This is mainly because of the turnover (of life span) of the products. In the building and construction industry the aluminium is still in use.”

Which industries do you believe has the highest potential for adapting recycled aluminium?

“It has to be the construction industry because of the high amount of aluminium being used. The only issue is the lifetime, which is very high. In Singapore buildings has to be made to last a minimum of 30 years, but should easily last 40 or 50 years. This tells us that there are some challenges.”

What would you predict the use of recycled aluminium in the automotive industry to be in Asia compared to Europe?

“I would think that Europe uses more, mainly due to the higher costs of energy and labor and higher levels of education and environmental awareness.”

Why do you think the usage of recycled aluminium is higher in Europe than in Asia?

“It is highly linked to education and that sustainability is more important in Europe.”

Do you believe Asian consumers are environmentally friendly? If not, do you think it will change in the nearest future (10 years)?

“No they are not. It can change in the long term but it is depending on how educated they are on environmental issues. Also, if the people understand that each small act matters for the total effects on the environment they are more likely to make changes on their behaviour. Main problem is lack of education and incentive given by the government.”
Do you think that it would be possible for the automotive industry to put a higher effort in creating environmental vehicles?

“Yes. They can simply use more recycled aluminium in their vehicles. The potential is great because of the effects it has on the vehicles with regards to lighter weight. That has a positive effect on the emission levels, and it also gives room for more safety features.”

Do you think that the younger generations are, and will be, more environmentally conscious than the older generation?

“As of right now it depends of the willingness of the government because something has to change for the attitudes of the younger generations to change. The status the item gives you is still much greater than how environmentally friendly the item is.”

What do you think about the statement “government plays a significant role in environmental consciousness”?

“I agree, mainly because the government has to educate the people. So basically the government has to start with them.”

How do you predict the environmental consciousness to develop in the future?

“Hard to say, but in short term I think it will not change that much. It is in the long term that there is hope, but it is dependent on education on these matters.”

What would it take for the subcontractors to be willing to use recycled aluminium?

“If the car makers puts pressure on them, they would have to change.”
Finally, in your opinion, will there be an increase in demand for recycled aluminium in the automotive industry in the future? And should Hydro consider to invest in this?

“Yes, it will increase, so Hydro should invest. The most important thing is to invest in new technology so they can extract more aluminium from each product and make the process more efficient.”
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