

THE LEGO GROUP

Team Project Report



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Executive Summary

There are few brands strong enough to span generations, genders and cultures simultaneously, yet the LEGO Group (LEGO) has managed to remain a fixture in households across the world for decades. It is next to impossible to enter a home with children of any age without spotting the trademark bricks scattered about, not to mention entering the toy department of any store without spotting one of their sets, video games, films, etc. However, in an increasingly environmentally conscious world, the core of the beloved toy's makeup as well as packaging and supply chain do not impress the millennial parents and adults with today's purchasing power. While LEGO has made several attempts at improving the sustainability of their products, they have a long way to go before they are truly able to prove alignment with the core values of their increasing number of conscious customers when it comes to sustainability.

This report analyzes LEGO's current operation and sustainability efforts to identify alternative solutions to meet the company's goals of zero waste by 2025 and make all bricks sustainably by 2030. LEGO consistently voices concern with plastic-alternative bricks being of lower quality than what is traditionally associated with their product, and more expensive to manufacture. Exploring plastic-alternatives is critical to the future of LEGO, and they should continue investing in and testing substitutes. An area of possibility that the company has neglected to explore thoroughly, however, is the true power in the LEGO end of life cycle and take-back systems with end-users.

The proposal set forth and supported in the pages to follow is a tiered-monthly LEGO subscription service that closes the product loop. In order to receive the next month's set of blocks, the member would need to either ship back or purchase the set already in their possession. The returned pieces are inspected, they may either be sorted back into monthly set or sent to one of LEGO's recycling centers, increasing the amount of recycled material per brick produced. By further incentivizing all those guilty of hoarding old boxes of the blocks from their childhood to package them up and send to a distribution center for a free month's subscription, LEGO would have enough of their product on hand to be able to cut back on manufacturing and re-invest that money in either new distribution centers to decrease transportation costs and emissions or in the search for a worthy plastic-alternative. The proposed plan leaves LEGO the time and additional resources to test efficient plastic-alternative products while simultaneously addressing the fact that billions of their plastic blocks are in existence around the world that already at this very moment require some efficiency-improved end-of-life alternative.

There are many subscription-based companies, but few focused on the reuse of the products they sell. As LEGO prides themselves on their high-quality product, one of the most important aspects of the subscription service rollout will be marketing and positioning. LEGO's brand loyal and environment loyal customer bases are therefore critical to a successful launch. By setting the example as the world's largest toy company for other companies currently struggling with unsustainable products and practices to follow, the impact and growth potential are monumental.

Problem Statement & Background

Established in 1932, LEGO has successfully transitioned from a small carpenter's workshop to a leading global brand in the toy manufacturing industry. Ole Kirk Christiansen founded this company and made the switch from wooden to plastic-based blocks in the late 1950s.¹ The word "lego" is derived from Danish words "leg godt", which loosely translates to "play well". This idea of providing products to facilitate creative play, learning, and engagement has been at the forefront of the company's goals since its inception².

Today, LEGO continues to operate as a family-owned enterprise and enjoys consistent customer loyalty and brand differentiation as they currently sell their products in one hundred and thirty different countries. Perhaps their continued strong customer relations can be attributed to their mission-driven operations that value quality, innovation, and design.³ Adding to a consistent quality standard, the company has been able to produce products in accordance with annual trends that dictate the consumption patterns of its customers. Almost sixty percent of their inventory change each year is driven by trends that determine what children would be interested in engaging with and therefore, is a seasonal market with distinct peaks and drops in demand. Relatedly, LEGO has also been successful in identifying and reaching its large but separate target audience: children between the ages of 5 to 11 years and adult LEGO customers.⁴ A large part of their current sustainability agenda can, then, be attributed to growing customer awareness around sustainability and environmental impacts. This is, of course, not to dismiss the company's social responsibility efforts in the last few years but to reiterate the impact of changing customer preferences on the operation front. LEGO as a brand has considered and acted upon sustainability issues in the past. As an example, the company has cut down the size of their packaging, engaged in Forest Stewardship Council (FSC) certified packaging, partnered with global social and environmental organizations such as the UN and WWF, and invested in off-shore renewable energy projects to offset their consumption.⁵

While these initiatives add positively to its sustainability footprint, the company has a long way to go in terms of revamping their model to make sustainability truly integrated into its operations. Currently, they process over 76 thousand tonnes of plastic each year along with over 50 thousand tonnes of cardboard. Similarly, 1.1 million tonnes of carbon emissions are produced directly link to their operations and supply chain while other emissions come from indirect sources. The single most important part of their environmental impact is the main product they produce: the building blocks.⁶ These bricks utilize plastic material (ABS i.e. acrylonitrile-butadiene-styrene) that does not disintegrate easily. Then, not only is the use of carbon-intensive plastic emission heavy, but the lack of a closed-loop system is troubling in terms of safe disposal, especially given that the company estimates about ninety-two building blocks per every single person in the world.⁷ The wide-ranging reach and presence of LEGOs, while encouraging, also

¹ <https://www.lego.com/en-us/aboutus/lego-group/the-lego-brand>, The LEGO Group, About US Section, 9/28/2019

² Ibid.

³ <https://www.youtube.com/watch?v=jsMhAP32Mpg>, Tim Guy Brooks, *From Bricks to Business: Experiences from LEGO's Sustainability Journey*, 9/26/19

⁴ Ibid.

⁵ <https://www.lego.com/da-dk/aboutus/lego-group/policies-and-reporting/reports>, The LEGO Group, Responsibility Report 2018, 8/18/19

⁶ <https://www.youtube.com/watch?v=jsMhAP32Mpg>, Tim Guy Brooks, *From Bricks to Business: Experiences from LEGO's Sustainability Journey*, 9/26/19

⁷ Ibid.

presents a need and opportunity to shift to greener and cleaner ways of producing the core product.

The company is seemingly aware of the need to transition to more sustainable raw material sources. Having declared in 2012 that they plan to eliminate oil-based material by 2030, they revised it in 2015 to say reframe the goal to achieve a more arbitrary standard of producing sustainably by 2030.⁸ Currently, they face three major challenges in regards to sustainable material shift: safety, consumer-perceived quality, and durability. The alternatives would have to be renewable, reusable, recyclable, and efficient in order to align with the overarching goal of being able to produce sufficiently in the place of plastic-based material. As part of their greater plan of identifying and producing sustainable material, they launched plant-based bioplastic and intensified the recycle and reuse aspect of their sustainability mission. In other words, they have amped up their charity programs that allow disposed blocks to be passed on to other kids and have actively established accessible collection centers that allow customers to drop off their blocks.

LEGO as a brand, despite having competitors, has managed to stay skillfully differentiated and unique in that it creates distinct value of its customers. Moreover, the company maintains a strong environmental and social impact record. Their supply chain practices are seemingly responsible, employees are taken care of, and the social and financial investments reflect the company's commitment to maintaining its mission-driven agendas.⁹ However, the company carries immense opportunity to further create positive environmental impact by finding better alternatives to plastic-based raw material and identifying clearer paths to reuse/recycle old blocks. This shift would not only carry tremendous environmental benefits but will also appeal to customers who seek products that align with their social values. In short, finding better alternatives and ways to reuse/recycle LEGOs will bring in environmental and business-oriented benefits alike.

Methodology

Despite numerous attempts in recent years at finding an alternative to plastic-based raw material and identifying clearer paths to reusing or recycling old material, LEGO has not managed to either successfully execute on a new green product or develop an efficient end-of-life plan for its blocks. The approach taken to studying this problem was to first assess the current state of the company's sustainability messaging and reporting as well as all of LEGO's recent sustainability efforts to identify what went wrong and what could be improved upon. From there, the team was able to identify key missing elements of the company's previous attempts: experimentation with price differentials for greener products, and a viable reuse/recycle option. Research and logical analysis were then conducted to collect ideas for alternative opportunities for the company, leading the team to the analysis below.

⁸<https://www.givainc.com/blog/index.cfm/2015/12/7/Case-Studies-in-CSR-Lego-to-Invest-150-Million-in-Sustainability-Projects>, Case Study in CSR: Lego Invest \$150 Million in Sustainability Projects, 9/27/2019

⁹ <https://www.lego.com/da-dk/aboutus/lego-group/policies-and-reporting/reports>, The LEGO Group, Responsibility Report 2018, 8/18/19

Analysis

Alternative 1: Creating a strategic plan to grow the market for a **green product** or service

Need for sustainable/green product:

As per the climate impact report of 2018, more than half (53%) of carbon emissions come from raw materials and services part of its supply chain. Lego mentions it has no direct control over this.¹⁰ The company says its aim is to use sustainable materials in its core products and packaging by 2030. It has invested 1 billion DKK (\$165 million) for a dedicated Sustainable Materials Centre to research, develop & implement sustainable alternatives to its current product.¹¹

Quality Requirements:

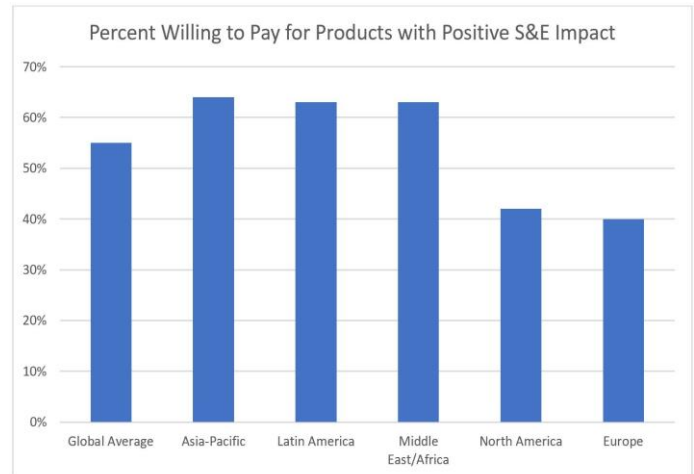
The Lego bricks must have a tolerance of less than 2 microns which is less than the thickness of human hair. There are other requirements such as a unique shine, coherent color, a signature sound the bricks make when mixed in a bowl, and they should be safe.¹² Any new product that is developed should be able to satisfy the above-mentioned requirements in addition to having a lower environmental impact.

Marketing Strategy:

Let's analyze a few options for LEGO to move forward with new sustainable product(s):

1. Charge a **price premium** on a differentiated product labelled as green/sustainable product:

Although the target market for LEGO is children aged 5-11, the decision makers are parents. When it comes to buying decisions, consumers are trending towards conscious capitalism. According to "Nielsen's global survey on corporate social responsibility"¹³, more than half (55%) of the respondents said that they are willing to pay a premium on products & services that are labelled "green". This is evident with many other products such as detergents, fast food, napkins etc.



Source: <https://www.nielsen.com/us/en/insights/report/2014/doing-well-by-doing-good/>
Nielsen Markets and Finances, "Doing Well By Doing Good" (2014), accessed Sep 29, 2019

¹⁰ <https://www.lego.com/da-dk/aboutus/lego-group/policies-and-reporting/reports>, The Lego Group, Responsibility Report 2018, 8/18/19

¹¹ https://www.lego.com/cdn/cs/aboutus/assets/bltbc3014acd4030002/LEGO_Group_2018_CO2_emissions_publication.pdf, The Lego Group, Climate Impact 2018, Accessed Aug 18, 2019

¹² <https://www.youtube.com/watch?v=jsMhAP32Mpg>, Tim Guy Brooks, From Bricks to Business: Experiences from LEGO's Sustainability Journey, Sep 1, 2019

¹³ <https://www.nielsen.com/us/en/insights/report/2014/doing-well-by-doing-good/>, Nielsen Markets and Finances, "Doing Well By Doing Good" (2014), accessed Sep 20, 2019

This provides LEGO an opportunity to raise funds via increased margins, which can be redirected towards research and development of newer products. This fund can also be used to purchase carbon offsets. They can also be redirected towards “**Social Development**” of the native population where these green products may be harvested. Gradually phase out the present raw material (ABS Plastic) replacing it with sustainable products. When LEGO switched to plastic during the 1960s, the transition was widely acceptable as plastic was on the rise worldwide. Here the role of sustainability department becomes significant as it must ensure there is no reduction in the customers. The change must be communicated efficiently so that the consumer has a positive reaction towards buying the new product.

2. Gradually **phase out** the present raw material (ABS Plastic) replacing it with sustainable product:

When LEGO switched to plastic during the 1960s, the transition was widely acceptable as plastic was on the rise worldwide. Here the role of sustainability department becomes significant as it must ensure there is no reduction in the customers. The change must be communicated efficiently so that the consumer has a positive reaction towards buying the new product.

Risk Management:

Following are some of the risks that can come up, and care should be taken to mitigate them.

- **Quality Reduction:** The company has a hard line stand on no compromise regarding quality, but the product should be tested for long term effect also.
- **Bad Marketing:** The change from Plastic to Sustainable product must be smooth and communicated effectively.
- **Greenwashing:** The new product(s) should be labelled responsibly with proper verification in order to ensure that the company doesn't get the reputation of being a “green washer”.

Pros:

- **Reduced Dependency on Oil:** As mentioned earlier, more than half of their emissions come from various oil-based raw material process of their supply chain. A sustainable/green alternative will help them reduce this impact.
- Provides new alternative supply chains
- Provides new labelling opportunities e.g. “Plastic-free”, “Eco-friendly”, etc.

Cons:

- **Life Cycle Impact:** The *overall carbon footprint* of harvesting and processing of plant-based raw material should be compared with traditional, petroleum-derived raw materials. Care must be given as to what is the *social impact* of this harvest on the indigenous populations. If any of these are ignored there is a chance that LEGO might get a reputation for being a green washer.

- **Absence of “Closed Loop”:** “The best supply chain is a *supply cycle*”. The sustainable/green alternatives are still part of an open loop which will generate waste either in the short term or in the long term.

Looking at the pros & cons, we started looking into closed loop options. The next alternatives will analyze these options in greater depth.

Alternative 2: Evaluating existing reuse options available for customers

As soon as the first LEGO kit enters a home, it becomes an integral part of a child’s play, learning, and development. The presence and popularity of LEGOs worldwide—while encouraging—also presents a grave concern considering that LEGOs, as they stand today, are not widely recycled. Imagine producing blocks more rapidly than before only to know that there is no end place other than a landfill. However, the growing section of conscious and green consumers are identifying and building better options to reuse and repurpose old LEGOs. This is, of course, not a solution to close the loop with better end of life options; but, it is an important measure in ensuring that the lifecycle of LEGOs is longer, more purposeful, and multidimensional. Comparing the lifecycle of a regular LEGO vs. reused LEGO kit would further emphasize this point. The lifecycle of a regular kit would be like this: The LEGO group designs and produces the kit, the customer purchases and uses it after which the kit would be on its way to the landfill. The reused version, on the other hand, would have the same start and endpoints but will be exchanged between multiple customer parties in ways that encourage reciprocity, less direct consumption, and more customer-customer interaction. Here are some ways to pass LEGOs along:

Option 1: Pass them to other friends and families

LEGOs play an important part in a child’s growth trajectory but are also expensive and therefore, not easily accessible to all children. One way to address this gap is by donating/passing them to young families who are looking to add variety to their play.

Pros:

- Heightened customer-customer interaction.
- Less purchasing of ‘in-trend’ kits because exchanges facilitate greater access to new models/kits in the market.
- Has the potential to promote social equity and access to toys among underprivileged families

Cons:

- Places excessive burden on customers to practice greener disposal methods
- Safety: The toys would have been thoroughly cleaned and safe before passing them on. This requires additional effort from consumers
- By relying on customer practices, The LEGO group would be able to wash off responsibility in coming up with safer and greener disposal methods

Option 2: Pass them to local charities and underprivileged communities

As mentioned above, access to LEGOs continues to be a distant dream for many. Establishing networks that allow donations will help in ensuring that access to play and learn is protected.

Pros:

- Customers can use market-driven methods to address social inequality at an individual level
- Safe and secure childhood is a right; and yet, it is often ignored in conversations around justice and equality. One small yet significant way to contribute is through donations.
- The LEGO website details safe ways to clean the kits before passing them along

Cons:

- Donations are not the solution to address social inequality. To think so would be myopic, unidimensional and complacent.
- Charities sometimes do not accept LEGOs fearing inadequate safety standards.¹⁴

Option 3: Sending them to collection points

Collection groups like the Brick Recycler, The Giving Brick and Brick Dreams are online collection centers that have identified the unique supply-demand issue with LEGOs in that customers who want to donate often do not know how to clean or are missing parts that make it challenging to donate.¹⁵ By accepting LEGO sets of any condition, any mix, dirty or clean, these groups take on the job of repurposing the building blocks. They donate repurposed kits to charities, hospitals, kids in low-income communities, foster care, etc.¹⁶

Pros:

- Customers can outsource the cleaning, sorting, and distributing aspect to these groups. This move creates opportunity to donate while simultaneously taking off the additional tasks related to repurposing
- Brick Recycler offers free shipping and has claimed to repurpose over 3 million pieces thus far.¹⁷
- Organization-led charities tend to perform better and reach a target audience in ways that individual donations may not be able to.

Cons:

While these repurposing methods offer some relief, they do not address the greater issue around non-biodegradable plastic. The ABS pieces are often considered to be Type-7 plastic that curbside recycling facilities would have to sort and process to recycle. Most often, these pieces

¹⁴ <https://lifehacker.com/how-to-donate-or-sell-used-legos-1831173688>, How To Donate LEGOs, 9/28/2019

¹⁵ <http://mentalfloss.com/article/569595/where-to-donate-lego-bricks>, Where To Donate LEGOs, 9/28/2019

¹⁶ <https://boingboing.net/2018/12/27/donating-unwanted-lego-to-some.html>, Donating Unwanted LEGOs, 9/28/2019

¹⁷ <https://www.brickrecycler.com/>, Brick Recycler, 9/27/2019

are too tiny and cumbersome to identify and therefore, make their way straight to the landfill.¹⁸ Hence, the LEGO group has the responsibility to find better alternatives that make the process of repurposing smoother, greener, and more efficient. It is important to note that none of these repurpose methods are directly led by the LEGO group. In other words, while they encourage repurposing and donations, they are yet to put forth established ways to better produce and consume.

Alternative 3: Creating a tiered-monthly subscription service.

Based on Tim Guy Brooks' Product Development Symposium in 2016, one of the LEGO Group's larger issues pertains to incentivizing LEGO take-back systems with its end users.¹⁹ He states that through pilot trials, "the amount of incentivization people need to bring it [LEGOs] back is almost on par with the original purchase cost of the kit." In terms of sustainability, this does not allow for the LEGO Group to close the loop in their process or increase the percentage of recycled material. However, perhaps the incentive isn't the issue, but the take-back system is the faulty operation. Let's propose a tiered-monthly LEGO subscription that allows the end-user the option to buy that month's product for an additional fee. The closed loop incentive would give members a free month subscription if they send "X" number of kilograms of blocks back to be inspected and recycled.

The business model behind this system would allow the end-user to choose which type of subscription package caters to their needs. Let's call these tiers "Beginner, Adventurer, Expert". Each tier would increase in price per month as well as the parts that are associated with each level. The "Beginner" subscription would be targeted towards toddlers and young children, the "Adventurer" targets older children who want to build larger pieces with more complex instructions and the "Expert" caters towards collectors who sought after the most complex and rigorous kits. At the beginning of each month, a package would arrive at the household containing either miscellaneous parts with minimum instructions for the toddlers or an entire kit that needs to be statistically assembled. Whomever has the month to utilize those kits as they feel and as instructed to send back the parts when they are done to receive the next package for the following month. The end-user is also given the option to buy that month's subscription for an additional fee if they want to keep it. It would be recommended that they keep the box it was shipped in to cut down on shipping materials. Based on market research, the other top toy subscription services include sustainable and eco-friendly company "Little Pnuts" and "Green Kids Crafts".²⁰ Although these companies are already established in this market, none of them have the brand recognition that the LEGO Group carries, which would ultimately lead to market dominance.

In a sustainability mindset, this system allows for the LEGO Group to close the loop with its product. As described above, after the month is over the product is then shipped back to the facility for reinspection. Let's group the outcomes into two situations: passing or failing inspection. If the product that is returned passes inspection, those blocks are reused into future subscription packages where they'll continue doing as such until they meet their "end life". If the product fails inspection, it is then put into the company's recycling method which increases the

¹⁸ Ibid. About Us Section

¹⁹ <https://www.youtube.com/watch?v=jsMhAP32Mpg>, Tim Guy Brooks, *From Bricks to Business: Experiences from LEGO's Sustainability Journey*, 9/26/19

²⁰ <https://www.fatherly.com/gear/best-toy-subscription-services/>, Dave Baldwin, *The Best Toy Subscription Boxes for Kids*, 9/27/19

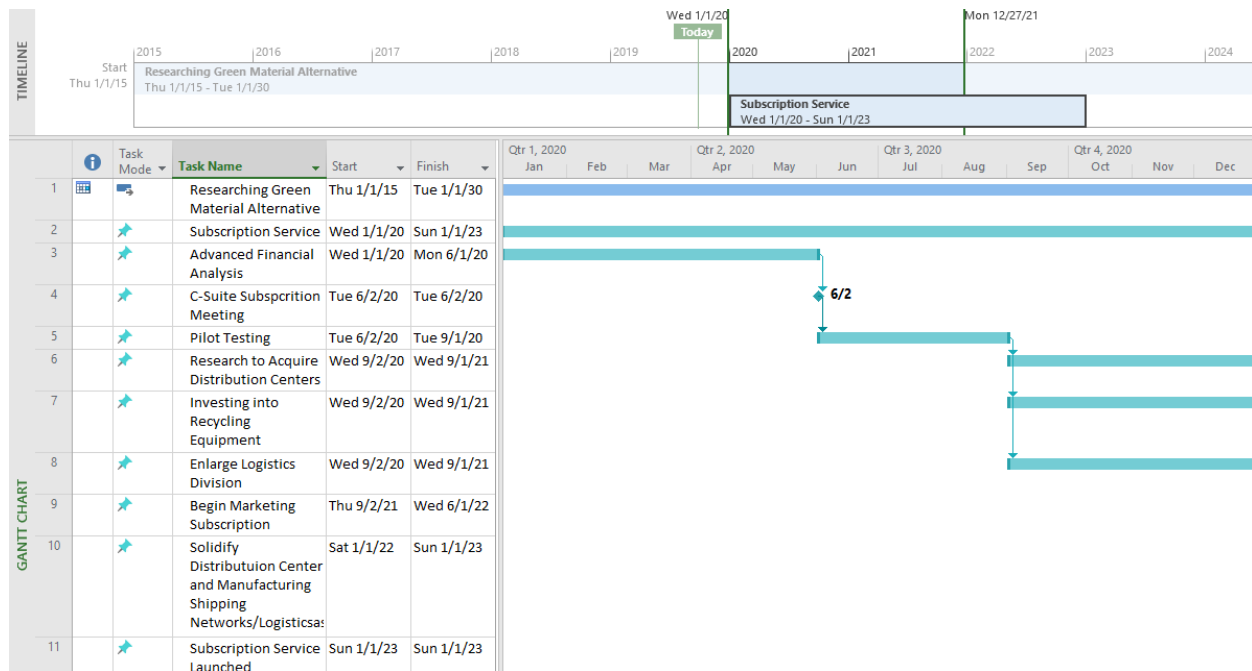
amount of recycled material per block produced. The one part of the “3Rs” that wouldn’t be improved upon is the reducing of packaging material. However, the LEGO Group’s 2018 sustainability report states that they reached their 2015 goal of using 100% of FSC certified paper and cardboard packaging materials.²¹ There is a vast amount of untapped potential with this solution and the product that’s been in homes for decades. Noted by Brooks, LEGOs are passed down from household to household, and if they’re not, they’re stored in attics for years. Let’s propose a discount for a month’s free subscription per “X” number of kilograms of blocks. An end-user, who has third generation LEGOs, are in the market for new but doesn’t have storage for more. What do they do? Send a tote box filled to brim with blocks back to LEGO and it’s a win-win situation for both parties. The end-user gets a free subscription for a month and the LEGO Group finally get to close the loop in their product lifecycle. Not only that, but this increases the amount of recycled material used in every brick.

Lastly, from a technical standpoint, this will most likely require a large capital investment into logistics, distribution centers and recycling equipment. With this subscription system, there would be a drastic increase in items shipped. This would directly increase the cost of goods sold, expenditure on packaging materials and transportation costs of these products. Although, acquiring several distribution centers would help maintain the cost per transportation if they were staged optimal locations. It would be at these centers where they reinspect the returned to product to determine if its being reused or recycled. Each center would be equipped with a recycle system that processes the bricks that failed inspection. Once the recycle material is sorted from the inspected brick, both would be sent back to manufacturing facilities. This allows the recycled material to quickly be made into brick as soon as it comes off the truck, not sitting inside the facility waiting to be processed. The inspected bricks would be sent to be sorted in the latter half of the manufacturing facility. With this distribution system in place with conjunction of the subscription model, the product life becomes circular.

²¹ <https://www.lego.com/da-dk/aboutus/lego-group/policies-and-reporting/reports>, The Lego Group, Responsibility Report 2018, 8/18/19

Recommendations:

The following timeline depicts the recommended course of action for the LEGO Group:



Detailed in their 2015 sustainability report, the LEGO Group has already dedicated one billion Danish Krone towards research in more sustainable materials for their bricks, packing and miscellaneous foam products, etc. [1] While this project is ongoing and explained earlier, the household subscription project should begin at the start of 2020. Initially, market research and financial analysis must be completed to first find if this program is tantalizing for consumers and if it is feasible for them. In theory, a subscription program might entice a wide population, but no one is going to pay an absurd amount of money per month for an unproportionate amount of product. Ultimately after the analysis, the executive board will make the final decision whether more resources are allocated towards the project. Once tests are proven positive results, the next year is dedicated to acquiring distribution centers, developing and purchasing recycling equipment and improving the logistics division. It's foreseen that this is where the brunt of the costs will come stem from this project. The largest issues are:

- Finding the optimum locations for these centers
- Mapping most efficient routes between these centers and manufacturing facilities
- Incorporating room for recycling equipment within these centers

Although it's slated for a year, more than likely there will be delayed pushing these items along for two years. However, once these tasks are complete, marketing can start which can assure consumers that this system will be operating by the start of 2023/24.