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LEED v4: Where Are We Now? Critical Assessment Through the LCA of an Office Building Using a Low Impact Energy Consumption Mix.

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LEED v4: Where Are We Now? Critical Assessment Through the LCA of an Office Building Using a Low Impact Energy Consumption Mix.

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<Heading level 1> Abstract

Various Green Building Rating Systems (GBRS) have been proposed to reduce the environmental impact of buildings. However, these GBRS, such as LEED v4, are primarily oriented towards a building`s use stage energy consumption. Their application in contexts involving a high share of renewable energy, and hence a low impact electricity mix, can result in undesirable side effects. This paper aims to investigate such effects, based on an existing office building in Quebec (Canada), where more than 95% of the electricity consumption mix is renewable. This paper compares the material impacts from a low-energy context building to material considerations in LEED v4. In addition to their contributions to the building impacts, material impacts are also defined by their potential to change impacts with different material configurations. LCA impacts were evaluated using Simapro 8.2, ecoinvent 3.1 database, and IMPACT 2002+ method.

The building LCA results indicated higher environmental impact contributions from materials (> 50%) compared to those from energy consumption. This is in contrast with LEED v4 rating system, as it did not seem to be as effective in capturing such effects. The conclusions drawn from this work will help stakeholders from the buildings sector to have a better understanding of building environmental profiles, and the limitations of LEED v4 in contexts involving a low impact energy mix. In addition, this critical assessment can be used to further improve the LEED certification system.

Keywords: Building, Structure and envelope materials, Life cycle assessment, Certification, Leadership in Energy and Environmental Design (LEED).

<Heading level 1> 1. Introduction

Life cycle thinking in the construction sector began in the early 1980s with a study by Bekker (1982). The author showed the importance of using a life cycle approach to evaluate environmental impacts in the building sector (Bekker 1982). With the increase of methodological development in life cycle assessment (LCA), this tool has become increasingly relevant to assess buildings' environmental impacts (Martínez-Rocamora and Solís-Guzmán 2016; Buyle et al. 2013).

In the early 1990s, the high contribution of building environmental impact was recognized by the building sector (Zabalza Bribián et al. 2011; Industry Canada 2013). Since then, many efforts have been made to improve industry standards and building codes with the main objective of reducing the environmental impacts of buildings, with particular attention to global warming impacts (Haapio and Viitaniemi 2008). Some certification programs for improving and encouraging building environmental performance have been developed, such as Green Building Rating Systems (GBRS). Amongst a large number of GBRS available, the Building Research Establishment Environmental Assessment Methodology (BREEAM), in the United Kingdom, and the Leadership in Energy and Environmental Design (LEED), in the United States, are two of the most currently used GBRS across the world (Lee 2013). LEED was developed by the U.S. Green Building Council (USGBC) and adapted to the Canadian context by the Canada Green Building Council (CaGBC 2014). Since its development in 1999 (USGBC 2014a), LEED has been updated over time by enlarging its scope (Richards 2012) until its newest version (LEED v4) released in 2013 (USGBC 2013). This certification aims to identify, implement and measure, amongst other things, the green building design, construction, operation and maintenance (USGBC 2014a).

The New Construction rating system (LEED v4 BD+C: New Construction), one of the 21 different rating systems available in LEED v4 (USGBC 2014b), is defined in nine categories (Figure 1). These categories are composed of prerequisites and optional credits. These credits correspond to different indicators (electricity consumption, noise, etc.) dealing with either one or all building life cycle stages. Each of the optional credits is weighted with a given number of points according to its importance in the certification. An example of MR LEED v4 optional credits is provided in Section SI.3. Overall, 110 points are spread over 43 optional credits. As a condition for earning LEED v4 certification, all prerequisites and enough points from optional credits must be achieved to reach the minimum score to the targeted LEED v4 level. LEED v4 can be awarded at four levels (USGBC 2014a): Certified (40-49 pts), Silver (50-59 pts), Gold (60-79 pts), and Platinum (80 pts and more).

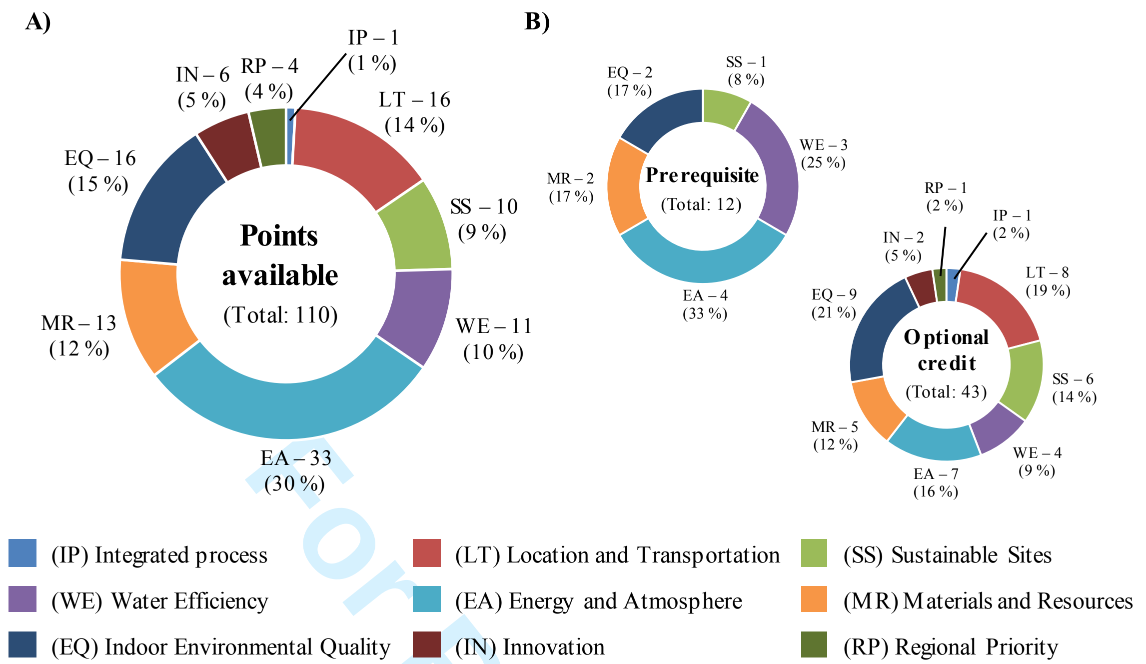

Figure 1. LEED v4 BD+C: New Construction rating system. A) Points allocated to each category and their contribution to the total available points (110); B) Optional and prerequisite credits corresponding to each LEED v4 category, and their respective contributions.

A few studies have evaluated the influence of LEED on building LCA impacts (Suh et al. 2014; Humbert et al. 2007; Suzer 2015; Wu et al. 2017). Literature shows that LEED (previous version; 2009) can reduce building life cycle impacts, as the main environmental burden was related to the energy consumption mix. The studies also showed that the environmental impact reduction potential attributable to LEED implementation was not uniform throughout the certification scheme, and could vary considerably depending on the optional credits, the intended LEED certification level (silver, gold, etc.), the building type and the energy consumption mix. In fact, some LEED scores did not yield a reduction of the overall LCA impacts (Al-Ghamdi and Bilec 2015; Suh et al. 2014; Humbert et al. 2007). As shown in Figure 1, LEED v4 gives more weight to Energy consumption (30% for the EA category), than to other categories such as construction materials (12% for MR category). This weighting is explained by the important environmental impact contribution of the building's use stage (from 60% to 90%) (Cabeza et al. 2014; Ortiz et al. 2009; Buyle et al. 2013), mainly explained by the high impact of the energy consumption mix (i.e. fossil-based). Other recent studies have shown that, when non-renewable sources are replaced with renewable ones such as hydroelectricity, the trend can be greatly modified (Chau et al. 2015; Mosteiro-Romero et al. 2014; Alain 2015; Al-Ghamdi and Bilec 2015) i.e., the use stage contribution to the total building LCA impacts could be as much as eight times lower than that of the construction stage (Mosteiro-Romero et al. 2014). This means that, under such circumstances, material selection could play a crucial role in decreasing building LCA impacts.

Although the number of building LCA publications is increasing significantly (Anand and Amor, 2017; Chau et al. 2007; Ortiz et al. 2010; Dean et al. 2006; Guardigli et al. 2011; Xing et al. 2008), to the best of our knowledge, studies assessing the influence of material selection on the whole building LCA performance in such an energy context are rare in the literature (Pajchrowski et al. 2014; Takano et al. 2014). This paper aims to contribute to this important research gap . As such, this study aims to 1) identify environmental hotspots in an office building using LCA methodology in the context of a low environmental impact energy consumption mix; 2) assess the extent to which material selection (i.e. different material scenarios) could change the building environmental impacts; and 3) compare material contributions to the office building LCA impacts with the MR points attributed by the LEED v4 rating system. This work was based on an office building located in Quebec, Canada, in a context of low environmental impact energy mix with 99% of renewable electricity, of which 96% comes from hydropower, and 1% from fossil and nuclear energy, mainly from imports (Whitmore and Pineau 2015; Hydro-Québec 2014).

<Heading level 1> 2. Methodology

The methodology followed three main steps reflecting the objectives of the study: 1) LCA of the Base Case Scenario (Section 2.1); 2) LCA Scenario Evaluation (Section 2.2); and, finally, 3) Critical Assessment of LEED v4: Assessment of MR Point Attribution in LEED v4 and Comparison with LCA Results from the base case and alternative Scenarios (Section 2.3). This methodology is summarized in Figure 2.

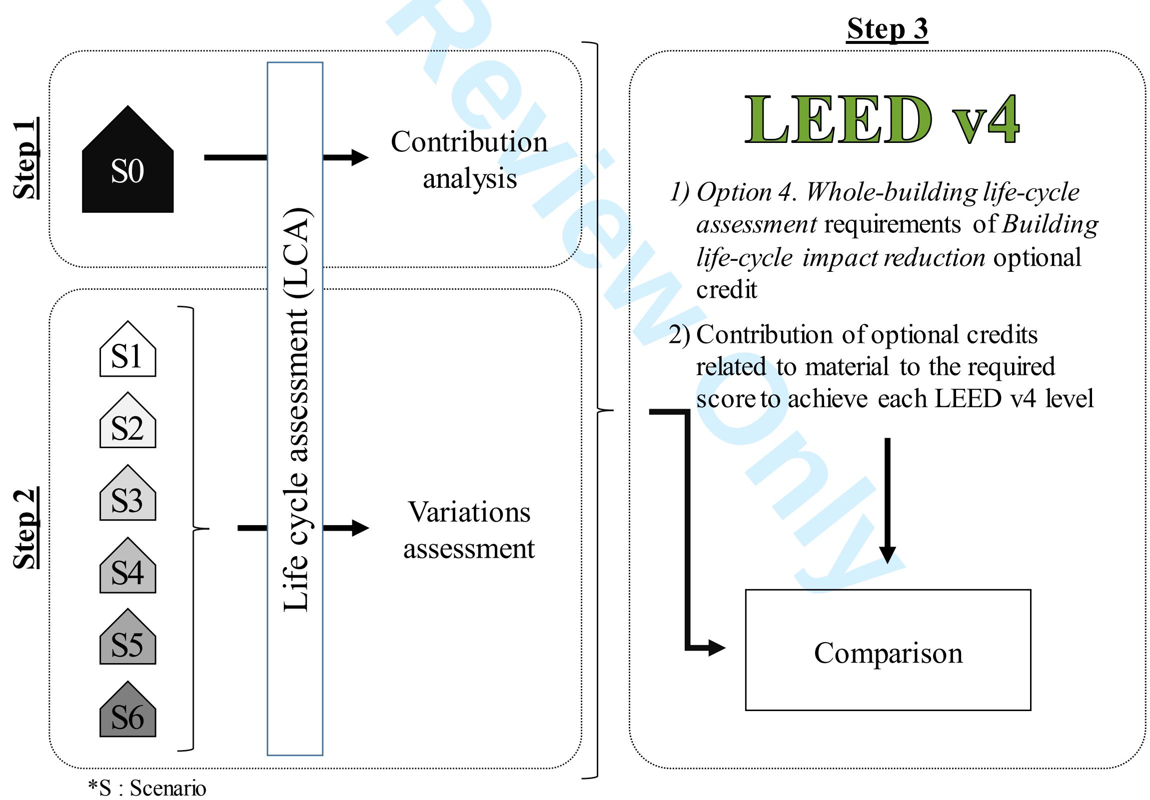

Figure 2. Summary of the study's methodology

<Heading level 2> 2.1 LCA of the Base Case Scenario

ISO standards 14040-44 (ISO 2006a, 2006b) were followed to perform the attributional LCA, in coherence with LEED v4 requirements (USGBC 2014a), of an existing six-story office building (called the base case or S0 in Figure 2). Located in Brossard, Quebec, Canada, the building has a gross floor area of 10,300 m² and an expected lifespan of 50 years. According to the industrial partner involved in the project, the base case, with its LEED-NC Silver LEED v1.0 certification, represents a typical office building built in the province of Quebec (Provencher_Roy 2016). Table 1 presents the main structure and envelope configuration of the base case (S0). The selected functional unit is 1 m² of an office space for 50 years lifespan, which is the most frequent functional unit found in the literature (Islam et al. 2015; Cabeza et al. 2014; Buyle et al. 2013). The system boundary is divided into five stages: supplying, pre-occupancy, occupancy, post occupancy, and waste management (Figure 3). For the occupancy stage, only the energy consumed was considered, in addition to the different resources needed for refurbishment. Resource consumption due to occupant activities, such as the use of office supplies, furniture, etc., were excluded from the analysis.

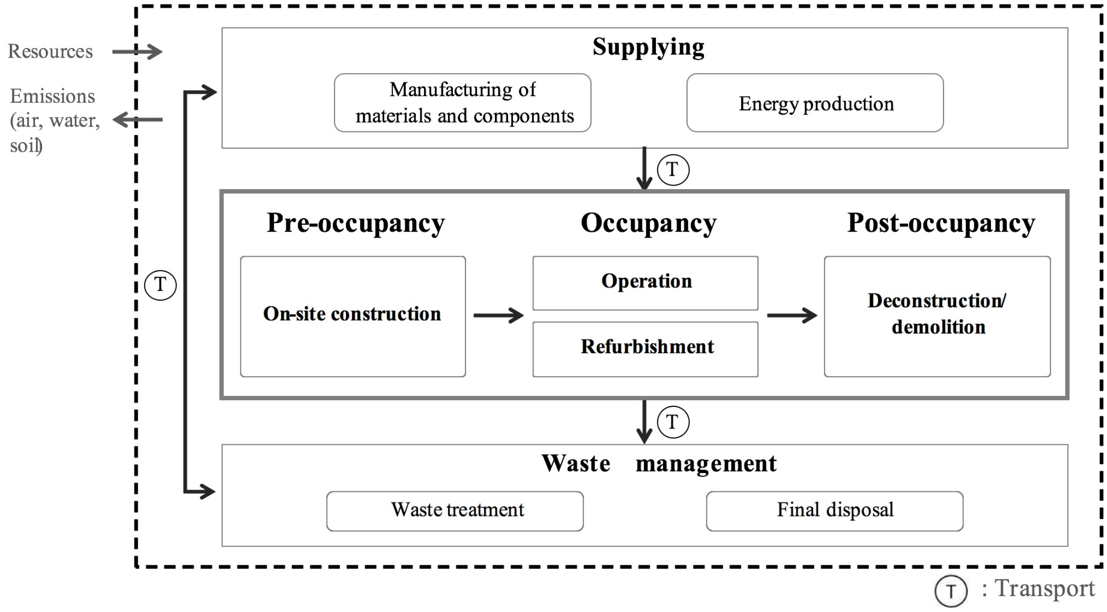

Figure 3. System boundary of the base case office building

Primary data, including types and quantities of building materials used, building energy consumption and expected life spans of building materials, were collected from the plans and specifications provided by the study partner involved in the construction of the base case scenario. When data were missing, technical specification sheets from manufacturers and secondary data from the literature were used. Finally, Athena's Impact Estimator for Building 5.1 software 2015 (Athena Sustainable Materials Institute) was used to estimate required amounts of materials when these were not available (e.g. attachments). The same approach was used for available quantities for validation purposes. Secondary data came from ecoinvent database v3.1, using the "allocation, recycled content" approach (ecoinvent Centre 2016a). Ecoinvent v3.1 is considered as one of the suitable databases for LCA modelling of construction systems (Martínez-Rocamora and Solís-Guzmán 2016). It is worth noting that it contains a regionalized Quebec dataset that is coherent with the geographical scope of the study (Wernet et al.

2016; Lesage and Samson 2013). To simplify the building's LCA modelling, the area surrounding the building, user activities and water consumption were not considered in the study due to lack of use data and context specific use of space. A cut-off rule was used to exclude all materials accounting for less than 0.05% of the total weight of the building materials, as a result, all building mechanical and electrical systems were excluded from the analysis due to their low weight contributions.

Building materials were categorized into four building subsystems: interior finish (IN), envelope (EN), foundation (FO) and structure (ST). The corresponding amounts of materials are presented in the supplementary information (SI) in Tables SI.1.1 and SI.1.2. The building end-of-life stage includes all material waste generated during the demolition stage of the office building, as well as wate generated during the construction and refurbishment stages. In coherence with the "cut–off rules" used in the "allocation, recycled content" approach in ecoinvent 3.1, the use of recycled materials and their corresponding impacts or benefits were considered at the beginning of the building life cycle only and not at its end. Therefore, if a material is recycled after the demolition of the office building, the primary producer does not receive any credit for the provision of any recyclable materials (ecoinvent Centre 2016b). Given the high uncertainty in predicting an end-of-life scenario after 50 years, all materials are considered to be landfilled, as a worst-case scenario. However, to identify the influence of this hypothesis on the conclusions, a sensitivity analysis was performed using an optimistic scenario (100% recycling, and hence, a cut-off approach). The energy consumption during the use stage of the building (base case) was modelled by the industrial partner during the design phase and is estimated to be 121.5 kWh / (m^2-year). This includes lighting, heating, ventilation, air conditioning (HVAC), water heating and all other forms of energy consumption from electrical outlets. Readers should note that this low energy consumption is explained by the fact that the base case is certified LEED-NC Silver LEED v1.0. Moreover, Quebec's energy mix is the only energy source for this office building. Not all office buildings in Quebec depend on electricity only. Building energy requirements for offices, in Quebec, are often fulfilled using electricity and natural gas. The building considered in this paper, however, represents LEED certified office buildings taking into consideration the fact that LEED requires buildings to adopt low-impact energy consumption. Finally, the ecoinvent unit process used in our models that represents the electricity mix is Electricity, low voltage {CA-QC}, which includes the electricity production in Quebec, electricity loss due to transmission and the imported electricity.

The building LCA impacts were assessed by using the midpoint categories from the impact method IMPACT 2002+ (Jolliet et al. 2010). As listed in Table 2, LEEDv4 only involves midpoint categories and explain the focus on midpoint category results in this work. However, the endpoint category results are only available in the supplementary information (see Section SI.4). Readers should note that LEED v4 does not specify any particular impact method, as long as the categories shown in Table 2 are used. Finally, two sensitivity analyses were also conducted to assess the sentivity of the impact assessment method, and the building energy consumption, on the results. The second impact method used was, TRACI v2.1 (U.S. EPA 2014). This LCA method is North American with fewer impact categories than Impact 2002+. Since the building energy was not occupany based, a variation of ± 20% of the energy consumed was applied in the second sensitivity analysis. SimaPro 8.2. was used for all modeling.

<Heading level 2> 2.2 Scenario Evaluation

Following identification of the materials hotspots from the LCA results, six hypothetical scenarios were defined to single out those having the greatest potential for reducing environmental impact over the base case scenario. These scenarios were defined in line with the commonly used alternative materials and in close collaboration with the study industrial partner due to frequent requests from architects for these scenarios. Of the six scenarios, as shown in Table 1, four involved exterior wall modifications of the building envelope, and two involved building structure modifications.

Table 1. Comparison between the base case scenario (S0) and the 6 hypothetical scenarios (S1-S6).

<table>
<tr><th>Scenarios</th><th>Base case scenario (S0)
Initial material configuration</th><th>Material modifications</th></tr>
<tr><td>S1</td><td rowspan="4"><u>Exterior walls (Envelope)*:</u>
• Aluminum siding type (40%)
• Fiber cement panel siding type (9%)
• Fiber cement clapboard siding type (28%)
• Curtain wall type (23%)</td><td>Aluminum siding type (100%)</td></tr>
<tr><td>S2</td><td>Fiber cement panel siding type (100%)</td></tr>
<tr><td>S3</td><td>Fiber cement clapboard siding type (100%)</td></tr>
<tr><td>S4</td><td>Curtain wall type (100%)</td></tr>
<tr><td>S5</td><td rowspan="2"><u>Structure type:</u>
• Reinforced concrete</td><td>Wood structure</td></tr>
<tr><td>S6</td><td>Steel structure with reinforced concrete slab</td></tr>
</table>

*Percentage refers to the total building exterior wall surface area.

For S1 to S4, each scenario was defined by one type of exterior wall configuration.The material amount per unit area of the associated exterior wall type provided by the industrial partner was multiplied by the total exterior wall surface area. The same approach was repeated from S1 to S4. The opening rate considered for S1 to S3 was the average of the three exterior wall configuration types associated in S0, 28%, excluding the curtain walls. For S4, all exterior walls were considered curtain walls, without taking into account any opening rate. For S5 and S6, Athena's Impact Estimator for Building 5.1 software 2015 (Athena Sustainable Materials Institute) was only used to estimate the amount of materials required to replace the base case structure with other types of materials. A comparison between the amount of base case structure materials calculated from the plans and specifications, and estimated by Athena's software showed that the two methods gave similar amounts of materials (see Section SI.2). All the material quantities obtained for the six new scenarios are listed in Table SI.1. For all scenarios (S1 to S6), the amount and type of electricity consumed during the use stage were assumed to be the same as in the base case scenario. Again, a variation of ± 20% of the energy consumed was applied to assess the robustness of the results. IMPACT 2002+ is once again used to assess the LCA impacts of the six scenarios. The results were compared to the base case LCA results to highlight the extent to which each scenario (and hence each material configuration) can change environmental performance over the base case scenario.

<Heading level 2> 2.3 Critical Assessment of LEED v4

As mentioned previously, the LEED v4 rating system for Building Design and Construction, New Construction (BD+C - NC) was selected for this study. The critical assessment of LEED v4 focused on the material consideration in its rating system. The aim of the assessment was to highlight how materials selection (from S1 to S6) affects building's LCA impacts (S0) and LEED v4 score.

To do so, two evaluations were proposed. The first compared the material contribution to the building LCA impacts with the point distribution between material credits (MR category) and energy consumption credits (EA category). More information related to MR LEED v4 optional credits is provided in Section SI.3. The point distribution was simply obtained by dividing the total amount of points available in the MR category (13 points; 28%) by the total number of points (46 points; 100%) attributed to the MR (13 points) and EA (33 points) categories. This comparison was repeated for the different certification levels. As explained in Section 1, LEED certification can be achieved under four different levels. The minimum point threshold is 40 points, which requires achieving the certified level; and the maximum point threshold is 110 points, which requires achieving all available points in LEED v4, even if this is very difficult in practice. These values were calculated by dividing the total number of points attributed to the MR category, 13 points, by these thresholds. The resulting percentages ranged between 12 and 33%. Keeping in mind that it is very difficult to capture, the effect of implementing the requirements related to the material optional credits on the building LCA impacts was not evaluated, and was considered outside the scope of the study.

The second comparison refers to the requirements of the “Option 4 in LEED v4: Whole building life cycle assessment” of “Building life cycle impact reduction” optional credit in the LEED v4 MR category. According to Option 4 requirements, the building (i.e. six scenarios in our case) should be compared to the baseline building (i.e the base case S0) with respect to environmental impacts. The comparison should demonstrate a decrease by more than 10% in at least three of six specified impact categories listed in the right column of Table 2, and no impact categories must increase by more than 5% (USGBC 2014a). In addition to listing the specific impact categories to be used for the assessment, LEED v4 allows the user to select an LCIA method as long as the specific impact categories are included. As shown in Table 2, IMPACT 2002+ is one of the LCIA methods that fulfill the requirement. More technical details about the Option 4 requirements are provided in Section SI.3. For this second comparison, we extended the analysis further by also including the IMPACT 2002+ impact categories that are not listed in the LEED v4 option 4 requirements. Finally, a sensitivity analysis was also performed with a second LCIA method, TRACI 2.1, presented in Section 2.2, to assess the robustness of this second comparison.

Table 2. Comparison of IMPACT 2002+ midpoint categories with LEED v4 option 4 categories requirement (Jolliet et al. 2010; USGBC 2014b)

IMPACT 2002+	LEED v4 Option 4
Carcinogens	
Non-carcinogens	
Respiratory inorganics	
Ionizing radiation	
Ozone layer depletion	Depletion of the stratospheric ozone layer
Respiratory organics	Formation of tropospheric ozone
Aquatic ecotoxicity	
Terrestrial ecotoxicity	
Terrestrial acidification/nitrification	Acidification of land and water sources*
Aquatic acidification	Acidification of land and water sources*
Land occupation	
Aquatic eutrophication	Eutrophication
Global warming	Global warming potential (greenhouse gases)
Non-renewable energy	Depletion of non-renewable energy resources
Mineral extraction	

* In IMPACT 2002+ method, the Terrestrial acidification and the Aquatic acidification are split into two distinct impact categories, unlike LEED v4 requirements.; GW - reference abbreviation for global warming adopted from IMPACT 2002+

<Heading level 1> 3. Results and Discussion

<Heading level 2> 3.1 Life cycle impacts - Base Case Scenario

The LCA results for the base case scenario are first presented in Figure 4, which shows the contribution of the different building life cycle stages. To facilitate the presentation of the results, the base case life cycle impacts are divided into the four stages of :

- *Construction*. This stage includes the impacts from supplying and pre-occupancy stages as well as all transportation to the building construction site.
- *Refurbishment*. This stage includes the impacts from supplying, refurbishment and all transportation to the building site.
- *Energy consumption*. This stage includes the impacts from electricity consumption of the building along its life span (50 years).
- *End of life*. Following the cut-off approach explained in Section 2.1, this stage includes the impacts as a result of post occupancy, waste management as well as all transportation from the construction site to the waste management site. The impacts of waste generated by the construction and refurbishment stages is also included in this stage.

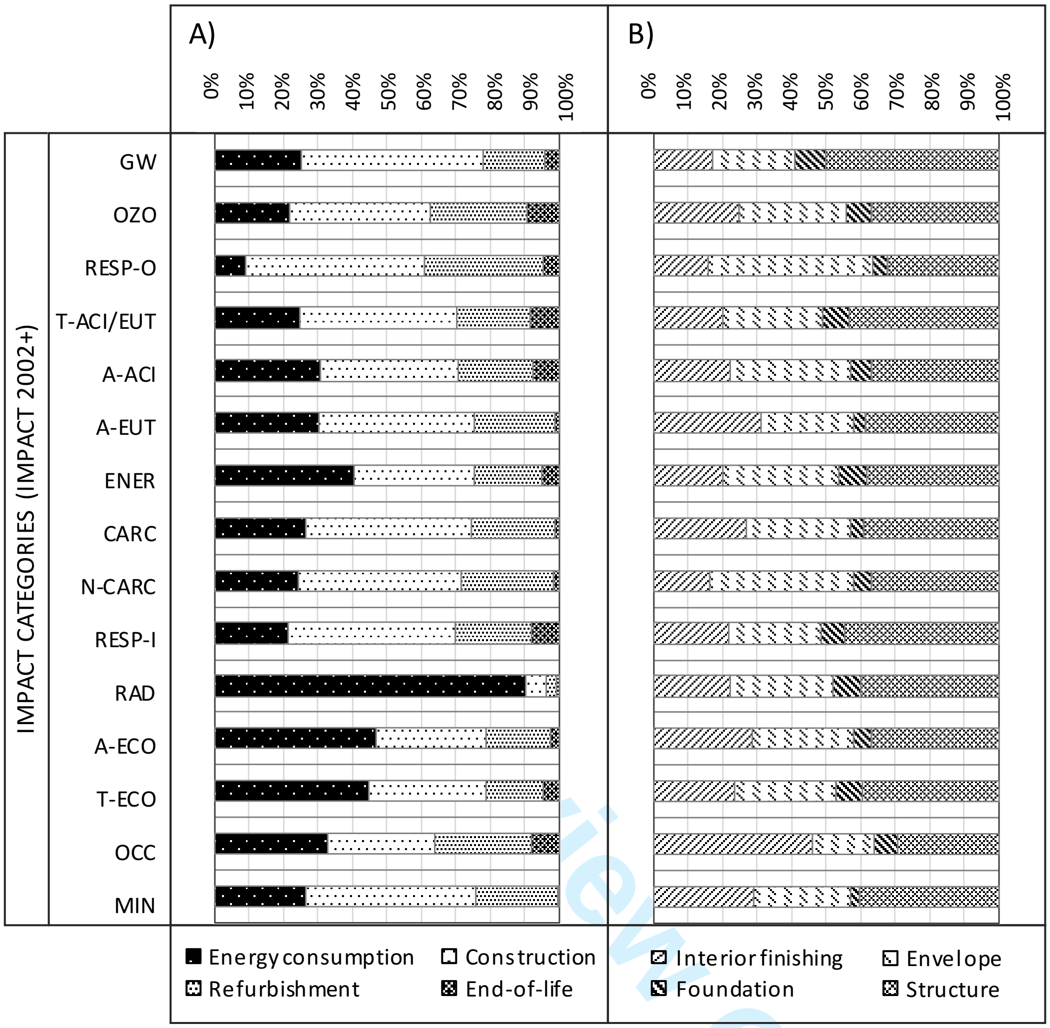

Figure 4. Contribution analysis of the office building life cycle environmental impacts using the IMPACT 2002+ method. Part (A) refers to the contributions of the base case scenario life cycle stages and part (B) refers to the contributions of materials excluding the use stage. Midpoint categories are: Global warming (GW), Ozone layer depletion (OZO), Respiratory organics (RESP-O), Terrestrial acidification and nitrification (T-ACI/EUT), Aquatic acidification (A-ACI), Aquatic eutrophication (A-EUT), Non-renewable energy (ENER), Carcinogens (CARC), Non-carcinogens (N-CARC), Respiratory inorganics (RESP-I), Ionizing radiation (RAD), Aquatic ecotoxicity (A-ECO), Terrestrial ecotoxicity (T-ECO), Land occupation (OCC) and Mineral extraction (MIN).
*** GW - reference abbreviation for global warming adopted from IMPACT 2002+**

As shown in Figure 4 (part A), in a low impact energy mix context, such as the one prevailing in the province of Quebec, materials dominate the office building LCA impacts (> 50%) for all the categories except Ionizing radiation. The highest contribution of the energy consumption stage (90%) was mainly due to the nuclear energy based electricity imported from Ontario. For the remaining impact categories, the highest contributions of materials were mainly explained by the low environmental impacts of Quebec's energy mix. These percentages are also summarized in Figure 5 (part A), while the absolute values per functional unit are presented in an Excel file in SI. Similar results have recently been reported from studies where the energy mix environmental impacts are very low (Chau et al. 2015; Al-Ghamdi and Bilec 2015; Mosteiro-Romero et al. 2014).

The largest impact came from the construction and refurbishment stages, with a bigger share accruing to the construction stage. The end-of-life stage caused the lowest environmental impact (0% to 9%), even when all materials were considered to be landfilled. A more detailed contribution analysis focusing on the end-of-life stage was performed to assess the robustness of the results (see SI Excel file). From a material contribution perspective, excluding use stage energy consumption (Figure 4 (part B)), the main hotspots were driven by 1) Envelope, 2) Structure, and 3) Interior finishing. Similar results were noticed in other studies (Pajchrowski et al. 2014; Chau et al. 2007; Ortiz et al. 2010). Finally, the sensitivity analysis involving a $\pm 20\%$ variation in energy consumption (see Figure SI.6.2 and Table SI.6.2) revealed that building materials impacts remained the highest, suggesting the robustness of previous observations. Moreover, the results obtained from the second sensitivity analysis, performed with a different LCIA method, TRACI 2.1, confirmed the previous results (Figure SI.6.1.1). More details on the highest environmental impact contributors are presented in Section SI.4.

<Heading level 2> 3.2 Alternative Scenario Evaluations

The results presented in Figure 5 (part B) help to understand the magnitude of the environmental impact variation for each scenario as a result of changing different materials from the base case scenario. A summary of the building LCA impact variations is also presented in Table 3.

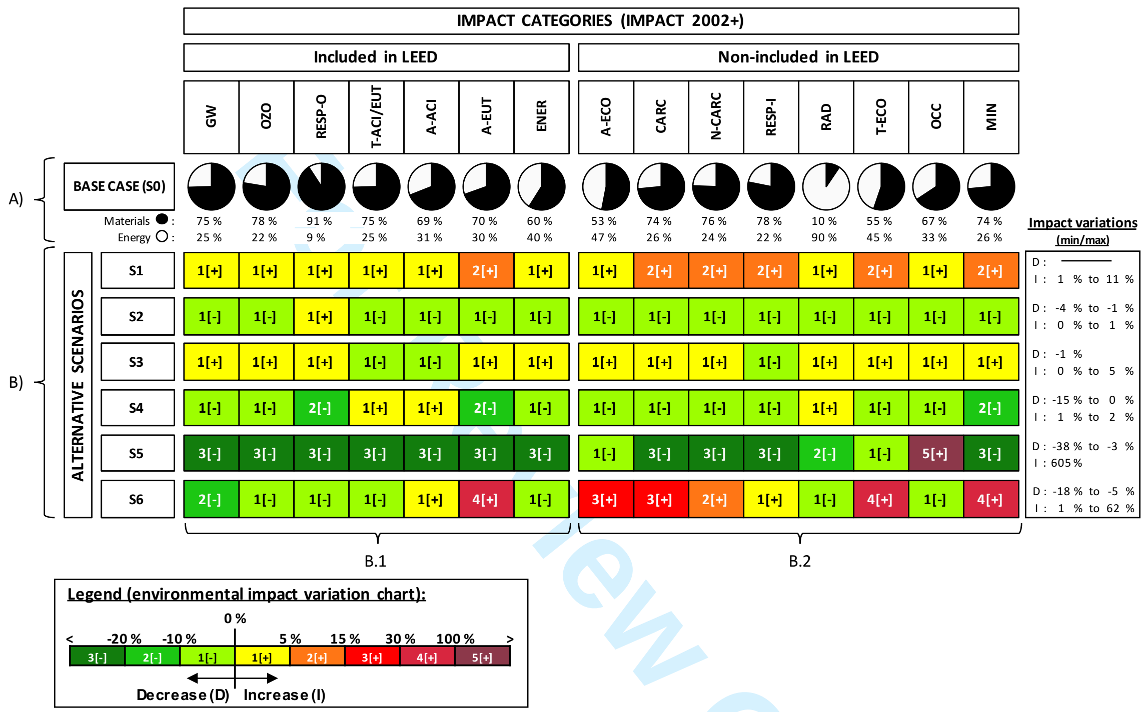

Figure 5. Material effects on office building LCA impacts using the IMPACT 2002+ midpoint categories. A) The S0 row displays the contributions of energy consumption (in white) and materials (in black) in the building LCA impacts. B) Variations due to material changes from the base case scenario for the six scenarios. IMPACT 2002+ impact categories are divided into two parts: included (B.1) and not included (B.2) in LEED v4. The thresholds to obtain "Option 4. Building life cycle impact reduction" optional credit are defined by the first four quotations in the legend, an increase (< 5%) is identified by the "1[+]" quotation and the minimum decrease (< -10%), by the "2[-]" quotation.

Figure 5 shows that using only an aluminum siding (S1) as the building envelope raises the environmental impact by up to 11% in all categories compared to the base case scenario, while using a fiber cement panel siding (S2) slightly reduces environmental impacts. The difference between the fiber cement panel siding scenario (S2) and the fiber cement clapboard siding scenario (S3) is mainly captured by the material quantities involved, because both are built approximately with the same material types. However, S3 has higher impacts in all categories than S2 as it needs more material to cover the same area. For the curtain walls scenario (S4), environmental impacts in most categories decreased by up to 15%, but there were also slight environmental impact increases in a few categories. For these four scenarios, a large part of the environmental impact variations was due to the use of different amounts of metal products (steel and aluminum). Using less of these materials could reduce the building LCA impacts in most cases, and hence meet Option 4 requirements.

Replacing the concrete structure with a wood structure (S5) appeared to decrease all environmental impacts (-38% to -3%), except for the land occupation impact category (see Figure 5 (part B)). The environmental impact from this category increased by 605%. The contribution of wood materials to the land occupation impact category has also been shown by few other studies (Dean et al. 2006; Guardigli et al. 2011). This high increase is due to the state of the art in assessing the use of high quantities of wood products, which contribute to higher pressure on land use. However, these estimated impacts are based on a historic case study from Switzerland (Alain 2015) and do not take into account more recent forest management in Canada and hence a better regionalized characterization factors. Finally, replacing a concrete structure or a steel structure with concrete slabs (S6) seemed to considerably increase environmental impacts for many categories. The high increases were mainly due to the higher volumes of steel products required, as shown by some other studies (Xing et al. 2008; Ortiz et al. 2010).

As mentioned in Section 2.2, the same energy consumption as the base case scenario was assumed in all scenarios. A sensitivity analysis based on a ± 20% variation in energy consumption showed that conclusions discussed earlier remained the same in all scenarios (see Table SI.6.2). The second sensitivity analysis conducted with another LCIA impact method, TRACI 2.1 (see Figure SI.6.1.2) showed that the above-mentioned observations remained fairly similar regardless of the impact method. Finally, more details and a disaggregated view of Figure 5 (part B) are provided in Section SI.5.

<Heading level 2> 3.3 Critical Assessment of LEED v4

As indicated in Section 2.3, two evaluations were proposed for the critical assessment of LEED v4. The first compared the material contribution to the building LCA impacts (presented in Section 3.1) with the point distribution between material credits (MR category) and energy consumption credits (EA category). The point distribution was simply obtained by dividing the total number of points available in the MR category (13 points; 28%) by the total number of points (46 points; 100%) granted for both the MR (13 points) and EA (33 points) categories. As shown in Table 3, this comparison was repeated for the different certification levels. The results, presented in Table 3, show that the contribution of the MR category (28%) was lower than that of the EA category. This contradicted previous results, where, in the context of a low impact energy consumption mix, the share of materials LCA impacts was above 50% (Figure 5 part A). Moreover, when the potential of material selection to affect the building LCA impacts (see impact variations box in Figure 5) was compared to the variation in points obtained from the LEED v4 MR category (12 to 33%), some important differences were noticed. This was mainly captured by Scenarios S5 and S6.

The second comparison refered to the requirements of the "Option 4 in LEED v4: Whole building life cycle assessment" of "Building life cycle impact reduction" optional credit in the LEED v4 MR category. The Option 4 requirements of LEED v4 are integrated in the environmental impact variations presented in Figure 5. As shown in Part B.1, none of the 6 scenarios in the study showed a significant environmental impact improvement for the non-LEED v4 categories over the LEED categories. This suggest that the selected LEED categories are necessary to avoid discrimination of good scenarios. The curtain wall scenario (S4) showed good potential for meeting the requirements of Option 4. However, only one impact category was missing for checking the minimum 10% reduction (2[-] quotation) in at least three impact categories. This was also coherent when considering the impact categories not included in LEED v4. Similar observations applied to the fiber cement panel siding scenario (S2), which showed good potential too. In Scenario S6, environmental impacts increased by large percentages, with a third of the impact categories showing increases of more than 15%. Additionally, only Scenario S5 (wood structure) met the Option 4 requirements, even if it is not totally the case from an LCA perspective. This finding suggests a continuous revision of LEED categories following the certification of multiple scenarios in order to avoid burdens shifting when scenarios meet the Option 4 requirements. It is also worth noting that the selection of the base case scenario can have a significant influence on the results, which also suggests that further investigation is required to delineate the boundaries defining the base case scenario.

Table 3. Comparison between building material LCA contributions and MR LEED v4 contribution. Impacts and points variations were also evaluated for all scenarios.

Scenario	Contribution		Variations		
	LCA impacts*	LEED v4	LCA impacts: Energy cons. excluded	LCA impacts: Energy cons. included	LEED v4
S0	53 to 91%	28% (i.e. 13 pts / 46 pts)	n/a	n/a	13 to 33% (i.e. 13 pts / (40 and 110 pts)
S1	54 to 91%		1 to 11%	0 to 8%	
S2	52 to 91%		-4 to 1%	-3 to 1%	
S3	53 to 91%		-1 to 5%	-1 to 3%	
S4	53 to 90%		-15 to 2%	-11 to 1%	
S5	53 to 94%		-38 to 605%	-29 to 406%	
S6	58 to 91%		-18 to 62%	-14 to 46%	

*Excluding Ionizing radiation category, for which material contribution varies by 8 to 10%

<Heading level 1> 4. Conclusions

This paper aimed: 1) To identify environmental hotspots in an office building, using the LCA methodology in the context of a low environmental impact energy consumption mix; 2) To assess the extent to which the material selection (i.e. different material scenarios) could change environmental impacts; and 3) To compare material contributions to the office building LCA impacts with the MR points attributed by the LEED v4 rating system.

The results indicated that materials could greatly contribute to office building LCA impacts, in the context of a low environmental impact energy consumption mix, in comparison with the building use phase. The LCA based material contributions (>50%) contradicted those of the MR category (28% or 13 points over 33). The performed sensitivity analysis, varying the consumed energy during the use phase, and the impact assessment method, suggested the robustness of the LCA observations.

The six scenarios defined based on multiple material configurations (i.e. four envelope scenarios and two structural scenarios) also showed that, material selection could significantly affect a building's LCA impacts. These variations, exceeding those of LEED v4 perspective, suggest the necessity of further investigation in LEED v4, to better fit the low environmental impact energy consumption mix buildings.

The second critical assessment referred to the requirements of the "Option 4 in LEED v4: Whole building life cycle assessment" of "Building life cycle impact reduction" (optional credit) in the MR category. The LCA results showed that none of the 6 scenarios presented a significant environmental impact improvement in the non-LEED v4 categories over the LEED categories. This may suggest that the selected LEEDv4 categories are necessary to avoid discrimination of good scenarios. Moreover, only one scenario satisfying Option 4 requirements was not completely improving the environmental profile of the base case from an LCA perspective. Hence, further investigations are recommended for building types other than an office building, in addition to performing different uncertainty analysis, to assess the extent to which Option 4 requirements systematically improve building LCA impacts.

Finally, in this paper, the critical assessment focused only on materials and their associated LEEDv4 points. It would be worthwhile extending research to energy consumption and other building components integrated in LEED v4. In addition to that, this paper was based on attributional LCA results and did not consider indirect environmental impacts. One may consider, for instance, that by giving more points to the EA category, less energy would be consumed and then less non-renewable energy plants would need to be built in the future. Such avoided (indirect) environmental burdens were not considered in this study. Indirect environmental burdens assessment could be valuable in the context of certification and long-term decision-making when dealing with long life span (at least 50 years in the case of buildings). As they stand, the results presented in this work are useful for a low environmental impact energy mix, such as the one prevailing in the province of Quebec. Despite some discrepancies between building rating systems and LCA, which need to be addressed by all stakeholders in the near future, this paper provides a good starting point in reducing building environmental impacts.

<Heading level 1> Acknowledgements.

The authors thank the anonymous dedicated reviewers for their very helpful and constructive criticism and their support of the approach taken. The authors are also grateful to the Natural Sciences and Engineering Research Council of Canada for its financial support through its ICP and CRD programs (MSc CRD 14) as well as the industrial partners of the NSERC industrial chair on eco-responsible wood construction (CIRCERB). The authors also acknowledge the industrial partners of CIRCERB for their contributions to providing primary data and consequently enhancing the LCA modelling.

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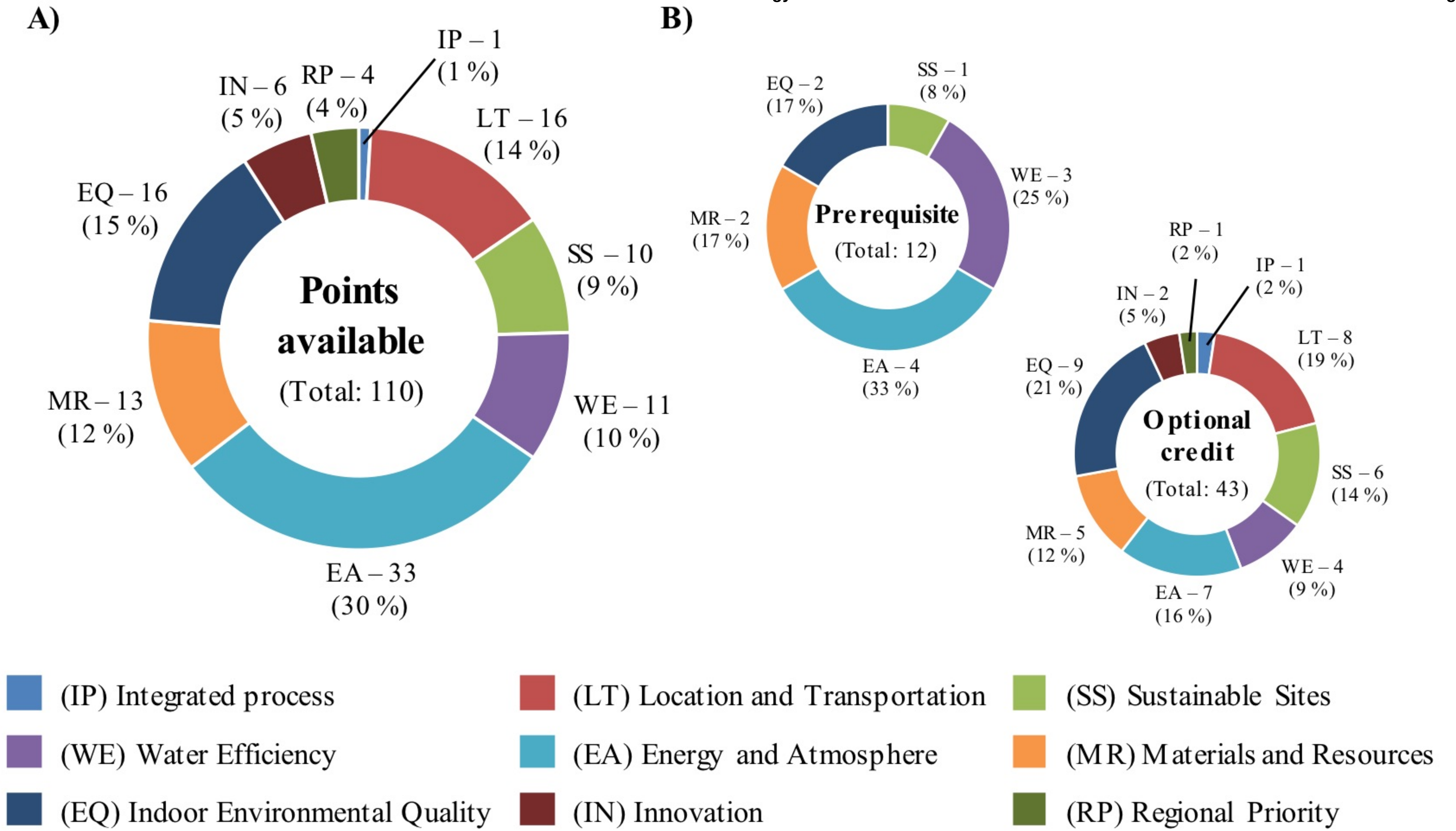

Figure 1. LEED v4 BD+C: New Construction rating system. A) Points allocated to each category and their contribution to the total available points (110); B) Optional and prerequisite credits corresponding to each LEED v4 category, and their respective contributions.

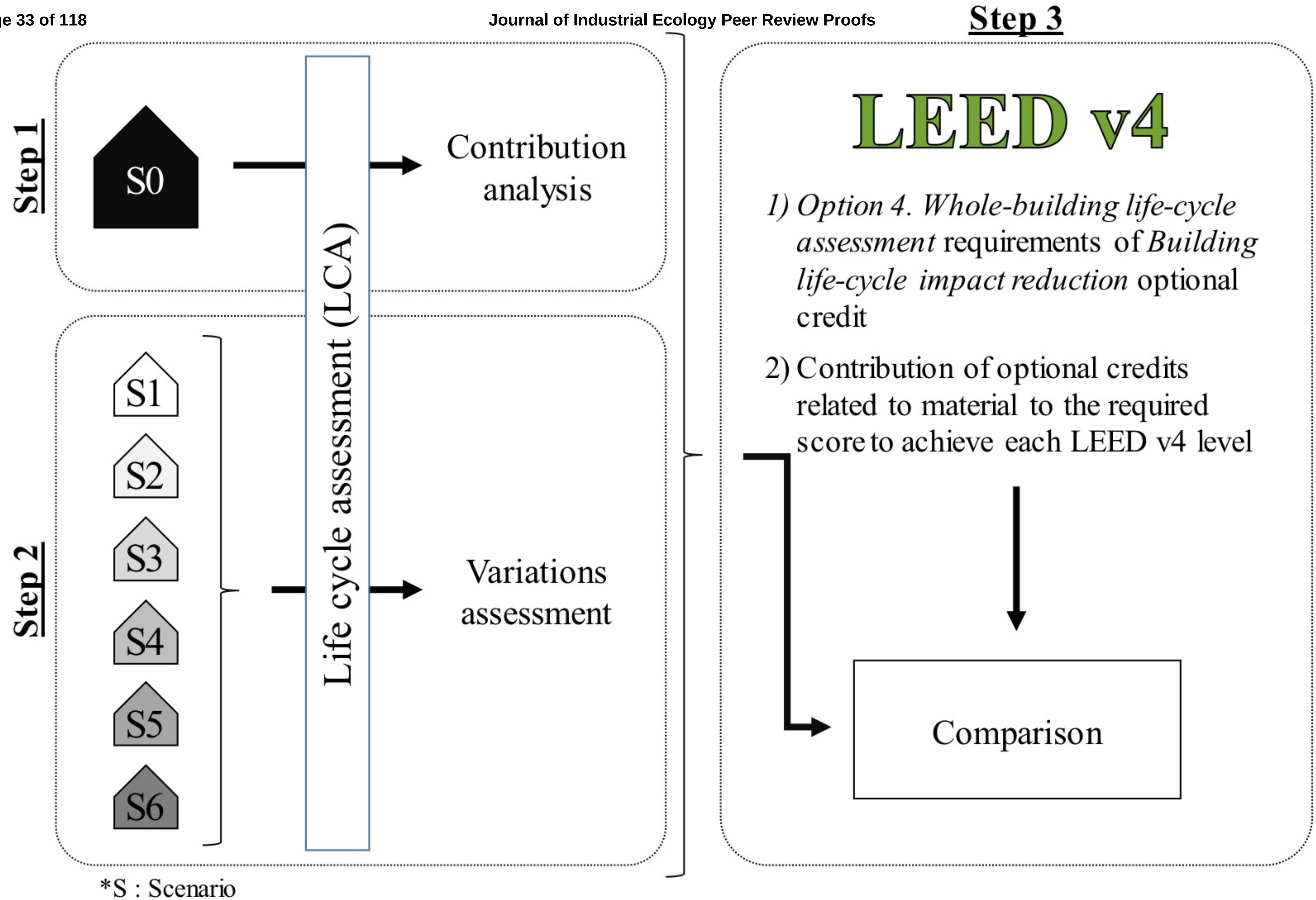

Figure 2. Summary of the study's methodology

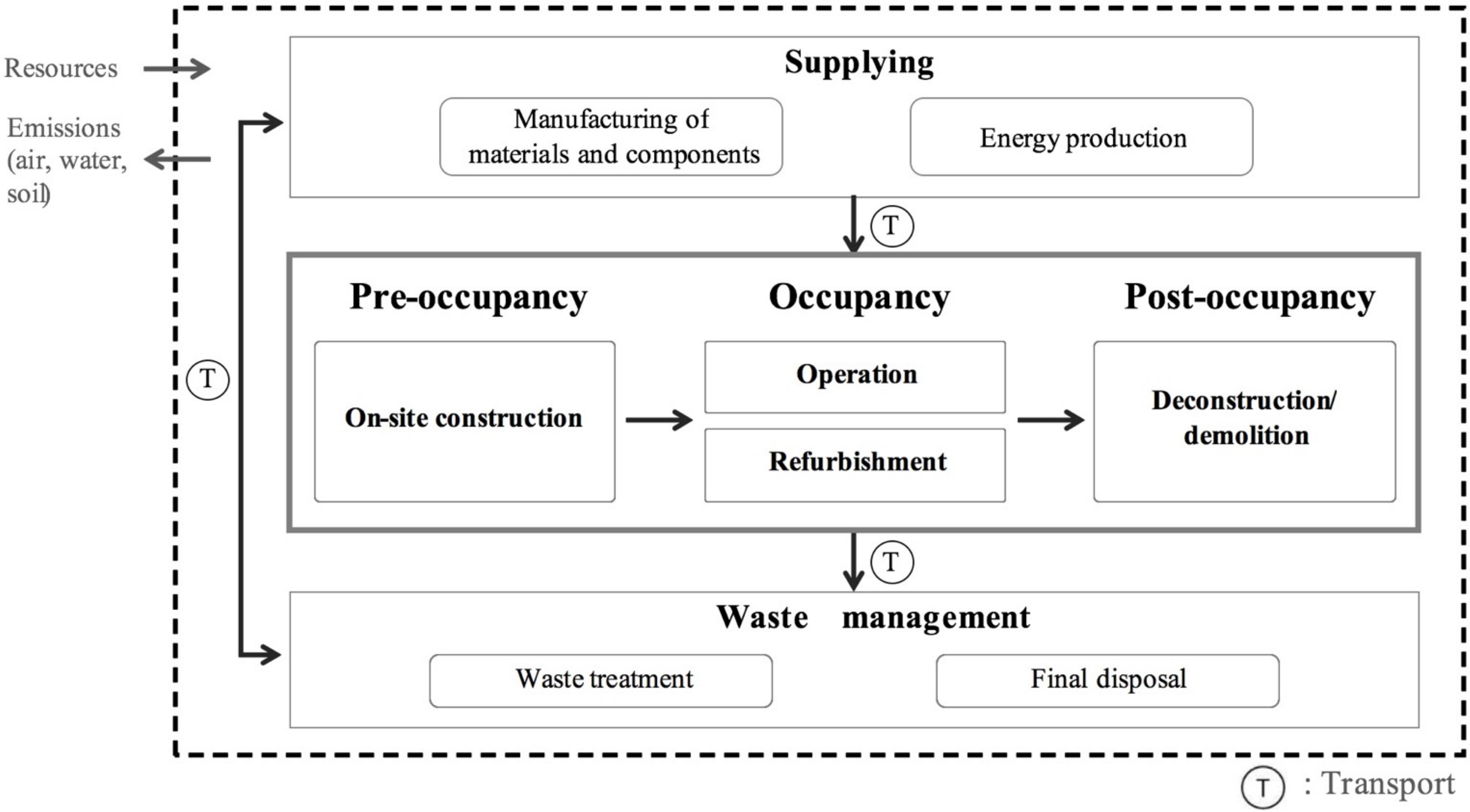

Figure 3. System boundary of the base case office building

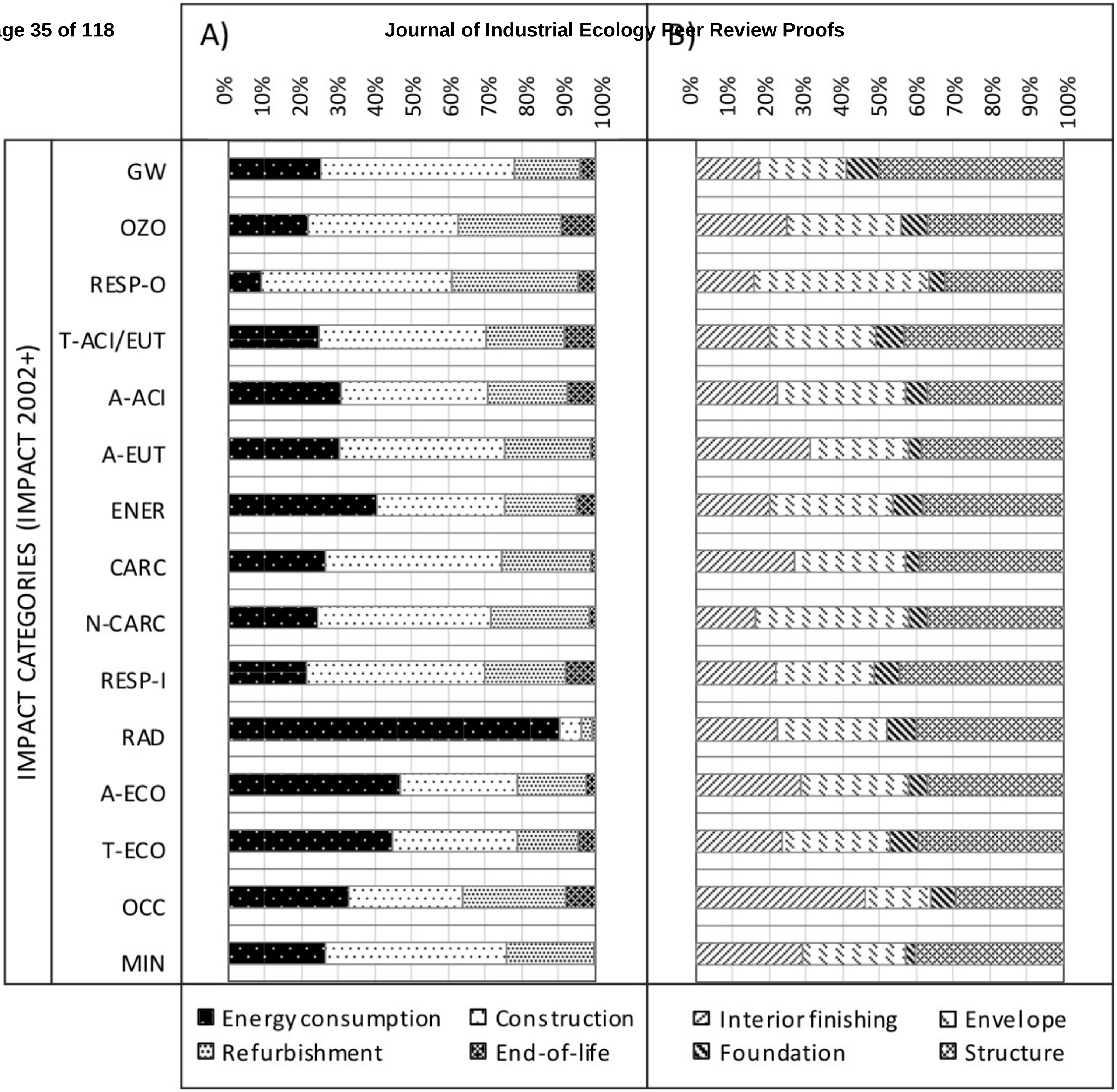

Figure 4. Contribution analysis of the office building life cycle environmental impacts using the IMPACT 2002+ method. Part (A) refers to the contributions of the base case scenario life cycle stages and part (B) refers to the contributions of materials excluding the use stage. Midpoint categories are: Global warming (GW), Ozone layer depletion (OZO), Respiratory organics (RESP-O), Terrestrial acidification and nitrification (T-ACI/EUT), Aquatic acidification (A-ACI), Aquatic eutrophication (A-EUT), Non-renewable energy (ENER), Carcinogens (CARC), Non-carcinogens (N-CARC), Respiratory inorganics (RESP-I), Ionizing radiation (RAD), Aquatic ecotoxicity (A-ECO), Terrestrial ecotoxicity (T-ECO), Land occupation (OCC) and Mineral extraction (MIN).

*** GW - reference abbreviation for global warming adopted from IMPACT 2002+**

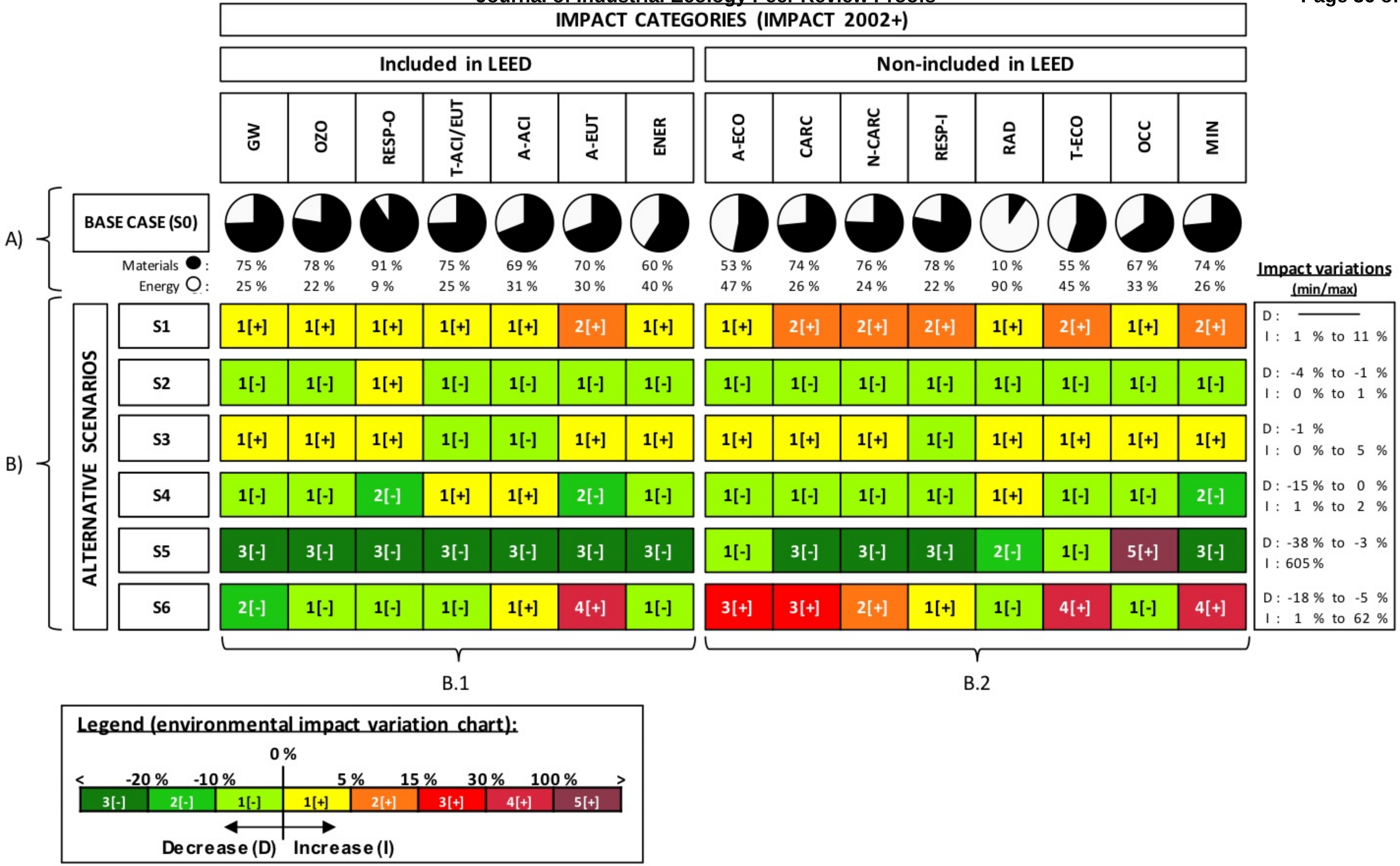

Figure 5. Material effects on office building LCA impacts using the IMPACT 2002+ midpoint categories. A) The S0 row displays the contributions of energy consumption (in white) and materials (in black) in the building LCA impacts. B) Variations due to material changes from the base case scenario for the six scenarios. IMPACT 2002+ impact categories are divided into two parts: included (B.1) and not included (B.2) in LEED v4. The thresholds to obtain "Option 4. Building life cycle impact reduction" optional credit are defined by the first four quotations in the legend, an increase (< 5%) is identified by the "1[+]" quotation and the minimum decrease (< -10%), by the "2[-]" quotation.

Table 1. Comparison between the base case scenario (S0) and the 6 hypothetical scenarios (S1-S6).

Scenarios	Base case scenario (S0) Initial material configuration	Material modifications
S1	Exterior walls (Envelope)*: • Aluminum siding type (40%) • Fiber cement panel siding type (9%) • Fiber cement clapboard siding type (28%) • Curtain wall type (23%)	Aluminum siding type (100%)
S2		Fiber cement panel siding type (100%)
S3		Fiber cement clapboard siding type (100%)
S4		Curtain wall type (100%)
S5	Structure type: • Reinforced concrete	Wood structure
S6		Steel structure with reinforced concrete slab

*Percentage refers to the total building exterior wall surface area.

Should appear as below:

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S3		Fiber cement clapboard siding type (100%)
S4		Curtain wall type (100%)
S5	Structure type: • Reinforced concrete	Wood structure
S6		Steel structure with reinforced concrete slab

*Percentage refers to the total building exterior wall surface area.

Table 2. Comparison of IMPACT 2002+ midpoint categories with LEED v4 option 4 categories requirement (Jolliet et al. 2010; USGBC 2014b)

IMPACT 2002+	LEED v4 Option 4
Carcinogens	
Non-carcinogens	
Respiratory inorganics	
Ionizing radiation	
Ozone layer depletion	Depletion of the stratospheric ozone layer
Respiratory organics	Formation of tropospheric ozone
Aquatic ecotoxicity	
Terrestrial ecotoxicity	
Terrestrial acidification/nitrification	Acidification of land and water sources*
Aquatic acidification	Acidification of land and water sources*
Land occupation	
Aquatic eutrophication	Eutrophication
Global warming	Global warming potential (greenhouse gases)
Non-renewable energy	Depletion of non-renewable energy resources
Mineral extraction	

* In IMPACT 2002+ method, the Terrestrial acidification and the Aquatic acidification are split into two distinct impact categories, unlike LEED v4 requirements.; GW - reference abbreviation for global warming adopted from IMPACT 2002+

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Aquatic acidification	Acidification of land and water sources*
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* In IMPACT 2002+ method, the Terrestrial acidification and the Aquatic acidification are split into two distinct impact categories, unlike LEED v4 requirements.; GW - reference abbreviation for global warming adopted from IMPACT 2002+

Table 3. Comparison between building material LCA contributions and MR LEED v4 contribution. Impacts and points variations were also evaluated for all scenarios.

Scenario	Contribution		Variations		
	LCA impacts*	LEED v4	LCA impacts		LEED v4
			Energy cons. excluded	Energy cons. included	
S0	53 to 91%		n/a	n/a	
S1	54 to 91%		1 to 11%	0 to 8%	
S2	52 to 91%		-4 to 1%	-3 to 1%	
S3	53 to 91%	28% (i.e. 13 pts / 46 pts)	-1 to 5%	-1 to 3%	13 to 33% (i.e. 13 pts / (40 and 110 pts)
S4	53 to 90%		-15 to 2%	-11 to 1%	
S5	53 to 94%		-38 to 605%	-29 to 406%	
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LEED v4: Where Are We Now? Critical Assessment Through the LCA of an Office Building Using a Low Impact Energy Consumption Mix. (Supplementary information)

SI.1 Data listing of the Base case (S0) and the assessed scenarios

Table SI.1.1. presents the bill of materials for each building scenarios, considering all material replacements (Repl.) during the refurbishment stage, plus the generated waste from the construction activities. The generated waste is estimated by using the construction waste factors (CWF) suggested by Athena software[1].

Table SI.1.1 Amount of materials used for the base case scenario (S0) and the assessed scenarios (S1 to S6)

			AMOUNT OF MATERIALS (kg)							MULTIPLIER	
	Material groups	Materials	S0	S1	S2	S3	S4	S5	S6	Repl.	CWF
Interior finishing	Ceiling	Fiber tiles	1.20E+05	1.20E+05	1.20E+05	1.20E+05	1.20E+05	1.20E+05	1.20E+05	1	1.10
		Paint	4.28E+03	4.28E+03	4.28E+03	4.28E+03	4.28E+03	4.28E+03	4.28E+03	4	1.02
		Steel	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	1	1.01
	Floor	Concrete finishes	1.79E+04	1.79E+04	1.79E+04	1.79E+04	1.79E+04	1.79E+04	1.79E+04	9	1.02
	Interior wall	Doors	1.44E+04	1.44E+04	1.44E+04	1.44E+04	1.44E+04	1.44E+04	1.44E+04	2	1.00
		Glass	5.80E+04	5.80E+04	5.80E+04	5.80E+04	5.80E+04	5.80E+04	5.80E+04	2	1.00
		Gypsum	1.05E+05	1.05E+05	1.05E+05	1.05E+05	1.05E+05	1.05E+05	1.05E+05	2	1.10
		Paint	6.20E+03	6.20E+03	6.20E+03	6.20E+03	6.20E+03	6.20E+03	6.20E+03	4	1.02
		Steel	6.70E+04	6.70E+04	6.70E+04	6.70E+04	6.70E+04	6.70E+04	6.70E+04	2	1.02
		Various	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	2	1.10
Envelope	Exterior wall	Aluminium	1.45E+04	4.09E+04	0.00E+00	0.00E+00	0.00E+00	1.45E+04	1.45E+04	1	1.01
		Doors	2.19E+03	2.19E+03	2.19E+03	2.19E+03	2.19E+03	2.19E+03	2.19E+03	2	1.00
		Fibercement	5.45E+04	0.00E+00	1.21E+05	1.61E+05	0.00E+00	5.45E+04	5.45E+04	1	1.10
		Insulation	4.48E+04	5.54E+04	5.54E+04	5.54E+04	8.85E+03	4.48E+04	4.48E+04	1	1.05
		Plastic membrane	3.71E+04	4.60E+04	4.60E+04	4.60E+04	7.34E+03	3.71E+04	3.71E+04	1	1.00
		Steel	8.14E+04	1.19E+05	7.77E+04	1.02E+05	1.75E+04	8.14E+04	8.14E+04	1	1.02
		Glazing	1.36E+05	6.77E+04	6.77E+04	6.77E+04	3.69E+05	1.36E+05	1.36E+05	2	1.00
	Roof	Bitumen product	3.02E+04	3.02E+04	3.02E+04	3.02E+04	3.02E+04	3.02E+04	3.02E+04	2	1.00
		Insulation	5.08E+04	5.08E+04	5.08E+04	5.08E+04	5.08E+04	5.08E+04	5.08E+04	2	1.05
		Membranes	8.26E+04	8.26E+04	8.26E+04	8.26E+04	8.26E+04	8.26E+04	8.26E+04	2	1.03
		Various	1.17E+04	1.17E+04	1.17E+04	1.17E+04	1.17E+04	1.17E+04	1.17E+04	2	1.01
Foundation	Excavation / Backfilling	Aggregates	3.56E+06	3.56E+06	3.56E+06	3.56E+06	3.56E+06	3.56E+06	3.56E+06	0	1.00
	Piles	Steel	2.15E+03	2.15E+03	2.15E+03	2.15E+03	2.15E+03	2.15E+03	2.15E+03	0	1.01
	Reinforced concrete	Concrete	1.56E+06	1.56E+06	1.56E+06	1.56E+06	1.56E+06	1.56E+06	1.56E+06	0	1.05
		Reinforcing steel	1.29E+04	1.29E+04	1.29E+04	1.29E+04	1.29E+04	1.29E+04	1.29E+04	0	1.01
	Various	Insulation	6.49E+03	6.49E+03	6.49E+03	6.49E+03	6.49E+03	6.49E+03	6.49E+03	0	1.05
		Plastic membrane	6.92E+02	6.92E+02	6.92E+02	6.92E+02	6.92E+02	6.92E+02	6.92E+02	0	1.02
		Various	6.94E+03	6.94E+03	6.94E+03	6.94E+03	6.94E+03	6.94E+03	6.94E+03	0	1.10
Structure	Primary	Concrete	7.47E+06	7.47E+06	7.47E+06	7.47E+06	7.47E+06	0.00E+00	1.92E+06	0	1.05
		Reinforcing steel	1.36E+05	1.36E+05	1.36E+05	1.36E+05	1.36E+05	0.00E+00	7.53E+03	0	1.01
		Steel	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.15E+03	3.85E+05	0	1.02
		Wood	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.46E+05	0.00E+00	0	1.01
	Secondary	Steel	3.61E+03	3.61E+03	3.61E+03	3.61E+03	3.61E+03	3.61E+03	3.61E+03	0	1.01

[1] Athena Sustainable Materials Institute. IE for Buildings. http://www.athenasmi.org/our-software-data/impact-estimator/. Accessed April 20, 2016.

Table SI.1.2. presents the considered distances to transport materials from manufacture site to the building site (corresponding to the construction and refurbishment stages), and from the building site to waste management site (corresponding to the end of life stage).

Table SI.1.2. Material transportations used for the base case scenario (S0) and all scenarios (S1 to S6)

			TRANSPORTATION (tkm)							DISTANCE (km)	
	Material groups	Materials	S0	S1	S2	S3	S4	S5	S6	Manufac-ture	EoL
Interior finishing	Ceiling	Fiber tiles	1.26E+05	1.26E+05	1.26E+05	1.26E+05	1.26E+05	1.26E+05	1.26E+05	1000	50
		Paint	4.49E+03	4.49E+03	4.49E+03	4.49E+03	4.49E+03	4.49E+03	4.49E+03	1000	50
		Steel	3.92E+04	3.92E+04	3.92E+04	3.92E+04	3.92E+04	3.92E+04	3.92E+04	1000	50
	Floor	Concrete finishes	1.88E+04	1.88E+04	1.88E+04	1.88E+04	1.88E+04	1.88E+04	1.88E+04	1000	50
	Interior wall	Doors	1.51E+04	1.51E+04	1.51E+04	1.51E+04	1.51E+04	1.51E+04	1.51E+04	1000	50
		Glass	6.09E+04	6.09E+04	6.09E+04	6.09E+04	6.09E+04	6.09E+04	6.09E+04	1000	50
		Gypsum	1.10E+05	1.10E+05	1.10E+05	1.10E+05	1.10E+05	1.10E+05	1.10E+05	1000	50
		Paint	6.51E+03	6.51E+03	6.51E+03	6.51E+03	6.51E+03	6.51E+03	6.51E+03	1000	50
		Steel	7.03E+04	7.03E+04	7.03E+04	7.03E+04	7.03E+04	7.03E+04	7.03E+04	1000	50
		Various	7.91E+03	7.91E+03	7.91E+03	7.91E+03	7.91E+03	7.91E+03	7.91E+03	1000	50
Envelope	Exterior wall	Aluminium	1.53E+04	4.29E+04	0.00E+00	0.00E+00	0.00E+00	1.53E+04	1.53E+04	1000	50
		Doors	2.30E+03	2.30E+03	2.30E+03	2.30E+03	2.30E+03	2.30E+03	2.30E+03	1000	50
		Fibercement	5.72E+04	0.00E+00	1.27E+05	1.69E+05	0.00E+00	5.72E+04	5.72E+04	1000	50
		Insulation	4.70E+04	5.82E+04	5.82E+04	5.82E+04	9.29E+03	4.70E+04	4.70E+04	1000	50
		Plastic membrane	3.90E+04	4.83E+04	4.83E+04	4.83E+04	7.71E+03	3.90E+04	3.90E+04	1000	50
		Steel	8.54E+04	1.25E+05	8.16E+04	1.07E+05	1.84E+04	8.54E+04	8.54E+04	1000	50
		Glazing	1.43E+05	7.11E+04	7.11E+04	7.11E+04	3.88E+05	1.43E+05	1.43E+05	1000	50
	Roof	Bitumen product	3.17E+04	3.17E+04	3.17E+04	3.17E+04	3.17E+04	3.17E+04	3.17E+04	1000	50
		Insulation	5.33E+04	5.33E+04	5.33E+04	5.33E+04	5.33E+04	5.33E+04	5.33E+04	1000	50
		Membranes	8.67E+04	8.67E+04	8.67E+04	8.67E+04	8.67E+04	8.67E+04	8.67E+04	1000	50
		Various	1.23E+04	1.23E+04	1.23E+04	1.23E+04	1.23E+04	1.23E+04	1.23E+04	1000	50
Foundation	Excavation / Backfilling	Aggregates	1.78E+05	1.78E+05	1.78E+05	1.78E+05	1.78E+05	1.78E+05	1.78E+05	50	0
	Piles	Steel	2.26E+03	2.26E+03	2.26E+03	2.26E+03	2.26E+03	2.26E+03	2.26E+03	1000	50
	Reinforced concrete	Concrete	1.56E+05	1.56E+05	1.56E+05	1.56E+05	1.56E+05	1.56E+05	1.56E+05	50	50
		Reinforcing steel	1.35E+04	1.35E+04	1.35E+04	1.35E+04	1.35E+04	1.35E+04	1.35E+04	1000	50
	Various	Insulation	6.81E+03	6.81E+03	6.81E+03	6.81E+03	6.81E+03	6.81E+03	6.81E+03	1000	50
		Plastic membrane	7.26E+02	7.26E+02	7.26E+02	7.26E+02	7.26E+02	7.26E+02	7.26E+02	1000	50
		Various	7.28E+03	7.28E+03	7.28E+03	7.28E+03	7.28E+03	7.28E+03	7.28E+03	1000	50
Structure	Primary	Concrete	7.47E+05	7.47E+05	7.47E+05	7.47E+05	7.47E+05	0.00E+00	1.92E+05	50	50
		Reinforcing steel	1.43E+05	1.43E+05	1.43E+05	1.43E+05	1.43E+05	0.00E+00	7.90E+03	1000	50
		Steel	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.26E+03	4.04E+05	1000	50
		Wood	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.79E+05	0.00E+00	1000	50
	Secondary	Steel	3.79E+03	3.79E+03	3.79E+03	3.79E+03	3.79E+03	3.79E+03	3.79E+03	1000	50

SI.2 Amount estimation for S5 and S6

Table SI.2. Comparison between the amount of base case structure materials calculated from the plans and specifications and estimated by the Athena's software

	Plans and specifications	Athena's software
Concrete	2965 m³	3251 m³
Reinforced steel	329 tonnes	356 tonnes

SI.3 MR credit in LEED v4

Materials and Resources (MR) LEED category contains two (2) prerequisites and five (5) optional credits, for a total of 13 points. All these prerequisites and optional credits can be classified into three main areas:

- Waste management:
  - (Prerequisite) Storage and collection of recyclables
  - (Prerequisite) Construction and demolition waste management planning
  - (Credit – 2 points) Construction and demolition waste management
- Life cycle impact reduction:
  - (Credit – 5 points) Building life cycle impact reduction
- Building product disclosure and optimization (BPDO):
  - (Credit – 2 points) BPDO – Environmental product declarations
  - (Credit – 2 points) BPDO – Sourcing of raw materials
  - (Credit – 2 points) BPDO – Material ingredients

Within MR category, it should be noted that LCA is included: 1) in Option 4. Whole-building life cycle assessment, in Building life cycle impact reduction optional credit, worth three points, and 2) in BPDO – Environmental product declarations optional credit, worth two points. In this study , the critical evaluation of LEED v4 only concern the requirements of the Option 4 in Building life cycle impact reduction optional credit.

To meet Option 4 requirements in Building life cycle impact reduction optional credit, the LCA results of the building must be compared to a baseline building. Both buildings must be of comparable size, function, orientation, operating energy performance and service life. Only the environmental impacts associated with the structure, foundation, and envelope on the whole building life cycle were considered. Additional building elements, such as interior non-structural materials and finishes, can be included under the project team discretion. However, use stage energy consumption, electrical and mechanical equipment, plumbing, alarm systems, elevators, conveying systems, and parking lots (except parking structures) are excluded from the analysis. The same LCA software and datasets, which are compliant with ISO 14044, must be used. To achieve the three points granted to this Option 4, the environmental impacts of the compared building must decrease by more than 10 % in at least three of six specified impact categories listed in the right column of table 2 in the article, and no impact categories must increase by more than 5 %. Those three points cannot be partially achieved.

SI.4 Detailed LCA results of the base case scenario

These nine materials contribute between 48 % to 80 % of the building material LCA impacts.

Table SI.4. Five highest contributors to each midpoint category of IMPACT 2002+ method, excluding the environmental impact from use stage energy consumption

		IMPACT CATEGORIES (IMPACT 2002+)[2]														
Material[1]		GW	OZO	RESP-O	T-ACI/EUT	A-ACI	A-EUT	ENER	A-ECO	CARC	N-CARC	RESP-I	RAD	T-ECO	OCC	MIN
IN	Interior wall / Steel			4%		6%	16%	4%	10%	10%	8%	7%		12%		17%
	Interior wall / Doors														12%	
	Interior wall / Paint														12%	
EN	Exterior wall / Steel	5%	5%	5%	6%	7%	20%	5%	12%	12%	10%	9%	6%	15%		21%
	Exterior wall / Windows / Glazing	5%	5%		7%	8%	2%	6%	6%	4%		6%	7%	4%		2%
	Exterior wall / Plastic membrane			7%							4%					
FO	Reinforced concrete / Concrete	7%	4%		5%								5%		4%	
ST	Primary structural system / Concrete	32%	21%	9%	25%	18%	6%	20%	13%	6%	13%	20%	24%	17%	19%	2%
	Primary structural system / Reinforcing steel	18%	16%	23%	18%	18%	32%	19%	24%	32%	24%	25%	16%	22%	10%	37%
	TOTAL	66%	51%	48%	61%	57%	75%	53%	64%	64%	59%	66%	57%	69%	57%	80%

[1] Interior finishing (IN), Envelope (EN), Foundation (FO), and Structure (ST).
[2] IMPACT 2002+ midpoint categories : Global warming (GW), Ozone layer depletion (OZO) , Respiratory organics (RESP-O), Terrestrial acidification and nitrification (T-ACI/EUT), Aquatic acidification (A-ACI), Aquatic eutrophication (A-EUT), Non-renewable energy (ENER), Carcinogens (CARC), Non-carcinogens (N-CARC), Respiratory inorganics (RESP-I) , Ionizing radiation (RAD), Aquatic ecotoxicity (A-ECO), Terrestrial ecotoxicity (T-ECO), Land occupation (OCC) and Mineral extraction (MIN).

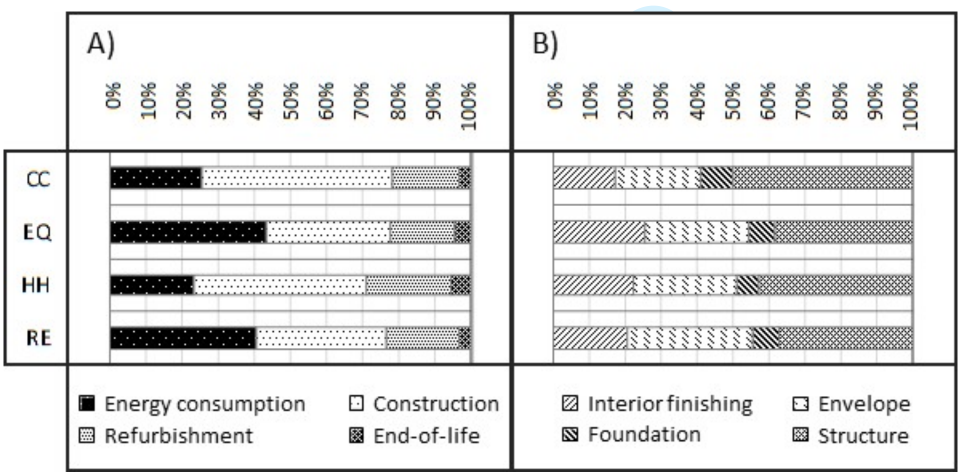

Figure SI.4. Contribution analysis of the office building life cycle environmental impacts using the IMPACT 2002+ method. Part (A) refers to the contributions of the base case scenario life cycle stages

and part (B) refers to the contributions of materials excluding the use stage. Endpoint categories are: Climate change (CC), Ecosystem quality (EQ), Human health (HH) and Resources (RE)

SI.5 Detailed evaluation of the assessed scenarios

The Figure SI.5 is divided into three parts, the first two parts (Figure SI.5 (part A) and Figures SI.5 (part B)) provide supporting information for the main Figure SI.5 (part C). Figure SI.5 (part C) summarizes the variations in two parts: 1) Building environmental impact variations on IMPACT 2002+ impact categories, and 2) Life cycle stage contributions for each impact variation, as detailed in Figure SI.5 (part A). The shaded/filled portion of the strip represents other material impacts and the unshaded/unfilled portion represents transport impacts.

With the bar chart part in Figure SI.5, it is possible to dig deeper to check where the impact variations come from when some materials are changed. In the majority of cases, the impacts associated with the material manufacturing cause the main variations for both construction and refurbishment stages. In the first four scenarios (envelope components) , the variations are caused mainly by the different material types and the total amount of material needed for the construction and refurbishment stages. The replacements consider the material life time in reference to the building life time. Furthermore, changing structure components have no effects on the refurbishment stage as it is not repaired or replaced during the whole building life cycle. Consequently, the variations occur during construction and end of life stages. Mainly, the end of life stage variations are caused by the lower material weight involved in both structure scenarios (S5 and S6), in contrast with the base case scenario, of which environmental impacts are related to material transportation from the building site to the waste disposal facility. However, in general, transportation contributes very little to these variations.

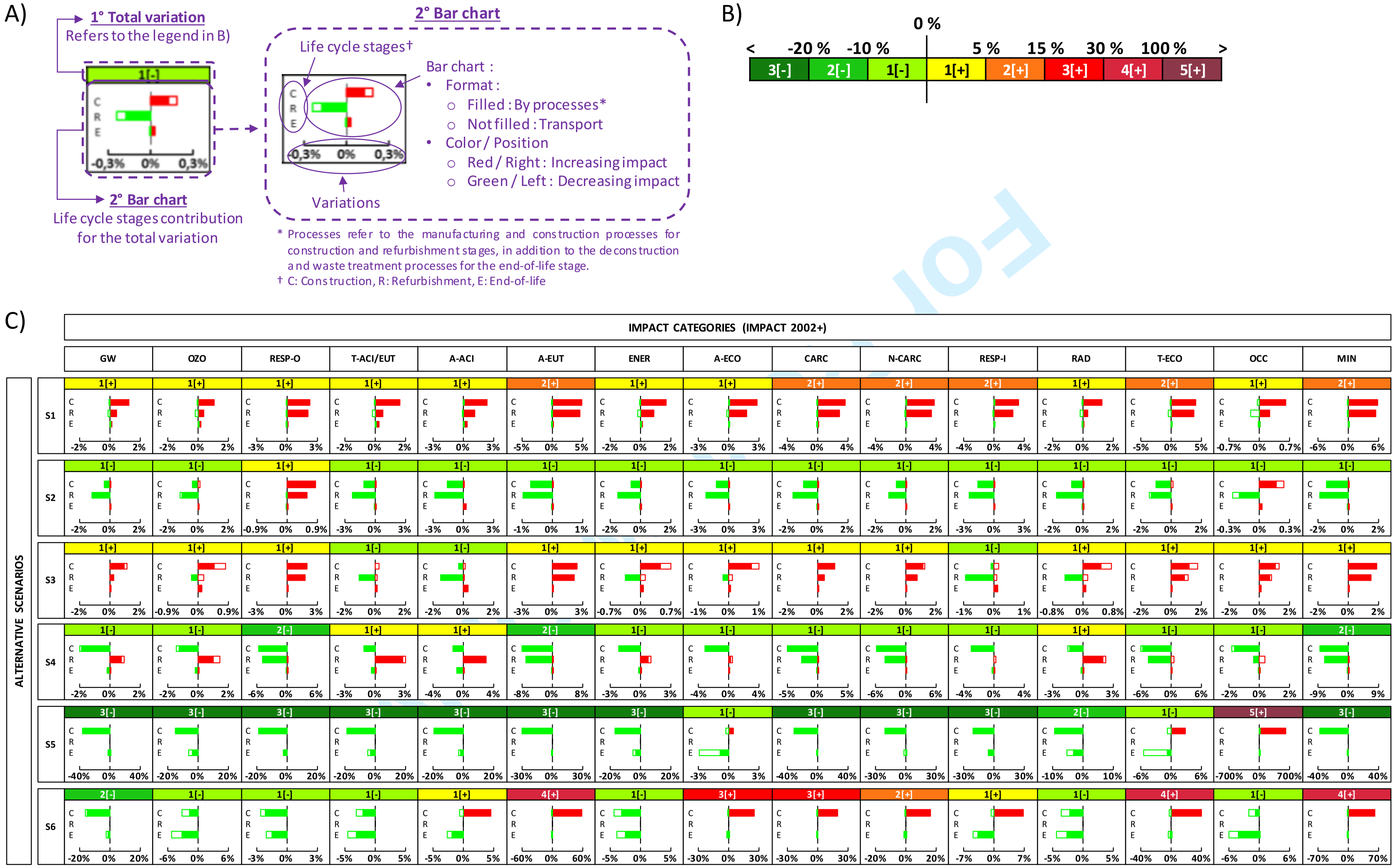

Figure SI.5. Building environmental impact variations due to material changes from the base case scenario for the six scenarios, without the consumption energy impacts (see Section 2.2). Environmental impacts are evaluated using IMPACT 2002+ midpoint categories. A) Explanation of each box. B) Legend of the variation quotations. C) Building environmental impact variations.

SI.6 Sensitivity analysis (Base case and scenarios)

SI.6.1 Impact assessment method: TRACI 2.1

SI.6.1.1 LCA results of the base case scenario

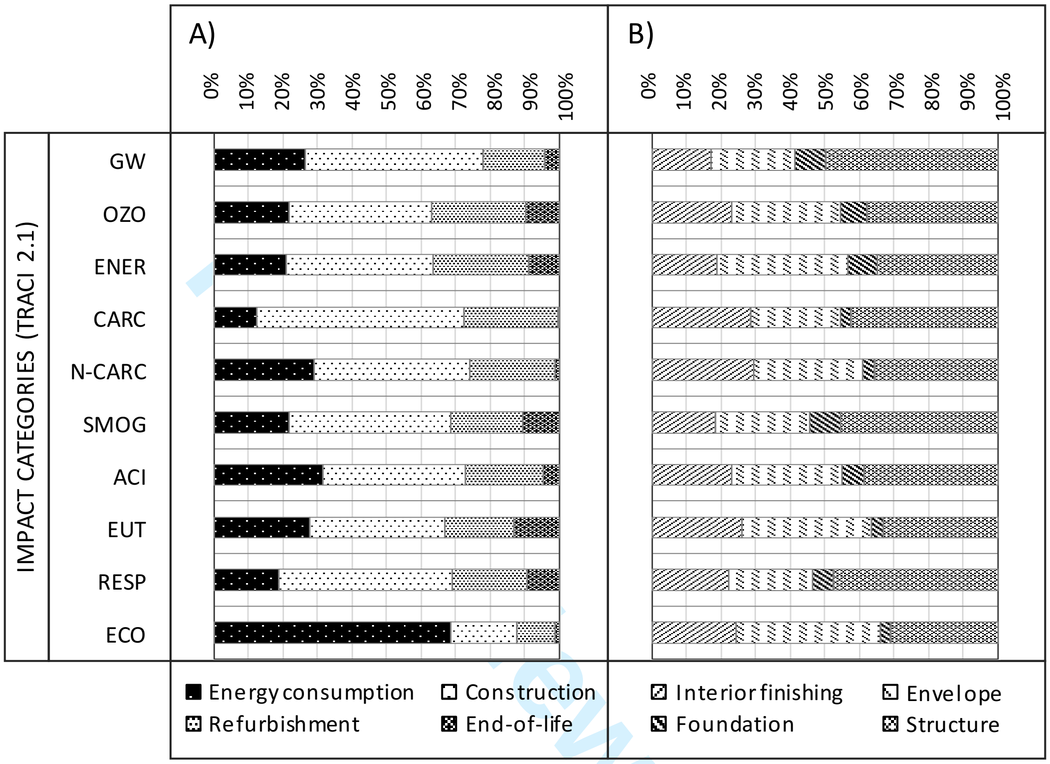

Figure SI.6.1.1 Contribution analysis of the office building life cycle environmental impacts using the TRACI method. Part (A) refers to the contributions of the base case scenario life cycle stages and part (B) refers to the contributions of materials excluding the use stage. Categories are:. Midpoint categories are: Global warming (GW), Acidification (ACI), Eutrophication (EUT), Carcinogenics(CARC), Non carcinogenics (N-CARC), Respiratory effects (RESP), Ecotoxicity (ECO), and Fossil fuel depletion (ENER).

SI.6.1.2 Results of the assessed scenarios

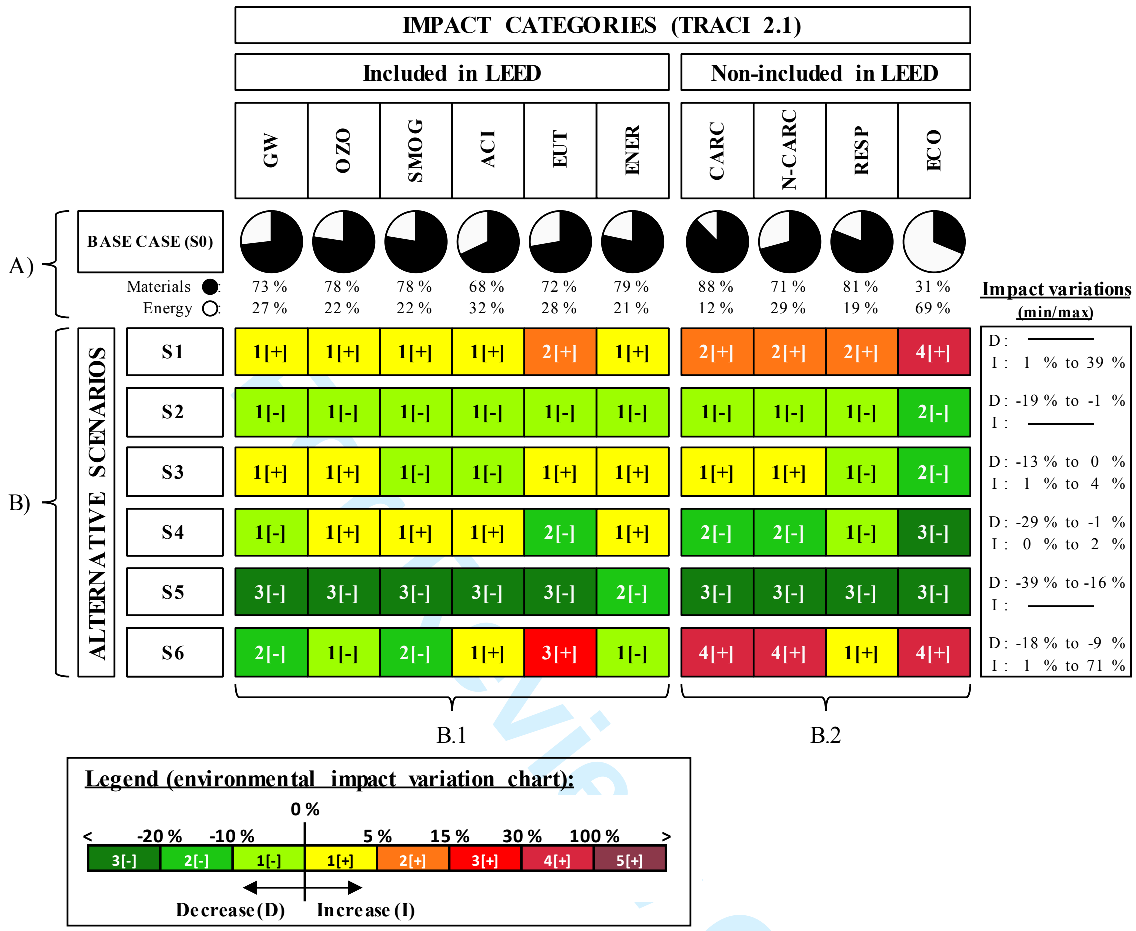

Figure SI.6.1.2. Material effects on office building LCA impacts using the TRACI 2.1 categories. A) The S0 row displays the contributions of energy consumption (in white) and materials (in black) in the building LCA impacts. B) Variations due to material changes from the base case scenario for the six scenarios. TRACI 2.1 impact categories are divided into two parts: included (B.1) and not included (B.2) in LEED v4. The thresholds to obtain "Option 4. Building life cycle impact reduction" optional credit are defined by the first four quotations in the legend, an increase (< 5%) is identified by the "1[+]" quotation and the minimum decrease (< -10%), by the "2[-]" quotation.

SI.6.2 Use stage energyconsumption changed by ± 20 %

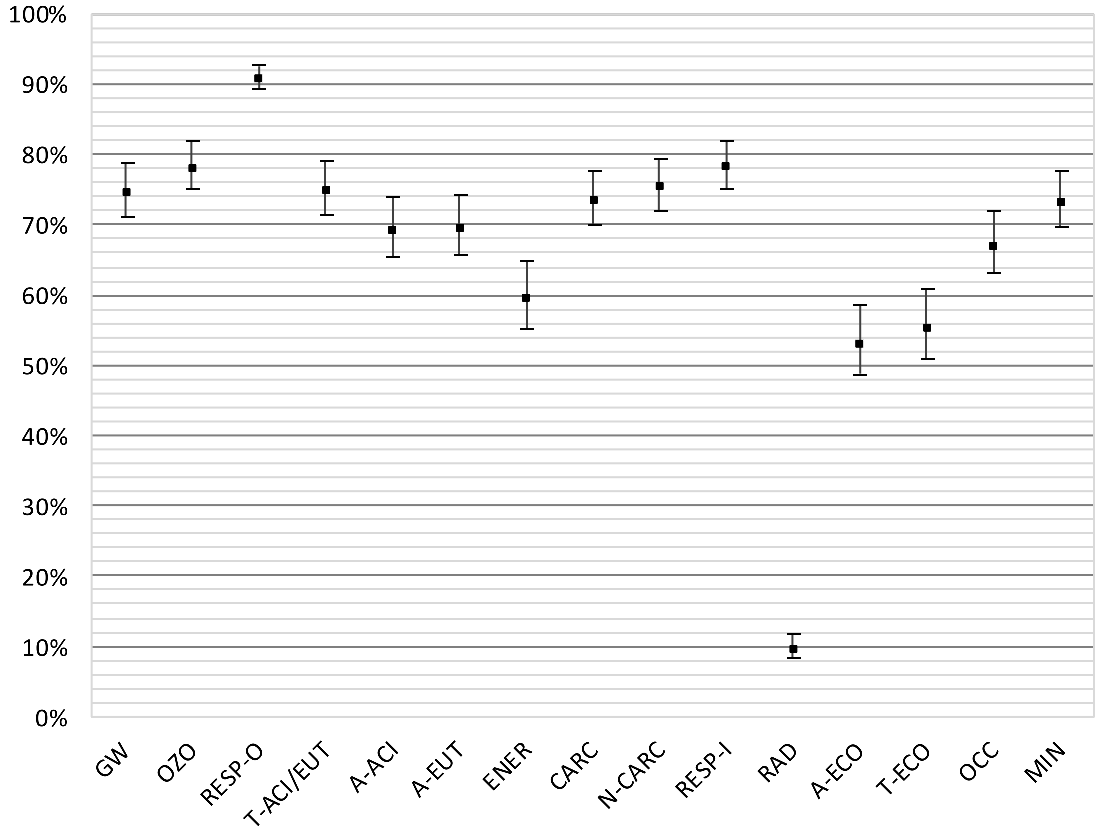

Figure SI.6.2. Material contribution on base case scenario (S0) life cycle environmental impacts evaluated using the IMPACT 2002+ midpoint categories. For each impact category, the middle point represents the material environmental impact contribution to building life cycle in function of the amount of energy consumption considered for the study. The bottom and the top bars from the middle point represent a decrease and an increase of 20 %, respectively, from the energy consumption considered for the study.

Table SI.6.2 Building environmental impact variations (in %) for all alternativescenarios as a function of the base case scenario (S0), using the IMPACT 2002+ midpoint categories. Three different amounts of use stage energy consumption are compared: 80 % (0.8), 100 % (1.0), and 120 % (1.2) of the energy consumption considered in the modelling of the base case scenario (i.e. 121.5 kWh/(m²-year)).

	S0			S1			S2			S3			S4			S5			S6		
	0.8	*1.0*	*1.2*	*0.8*	*1.0*	*1.2*	*0.8*	*1.0*	*1.2*	*0.8*	*1.0*	*1.2*	*0.8*	*1.0*	*1.2*	*0.8*	*1.0*	*1.2*	*0.8*	*1.0*	*1.2*
GW	-5	0	5	-4	1	6	-6	-1	4	-4	1	6	-6	-1	4	-34	-29	-23	-19	-14	-9
OZO	-4	0	4	-3	1	5	-6	-1	3	-4	1	5	-5	0	4	-21	-17	-12	-11	-7	-2
RESP-O	-2	0	2	2	4	6	-1	1	3	2	3	5	-11	-10	-8	-21	-19	-17	-6	-4	-2
T-ACI/EUT	-5	0	5	-3	2	7	-8	-3	2	-5	0	5	-4	1	6	-22	-17	-12	-11	-6	-1
A-ACI	-6	0	6	-4	3	9	-9	-3	3	-7	-1	5	-6	1	7	-22	-16	-10	-5	1	7
A-EUT	-6	0	6	1	7	13	-7	-1	5	-3	3	9	-16	-10	-4	-27	-21	-15	34	40	46
ENER	-8	0	8	-7	1	10	-9	-1	7	-8	0	8	-9	-1	7	-21	-13	-5	-13	-5	3
CARC	-5	0	5	0	5	10	-7	-2	3	-4	1	6	-11	-6	0	-28	-23	-18	9	14	19
N-CARC	-5	0	5	0	5	10	-6	-1	4	-3	2	6	-12	-7	-2	-22	-17	-12	6	11	16
RESP-I	-4	0	4	0	4	9	-7	-3	1	-5	-1	4	-7	-2	2	-25	-21	-16	-3	1	5
RAD	-18	0	18	-18	0	18	-18	0	18	-18	0	18	-18	0	18	-19	-1	17	-19	-1	17
A-ECO	-9	0	9	-7	2	12	-11	-2	8	-9	1	10	-11	-1	8	-11	-1	8	2	11	21
T-ECO	-9	0	9	-5	4	13	-10	-1	8	-7	2	11	-14	-5	4	-11	-2	7	9	18	27
OCC	-7	0	7	-6	0	7	-7	0	7	-5	1	8	-8	-1	5	400	406	413	-12	-5	1
MIN	-5	0	5	3	8	14	-8	-2	3	-3	2	8	-16	-11	-6	-32	-27	-22	41	46	51

End

	MATERIALS		CARC			
		S0	S1	S2	S3	S4
INTERIOR FINISHING	**CEILING**					
	Fiber tiles					
	Transport	0.3%	0.3%	0.3%	0.3%	0.4%
	Deconstruction	0.0%	0.0%	0.0%	0.0%	0.0%
	Landfilling	0.5%	0.5%	0.5%	0.5%	0.5%
	Paint					
	Transport	0.0%	0.0%	0.0%	0.0%	0.0%
	Deconstruction	0.0%	0.0%	0.0%	0.0%	0.0%
	Landfilling	0.0%	0.0%	0.0%	0.0%	0.0%
	Steel					
	Transport	0.1%	0.1%	0.1%	0.1%	0.1%
	Deconstruction	0.9%	0.8%	0.9%	0.8%	0.9%
	Landfilling	0.1%	0.1%	0.1%	0.1%	0.2%
	Floor					
	Concrete finishes					
	Transport	0.1%	0.1%	0.1%	0.1%	0.1%
	Deconstruction	0.0%	0.0%	0.0%	0.0%	0.0%
	Landfilling	0.2%	0.2%	0.2%	0.2%	0.2%
	Interior wall					
	Doors					
	Transport	0.0%	0.0%	0.0%	0.0%	0.0%
	Deconstruction	0.0%	0.0%	0.0%	0.0%	0.0%
	Landfilling	0.1%	0.1%	0.1%	0.1%	0.1%
	Glass					
	Transport	0.2%	0.2%	0.2%	0.2%	0.2%
	Deconstruction	0.0%	0.0%	0.0%	0.0%	0.0%
	Landfilling	0.2%	0.2%	0.2%	0.2%	0.2%
	Gypsum					
	Transport	0.3%	0.3%	0.3%	0.3%	0.3%
	Deconstruction	0.1%	0.1%	0.1%	0.1%	0.1%
	Landfilling	0.4%	0.4%	0.4%	0.4%	0.4%
	Paint					
	Transport	0.0%	0.0%	0.0%	0.0%	0.0%
	Deconstruction	0.0%	0.0%	0.0%	0.0%	0.0%
	Landfilling	0.1%	0.1%	0.1%	0.1%	0.1%
	Steel					
	Transport	0.2%	0.2%	0.2%	0.2%	0.2%
	Deconstruction	1.5%	1.5%	1.5%	1.5%	1.5%
	Landfilling	0.3%	0.3%	0.3%	0.3%	0.3%
	Various					
	Transport	0.0%	0.0%	0.0%	0.0%	0.0%
	Deconstruction	0.0%	0.0%	0.0%	0.0%	0.0%
	Landfilling	0.0%	0.0%	0.0%	0.0%	0.0%

ENVELOPE	**Exterior wall**					
	Aluminium					
	Transport	0.0%	0.1%	0.0%	0.0%	0.0%
	Deconstruction	0.3%	0.9%	0.0%	0.0%	0.0%
	Landfilling	0.1%	0.2%	0.0%	0.0%	0.0%
	Doors					
	Transport	0.0%	0.0%	0.0%	0.0%	0.0%
	Deconstruction	0.0%	0.0%	0.0%	0.0%	0.0%
	Landfilling	0.0%	0.0%	0.0%	0.0%	0.0%
	Fibercement					
	Transport	0.2%	0.0%	0.3%	0.5%	0.0%
	Deconstruction	0.1%	0.0%	0.2%	0.3%	0.0%
	Landfilling	0.2%	0.0%	0.5%	0.6%	0.0%
	Insulation					
	Transport	0.1%	0.2%	0.2%	0.2%	0.0%
	Deconstruction	0.0%	0.0%	0.0%	0.0%	0.0%
	Landfilling	0.2%	0.2%	0.2%	0.2%	0.0%
	Plastic membrane					
	Transport	0.1%	0.1%	0.1%	0.1%	0.0%
	Deconstruction	0.0%	0.0%	0.0%	0.0%	0.0%
	Landfilling	0.4%	0.5%	0.5%	0.5%	0.1%
	Steel					
	Transport	0.2%	0.3%	0.2%	0.3%	0.1%
	Deconstruction	1.8%	2.7%	1.8%	2.3%	0.4%
	Landfilling	0.3%	0.5%	0.3%	0.4%	0.1%
	Windows/Glazing					
	Transport	0.4%	0.2%	0.2%	0.2%	1.1%
	Deconstruction	0.0%	0.0%	0.0%	0.0%	0.0%
	Landfilling	0.5%	0.3%	0.3%	0.3%	1.5%
	Roof					
	Bitumen product					
	Transport	0.1%	0.1%	0.1%	0.1%	0.1%
	Deconstruction	0.0%	0.0%	0.0%	0.0%	0.0%
	Landfilling	0.3%	0.3%	0.3%	0.3%	0.3%
	Insulation					
	Transport	0.1%	0.1%	0.1%	0.1%	0.1%
	Deconstruction	0.0%	0.0%	0.0%	0.0%	0.0%
	Landfilling	0.6%	0.6%	0.6%	0.6%	0.6%
	Membranes					
	Transport	0.2%	0.2%	0.2%	0.2%	0.2%
	Deconstruction	0.0%	0.0%	0.0%	0.0%	0.0%
	Landfilling	0.9%	0.9%	0.9%	0.9%	0.9%
	Various					
	Transport	0.0%	0.0%	0.0%	0.0%	0.0%
	Deconstruction	0.0%	0.0%	0.0%	0.0%	0.0%
	Landfilling	0.1%	0.1%	0.1%	0.1%	0.1%

FOUNDATION	**Excavation/Backfilling**					
	Aggregates					
	Transport	0.0%	0.0%	0.0%	0.0%	0.0%
	Deconstruction	0.0%	0.0%	0.0%	0.0%	0.0%
	Landfilling	0.0%	0.0%	0.0%	0.0%	0.0%
	Piles					
	Steel					
	Transport	0.0%	0.0%	0.0%	0.0%	0.0%
	Deconstruction	0.0%	0.0%	0.0%	0.0%	0.0%
	Landfilling	0.0%	0.0%	0.0%	0.0%	0.0%
	Reinforced concrete					
	Concrete					
	Transport	4.5%	4.4%	4.5%	4.4%	4.6%
	Deconstruction	2.5%	2.5%	2.5%	2.5%	2.5%
	Landfilling	6.2%	6.1%	6.2%	6.2%	6.3%
	Reinforcing steel					
	Transport	0.0%	0.0%	0.0%	0.0%	0.0%
	Deconstruction	0.3%	0.3%	0.3%	0.3%	0.3%
	Landfilling	0.1%	0.1%	0.1%	0.1%	0.1%
	Various					
	Insulation					
	Transport	0.0%	0.0%	0.0%	0.0%	0.0%
	Deconstruction	0.0%	0.0%	0.0%	0.0%	0.0%
	Landfilling	0.0%	0.0%	0.0%	0.0%	0.0%
	Plastic membrane					
	Transport	0.0%	0.0%	0.0%	0.0%	0.0%
	Deconstruction	0.0%	0.0%	0.0%	0.0%	0.0%
	Landfilling	0.0%	0.0%	0.0%	0.0%	0.0%
	Various					
	Transport	0.0%	0.0%	0.0%	0.0%	0.0%
	Deconstruction	0.0%	0.0%	0.0%	0.0%	0.0%
	Landfilling	0.0%	0.0%	0.0%	0.0%	0.0%
STRUCTURE	**Primary structural system**					
	Concrete					
	Transport	21.5%	21.2%	21.5%	21.3%	21.9%
	Deconstruction	11.9%	11.8%	12.0%	11.8%	12.2%
	Landfilling	29.8%	29.4%	29.8%	29.5%	30.3%
	Reinforcing steel					
	Transport	1.0%	0.9%	1.0%	0.9%	1.0%
	Deconstruction	7.6%	7.5%	7.6%	7.5%	7.7%
	Landfilling	1.3%	1.3%	1.3%	1.3%	1.3%
	Steel					
	Transport	0.0%	0.0%	0.0%	0.0%	0.0%
	Deconstruction	0.0%	0.0%	0.0%	0.0%	0.0%
	Landfilling	0.0%	0.0%	0.0%	0.0%	0.0%
	Wood					

Transport	0.0%	0.0%	0.0%	0.0%	0.0%
Deconstruction	0.0%	0.0%	0.0%	0.0%	0.0%
Landfilling	0.0%	0.0%	0.0%	0.0%	0.0%
Secondary structural system					
Steel					
Transport	0.0%	0.0%	0.0%	0.0%	0.0%
Deconstruction	0.1%	0.1%	0.1%	0.1%	0.1%
Landfilling	0.0%	0.0%	0.0%	0.0%	0.0%
Total général	100.0%	100.0%	100.0%	100.0%	100.0%

		ENER				
S5	S6	S0	S1	S2	S3	S4
0.7%	0.6%	0.4%	0.4%	0.4%	0.4%	0.4%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1.0%	0.9%	0.5%	0.5%	0.5%	0.5%	0.5%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%
1.8%	1.6%	0.8%	0.8%	0.8%	0.8%	0.8%
0.3%	0.3%	0.1%	0.1%	0.1%	0.1%	0.1%
0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.4%	0.3%	0.1%	0.1%	0.1%	0.1%	0.1%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
0.4%	0.3%	0.2%	0.2%	0.2%	0.2%	0.2%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.5%	0.4%	0.2%	0.2%	0.2%	0.2%	0.2%
0.7%	0.6%	0.3%	0.3%	0.3%	0.3%	0.3%
0.3%	0.3%	0.1%	0.1%	0.1%	0.1%	0.1%
0.9%	0.8%	0.4%	0.4%	0.4%	0.4%	0.4%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.4%	0.4%	0.2%	0.2%	0.2%	0.2%	0.2%
3.3%	2.8%	1.4%	1.4%	1.4%	1.4%	1.4%
0.6%	0.5%	0.3%	0.3%	0.3%	0.3%	0.3%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%

0.1%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%
0.7%	0.6%	0.3%	0.9%	0.0%	0.0%	0.0%
0.1%	0.1%	0.1%	0.2%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.3%	0.3%	0.2%	0.0%	0.4%	0.5%	0.0%
0.2%	0.2%	0.1%	0.0%	0.2%	0.2%	0.0%
0.5%	0.4%	0.2%	0.0%	0.5%	0.6%	0.0%
0.3%	0.2%	0.1%	0.2%	0.2%	0.2%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.4%	0.3%	0.2%	0.2%	0.2%	0.2%	0.0%
0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.9%	0.8%	0.3%	0.3%	0.3%	0.3%	0.1%
0.5%	0.4%	0.3%	0.4%	0.3%	0.3%	0.1%
4.0%	3.4%	1.7%	2.5%	1.6%	2.2%	0.4%
0.7%	0.6%	0.3%	0.5%	0.3%	0.4%	0.1%
0.8%	0.7%	0.4%	0.2%	0.2%	0.2%	1.2%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1.2%	1.0%	0.5%	0.3%	0.3%	0.3%	1.4%
0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.7%	0.6%	0.2%	0.2%	0.2%	0.2%	0.2%
0.3%	0.3%	0.2%	0.2%	0.2%	0.2%	0.2%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1.2%	1.0%	0.3%	0.3%	0.3%	0.3%	0.3%
0.5%	0.4%	0.3%	0.3%	0.3%	0.3%	0.3%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2.0%	1.7%	0.6%	0.6%	0.6%	0.6%	0.6%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.3%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%

0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
9.7%	8.2%	5.0%	5.0%	5.1%	5.0%	5.1%
5.4%	4.5%	2.3%	2.3%	2.3%	2.3%	2.4%
13.4%	11.3%	6.0%	6.0%	6.1%	6.0%	6.1%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.6%	0.5%	0.3%	0.3%	0.3%	0.3%	0.3%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	10.1%	24.2%	24.0%	24.3%	24.0%	24.6%
0.0%	5.6%	11.2%	11.1%	11.2%	11.1%	11.4%
0.0%	14.0%	29.0%	28.7%	29.1%	28.8%	29.5%
0.0%	0.0%	1.1%	1.1%	1.1%	1.1%	1.1%
0.0%	0.3%	7.1%	7.1%	7.1%	7.1%	7.2%
0.0%	0.1%	1.3%	1.3%	1.3%	1.3%	1.3%
0.0%	2.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	15.8%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	2.8%	0.0%	0.0%	0.0%	0.0%	0.0%

4.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
32.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

		GW				
S5	S6	S0	S1	S2	S3	S4
0.9%	0.7%	0.4%	0.4%	0.4%	0.4%	0.5%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1.0%	0.9%	0.3%	0.3%	0.3%	0.3%	0.3%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.3%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%
1.8%	1.5%	1.0%	1.0%	1.0%	1.0%	1.0%
0.3%	0.3%	0.1%	0.1%	0.1%	0.1%	0.1%
0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.3%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%
0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.4%	0.3%	0.2%	0.2%	0.2%	0.2%	0.2%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.5%	0.4%	0.1%	0.1%	0.1%	0.1%	0.1%
0.8%	0.6%	0.4%	0.4%	0.4%	0.4%	0.4%
0.3%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
0.9%	0.8%	0.2%	0.2%	0.2%	0.2%	0.3%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.5%	0.4%	0.2%	0.2%	0.3%	0.2%	0.3%
3.2%	2.6%	1.7%	1.7%	1.7%	1.7%	1.8%
0.6%	0.5%	0.2%	0.2%	0.2%	0.2%	0.2%
0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%

0.1%	0.1%	0.1%	0.2%	0.0%	0.0%	0.0%
0.7%	0.6%	0.4%	1.1%	0.0%	0.0%	0.0%
0.1%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.4%	0.3%	0.2%	0.0%	0.5%	0.6%	0.0%
0.2%	0.2%	0.1%	0.0%	0.2%	0.3%	0.0%
0.5%	0.4%	0.1%	0.0%	0.3%	0.4%	0.0%
0.3%	0.3%	0.2%	0.2%	0.2%	0.2%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.4%	0.3%	0.1%	0.1%	0.1%	0.1%	0.0%
0.3%	0.2%	0.1%	0.2%	0.2%	0.2%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.6%	0.5%	1.1%	1.3%	1.4%	1.3%	0.2%
0.6%	0.5%	0.3%	0.4%	0.3%	0.4%	0.1%
3.9%	3.2%	2.1%	3.0%	2.0%	2.6%	0.5%
0.7%	0.6%	0.2%	0.3%	0.2%	0.2%	0.0%
1.0%	0.8%	0.5%	0.2%	0.3%	0.3%	1.4%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1.2%	1.0%	0.3%	0.2%	0.2%	0.2%	0.9%
0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.5%	0.4%	0.9%	0.9%	0.9%	0.9%	0.9%
0.4%	0.3%	0.2%	0.2%	0.2%	0.2%	0.2%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.8%	0.6%	1.5%	1.5%	1.5%	1.5%	1.5%
0.6%	0.5%	0.3%	0.3%	0.3%	0.3%	0.3%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1.2%	1.0%	2.4%	2.4%	2.4%	2.4%	2.5%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%

0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
11.3%	9.4%	5.8%	5.7%	5.8%	5.8%	6.0%
5.2%	4.3%	2.8%	2.8%	2.8%	2.8%	2.9%
13.5%	11.3%	3.7%	3.7%	3.7%	3.7%	3.8%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.6%	0.5%	0.3%	0.3%	0.3%	0.3%	0.3%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	11.6%	27.9%	27.5%	27.9%	27.6%	28.7%
0.0%	5.3%	13.6%	13.4%	13.7%	13.5%	14.0%
0.0%	13.8%	17.8%	17.5%	17.8%	17.6%	18.3%
0.0%	0.0%	1.2%	1.2%	1.2%	1.2%	1.3%
0.0%	0.3%	8.7%	8.5%	8.7%	8.6%	8.9%
0.0%	0.1%	0.8%	0.8%	0.8%	0.8%	0.8%
0.0%	2.3%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	15.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	2.8%	0.0%	0.0%	0.0%	0.0%	0.0%

4.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
31.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

		N-CARC				
S5	S6	S0	S1	S2	S3	S4
0.9%	0.8%	0.9%	0.9%	0.9%	0.9%	0.9%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.6%	0.5%	0.2%	0.2%	0.2%	0.2%	0.2%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.3%	0.2%	0.3%	0.3%	0.3%	0.3%	0.3%
1.9%	1.7%	0.3%	0.3%	0.3%	0.3%	0.3%
0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%
0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.3%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%
0.8%	0.7%	0.8%	0.8%	0.8%	0.8%	0.8%
0.3%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%
0.5%	0.4%	0.2%	0.2%	0.2%	0.2%	0.2%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.5%	0.4%	0.5%	0.5%	0.5%	0.5%	0.5%
3.4%	3.0%	0.5%	0.5%	0.5%	0.5%	0.5%
0.3%	0.3%	0.1%	0.1%	0.1%	0.1%	0.1%
0.1%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

0.1%	0.1%	0.1%	0.3%	0.0%	0.0%	0.0%
0.7%	0.7%	0.1%	0.3%	0.0%	0.0%	0.0%
0.1%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.4%	0.4%	0.4%	0.0%	0.9%	1.2%	0.0%
0.2%	0.2%	0.0%	0.0%	0.1%	0.1%	0.0%
0.3%	0.2%	0.1%	0.0%	0.2%	0.2%	0.0%
0.3%	0.3%	0.3%	0.4%	0.4%	0.4%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.0%
0.3%	0.2%	0.3%	0.3%	0.3%	0.3%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2.2%	1.9%	0.2%	0.2%	0.2%	0.2%	0.0%
0.6%	0.5%	0.6%	0.9%	0.6%	0.7%	0.1%
4.1%	3.7%	0.6%	0.8%	0.5%	0.7%	0.1%
0.4%	0.3%	0.1%	0.2%	0.1%	0.2%	0.0%
1.0%	0.9%	1.0%	0.5%	0.5%	0.5%	2.6%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.6%	0.6%	0.2%	0.1%	0.1%	0.1%	0.5%
0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1.7%	1.5%	0.1%	0.1%	0.1%	0.1%	0.1%
0.4%	0.3%	0.4%	0.4%	0.4%	0.4%	0.4%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2.9%	2.6%	0.2%	0.2%	0.2%	0.2%	0.2%
0.6%	0.5%	0.6%	0.6%	0.6%	0.6%	0.6%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4.8%	4.2%	0.3%	0.3%	0.3%	0.3%	0.3%
0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%

0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
11.4%	10.1%	11.3%	11.3%	11.3%	11.3%	11.4%
5.6%	4.9%	0.8%	0.8%	0.8%	0.8%	0.8%
7.3%	6.4%	2.3%	2.3%	2.3%	2.3%	2.3%
0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
0.7%	0.6%	0.1%	0.1%	0.1%	0.1%	0.1%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	12.4%	54.4%	54.3%	54.4%	54.0%	54.6%
0.0%	6.1%	3.7%	3.7%	3.7%	3.7%	3.7%
0.0%	7.9%	11.1%	11.1%	11.1%	11.1%	11.2%
0.0%	0.0%	2.4%	2.4%	2.4%	2.4%	2.4%
0.0%	0.3%	2.4%	2.4%	2.4%	2.3%	2.4%
0.0%	0.0%	0.5%	0.5%	0.5%	0.5%	0.5%
0.0%	2.5%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	17.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	1.6%	0.0%	0.0%	0.0%	0.0%	0.0%

4.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
33.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

				OZO		
S5	S6	S0	S1	S2	S3	S4
2.4%	1.8%	0.4%	0.4%	0.4%	0.4%	0.4%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.5%	0.4%	0.5%	0.4%	0.5%	0.4%	0.5%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.8%	0.5%	0.1%	0.1%	0.1%	0.1%	0.1%
0.7%	0.5%	0.8%	0.8%	0.8%	0.8%	0.8%
0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
0.4%	0.3%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
0.3%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%
1.2%	0.9%	0.2%	0.2%	0.2%	0.2%	0.2%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
2.1%	1.5%	0.3%	0.3%	0.3%	0.3%	0.3%
0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
0.4%	0.3%	0.4%	0.4%	0.4%	0.4%	0.4%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1.4%	1.0%	0.2%	0.2%	0.2%	0.2%	0.2%
1.3%	1.0%	1.5%	1.5%	1.5%	1.5%	1.5%
0.3%	0.2%	0.3%	0.3%	0.3%	0.3%	0.3%
0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

0.3%	0.2%	0.0%	0.1%	0.0%	0.0%	0.0%
0.3%	0.2%	0.3%	0.9%	0.0%	0.0%	0.0%
0.1%	0.0%	0.1%	0.2%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1.1%	0.8%	0.2%	0.0%	0.4%	0.5%	0.0%
0.1%	0.1%	0.1%	0.0%	0.2%	0.2%	0.0%
0.2%	0.2%	0.2%	0.0%	0.5%	0.6%	0.0%
0.9%	0.7%	0.1%	0.2%	0.2%	0.2%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.2%	0.1%	0.2%	0.2%	0.2%	0.2%	0.0%
0.8%	0.5%	0.1%	0.1%	0.1%	0.1%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.4%	0.3%	0.2%	0.3%	0.3%	0.3%	0.0%
1.7%	1.2%	0.3%	0.4%	0.3%	0.3%	0.1%
1.6%	1.2%	1.8%	2.6%	1.7%	2.2%	0.4%
0.3%	0.2%	0.3%	0.4%	0.3%	0.4%	0.1%
2.7%	2.0%	0.4%	0.2%	0.2%	0.2%	1.2%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.6%	0.4%	0.5%	0.3%	0.3%	0.3%	1.4%
0.6%	0.4%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.3%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
1.0%	0.7%	0.2%	0.2%	0.2%	0.2%	0.2%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.6%	0.4%	0.3%	0.3%	0.3%	0.3%	0.3%
1.7%	1.2%	0.3%	0.3%	0.3%	0.3%	0.3%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.9%	0.7%	0.5%	0.5%	0.5%	0.5%	0.5%
0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%

0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
31.7%	22.9%	5.1%	5.0%	5.1%	5.0%	5.2%
2.2%	1.6%	2.4%	2.4%	2.4%	2.4%	2.5%
6.5%	4.7%	5.9%	5.8%	5.9%	5.8%	6.0%
0.3%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
0.3%	0.2%	0.3%	0.3%	0.3%	0.3%	0.3%
0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	28.2%	24.3%	24.0%	24.4%	24.1%	24.7%
0.0%	1.9%	11.6%	11.5%	11.7%	11.6%	11.8%
0.0%	5.8%	28.3%	28.0%	28.4%	28.1%	28.8%
0.0%	0.1%	1.1%	1.1%	1.1%	1.1%	1.1%
0.0%	0.1%	7.4%	7.3%	7.4%	7.4%	7.5%
0.0%	0.0%	1.3%	1.2%	1.3%	1.2%	1.3%
0.0%	5.7%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	5.4%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	1.2%	0.0%	0.0%	0.0%	0.0%	0.0%

13.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
12.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

		RESP-I				
S5	S6	S0	S1	S2	S3	S4
0.9%	0.7%	0.2%	0.2%	0.2%	0.2%	0.2%
0.0%	0.0%	0.4%	0.3%	0.4%	0.3%	0.4%
1.0%	0.8%	0.2%	0.2%	0.2%	0.2%	0.2%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.3%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%
1.9%	1.5%	1.0%	1.0%	1.0%	1.0%	1.1%
0.3%	0.3%	0.1%	0.1%	0.1%	0.1%	0.1%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.4%	0.4%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.5%	0.4%	0.1%	0.1%	0.1%	0.1%	0.1%
0.8%	0.6%	0.2%	0.2%	0.2%	0.2%	0.2%
0.3%	0.2%	0.5%	0.5%	0.5%	0.5%	0.5%
0.9%	0.7%	0.2%	0.2%	0.2%	0.2%	0.2%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.5%	0.4%	0.1%	0.1%	0.1%	0.1%	0.1%
3.3%	2.7%	1.8%	1.8%	1.9%	1.8%	1.9%
0.6%	0.5%	0.1%	0.1%	0.1%	0.1%	0.1%
0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%

0.1%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%
0.7%	0.6%	0.4%	1.1%	0.0%	0.0%	0.0%
0.1%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.4%	0.3%	0.1%	0.0%	0.2%	0.3%	0.0%
0.2%	0.2%	0.3%	0.0%	0.6%	0.8%	0.0%
0.5%	0.4%	0.1%	0.0%	0.2%	0.3%	0.0%
0.3%	0.3%	0.1%	0.1%	0.1%	0.1%	0.0%
0.0%	0.0%	0.1%	0.2%	0.2%	0.2%	0.0%
0.4%	0.3%	0.1%	0.1%	0.1%	0.1%	0.0%
0.3%	0.2%	0.1%	0.1%	0.1%	0.1%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.5%	0.4%	0.2%	0.2%	0.2%	0.2%	0.0%
0.6%	0.5%	0.1%	0.2%	0.1%	0.2%	0.0%
4.0%	3.3%	2.3%	3.3%	2.1%	2.8%	0.5%
0.7%	0.6%	0.2%	0.2%	0.2%	0.2%	0.0%
1.0%	0.8%	0.2%	0.1%	0.1%	0.1%	0.6%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1.1%	0.9%	0.3%	0.1%	0.1%	0.1%	0.7%
0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.4%	0.3%	0.1%	0.1%	0.1%	0.1%	0.1%
0.4%	0.3%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.7%	0.6%	0.2%	0.2%	0.2%	0.2%	0.2%
0.6%	0.5%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1.1%	0.9%	0.4%	0.4%	0.4%	0.4%	0.4%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%

0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
11.2%	9.4%	2.7%	2.6%	2.7%	2.6%	2.7%
5.4%	4.5%	7.6%	7.5%	7.6%	7.5%	7.8%
13.1%	10.9%	3.1%	3.1%	3.1%	3.1%	3.2%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.6%	0.5%	0.4%	0.4%	0.4%	0.4%	0.4%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	11.6%	12.8%	12.6%	12.8%	12.7%	13.1%
0.0%	5.5%	36.6%	36.1%	36.6%	36.2%	37.5%
0.0%	13.5%	15.0%	14.8%	15.1%	14.9%	15.4%
0.0%	0.0%	0.6%	0.6%	0.6%	0.6%	0.6%
0.0%	0.3%	9.3%	9.2%	9.3%	9.2%	9.5%
0.0%	0.1%	0.7%	0.7%	0.7%	0.7%	0.7%
0.0%	2.3%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	15.6%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	2.7%	0.0%	0.0%	0.0%	0.0%	0.0%

4.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
32.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

				RAD		
S5	S6	S0	S1	S2	S3	S4
0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%
0.8%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%
0.5%	0.4%	0.5%	0.5%	0.5%	0.5%	0.5%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
2.3%	1.9%	0.8%	0.8%	0.8%	0.8%	0.8%
0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.3%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
0.4%	0.3%	0.4%	0.3%	0.4%	0.3%	0.4%
1.0%	0.9%	0.1%	0.1%	0.1%	0.1%	0.1%
0.5%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.3%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
4.1%	3.4%	1.4%	1.4%	1.4%	1.4%	1.4%
0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
0.9%	0.8%	0.3%	0.8%	0.0%	0.0%	0.0%
0.1%	0.1%	0.1%	0.2%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.2%	0.2%	0.2%	0.0%	0.4%	0.5%	0.0%
0.6%	0.5%	0.1%	0.0%	0.2%	0.2%	0.0%
0.2%	0.2%	0.2%	0.0%	0.5%	0.6%	0.0%
0.2%	0.1%	0.2%	0.2%	0.2%	0.2%	0.0%
0.3%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.0%
0.1%	0.1%	0.1%	0.2%	0.2%	0.2%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.4%	0.3%	0.3%	0.4%	0.4%	0.4%	0.1%
0.3%	0.3%	0.3%	0.4%	0.3%	0.3%	0.1%
4.9%	4.2%	1.7%	2.4%	1.6%	2.1%	0.4%
0.4%	0.3%	0.3%	0.5%	0.3%	0.4%	0.1%
0.5%	0.4%	0.5%	0.2%	0.2%	0.2%	1.2%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.6%	0.5%	0.5%	0.3%	0.3%	0.3%	1.4%
0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.3%	0.3%	0.2%	0.2%	0.2%	0.2%	0.2%
0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.5%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%
0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.9%	0.7%	0.7%	0.6%	0.7%	0.6%	0.7%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%

0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5.8%	4.9%	5.2%	5.2%	5.2%	5.2%	5.3%
16.7%	14.2%	2.3%	2.2%	2.3%	2.2%	2.3%
6.9%	5.8%	6.0%	5.9%	6.0%	5.9%	6.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.8%	0.7%	0.3%	0.3%	0.3%	0.3%	0.3%
0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	6.1%	25.0%	24.8%	25.1%	24.9%	25.5%
0.0%	17.4%	10.8%	10.7%	10.8%	10.7%	11.0%
0.0%	7.2%	28.6%	28.3%	28.7%	28.4%	29.1%
0.0%	0.0%	1.1%	1.1%	1.1%	1.1%	1.1%
0.0%	0.4%	6.9%	6.8%	6.9%	6.8%	7.0%
0.0%	0.0%	1.3%	1.3%	1.3%	1.3%	1.3%
0.0%	1.2%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	19.6%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	1.4%	0.0%	0.0%	0.0%	0.0%	0.0%

2.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
39.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

		IMPACT CATEGORIES (IMPACT 2002+)				
		RESP-O				
S5	S6	S0	S1	S2	S3	S4
0.9%	0.7%	0.3%	0.3%	0.3%	0.3%	0.3%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1.0%	0.9%	0.4%	0.4%	0.4%	0.4%	0.4%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.3%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%
1.7%	1.4%	1.3%	1.3%	1.3%	1.3%	1.4%
0.3%	0.3%	0.1%	0.1%	0.1%	0.1%	0.1%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.3%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.4%	0.4%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.5%	0.4%	0.2%	0.2%	0.2%	0.2%	0.2%
0.8%	0.7%	0.2%	0.2%	0.2%	0.2%	0.3%
0.3%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
0.9%	0.7%	0.3%	0.3%	0.3%	0.3%	0.3%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.5%	0.4%	0.2%	0.2%	0.2%	0.2%	0.2%
3.1%	2.6%	2.4%	2.3%	2.4%	2.3%	2.4%
0.6%	0.5%	0.2%	0.2%	0.2%	0.2%	0.2%
0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%

0.1%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%
0.7%	0.6%	0.5%	1.4%	0.0%	0.0%	0.0%
0.1%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.4%	0.3%	0.1%	0.0%	0.3%	0.4%	0.0%
0.2%	0.1%	0.1%	0.0%	0.3%	0.4%	0.0%
0.5%	0.4%	0.2%	0.0%	0.4%	0.5%	0.0%
0.3%	0.3%	0.1%	0.1%	0.1%	0.1%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.4%	0.3%	0.1%	0.2%	0.2%	0.2%	0.0%
0.3%	0.2%	0.1%	0.1%	0.1%	0.1%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.7%	0.5%	0.2%	0.3%	0.3%	0.3%	0.0%
0.6%	0.5%	0.2%	0.3%	0.2%	0.2%	0.0%
3.8%	3.1%	2.9%	4.1%	2.7%	3.6%	0.6%
0.7%	0.6%	0.3%	0.4%	0.2%	0.3%	0.1%
1.0%	0.8%	0.3%	0.2%	0.2%	0.2%	0.9%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1.2%	1.0%	0.4%	0.2%	0.2%	0.2%	1.2%
0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.5%	0.4%	0.2%	0.2%	0.2%	0.2%	0.2%
0.4%	0.3%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.9%	0.7%	0.3%	0.3%	0.3%	0.3%	0.3%
0.6%	0.5%	0.2%	0.2%	0.2%	0.2%	0.2%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1.5%	1.2%	0.5%	0.5%	0.5%	0.5%	0.5%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%

0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
11.8%	9.7%	3.7%	3.6%	3.7%	3.7%	3.8%
5.1%	4.2%	3.9%	3.8%	3.9%	3.8%	4.0%
13.4%	11.1%	4.9%	4.8%	4.9%	4.8%	5.0%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.6%	0.5%	0.5%	0.4%	0.5%	0.5%	0.5%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	12.0%	17.7%	17.4%	17.8%	17.6%	18.2%
0.0%	5.2%	18.6%	18.2%	18.6%	18.4%	19.1%
0.0%	13.7%	23.5%	23.0%	23.6%	23.3%	24.1%
0.0%	0.0%	0.8%	0.8%	0.8%	0.8%	0.8%
0.0%	0.3%	11.8%	11.6%	11.9%	11.7%	12.2%
0.0%	0.1%	1.0%	1.0%	1.0%	1.0%	1.1%
0.0%	2.4%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	14.5%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	2.7%	0.0%	0.0%	0.0%	0.0%	0.0%

4.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
30.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

		A-ECO				
S5	S6	S0	S1	S2	S3	S4
0.5%	0.5%	0.7%	0.7%	0.7%	0.7%	0.7%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.7%	0.7%	0.3%	0.3%	0.3%	0.3%	0.3%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
2.5%	2.3%	0.4%	0.4%	0.4%	0.4%	0.5%
0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%
0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%
0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.3%	0.2%	0.3%	0.3%	0.3%	0.3%	0.3%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.3%	0.3%	0.1%	0.1%	0.1%	0.1%	0.1%
0.5%	0.4%	0.6%	0.6%	0.6%	0.6%	0.6%
0.4%	0.4%	0.1%	0.1%	0.1%	0.1%	0.1%
0.6%	0.6%	0.2%	0.2%	0.2%	0.2%	0.2%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.3%	0.3%	0.4%	0.4%	0.4%	0.4%	0.4%
4.4%	4.1%	0.8%	0.8%	0.8%	0.8%	0.8%
0.4%	0.4%	0.2%	0.2%	0.2%	0.2%	0.2%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

0.1%	0.1%	0.1%	0.2%	0.0%	0.0%	0.0%
1.0%	0.9%	0.2%	0.5%	0.0%	0.0%	0.0%
0.1%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.2%	0.2%	0.3%	0.0%	0.7%	0.9%	0.0%
0.3%	0.2%	0.0%	0.0%	0.1%	0.1%	0.0%
0.3%	0.3%	0.1%	0.0%	0.3%	0.4%	0.0%
0.2%	0.2%	0.3%	0.3%	0.3%	0.3%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.3%	0.2%	0.1%	0.1%	0.1%	0.1%	0.0%
0.2%	0.2%	0.2%	0.3%	0.3%	0.3%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.4%	0.4%	0.2%	0.2%	0.2%	0.2%	0.0%
0.4%	0.3%	0.5%	0.7%	0.5%	0.6%	0.1%
5.4%	5.0%	1.0%	1.4%	0.9%	1.2%	0.2%
0.5%	0.4%	0.2%	0.3%	0.2%	0.2%	0.0%
0.6%	0.6%	0.8%	0.4%	0.4%	0.4%	2.2%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.8%	0.7%	0.3%	0.2%	0.2%	0.2%	0.8%
0.1%	0.1%	0.2%	0.2%	0.2%	0.2%	0.2%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.3%	0.3%	0.1%	0.1%	0.1%	0.1%	0.1%
0.2%	0.2%	0.3%	0.3%	0.3%	0.3%	0.3%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.5%	0.5%	0.2%	0.2%	0.2%	0.2%	0.2%
0.4%	0.3%	0.5%	0.5%	0.5%	0.5%	0.5%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.9%	0.8%	0.4%	0.4%	0.4%	0.4%	0.4%
0.1%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%

0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6.9%	6.4%	9.2%	9.2%	9.3%	9.2%	9.3%
7.3%	6.7%	1.3%	1.3%	1.3%	1.3%	1.3%
9.2%	8.5%	3.6%	3.5%	3.6%	3.5%	3.6%
0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
0.9%	0.8%	0.2%	0.2%	0.2%	0.2%	0.2%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	7.9%	44.3%	44.1%	44.4%	44.0%	44.7%
0.0%	8.2%	6.3%	6.2%	6.3%	6.2%	6.3%
0.0%	10.4%	17.1%	17.0%	17.1%	17.0%	17.2%
0.0%	0.0%	2.0%	2.0%	2.0%	2.0%	2.0%
0.0%	0.5%	4.0%	4.0%	4.0%	4.0%	4.0%
0.0%	0.0%	0.8%	0.8%	0.8%	0.8%	0.8%
0.0%	1.6%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	23.2%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	2.1%	0.0%	0.0%	0.0%	0.0%	0.0%

2.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
43.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

		T-ECO				
S5	**S6**	**S0**	**S1**	**S2**	**S3**	**S4**
1.8%	1.4%	1.0%	1.0%	1.0%	1.0%	1.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.7%	0.5%	0.1%	0.1%	0.1%	0.1%	0.1%
0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.6%	0.4%	0.3%	0.3%	0.3%	0.3%	0.3%
1.2%	0.9%	0.2%	0.2%	0.2%	0.2%	0.2%
0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
0.3%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.9%	0.7%	0.5%	0.5%	0.5%	0.5%	0.5%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.3%	0.3%	0.1%	0.1%	0.1%	0.1%	0.1%
1.6%	1.2%	0.8%	0.8%	0.8%	0.8%	0.8%
0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.6%	0.5%	0.1%	0.1%	0.1%	0.1%	0.1%
0.1%	0.1%	0.1%	0.1%	0.1%	0.0%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1.0%	0.8%	0.5%	0.5%	0.5%	0.5%	0.5%
2.1%	1.6%	0.3%	0.3%	0.3%	0.3%	0.3%
0.4%	0.3%	0.1%	0.1%	0.1%	0.1%	0.1%
0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

0.2%	0.2%	0.1%	0.3%	0.0%	0.0%	0.0%
0.5%	0.3%	0.1%	0.2%	0.0%	0.0%	0.0%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.8%	0.6%	0.4%	0.0%	1.0%	1.3%	0.0%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.3%	0.2%	0.1%	0.0%	0.1%	0.2%	0.0%
0.7%	0.5%	0.4%	0.4%	0.4%	0.4%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.3%	0.2%	0.0%	0.1%	0.1%	0.1%	0.0%
0.6%	0.4%	0.3%	0.4%	0.4%	0.4%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.4%	0.3%	0.1%	0.1%	0.1%	0.1%	0.0%
1.2%	0.9%	0.7%	1.0%	0.6%	0.8%	0.1%
2.5%	1.9%	0.3%	0.5%	0.3%	0.4%	0.1%
0.5%	0.4%	0.1%	0.1%	0.1%	0.1%	0.0%
2.1%	1.6%	1.1%	0.5%	0.5%	0.5%	2.9%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.8%	0.6%	0.1%	0.1%	0.1%	0.1%	0.4%
0.5%	0.4%	0.2%	0.2%	0.2%	0.2%	0.2%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.3%	0.3%	0.1%	0.1%	0.1%	0.1%	0.1%
0.8%	0.6%	0.4%	0.4%	0.4%	0.4%	0.4%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.6%	0.4%	0.1%	0.1%	0.1%	0.1%	0.1%
1.3%	1.0%	0.7%	0.7%	0.7%	0.7%	0.7%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.9%	0.7%	0.2%	0.2%	0.2%	0.2%	0.2%
0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%

0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
23.9%	18.2%	12.6%	12.6%	12.6%	12.5%	12.6%
3.4%	2.6%	0.5%	0.5%	0.5%	0.5%	0.5%
9.2%	7.0%	1.6%	1.6%	1.6%	1.6%	1.6%
0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%
0.4%	0.3%	0.1%	0.1%	0.1%	0.1%	0.1%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

0.0%	22.4%	60.5%	60.5%	60.5%	60.1%	60.6%
0.0%	3.2%	2.2%	2.2%	2.2%	2.2%	2.2%
0.0%	8.6%	7.8%	7.8%	7.8%	7.8%	7.8%
0.0%	0.1%	2.7%	2.7%	2.7%	2.7%	2.7%
0.0%	0.2%	1.4%	1.4%	1.4%	1.4%	1.4%
0.0%	0.0%	0.3%	0.3%	0.3%	0.3%	0.3%
0.0%	4.5%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	8.9%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%

9.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
20.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

		T-ACI/EUT				
S5	S6	S0	S1	S2	S3	S4
2.9%	2.0%	0.3%	0.3%	0.3%	0.3%	0.3%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.4%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.9%	0.6%	0.1%	0.1%	0.1%	0.1%	0.1%
0.5%	0.3%	1.5%	1.5%	1.5%	1.5%	1.5%
0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
0.4%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
0.3%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1.4%	1.0%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.2%	0.1%	0.2%	0.2%	0.2%	0.2%	0.2%
2.5%	1.8%	0.2%	0.2%	0.2%	0.2%	0.2%
0.1%	0.1%	0.2%	0.2%	0.2%	0.2%	0.2%
0.3%	0.2%	0.3%	0.3%	0.3%	0.3%	0.3%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1.6%	1.1%	0.2%	0.1%	0.2%	0.2%	0.2%
0.8%	0.6%	2.6%	2.6%	2.6%	2.6%	2.7%
0.2%	0.1%	0.2%	0.2%	0.2%	0.2%	0.2%
0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

0.3%	0.2%	0.0%	0.1%	0.0%	0.0%	0.0%
0.2%	0.1%	0.6%	1.6%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1.3%	0.9%	0.1%	0.0%	0.3%	0.4%	0.0%
0.0%	0.0%	0.2%	0.0%	0.3%	0.4%	0.0%
0.2%	0.1%	0.1%	0.0%	0.3%	0.4%	0.0%
1.1%	0.7%	0.1%	0.1%	0.1%	0.1%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.1%	0.1%	0.2%	0.2%	0.0%
0.9%	0.6%	0.1%	0.1%	0.1%	0.1%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.2%	0.1%	0.2%	0.3%	0.3%	0.3%	0.0%
2.0%	1.4%	0.2%	0.3%	0.2%	0.2%	0.0%
1.0%	0.7%	3.2%	4.6%	3.1%	4.0%	0.7%
0.3%	0.2%	0.2%	0.3%	0.2%	0.3%	0.0%
3.2%	2.3%	0.3%	0.1%	0.2%	0.2%	0.8%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.4%	0.3%	0.4%	0.2%	0.2%	0.2%	1.0%
0.7%	0.5%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.2%	0.1%	0.2%	0.2%	0.2%	0.2%	0.2%
1.2%	0.8%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.3%	0.2%	0.3%	0.3%	0.3%	0.3%	0.3%
2.0%	1.4%	0.2%	0.2%	0.2%	0.2%	0.2%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.5%	0.3%	0.5%	0.5%	0.5%	0.5%	0.5%
0.3%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%

0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
37.4%	26.1%	3.5%	3.4%	3.5%	3.5%	3.6%
1.3%	0.9%	4.3%	4.2%	4.4%	4.3%	4.5%
4.8%	3.4%	4.3%	4.2%	4.3%	4.2%	4.4%
0.3%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
0.2%	0.1%	0.5%	0.5%	0.5%	0.5%	0.5%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	32.1%	16.9%	16.5%	17.0%	16.8%	17.5%
0.0%	1.2%	20.8%	20.3%	20.9%	20.6%	21.5%
0.0%	4.1%	20.6%	20.1%	20.7%	20.4%	21.2%
0.0%	0.1%	0.8%	0.7%	0.8%	0.7%	0.8%
0.0%	0.1%	13.2%	12.9%	13.3%	13.1%	13.7%
0.0%	0.0%	0.9%	0.9%	0.9%	0.9%	0.9%
0.1%	6.4%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	3.3%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%

15.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

		OCC				
S5	S6	S0	S1	S2	S3	S4
0.5%	0.5%	0.3%	0.3%	0.3%	0.3%	0.3%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.6%	0.6%	0.8%	0.8%	0.8%	0.8%	0.8%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%
0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
2.7%	2.5%	0.0%	0.0%	0.0%	0.0%	0.0%
0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.2%	0.1%	0.4%	0.4%	0.4%	0.4%	0.4%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.3%	0.3%	0.4%	0.4%	0.4%	0.4%	0.4%
0.4%	0.4%	0.3%	0.3%	0.3%	0.3%	0.3%
0.4%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%
0.5%	0.5%	0.7%	0.7%	0.7%	0.7%	0.7%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
0.3%	0.3%	0.2%	0.2%	0.2%	0.2%	0.2%
4.7%	4.5%	0.1%	0.1%	0.1%	0.1%	0.1%
0.3%	0.3%	0.4%	0.4%	0.4%	0.4%	0.4%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

0.1%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%
1.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.1%	0.3%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.2%	0.2%	0.1%	0.0%	0.3%	0.4%	0.0%
0.3%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%
0.3%	0.3%	0.4%	0.0%	0.8%	1.0%	0.0%
0.2%	0.2%	0.1%	0.2%	0.1%	0.1%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.2%	0.2%	0.3%	0.4%	0.4%	0.4%	0.1%
0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.4%	0.4%	0.8%	1.0%	1.0%	1.0%	0.2%
0.3%	0.3%	0.2%	0.3%	0.2%	0.3%	0.0%
5.7%	5.4%	0.1%	0.1%	0.1%	0.1%	0.0%
0.4%	0.4%	0.5%	0.8%	0.5%	0.7%	0.1%
0.5%	0.5%	0.4%	0.2%	0.2%	0.2%	1.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.7%	0.6%	0.9%	0.4%	0.4%	0.4%	2.3%
0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.3%	0.3%	0.7%	0.7%	0.7%	0.7%	0.7%
0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.5%	0.5%	1.2%	1.2%	1.2%	1.1%	1.2%
0.3%	0.3%	0.2%	0.2%	0.2%	0.2%	0.2%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.8%	0.8%	1.9%	1.9%	1.9%	1.9%	1.9%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.3%	0.3%	0.3%	0.3%	0.3%

0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6.3%	6.0%	4.2%	4.2%	4.2%	4.2%	4.2%
7.8%	7.3%	0.1%	0.1%	0.1%	0.1%	0.1%
7.7%	7.3%	10.0%	10.1%	10.0%	10.0%	10.1%
0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.9%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	7.3%	20.2%	20.2%	20.2%	20.1%	20.3%
0.0%	9.0%	0.5%	0.5%	0.5%	0.5%	0.5%
0.0%	8.9%	48.2%	48.3%	48.1%	47.8%	48.3%
0.0%	0.0%	0.9%	0.9%	0.9%	0.9%	0.9%
0.0%	0.5%	0.3%	0.3%	0.3%	0.3%	0.3%
0.0%	0.0%	2.1%	2.1%	2.1%	2.1%	2.1%
0.0%	1.5%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	25.4%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	1.8%	0.0%	0.0%	0.0%	0.0%	0.0%

2.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
46.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.3%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

		A-ACI				
S5	S6	S0	S1	S2	S3	S4
0.9%	0.7%	0.2%	0.2%	0.2%	0.2%	0.2%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2.3%	1.6%	0.2%	0.2%	0.2%	0.2%	0.2%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.3%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%
0.3%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%
0.1%	0.1%	0.8%	0.8%	0.8%	0.8%	0.8%
0.7%	0.5%	0.1%	0.1%	0.1%	0.1%	0.1%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1.2%	0.8%	0.5%	0.5%	0.5%	0.5%	0.5%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.3%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
0.5%	0.3%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1.1%	0.8%	0.1%	0.1%	0.1%	0.1%	0.1%
0.8%	0.6%	0.2%	0.1%	0.2%	0.1%	0.2%
0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%
2.0%	1.4%	0.2%	0.2%	0.2%	0.2%	0.2%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.4%	0.3%	0.2%	0.2%	0.2%	0.2%	0.2%
0.5%	0.4%	0.1%	0.1%	0.1%	0.1%	0.1%
0.2%	0.1%	1.4%	1.3%	1.4%	1.3%	1.5%
1.3%	0.9%	0.1%	0.1%	0.1%	0.1%	0.1%
0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%

0.1%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%
0.0%	0.0%	0.3%	0.8%	0.0%	0.0%	0.0%
0.3%	0.2%	0.0%	0.1%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.4%	0.3%	0.1%	0.0%	0.2%	0.2%	0.0%
0.0%	0.0%	0.1%	0.0%	0.2%	0.2%	0.0%
1.0%	0.7%	0.1%	0.0%	0.2%	0.3%	0.0%
0.4%	0.2%	0.1%	0.1%	0.1%	0.1%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.8%	0.6%	0.1%	0.1%	0.1%	0.1%	0.0%
0.3%	0.2%	0.1%	0.1%	0.1%	0.1%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2.5%	1.7%	7.7%	9.2%	9.3%	9.3%	1.6%
0.6%	0.4%	0.1%	0.2%	0.1%	0.1%	0.0%
0.2%	0.1%	1.7%	2.4%	1.6%	2.1%	0.4%
1.5%	1.1%	0.1%	0.2%	0.1%	0.2%	0.0%
1.1%	0.7%	0.2%	0.1%	0.1%	0.1%	0.6%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2.5%	1.8%	0.2%	0.1%	0.1%	0.1%	0.7%
0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2.0%	1.4%	6.2%	6.0%	6.1%	6.1%	6.7%
0.4%	0.3%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3.4%	2.3%	10.5%	10.2%	10.3%	10.2%	11.3%
0.7%	0.5%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5.5%	3.8%	17.0%	16.5%	16.8%	16.6%	18.4%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.8%	0.5%	0.3%	0.3%	0.3%	0.3%	0.4%

0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
12.3%	8.5%	2.3%	2.2%	2.2%	2.2%	2.5%
0.3%	0.2%	2.3%	2.2%	2.2%	2.2%	2.4%
29.3%	20.3%	2.7%	2.7%	2.7%	2.7%	3.0%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.3%	0.3%	0.3%	0.3%	0.3%
0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	10.5%	10.9%	10.6%	10.7%	10.7%	11.8%
0.0%	0.2%	10.8%	10.5%	10.7%	10.6%	11.7%
0.0%	25.0%	13.1%	12.7%	12.9%	12.8%	14.2%
0.0%	0.0%	0.5%	0.5%	0.5%	0.5%	0.5%
0.0%	0.0%	6.9%	6.7%	6.8%	6.7%	7.5%
0.0%	0.1%	0.6%	0.6%	0.6%	0.6%	0.6%
0.0%	2.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	5.0%	0.0%	0.0%	0.0%	0.0%	0.0%

5.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
12.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%
0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

		A-EUT				
S5	**S6**	**S0**	**S1**	**S2**	**S3**	**S4**
0.2%	0.2%	0.4%	0.4%	0.4%	0.4%	0.4%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.3%	0.3%	0.4%	0.4%	0.4%	0.4%	0.4%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
1.1%	1.0%	0.7%	0.7%	0.7%	0.7%	0.7%
0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.7%	0.7%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.1%	0.0%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%
0.1%	0.1%	0.2%	0.2%	0.2%	0.2%	0.2%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.2%	0.2%	0.2%	0.2%	0.2%
0.2%	0.2%	0.4%	0.4%	0.4%	0.4%	0.4%
0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%
0.3%	0.2%	0.4%	0.4%	0.4%	0.4%	0.4%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.2%	0.2%	0.2%	0.2%	0.2%
1.9%	1.8%	1.3%	1.3%	1.3%	1.3%	1.3%
0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%
0.4%	0.4%	0.3%	0.8%	0.0%	0.0%	0.0%
0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.2%	0.0%	0.4%	0.6%	0.0%
0.1%	0.1%	0.1%	0.0%	0.2%	0.2%	0.0%
0.1%	0.1%	0.2%	0.0%	0.4%	0.6%	0.0%
0.1%	0.1%	0.2%	0.2%	0.2%	0.2%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.2%	0.2%	0.2%	0.2%	0.0%
0.1%	0.1%	0.1%	0.2%	0.2%	0.2%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10.5%	10.1%	0.7%	0.9%	0.9%	0.9%	0.1%
0.2%	0.2%	0.3%	0.4%	0.3%	0.4%	0.1%
2.3%	2.2%	1.6%	2.3%	1.5%	1.9%	0.3%
0.2%	0.2%	0.3%	0.4%	0.3%	0.4%	0.1%
0.3%	0.3%	0.5%	0.2%	0.2%	0.2%	1.3%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.3%	0.3%	0.5%	0.2%	0.2%	0.2%	1.3%
0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8.5%	8.2%	0.6%	0.6%	0.6%	0.6%	0.6%
0.1%	0.1%	0.2%	0.2%	0.2%	0.2%	0.2%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
14.4%	13.9%	1.0%	1.0%	1.0%	1.0%	1.0%
0.2%	0.2%	0.3%	0.3%	0.3%	0.3%	0.3%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
23.4%	22.6%	1.6%	1.6%	1.6%	1.6%	1.7%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.5%	0.4%	0.1%	0.1%	0.1%	0.1%	0.1%

0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3.1%	3.0%	5.5%	5.4%	5.5%	5.4%	5.6%
3.1%	3.0%	2.1%	2.1%	2.1%	2.1%	2.1%
3.8%	3.6%	5.6%	5.5%	5.6%	5.5%	5.7%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.4%	0.4%	0.2%	0.2%	0.2%	0.2%	0.3%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	3.7%	26.3%	26.0%	26.3%	26.0%	26.8%
0.0%	3.7%	10.1%	10.0%	10.1%	10.0%	10.3%
0.0%	4.5%	26.8%	26.5%	26.8%	26.6%	27.3%
0.0%	0.0%	1.2%	1.2%	1.2%	1.2%	1.2%
0.0%	0.2%	6.4%	6.4%	6.4%	6.4%	6.5%
0.0%	0.0%	1.2%	1.2%	1.2%	1.2%	1.2%
0.0%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	10.4%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%

1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
18.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

				MIN		
S5	S6	S0	S1	S2	S3	S4
0.9%	0.8%	0.5%	0.5%	0.5%	0.5%	0.5%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.9%	0.8%	0.4%	0.4%	0.4%	0.4%	0.4%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
0.3%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%
1.6%	1.3%	0.8%	0.8%	0.8%	0.8%	0.9%
0.3%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%
0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.3%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.5%	0.4%	0.2%	0.2%	0.2%	0.2%	0.2%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.5%	0.4%	0.2%	0.2%	0.2%	0.2%	0.2%
0.8%	0.7%	0.4%	0.4%	0.4%	0.4%	0.4%
0.3%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%
0.8%	0.7%	0.3%	0.3%	0.3%	0.3%	0.3%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
0.5%	0.4%	0.3%	0.3%	0.3%	0.3%	0.3%
2.8%	2.3%	1.5%	1.5%	1.5%	1.5%	1.5%
0.5%	0.4%	0.2%	0.2%	0.2%	0.2%	0.2%
0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

0.1%	0.1%	0.1%	0.2%	0.0%	0.0%	0.0%
0.6%	0.5%	0.3%	0.9%	0.0%	0.0%	0.0%
0.1%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.4%	0.4%	0.2%	0.0%	0.5%	0.6%	0.0%
0.2%	0.1%	0.1%	0.0%	0.2%	0.3%	0.0%
0.4%	0.4%	0.2%	0.0%	0.4%	0.5%	0.0%
0.3%	0.3%	0.2%	0.2%	0.2%	0.2%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.4%	0.3%	0.1%	0.2%	0.2%	0.2%	0.0%
0.3%	0.2%	0.1%	0.2%	0.2%	0.2%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1.6%	1.3%	0.5%	0.6%	0.6%	0.6%	0.1%
0.6%	0.5%	0.3%	0.5%	0.3%	0.4%	0.1%
3.4%	2.9%	1.8%	2.6%	1.7%	2.3%	0.4%
0.6%	0.5%	0.2%	0.4%	0.2%	0.3%	0.1%
1.0%	0.9%	0.5%	0.3%	0.3%	0.3%	1.4%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1.1%	0.9%	0.4%	0.2%	0.2%	0.2%	1.1%
0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1.3%	1.1%	0.4%	0.4%	0.4%	0.4%	0.4%
0.4%	0.3%	0.2%	0.2%	0.2%	0.2%	0.2%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2.2%	1.8%	0.6%	0.6%	0.6%	0.6%	0.7%
0.6%	0.5%	0.3%	0.3%	0.3%	0.3%	0.3%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3.6%	3.0%	1.1%	1.0%	1.1%	1.0%	1.1%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%

0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
12.1%	10.0%	6.0%	5.9%	6.0%	5.9%	6.1%
4.7%	3.9%	2.5%	2.4%	2.5%	2.4%	2.5%
12.4%	10.2%	4.7%	4.6%	4.7%	4.6%	4.8%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%
0.6%	0.5%	0.3%	0.3%	0.3%	0.3%	0.3%
0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	12.4%	28.6%	28.2%	28.6%	28.3%	29.1%
0.0%	4.8%	11.8%	11.7%	11.8%	11.7%	12.1%
0.0%	12.6%	22.4%	22.1%	22.4%	22.2%	22.8%
0.0%	0.0%	1.3%	1.3%	1.3%	1.3%	1.3%
0.0%	0.3%	7.5%	7.4%	7.5%	7.5%	7.7%
0.0%	0.0%	1.0%	1.0%	1.0%	1.0%	1.0%
0.0%	2.5%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	13.4%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	2.5%	0.0%	0.0%	0.0%	0.0%	0.0%

5.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
27.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

S5	S6
1.0%	0.8%
0.0%	0.0%
0.8%	0.7%
0.0%	0.0%
0.0%	0.0%
0.1%	0.1%
0.3%	0.3%
1.8%	1.5%
0.2%	0.2%
0.1%	0.1%
0.0%	0.0%
0.5%	0.4%
0.1%	0.1%
0.0%	0.0%
0.1%	0.1%
0.5%	0.4%
0.0%	0.0%
0.4%	0.3%
0.9%	0.7%
0.3%	0.2%
0.7%	0.6%
0.1%	0.0%
0.0%	0.0%
0.2%	0.1%
0.6%	0.5%
3.2%	2.7%
0.4%	0.4%
0.1%	0.1%
0.0%	0.0%
0.0%	0.0%

0.1%	0.1%
0.7%	0.6%
0.1%	0.1%
0.0%	0.0%
0.0%	0.0%
0.0%	0.0%
0.4%	0.4%
0.2%	0.2%
0.4%	0.3%
0.4%	0.3%
0.0%	0.0%
0.3%	0.2%
0.3%	0.3%
0.0%	0.0%
1.0%	0.9%
0.7%	0.6%
3.9%	3.3%
0.5%	0.4%
1.1%	0.9%
0.0%	0.0%
0.9%	0.7%
0.2%	0.2%
0.0%	0.0%
0.8%	0.7%
0.4%	0.4%
0.0%	0.0%
1.4%	1.2%
0.7%	0.6%
0.0%	0.0%
2.3%	1.9%
0.1%	0.1%
0.0%	0.0%
0.3%	0.3%

0.0%	0.0%
0.0%	0.0%
0.0%	0.0%
0.0%	0.0%
0.0%	0.0%
0.0%	0.0%
12.8%	10.8%
5.3%	4.5%
10.0%	8.5%
0.1%	0.1%
0.6%	0.5%
0.1%	0.1%
0.1%	0.0%
0.0%	0.0%
0.0%	0.0%
0.0%	0.0%
0.0%	0.0%
0.0%	0.0%
0.1%	0.0%
0.0%	0.0%
0.0%	0.0%
0.0%	13.3%
0.0%	5.5%
0.0%	10.5%
0.0%	0.1%
0.0%	0.3%
0.0%	0.0%
0.0%	2.7%
0.0%	15.5%
0.0%	2.1%

5.3%	0.0%
31.5%	0.0%
4.2%	0.0%
0.0%	0.0%
0.2%	0.1%
0.0%	0.0%
100.0%	100.0%

Scenario	IMPACT 2002+ categories and unit	Environmental impacts by fonctional unit (in m² * year			
		Building stages			
		Construction	Refurbishment	End-of-life	Energy consumption
S0	GW (Kg C02 eq)	5.73E+00	1.96E+00	4.33E-01	2.75E+00
	OZO (Kg CFC-11 eq)	4.15E-07	2.87E-07	9.23E-08	2.20E-07
	RESP-O (Kg C2H4 eq)	3.96E-03	2.67E-03	3.40E-04	6.95E-04
	T-ACI/EUT (Kg SO2 eq)	1.02E-01	4.84E-02	1.87E-02	5.61E-02
	A-ACI (Kg SO2 eq)	2.74E-02	1.48E-02	5.28E-03	2.10E-02
	A-EUT (Kg PO4P-lim)	2.11E-03	1.09E-03	5.08E-05	1.42E-03
	ENER (Mj-Primary)	5.71E+01	3.18E+01	8.22E+00	6.58E+01
	CARC (Kg C2H3CL eq)	1.95E-01	9.99E-02	4.49E-03	1.08E-01
	N-CARC (Kg C2H3Cl eq	1.71E-01	9.60E-02	6.60E-03	8.83E-02
	RESP-I (Kg PM 2.5 eq)	6.48E-03	2.97E-03	1.10E-03	2.90E-03
	RAD (Bq C-14 eq)	2.57E+01	1.36E+01	3.99E+00	4.03E+02
	A-ECO (Kg TEG water)	4.62E+02	2.72E+02	3.63E+01	6.77E+02
	T-ECO (Kg TEG soil)	1.92E+02	9.44E+01	2.50E+01	2.51E+02
	OCC (m2org. Arable)	1.00E-01	9.16E-02	2.58E-02	1.06E-01
	MIN (MJ-Surplus)	1.62E+00	7.79E-01	1.11E-02	8.67E-01
S1	GW (Kg C02 eq)	5.82E+00	1.99E+00	4.40E-01	2.75E+00
	OZO (Kg CFC-11 eq)	4.22E-07	2.88E-07	9.33E-08	2.20E-07
	RESP-O (Kg C2H4 eq)	4.12E-03	2.81E-03	3.46E-04	6.95E-04
	T-ACI/EUT (Kg SO2 eq)	1.04E-01	4.90E-02	1.91E-02	5.61E-02
	A-ACI (Kg SO2 eq)	2.85E-02	1.53E-02	5.43E-03	2.10E-02
	A-EUT (Kg PO4P-lim)	2.27E-03	1.24E-03	5.13E-05	1.42E-03
	ENER (Mj-Primary)	5.87E+01	3.25E+01	8.30E+00	6.58E+01
	CARC (Kg C2H3CL eq)	2.06E-01	1.09E-01	4.55E-03	1.08E-01
	N-CARC (Kg C2H3Cl eq	1.81E-01	1.05E-01	6.60E-03	8.83E-02
	RESP-I (Kg PM 2.5 eq)	6.82E-03	3.21E-03	1.11E-03	2.90E-03
	RAD (Bq C-14 eq)	2.63E+01	1.37E+01	4.03E+00	4.03E+02
	A-ECO (Kg TEG water)	4.83E+02	2.85E+02	3.65E+01	6.77E+02
	T-ECO (Kg TEG soil)	2.04E+02	1.05E+02	2.50E+01	2.51E+02
	OCC (m2org. Arable)	1.02E-01	9.17E-02	2.58E-02	1.06E-01
	MIN (MJ-Surplus)	1.76E+00	9.12E-01	1.13E-02	8.67E-01
S2	GW (Kg C02 eq)	5.70E+00	1.87E+00	4.33E-01	2.75E+00
	OZO (Kg CFC-11 eq)	4.12E-07	2.78E-07	9.20E-08	2.20E-07
	RESP-O (Kg C2H4 eq)	4.02E-03	2.71E-03	3.38E-04	6.95E-04
	T-ACI/EUT (Kg SO2 eq)	9.97E-02	4.45E-02	1.86E-02	5.61E-02
	A-ACI (Kg SO2 eq)	2.67E-02	1.35E-02	5.36E-03	2.10E-02
	A-EUT (Kg PO4P-lim)	2.09E-03	1.06E-03	5.07E-05	1.42E-03
	ENER (Mj-Primary)	5.65E+01	3.04E+01	8.20E+00	6.58E+01
	CARC (Kg C2H3CL eq)	1.93E-01	9.51E-02	4.48E-03	1.08E-01
	N-CARC (Kg C2H3Cl eq	1.69E-01	9.31E-02	6.59E-03	8.83E-02
	RESP-I (Kg PM 2.5 eq)	6.31E-03	2.71E-03	1.09E-03	2.90E-03
	RAD (Bq C-14 eq)	2.55E+01	1.29E+01	3.98E+00	4.03E+02

	A-ECO (Kg TEG water)	4.53E+02	2.55E+02	3.62E+01	6.77E+02
	T-ECO (Kg TEG soil)	1.89E+02	9.00E+01	2.50E+01	2.51E+02
	OCC (m2org. Arable)	1.01E-01	9.11E-02	2.58E-02	1.06E-01
	MIN (MJ-Surplus)	1.58E+00	7.36E-01	1.11E-02	8.67E-01
S3	GW (Kg C02 eq)	5.82E+00	1.99E+00	4.38E-01	2.75E+00
	OZO (Kg CFC-11 eq)	4.21E-07	2.87E-07	9.30E-08	2.20E-07
	RESP-O (Kg C2H4 eq)	4.10E-03	2.79E-03	3.43E-04	6.95E-04
	T-ACI/EUT (Kg SO2 eq)	1.02E-01	4.68E-02	1.88E-02	5.61E-02
	A-ACI (Kg SO2 eq)	2.74E-02	1.42E-02	5.40E-03	2.10E-02
	A-EUT (Kg PO4P-lim)	2.19E-03	1.16E-03	5.12E-05	1.42E-03
	ENER (Mj-Primary)	5.77E+01	3.16E+01	8.28E+00	6.58E+01
	CARC (Kg C2H3CL eq)	1.99E-01	1.01E-01	4.53E-03	1.08E-01
	N-CARC (Kg C2H3Cl eq	1.74E-01	9.81E-02	6.64E-03	8.83E-02
	RESP-I (Kg PM 2.5 eq)	6.48E-03	2.88E-03	1.11E-03	2.90E-03
	RAD (Bq C-14 eq)	2.61E+01	1.35E+01	4.02E+00	4.03E+02
	A-ECO (Kg TEG water)	4.70E+02	2.72E+02	3.66E+01	6.77E+02
	T-ECO (Kg TEG soil)	1.97E+02	9.80E+01	2.52E+01	2.51E+02
	OCC (m2org. Arable)	1.03E-01	9.34E-02	2.60E-02	1.06E-01
	MIN (MJ-Surplus)	1.66E+00	8.14E-01	1.12E-02	8.67E-01
S4	GW (Kg C02 eq)	5.57E+00	2.04E+00	4.21E-01	2.75E+00
	OZO (Kg CFC-11 eq)	4.03E-07	2.98E-07	9.07E-08	2.20E-07
	RESP-O (Kg C2H4 eq)	3.57E-03	2.34E-03	3.30E-04	6.95E-04
	T-ACI/EUT (Kg SO2 eq)	9.97E-02	5.34E-02	1.81E-02	5.61E-02
	A-ACI (Kg SO2 eq)	2.68E-02	1.63E-02	4.87E-03	2.10E-02
	A-EUT (Kg PO4P-lim)	1.85E-03	8.62E-04	4.98E-05	1.42E-03
	ENER (Mj-Primary)	5.50E+01	3.28E+01	8.08E+00	6.58E+01
	CARC (Kg C2H3CL eq)	1.80E-01	9.24E-02	4.41E-03	1.08E-01
	N-CARC (Kg C2H3Cl eq	1.55E-01	8.52E-02	6.57E-03	8.83E-02
	RESP-I (Kg PM 2.5 eq)	6.16E-03	2.99E-03	1.07E-03	2.90E-03
	RAD (Bq C-14 eq)	2.51E+01	1.47E+01	3.92E+00	4.03E+02
	A-ECO (Kg TEG water)	4.38E+02	2.76E+02	3.60E+01	6.77E+02
	T-ECO (Kg TEG soil)	1.73E+02	8.25E+01	2.50E+01	2.51E+02
	OCC (m2org. Arable)	9.65E-02	9.15E-02	2.57E-02	1.06E-01
	MIN (MJ-Surplus)	1.42E+00	6.16E-01	1.09E-02	8.67E-01
S5	GW (Kg C02 eq)	2.84E+00	1.96E+00	2.20E-01	2.75E+00
	OZO (Kg CFC-11 eq)	2.96E-07	2.87E-07	4.15E-08	2.20E-07
	RESP-O (Kg C2H4 eq)	2.67E-03	2.67E-03	1.81E-04	6.95E-04
	T-ACI/EUT (Kg SO2 eq)	7.06E-02	4.84E-02	1.04E-02	5.61E-02
	A-ACI (Kg SO2 eq)	1.80E-02	1.48E-02	3.84E-03	2.10E-02
	A-EUT (Kg PO4P-lim)	1.15E-03	1.09E-03	2.29E-05	1.42E-03
	ENER (Mj-Primary)	4.08E+01	3.18E+01	3.67E+00	6.58E+01
	CARC (Kg C2H3CL eq)	1.05E-01	9.99E-02	2.08E-03	1.08E-01
	N-CARC (Kg C2H3Cl eq	1.14E-01	9.60E-02	2.36E-03	8.83E-02
	RESP-I (Kg PM 2.5 eq)	4.29E-03	2.97E-03	5.00E-04	2.90E-03
	RAD (Bq C-14 eq)	2.17E+01	1.36E+01	1.77E+00	4.03E+02
	A-ECO (Kg TEG water)	4.63E+02	2.72E+02	1.40E+01	6.77E+02
	T-ECO (Kg TEG soil)	1.98E+02	9.44E+01	8.44E+00	2.51E+02

	OCC (m2org. Arable)	1.44E+00	9.16E-02	8.85E-03	1.06E-01
	MIN (MJ-Surplus)	7.36E-01	7.79E-01	5.18E-03	8.67E-01
S6	GW (Kg C02 eq)	4.43E+00	1.96E+00	2.50E-01	2.75E+00
	OZO (Kg CFC-11 eq)	3.88E-07	2.87E-07	4.97E-08	2.20E-07
	RESP-O (Kg C2H4 eq)	3.78E-03	2.67E-03	1.96E-04	6.95E-04
	T-ACI/EUT (Kg SO2 eq)	9.63E-02	4.84E-02	1.10E-02	5.61E-02
	A-ACI (Kg SO2 eq)	2.92E-02	1.48E-02	3.98E-03	2.10E-02
	A-EUT (Kg PO4P-lim)	3.99E-03	1.09E-03	2.77E-05	1.42E-03
	ENER (Mj-Primary)	5.28E+01	3.18E+01	4.41E+00	6.58E+01
	CARC (Kg C2H3CL eq)	2.55E-01	9.99E-02	2.46E-03	1.08E-01
	N-CARC (Kg C2H3Cl eq	2.14E-01	9.60E-02	3.26E-03	8.83E-02
	RESP-I (Kg PM 2.5 eq)	7.09E-03	2.97E-03	5.90E-04	2.90E-03
	RAD (Bq C-14 eq)	2.42E+01	1.36E+01	2.14E+00	4.03E+02
	A-ECO (Kg TEG water)	6.45E+02	2.72E+02	1.84E+01	6.77E+02
	T-ECO (Kg TEG soil)	3.07E+02	9.44E+01	1.21E+01	2.51E+02
	OCC (m2org. Arable)	9.58E-02	9.16E-02	1.27E-02	1.06E-01
	MIN (MJ-Surplus)	3.12E+00	7.79E-01	6.12E-03	8.67E-01

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Total
1.09E+01
1.01E-06
7.66E-03
2.25E-01
6.86E-02
4.66E-03
1.63E+02
4.07E-01
3.62E-01
1.34E-02
4.46E+02
1.45E+03
5.62E+02
3.24E-01
3.27E+00
1.10E+01
1.02E-06
7.97E-03
2.28E-01
7.03E-02
4.97E-03
1.65E+02
4.27E-01
3.81E-01
1.40E-02
4.47E+02
1.48E+03
5.85E+02
3.26E-01
3.55E+00
1.07E+01
1.00E-06
7.76E-03
2.19E-01
6.66E-02
4.61E-03
1.61E+02
4.00E-01
3.57E-01
1.30E-02
4.45E+02

1.42E+03
5.55E+02
3.24E-01
3.19E+00
1.10E+01
1.02E-06
7.93E-03
2.24E-01
6.79E-02
4.81E-03
1.63E+02
4.12E-01
3.68E-01
1.34E-02
4.47E+02
1.45E+03
5.71E+02
3.29E-01
3.35E+00
1.08E+01
1.01E-06
6.93E-03
2.27E-01
6.90E-02
4.18E-03
1.62E+02
3.85E-01
3.36E-01
1.31E-02
4.47E+02
1.43E+03
5.31E+02
3.20E-01
2.91E+00
7.77E+00
8.45E-07
6.21E-03
1.85E-01
5.77E-02
3.67E-03
1.42E+02
3.14E-01
3.01E-01
1.07E-02
4.40E+02
1.43E+03
5.52E+02

1.64E+00
2.39E+00
9.39E+00
9.45E-07
7.34E-03
2.12E-01
6.91E-02
6.52E-03
1.55E+02
4.65E-01
4.02E-01
1.36E-02
4.43E+02
1.61E+03
6.65E+02
3.07E-01
4.77E+00