# Campus Sustainability Assessment Framework (CSAF)

## A BRIEF INTRODUCTION

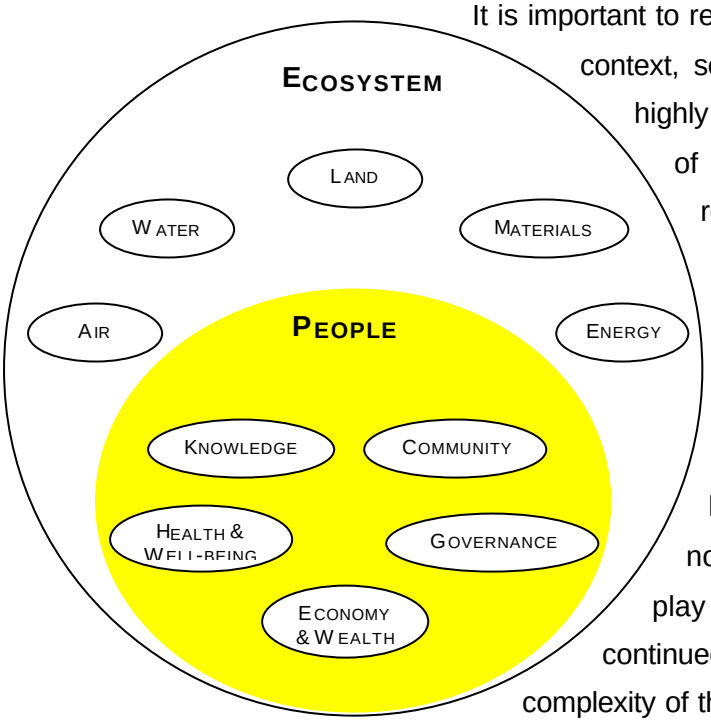
Welcome to the Campus Sustainability Assessment Framework (CSAF). The CSAF is the product of a Masters thesis, the work of 15 co-researchers who are experts in campus sustainability, and more than 130 others who helped out with advice, input, and ideas along the way. Although this version of the CSAF is the "final version" in terms of this phase of the project, it is by no means complete. There is still a tremendous amount of work to be done. Most of this work must involve all of the budding campus sustainability activists out there who want to start a new project on their campus. This version of the CSAF needs to be used, abused, critiqued, ripped apart, and then rebuilt (hopefully in the near future) in order for it to begin to realize its full potential. This project needs all of you to take action.

I encourage you to read through the full Masters thesis by Lindsay Cole associated with this framework so as to fully understand how it was developed, who was involved in its development, why certain decisions were made, and what the remaining challenges that need to be worked out are. It is important to understand all of the bias and assumptions built in to this version of the CSAF in order for it to be most effectively tested, critiqued, and then improved. I hope that this tool helps you to work through some of your campus sustainability challenges, and helps to unite the Canadian campus sustainability movement together with one objective: to transform the way that our campuses teach, research and operate in to models of sustainability.

## CAMPUS SUSTAINABILITY ASSESSMENT FRAMEWORK OVERVIEW

The CSAF began as a slightly modified version of Robert Prescott-Allen's Wellbeing Assessment (2001). Through working with his methodological framework, trying to shape and mold it to the university campus context, and through piloting it with over 130 different sustainable campus proponents the CSAF has evolved substantially. The figure below represents our egg of sustainability, differing fundamentally from Wellbeing Assessment's version (Prescott-Allen, 2001). This schematic shows that the people subsystem lies within the eco-subsystem, representing its supportive function, and that each subsystem needs to be healthy in order for the whole system to be healthy. Within each subsystem are five "dimensions," representing the key campus sustainability issues identified by the co-research team. The ecosystem dimensions are air, water, land, materials, and energy. The people dimensions are knowledge, community, economy and wealth, governance, and health and wellbeing. Each dimension is then further broken down into "elements" and "subelements" until the organizational level of indicators is reached.

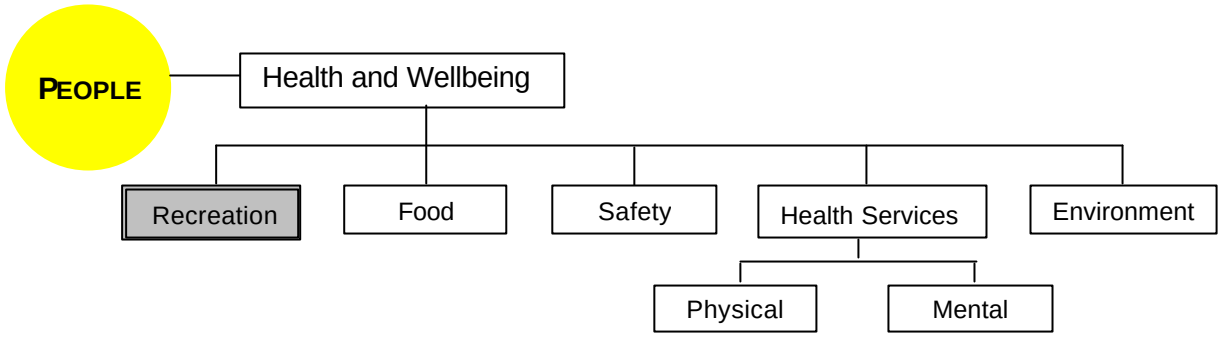



It is important to remember that any model of sustainability, for any context, serves only to visually represent and simplify a highly complex issue in order to aid our understanding of it. One of the greatest challenges of this research has been to model campus sustainability. Sustainability is a complex, interdependent, and long-term state that is currently ill defined, and very difficult to accurately divide into smaller parts. Humans are one part of the larger ecosystem, and the larger universe in which we live. Every living and non-living part of this earth has an essential role to play in the function of our world, and a right to continued existence. A model can only describe the complexity of these relationships in a very simplistic way. This model – our egg of sustainability – is meant to help with understanding and describing the wide range of campus sustainability issues included in the CSAF. There will be many criticisms of this model, and it is hoped that it can evolve over time as our understanding of campus sustainability grows.

Many campuses will face challenges in data and information gathering, and fully completing the CSAF. The CSAF is the largest scale tool of its kind, containing over 170 indicators. Many campuses will not be able to find information on all of the indicators contained in the CSAF, and perhaps whole sub-sections will have to be left blank due to inaccessibility or unavailability of information. This will be a great frustration, but should also be seen as a challenge and an opportunity for future improvements on your campus. People employing the CSAF should use these particularly challenging sections of the framework to describe your data collection difficulties, talk about these issues where your campus lacks important information, and make concrete suggestions on how to move forward. Inaccessible or uncollected information does not mean that the issue is not important for your campus, in fact it may be that these exact issues are the most important ones for your campus to address. The CSAF has been designed as a whole to describe overall movement of your campus towards sustainability. Application of the CSAF will be a great challenge, and an important one, requiring patience, diplomacy, strategic planning and perseverance to complete.

# PEOPLE: HEALTH AND WELLBEING

There are 19 indicators in this section.




## Recreation

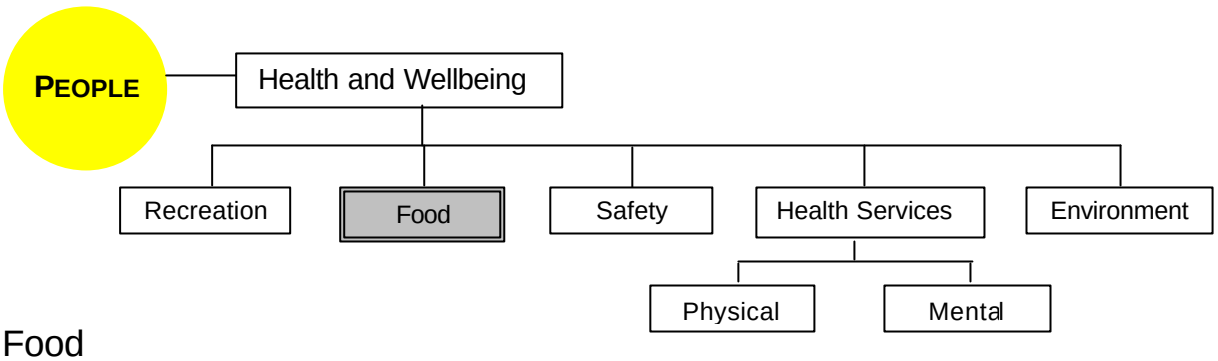
Issue: Physical and social activity leads to improved human wellbeing through activation of the body and mind. It is important for campuses to support and encourage recreation on campus for these reasons. Recreation can include both competitive and intra-mural or club recreational activities. Need to define "recreation" a bit more clearly

Indicators and Benchmarks:

| NO. | INDICATOR | MEASUREMENT | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| HW-1 | Recreation Space | Total square metres dedicated to recreation uses (both in- and outdoor to be included) divided by total campus square metres; multiply by 100. | | |
| HW-2 | Recreation Participation | Total number of CCMs participating in one or more on-campus recreation programs (avoid double counting of people who participate in more than one program) divided by the total number of CCMs; multiply by 100. | At least 40% | 100% |

Discussion: It is particularly difficult to set performance benchmarks for these indicators, as they will require some new research and testing for appropriate levels of performance. Thus all three short-term benchmarks should be seen as highly malleable, and are meant to initiate discussion on this important subject. HW-1 will have optimum performance that must be neither too high nor two low, and a careful balance must be found between the two extremes.




# Food

Issue: Access to healthy, nutritious, safe, and sustainable food products on campus is critical to the wellbeing of a campus community.

Indicators and Benchmarks:

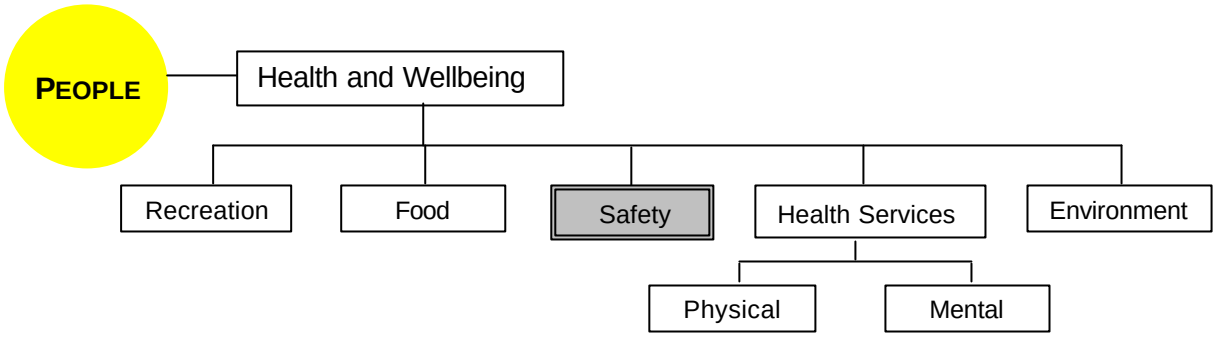
| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| HW-3 | Diet Types | Total annual number of meal servings (i.e. breakfast, lunch and/or dinner) provided by all food service outlets on-campus that have all listed diet types provided for in the serving, divided by total number of meal servings provided by all food services each year; multiply by 100.<br><br>Different diet types include: regular, vegan, vegetarian (lacto ovo), kosher, halal, diabetic, gluten free, and low calorie, cholesterol and salt. | At least 30% | 100% |
| HW-4 | Nutritional Information | Total annual number of meal servings (i.e. breakfast, lunch and/or dinner) provided by all food service outlets on-campus that provide detailed nutritional information to the consumer at point of purchase, divided by the total meals served; multiply by 100.<br><br>Note: if one meal serving (i.e. breakfast) has 25% of its food products labeled with detailed nutritional information, then only 25% of that one meal should be counted towards the total. | At least 30% | 100% |
| HW-5 | Organic, Non-GMO, Fair Trade Food | Total annual dollar value of certified organic, and/or non-genetically modified, and/or fairly traded food products for all outlets selling food (prepared and unprepared) on campus, divided by the total annual food budget; multiply by 100.<br>Note: if a food meets two or more of the categories, it should only be counted once. | At least 30% | 100% |

Discussion: The list of meal types in indicator HW-3 is adapted from Air Canada's list of meal options. This was selected as a source because of the national context from which their meal options were informed, and because it was quite extensive. This list will likely need to be adapted over time as better sources are found. Difficulty of quantifying a "meal."

It would be better to measure certified organic, non-genetically modified, and fairly traded food purchases by weight rather than dollar value, because they often cost substantially more than 'traditional' food products. Dollar value thus skews the results, as it more heavily weights the 'non-traditional' foods purchased. However, because most campuses measure food purchases by dollar value and not weight, we used this measure.

The short-term benchmarks used in this section have been decided upon through a limited consensus process, and future work on setting these benchmarks must occur in order to set better targets.




## Safety

Issue: All campuses should work to protect the personal safety of their students, staff, faculty and visitors, as this is essential for long-term social sustainability.

Indicators and Benchmarks:

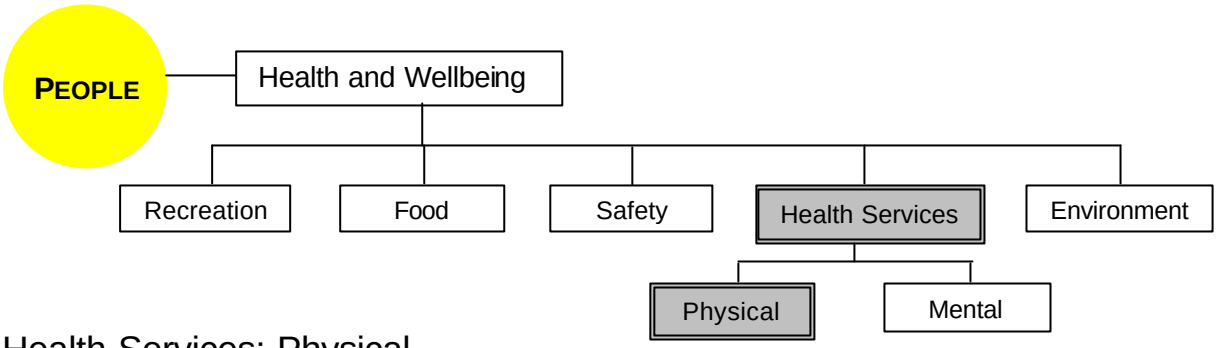
| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| HW-6 | Motor Vehicle Accidents | Total annual number of accidents on-campus occurring on campus lands and involving at least one motor vehicle (include accidents involving cyclists, pedestrians, etc. with motor vehicles) divided by the total number of CCMs; multiply by 1000. | | Zero per 1000 CCMs |
| HW-7 | Workplace Incidents | Total annual number of workplace incidents divided by total number of staff and faculty CCMs (do not include FTE students); multiply by 1000. | | Zero per 1000 CCMs |
| HW-8 | Incidents of Assault | Total annual number of reported incidents of rape, sexual assault, racism, physical assault, homophobia, and other similar events divided by the total number of CCMs; multiply by 1000 | | Zero per 1000 CCMs |

Discussion: Many workplace incidents go unreported, as well as many incidents of assault, so indicators HW-7 and HW-8 are only as good as the systems in place to report and track them.

Perhaps the reporting scale for all of these indicators is too small, and many campuses may have resulting numbers in the very low decimals even though we are using a number per 1000 CCMs. Over time, a better scale might be found that makes the resulting numbers more reasonable.

The long-term goals for all of these indicators are quite easy and obvious, but the shorter-term benchmarks are much less so. It was a struggle to set short-term benchmarks for these very serious issues that were something less than zero.




## Health Services: Physical

Issue: The provision of on-campus services to promote and protect the physical wellbeing of the campus community is an important aspect of campus sustainability.

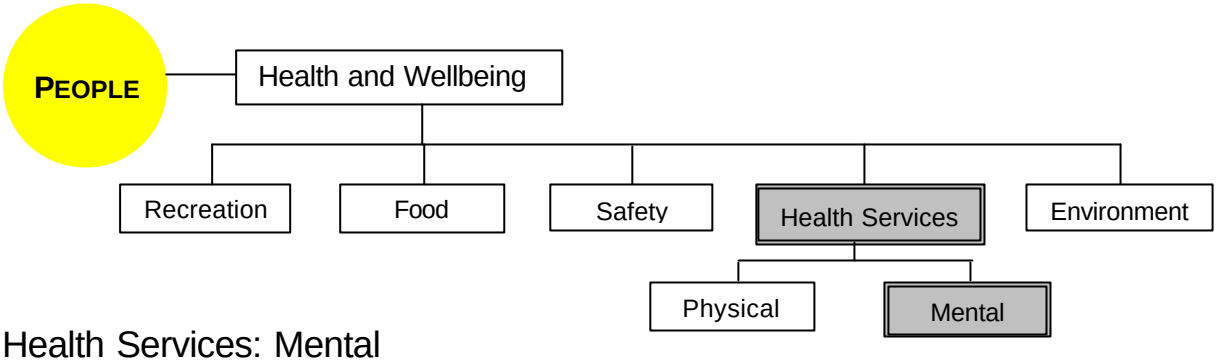
Indicators and Benchmarks:

| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| HW-9 | Physical Health Care Practitioners | Total number of CCMs divided by the total number of certified FTE physical health care professionals on-campus in assessment year (doctors, nurses, naturopaths, physiotherapists, etc.). | X CCMs/ FTE professional | X CCMs/ FTE professional |
| HW-10 | Sick Days | Total annual number of sick days taken by FTE staff and faculty, divided by the total FTE staff and faculty members. | | Zero |
| HW-11 | Smoking | Total number of CCMs who smoke daily in assessment year, divided by the total number of CCMs. | 14.5%[i] or less | Zero |

Discussion: Measuring the quality of on-campus physical health care services is difficult in a primarily quantitative indicator framework. It is assumed that one reason for a low number of visits might be poor quality of the service. Of course there are likely to be other reasons for a low number of visits, but a qualitative indicator to measure quality is not likely currently measured by most campuses.

Indicator HW-10 can be interpreted in several ways, as sick days are taken for different reasons including some that are outside the control of the campus. Many of these reasons likely relate to less than optimum working conditions, including actual sickness, stress, fatigue, workplace dissatisfaction, etc.




## Health Services: Mental

Issue: The provision of high-quality on-campus mental health care services is a vitally important sustainability issue in the high stress, complex world of a campus.

Indicators and Benchmarks:

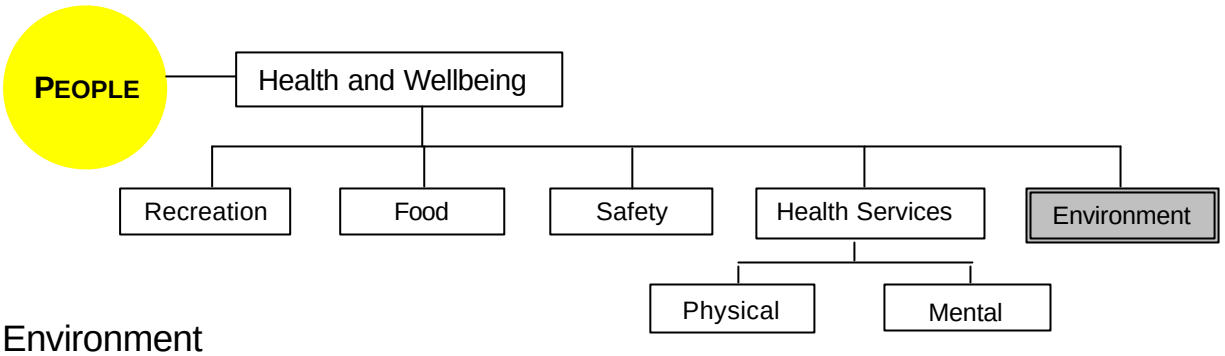
| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| HW-12 | Mental Health Care Practitioner | Total number of CCMs divided by the total number of certified FTE mental health care professionals on-campus in assessment year (psychiatrists, psychologists, counselors, etc.). | X CCMs/ FTE professional | X CCMs/ FTE professional |
| HW-13 | Retention Rate | Measure annual retention rates of staff, students and faculty and average them based on the total FTE populations of each group. | At least 85% | 100% |
| HW-14 | Spiritual Services | Total number of CCMs practicing a spiritual discipline who are serviced by spirituality outlets available on-campus (with care taken not to double count individuals using more than one service) divided by the total number of CCMs; multiply by 100. | | 100% |
| HW-15 | Mental Illness | Total annual number of people reporting depression, alcohol/drug abuse, etc., divided by the total campus headcount; multiply by 100. | | Zero |
| HW-16 | Student Suicide Rate | Total annual number of student suicides, divided by the total headcount of students; multiply by 1000. | | Zero per 1000 students. |

Discussion: Indicator HW-12 has the same challenges as its counterpart in the physical health services section. It is difficult to determine what good short- and long-term performance is, and also what low or high levels actually mean in terms of sustainability and quality of the service. This indicator needs further work.

Indicators HW-15 and 16 are also difficult in many ways. It is emotionally difficult to set any short-term benchmark above zero due to the nature of these issues. Also, these issues are not entirely within the control or responsibility of the campus as there are often many other confounding factors in these cases. A campus can have a contribution to mental stresses, and has some responsibility to its community to help

deal with them.  That is why these two measures have been included, even though they are difficult.




## Environment

Issue: These indicators link environmental issues specifically with human wellbeing issues as a vital convergence in sustainability work on campus. They address measurable issues that have potential impacts on both humans and the ecosystem together.

Indicators and Benchmarks:

| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| HW-17 | Accessible Greenspace | Total hectares of greenspace accessible to CCMs within 1 kilometre of campus (both on- and off-campus) in assessment year divided by the total number of CCMs; multiply by 1000. | X hectares per 1000 CCMs | X hectares per 1000 CCMs |
| HW-18 | Noise Pollution | Number of unoccupied classrooms and offices with noise levels of 35 decibals or less[ii] divided by the total number of classrooms in assessment year; multiply by 100. | At least 50% | 100% |
| HW-19 | Light Pollution | Subtract average uplight level above built campus space (in footcandles) from ambient uplight levels (i.e. levels with all campus lights turned off)[iii]. Divide the difference by the built campus uplight levels; multiply by 100. | 25% or less contribution of campus lighting to uplight levels. | Zero |

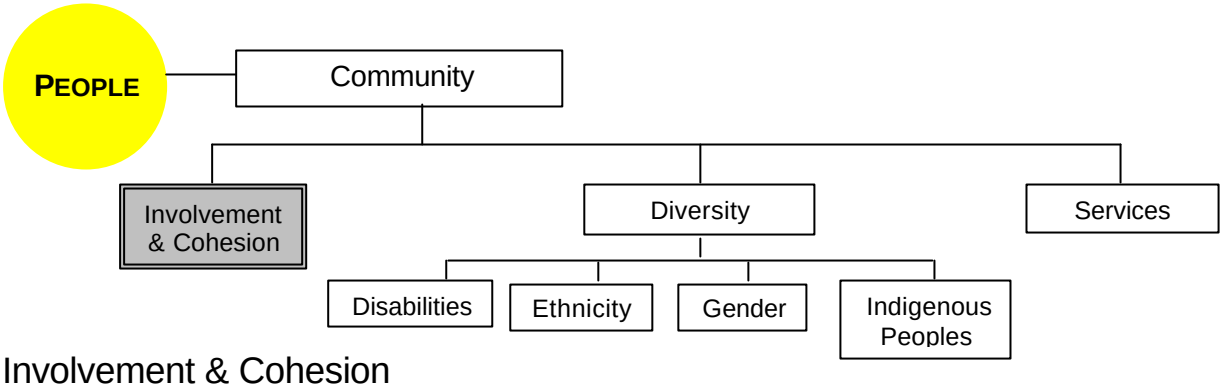
Discussion: HW-17 was deemed important by the co-research team and others. It is important for wellbeing in terms of recreation and respite from day-to-day campus stresses. By linking this issue to off-campus accessible greenspace, we have moved in to the realm of things outside of the control of the campus. We didn't want to limit this indicator to only on-campus greenspace, however, so as to give urban campuses the opportunity to perform well on this measure.

Light pollution is an important environment and health issue, for humans and other animals. The measurement of uplight pollution is a new and emerging field, and there is currently no consensus-based method of measurement, or indicator of good performance. We urge those interested in this indicator to watch the litreature carefully on this topic to ensure that the latest and most innovative ideas are used when assessing this indicator. The short-term benchmark used here is based on uplight of 25% greater than that arising from a full moon in a completely dark environment.

# PEOPLE: COMMUNITY

This section has 25 indicators.




## Involvement & Cohesion

Issue: A community with involved and engaged citizens has a much better chance of making coordinated and cooperative progress towards sustainability. Community cohesion is the on-going process of developing a community of shared values, shared challenges, and equal opportunity, based on a sense of trust, hope, and reciprocity. This section measures the strength of the campus community, as well as the strength of the relationship between on- and off-campus communities.

Indicators and Benchmarks:

| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| C-1 | Volunteerism | Total annual number of CCMs who volunteer at least 2 hours per week divided by the total number of CCMs, and multiplied by 100. Volunteering can be with one, or several different groups working on any issue but must be based on-campus. Organizations actively working against the concepts of sustainability (i.e. racial discrimination, waste of resources, etc.) shall not be included, and double counting of people should be avoided. | At least 30% | 100% |
| C-2 | Financing Volunteer Groups | Total annual amount of money university gives to each on-campus volunteer driven organization (excluding those working against sustainability), divided by the total number of organizations (excluding those working against sustainability). Money from both university and student government administrations should be included. | At least $250 per group each year. | At least $500 per group each year. |
| C-3 | Alumni Volunteerism | Total annual hours of volunteer work done by university alumni for university specific tasks, divided by the total number of living alumni. | At least 12 hours per year. | At least 24 hours per year |

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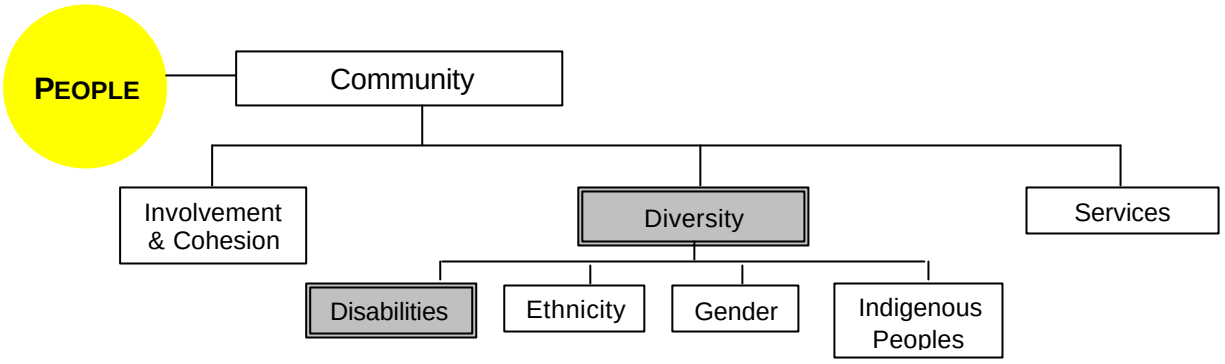
| C-4 | Graduates In the Community | Total annual number of incoming students from the local community, subtract total number of those local students who graduate and are still living in the community 1 year after graduation. Divide the difference by the total number of incoming students from the local community; multiply by 100. "Local' is defined as the local or regional government management area, as this is most likely how statistics will be kept. | At least 50% | 100% |
| C-5 | Sense of Community | Total annual number of CCMs who feel a very strong sense of belonging, attachment to, confidence in, and engagement in their campus community according to survey results, divided by total number of survey respondents; multiply by 100. | At least 75% | 100% |
| C-6 | Voter Turnout | Number of student voters in most recent student election (of any type), divided by total number of eligible voters; multiply by 100. If more than one election was held in the previous year, average the voter turnout results. | At least 50% | 100% |

Discussion: It is difficult to determine where to draw the line in terms of community engagement in volunteer driven organizations. Do we pick only those that focus specifically on sustainability issues, or do we choose all organizations – as they all promote community involvement in one way or another? We chose the latter, and the problem then became how we exclude groups that are actively working against the concepts of sustainability (i.e. car racing clubs, racial discrimination groups, etc.). This indicator forms our best first attempt at measuring this issue.

Indicators C-2 through 4 are all challenging in terms of setting benchmarks, as they will all have undesirable extremes on the low and high ends of the scale, and the optimum level will be found somewhere in between. It is also difficult to determine what reasonable targets might be for long-term goals. The benchmarks should be reviewed and improved through use, and the determination of best practice examples. The measurement unit of 'local' in indicator C-4 is also sub-optimal, and does not correspond to other uses of the word, but was selected because it is the most reasonable in terms of data collection.

Indicator C-5 is one of very few examples of a qualitative measure used in this framework. We strove to use quantitative measures as much as possible not because we view them as stronger measures, but because in many cases they are easier to use, and more consistent when used for comparisons across different campuses. The important elements of community cohesion described in the indicator were deemed a vital part of this section, and thus a qualitative measure was included. As the implementation of the framework is designed following the completion of this tool, guidelines should be developed for determining performance on this indicator so as to standardize results as much as possible.




## Diversity: Disabilities

Issues: Active promotion of employment equity for faculty and staff, and for recruitment and accessibility equity for students for people living with disabilities is a vital component of social sustainability on the campus. Each of these indicators measures the gap between the provincial population average of people of working age with physical and/or mental disabilities, and the campus community group in question.

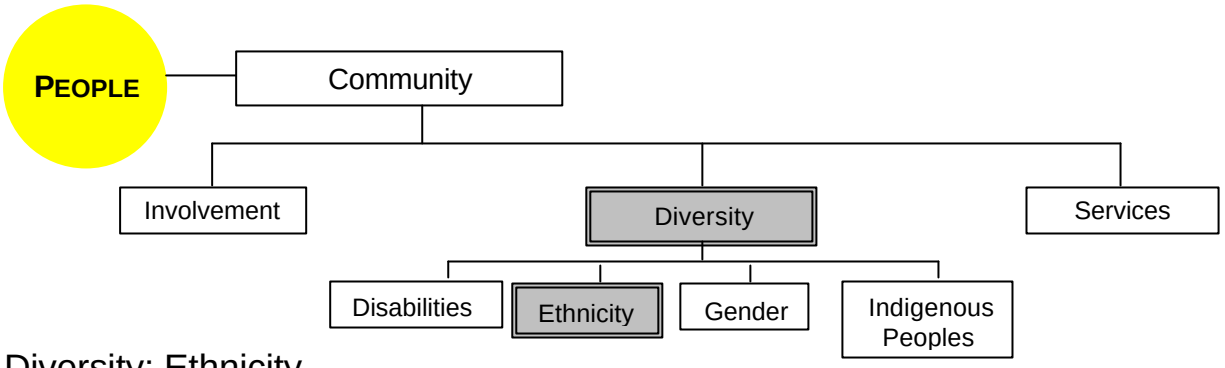
Indicators and Benchmarks:

| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| C-7 | Faculty with Disabilities | Percent of FTE faculty with physical and/or mental disabilities from each of three faculty groups (in FTE's): tenured faculty; non-tenured faculty; and sessional instructors. Subtract the provincial population average of people of working age with disabilities from the percent for each of the three faculty groups. | Gap of 10% or less above or below zero for all three faculty groupings. | Zero difference between campus and provincial populations for all three faculty groupings. |
| C-8 | Staff with Disabilities | Percent of FTE staff with physical and/or mental disabilities from each of the three staff groups (in FTE's): staff from the top 33% of salary; the middle 33%; and the bottom 34%. Subtract the provincial population average of people of working age with disabilities from the percent for each of the three staff groups. | Gap of 10% or less above or below zero for all three staff groupings. | Zero difference between campus and provincial populations for all three staff groupings. |
| C-9 | Students with Disabilities | Percent of FTE students with physical and/or mental disabilities from each department on campus, by number of FTE students. Note: each campus will have different department listings, according to their unique academic structures. Subtract the provincial population average of people of working age with disabilities from the percent for each of the departments. | Gap of 10% or less above or below zero for all departments. | Zero difference between campus and provincial populations for all departments. |

Discussion: It is difficult to determine acceptable short- and long-term benchmarks for these diversity issues. Is it ideal to have campus averages of people with disabilities match the provincial averages, or should a campus strive to exceed the provincial population average? If that is a goal, then by how much should those averages be exceeded? Should a campus strive to exceed these averages in all categories, or only the higher income/stability job types? These indicators have taken fairly conservative long-term measures at this point, but these may change over time. A further complication is that not all people who live with disabilities declare it, for a variety of reasons, thus potentially skewing results.

These measures are relatively complex, but this was deemed necessary in order to paint an appropriate picture of a campus' performance. High numbers of people with disabilities in low wage, part-time, impermanent positions is not as desirable as high numbers in higher wage, permanent positions. This indicator hopes to capture the appropriate resolution necessary to assess this variation.




## Diversity: Ethnicity

Issues: Canada is an increasingly ethnically diverse country, and the hiring and recruitment policies and practices of universities should be designed to fully include this diversity in the campus community to promote equity, and the cross-cultural sharing of ideas and knowledge for enhanced learning. Please note that Indigenous Peoples have a separate diversity category, and thus should not be included in the 'ethnic minority' measures in this section. Each of these indicators measures the gap between the provincial population average of people that self-identify as an ethnic minority, and the campus community group in question.

Indicators and Benchmarks:

| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| C-10 | Faculty of Ethnic Minorities | Percent of FTE faculty that self-identify as a member of an ethnic minority from each of the three faculty groups (in FTE's): tenured faculty; non-tenured faculty; and sessional instructors. Subtract the provincial population average of people of working age who self-identify as members of ethnic minorities from the percent from all three faculty groups. | Gap of 10% or less above or below zero for all three faculty groupings. | Zero difference between campus and provincial populations for all three faculty groupings. |
| C-11 | Staff of Ethnic Minorities | Percent of FTE staff that self-identify as a member of an ethnic minority from each of the three staff groups (in FTE's): staff from the top 33% of salary; the middle 33%; and the bottom 34%. Subtract the provincial population average of people of working age that self-identify as members of ethnic minorities from the percent from each of the three staff groups. | Gap of 10% or less above or below zero for all three staff groupings. | Zero difference between campus and provincial populations for all three staff groupings. |
| C-12 | Students of Ethnic Minorities | Percent of FTE students that self-identify as a member of an ethnic minority from each department on campus, by number of FTE students. Note: each campus will have different department listings, according to their unique academic structures. Subtract the provincial | Gap of 10% or less above or below zero for all departments. | Zero difference between campus and provincial populations |

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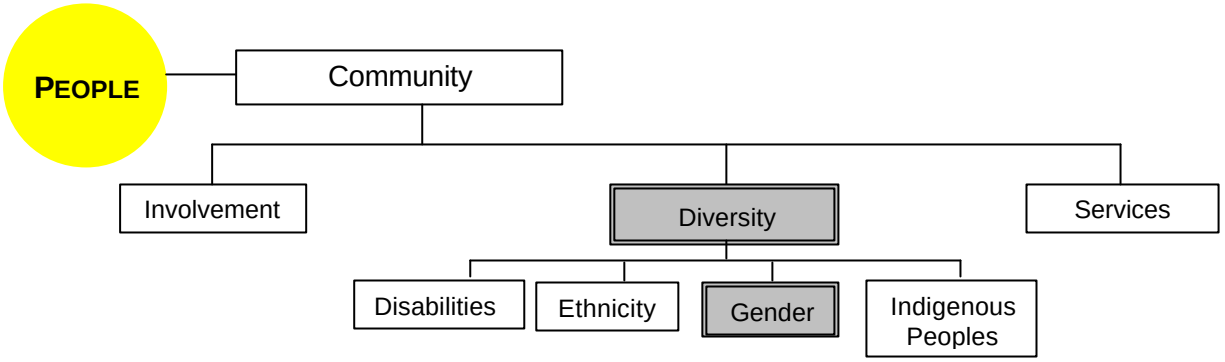
| | | population average of people of working age that self-identify as members of ethnic minorities from the percent from all departments. | | for all departments. |

Discussion: These indicators are relatively coarse measures of ethnic diversity, as they do not accurately take representation from different ethnic groups in to account. Setting benchmarks and goals face the same challenges as the 'disabilities' section above. It is difficult to determine what acceptable benchmarks and targets of performance are for promoting ethnic diversity in the campus community.

These measures are relatively complex, but this was deemed necessary in order to paint an appropriate picture of a campus' performance. High numbers of people from ethnic minority groups in low wage, part-time, impermanent positions is not as desirable as high numbers in higher wage, permanent positions. This indicator hopes to capture the appropriate resolution necessary to assess this variation.




## Diversity: Gender

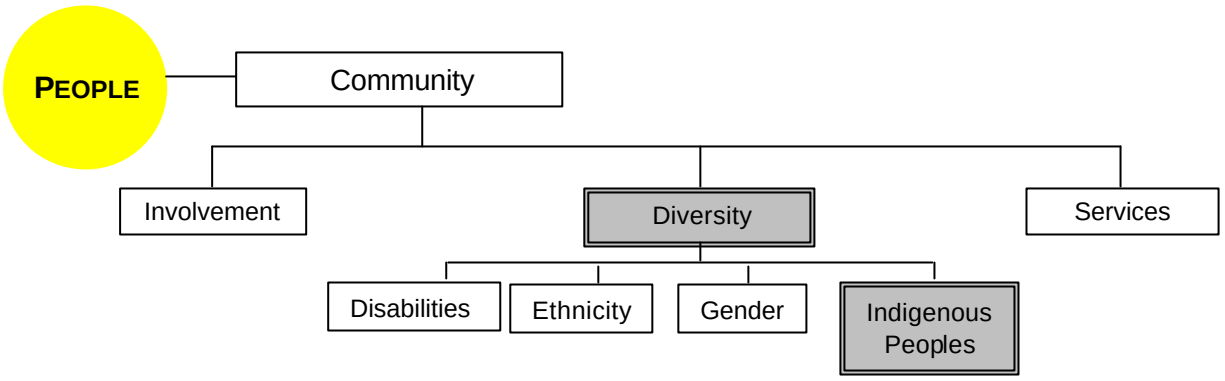
Issues: Promotion of gender equity in hiring and recruitment processes has long been a sustainability issue in Canada and beyond. These indicators help to assess a campus' gender diversity, thus helping to promote more vibrant and equitable learning, teaching, and working environments. Each of these indicators measures the gap between the provincial population average of women of working age, and the campus community group in question.

Indicators and Benchmarks:

| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| C-13 | Faculty Gender | Percent of FTE women in each of the three faculty groups (in FTE's): non-tenured full-time faculty, and sessionals. Subtract the provincial population average of women of working age from the percent from each of the three faculty groups. | Gap of 10% or less above or below zero for all three faculty groupings. | Zero difference between campus and provincial populations for all three faculty groupings. |
| C-14 | Staff Gender | Percent of FTE women in each of the three staff groups (in FTE's): staff from the top 33% of salary; the middle 33%; and the bottom 34%. Subtract the provincial population average of working age women from the percent for each of the three staff groups. | Gap of 10% or less above or below zero for all three staff groupings. | Zero difference between campus and provincial populations for all three staff groupings. |
| C-15 | Student Gender | Percent of FTE women students in each department on campus (in student FTE's). Note: each campus will have different department listings, according to their unique academic structures. Subtract the provincial population average of working age women from the percentage of all departments. | Gap of 10% or less above or below zero for all departments. | Zero difference between campus and provincial populations for all departments. |

Discussion: Benchmarks for these indicators were difficult to set, and whether or not a campus should strive to meet provincial averages, or exceed them in certain circumstances is difficult to determine.

These measures are relatively complex, but this was deemed necessary in order to paint an appropriate picture of a campus' performance. High numbers of women in low wage, part-time, impermanent positions is not as desirable as high numbers in higher wage, permanent positions. This indicator hopes to capture the appropriate resolution necessary to assess this variation.




## Diversity: Indigenous Peoples

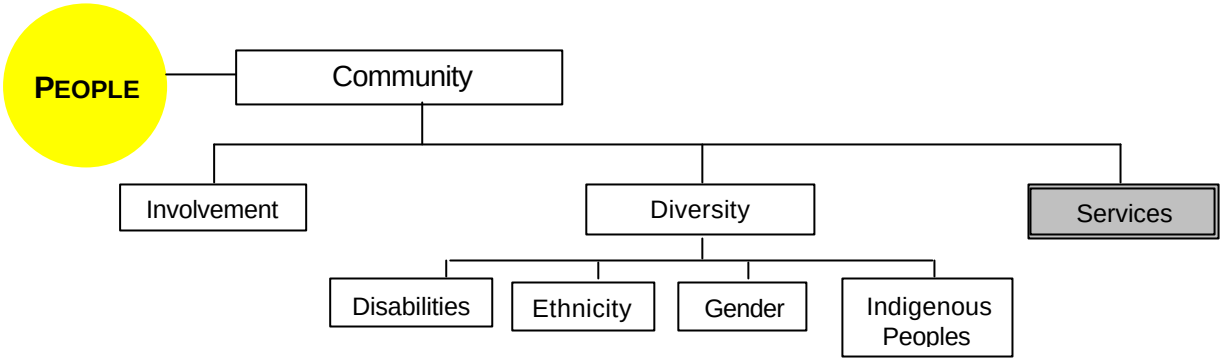
Issues: Indigenous Peoples who live in Canada are a integral part of a healthy, sustainable community. Promotion of fully including Indigenous Peoples in our campus communities through focused hiring and recruitment is an important aspect of campus sustainability, and these indicators measure a campuses ability to perform on these issues. Each of these indicators measures the gap between the provincial population average of people who self-identify as Indigenous Peoples of working age, and the campus community group in question.

Indicators and Benchmarks:

| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| C-16 | Equity of Indigenous Peoples: Faculty | Percent of faculty that self-identify as Indigenous Peoples in each of the three faculty groups (in FTE's): tenured faculty; non-tenured full-time faculty; and sessionals. Subtract the national population average of people of working age that self-identify as Indigenous Peoples from the percent from each faculty group. | Gap of 10% above or below zero for all three faculty groupings. | Zero between campus and national populations for all three faculty groupings. |
| C-17 | Equity of Indigenous Peoples: Staff | Percent of staff that self-identify as Indigenous Peoples in each of the three staff groups (in FTE's): staff in the top 33% salary range; the middle 33%; and the bottom 34%. Subtract the national population average of people of working age that self-identify as Indigenous Peoples from the percent for each staff group. | Gap of 10% above or below zero for all three staff groupings. | Zero difference between campus and national populations for all three staff groupings. |
| C-18 | Equity of Indigenous Peoples: Students | Percent of students that self-identify as Indigenous Peoples from each department on campus (in FTE's). Note: each campus will have different department listings, according to their academic structures. Subtract the national population average of people that self-identify as Indigenous Peoples from the percent for each department. | Gap of 10% above or below zero for all departments. | Zero difference between campus and national populations for all departments. |

Discussion: It was a challenge to define both short- and long-term benchmarks for this indicator, like its counterparts in the 'diversity' section. It is also difficult to find an appropriate boundary to assess the percent population of Indigenous Peoples, as their sense of boundaries is different than the politicized Canadian boundary. We used national statistics, for ease of data collection, but perhaps in the future a better measure can be found.

These measures are relatively complex, but this was deemed necessary in order to paint an appropriate picture of a campus' performance. High numbers of Indigenous Peoples in low wage, part-time, impermanent positions is not as desirable as high numbers in higher wage, permanent positions. This indicator hopes to capture the appropriate resolution necessary to assess this variation.




## Services

Issues: Provision of accessible services that are available on campus promote campus community, well-being, and thus sustainability.

Indicators and Benchmarks:

| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOALS |
|---|---|---|---|---|
| C-19 | Indoor Community Space | Square metres of designated indoor community gathering space, divided by the total indoor square metres; multiply by 100. Indoor community gathering space includes lounges, food service outlets, designated meeting rooms, computer laboratories (accessible to whole campus), etc. It excludes hallways, classrooms, offices, private study spaces, etc. | At least 15% | At least 25% |
| C-20 | On-campus Housing | Total number of university owned and managed beds (for students, staff and faculty), both on- and off-campus, divided by the total number of CCMs; multiply by 100. | | At least 75% |
| C-21 | On-campus Housing Affordability | Average cost of university owned and managed single student housing divided by the total average expenses per single student (based on a normal months' costs while in school); multiply by 100. | 30 – 35% (based on Student Loan allowances) | Less than 30%. |
| C-22 | On-campus Employment Services | Total number of full-time jobs posted annually by an on-campus student employment centre, divided by the total number of students graduating in that year (including undergraduate and graduate students). | At least 0.5 per student | At least 1 per student |
| C-23 | Community Library Cards | Total number of "community library cards" (i.e. non-student [of any university], staff or faculty) issued or renewed annually, divided by the total number of cards issued; multiply by 100. Note: if there is an annual fee of $20 or more, these cards should not be counted in the calculation. | | |

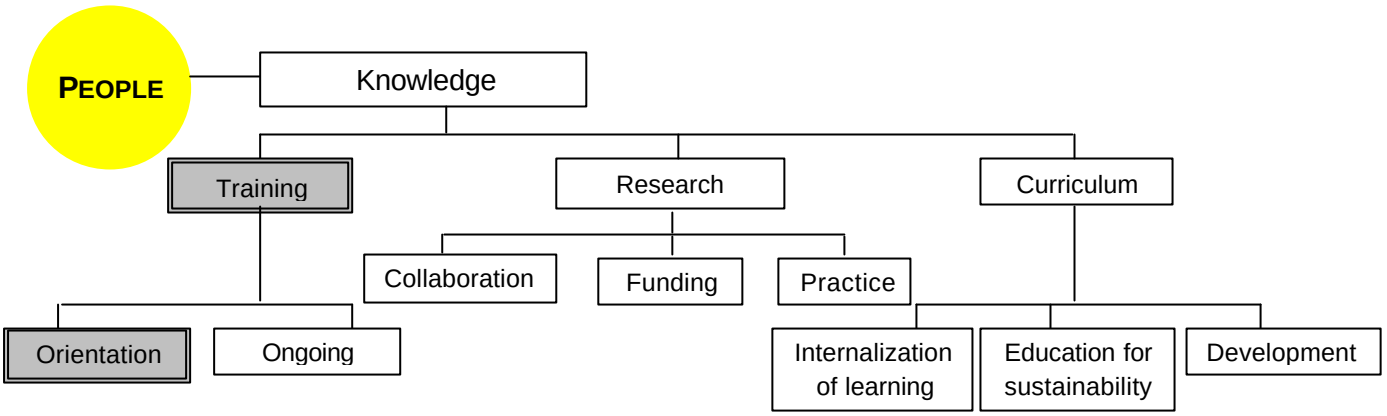
| | | | | |
|---|---|---|---|---|
| C-24 | On-campus Media Expenditures | Total annual operating budget for all on-campus media sources (of all types), subtract total annual financial contribution in dollars by both student and university administrations (in order to identify external funding sources like advertising, grants, etc.). Divide this difference by the total annual operating budget; multiply by 100. | At least 75% | 100% |
| C-25 | Affordability of Public Transit | Total annual cost of providing all CCMs with public transit passes for their time on campus, subtract total amount of money spent by university and student administrations on public transit subsidies each year. Divide this difference by the total annual cost of providing all CCMs with public transit passes; multiply by 100. | At least 25% | 100% |

Discussion: Indicator C-22 attempts to get at how well the employment service meets the needs of graduating students through measuring total number of jobs against the need for jobs, as determined by the number of graduating students. This is quite an indirect measure of the issue, excludes in-term students needing work and staff and faculty looking for new work, and perhaps a qualitative measure of 'perceived quality' would be better in the longer term.

Many of these indicators are difficult to benchmark for a variety of reasons. Some benchmarks have been left blank, and others suggested but they will all need to be refined over time with use.

# PEOPLE: KNOWLEDGE

This section has 21 indicators.




## Training: Orientation

Issues: Orientation of new students, staff and faculty helps to create a welcoming community, and also introduces new campus community members to local ecological and social issues of importance, thus (hopefully) making them more conscientious campus citizens.

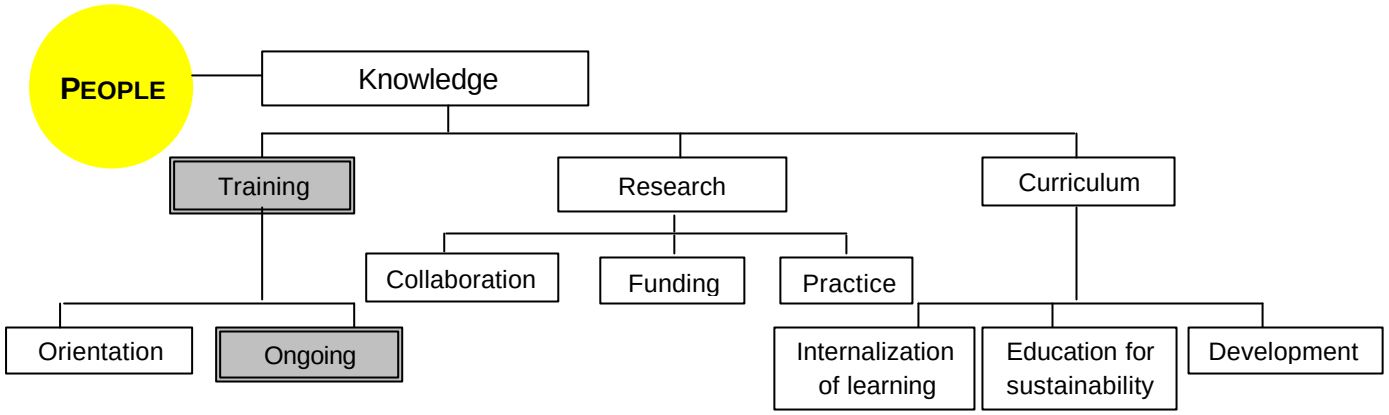
Indicators and Benchmarks:

| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| K-1 | New Faculty Orientation | Total annual number of new faculty (by headcount) receiving at least 1 hour of in-person orientation to campus and local community environment/social issues divided by the total number of new faculty members arriving on-campus in that year, multiply by 100. | At least 50% | 100% |
| K-2 | New Staff Orientation | Total annual number of new staff (by headcount) receiving at least 1 hour of in-person orientation to campus and local community environment/social issues divided by the total number of new staff arriving on-campus in that year; multiply by 100. | At least 50% | 100% |
| K-3 | New Student Orientation | Total annual number of new students (by headcount) receiving at least 1 hour of in-person orientation to campus and local community environment/social issues divided by the total number of new students arriving on-campus in that year; multiply by 100. | At least 50% | 100% |

Discussion: These indicators may be challenging for some, as often orientation programs are offered but there are no incentives or requirements in place that guarantee participation. These indicators wanted to address actual delivery of specific orientation programming,

hence the more focused, and potentially challenging measures. It is also difficult to determine performance benchmarks for these indicators.



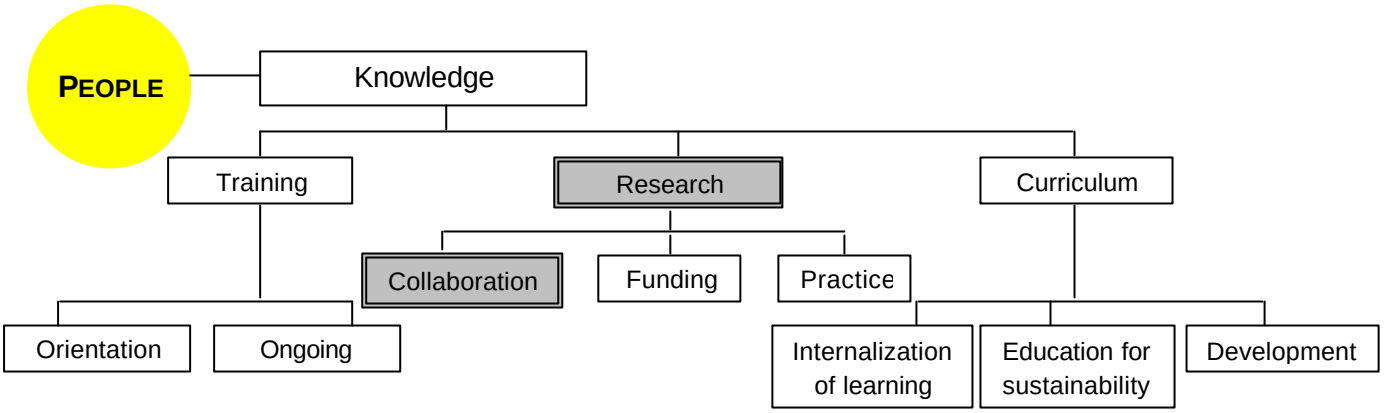

## Training: Ongoing

Issues: Ongoing training for campus community members on social and ecological sustainability issues is important for continued learning on these topics as new and emerging information becomes available.

Indicators and Benchmarks:

| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| K-4 | Faculty Sustainability Training | Total annual number of training hours dedicated to sustainability topics (including on- and off-campus workshops, seminars, conferences, etc.) for faculty members (by headcount) divided by the total number of faculty (headcount). | At least 24 hours per year per faculty member | At least 60 hours per year per faculty member |
| K-5 | Staff Sustainability Training | Total annual number of training hours dedicated to sustainability topics for staff (by headcount), divided by the total number of staff (headcount). | At least 24 hours per year per staff person | At least 60 hours per year per staff person |
| K-6 | On-campus Student Sustainability Jobs | Total annual number of on-campus student job postings (full- and part-time jobs adjusted to FTE) focused on sustainability issues, divided by total number of jobs posted; multiply by 100. | At least 10% | 40% |

Discussion: It is difficult to determine appropriate training indicators for faculty and students, as faculty 'training' is quite unique in nature and students are arguably being 'trained' throughout their whole university career. These indicators attempt to get at the less academic and more practical, hands-on elements of training, while still being responsive to the nature of the three on-campus communities listed. Perhaps over time better measures for ongoing training can be found. Benchmarks for both the short- and long-term are also difficult to determine in this category.




## Research: Collaboration

Issues: Research collaboration is a great way for a university campus to fulfill its research mandate and to promote sustainability through the integration of and cooperation between different faculties and departments. It is also a great way to extend the research expertise of one campus into the broader communities of other educational institutions, government, community organizations, etc.

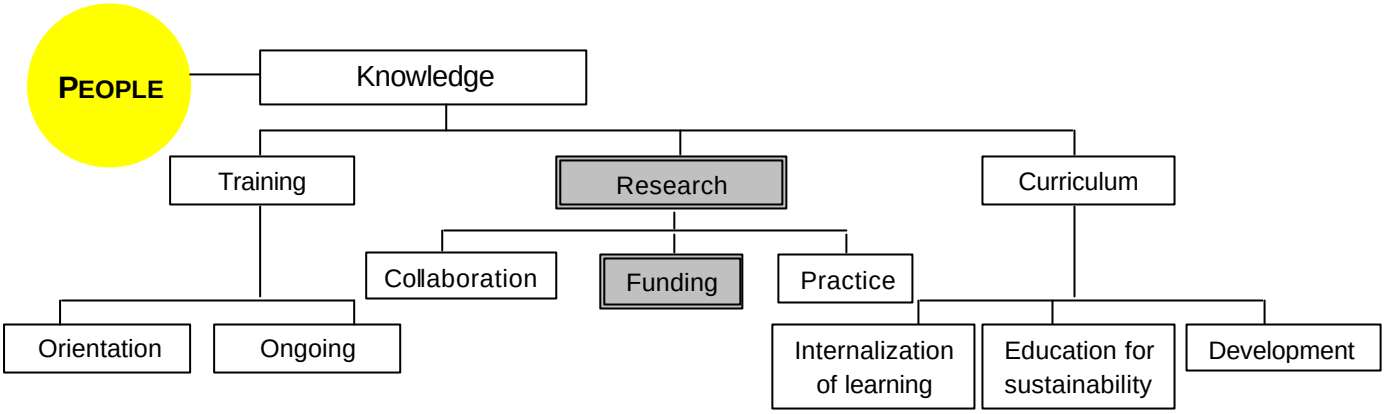
Indicators and Benchmarks:

| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| K-7 | Research Collaboration: On-campus | Total annual number of on-campus research projects involving two or more on-campus departments divided by the total number of on-campus research projects, multiply by 100. Note: collaborative projects that actively promote unsustainability should not be included as a collaborative project in this indicator. | At least 50% | Approach 100% |
| K-8 | Research Collaboration: Non-Profit | Total number of research projects involving two or more partners (one of which is the university and the other being government, community, higher education, and/or not-for profit organizations) divided by the total number of all research projects; multiply by 100. Note: collaborative projects that actively promote unsustainability should not be included as a partnership in this indicator. | At least 50% | Approach 100% |
| K-9 | Research Collaboration: For Profit | Total number of research projects involving the university with one or more businesses, corporations, and/or other for-profit organizations, divided by the total number of all research projects; multiply by 100. Note: collaborative projects that actively promote sustainability should not be included as a collaborative project in this indicator. | 25% or less | Approach 0% |

Discussion: These indicators are quite challenging to assess. In indicator K-10, the influence of for-profit agencies in higher education institutions is considered. It is growing by leaps and bounds, especially as government financing in many provinces continues to drop, and enrollment demands rise. This is a controversial issue, but consensus within the sustainable campus community leans toward a discomfort with, and opposition to, for-profit investments in university campuses. We have tried to balance this out by allowing projects that actively promote and research sustainability to be discounted. Indicators K-8 and K-9 we have allowed similar discounting calculations for projects that actively promote unsustainability through research.

It is also important to recognize that intra-campus research collaboration is a desirable thing in terms of promoting inter-disciplinary and greater understanding of issues beyond a single faculty members' research interests. There are, however, certain kinds of research that would suffer from collaboration. Highly specialized scientific research might be an example of this. That is why the long-term benchmark uses the word "approaches" in order to set a direction for improvement but recognize that it is not likely to be achieved. Similarly the other indicators in this section use the word "approach" in the long-term benchmark column to reflect a similar thought.
Add on- and off-campus cross-departmental collaboration




## Research: Funding

Issues: Research financing is a vitally important campus sustainability issue. Universities are centres of innovation and creation, and research dollars fuel these activities.

Indicators and Benchmarks:

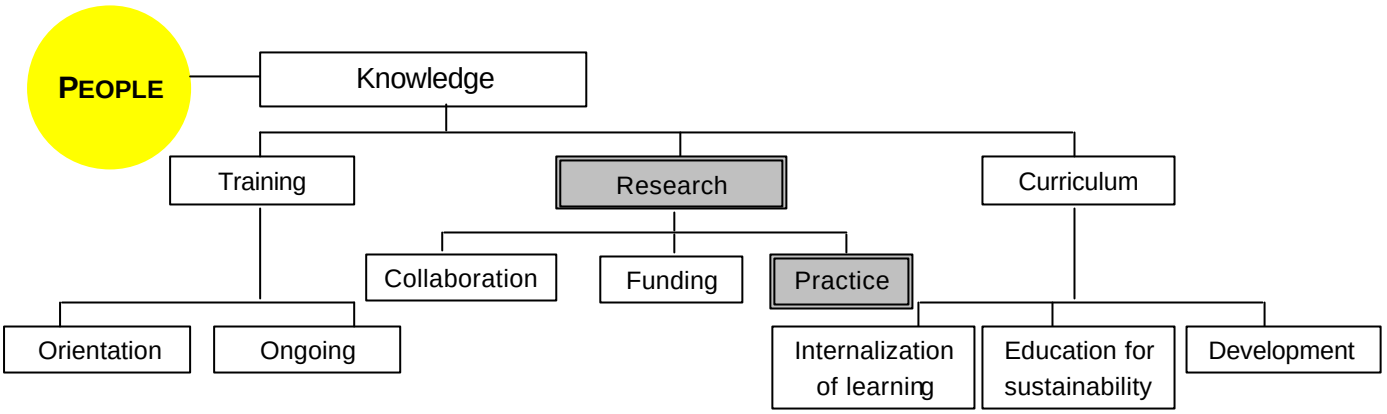
| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| K-10 | Sustainability Research Expenditures | Total annual research dollars spent on sustainability-focused projects divided by the total annual research dollars, multiply by 100. | | |
| K-11 | For-profit Research Contributions | Total research dollars from all for-profit sources (i.e. corporations, businesses, etc.), divided by the total annual research dollars; multiply by 100. | | Approach 0% |

Discussion: A definition for 'sustainability focused research' is offered in the definitions section at the beginning of this Appendix. It is a relatively loose definition, and will thus be open to some interpretation when a campus sustainability assessment is undertaken.

Research activities at universities are highly complex, and it is important to be aware of one major complication in most research expenditure measures. An emerging issue in this area has become contracted and non-trackable research activities of many academics. Many academics have begun taking money to support research and publishing activities that is not managed by the university. Thus whatever results come out of assessing these indicators will likely miss out on this huge source of money for research.

Indicator K-12 is another controversial and difficult one, in terms of corporate influence on campuses. There was general consensus among those reviewed in the development of this framework that research money from for-profit agencies was not in-line with the not-for-profit nature of a university and thus does not promote sustainability. Hence we have set our benchmarks to correspond with this ethic. We have attempted to find some balance on this issue in the research collaboration section, where for-profit agencies who actively work to promote sustainability are seen as having a positive effect.




## Research: Practice

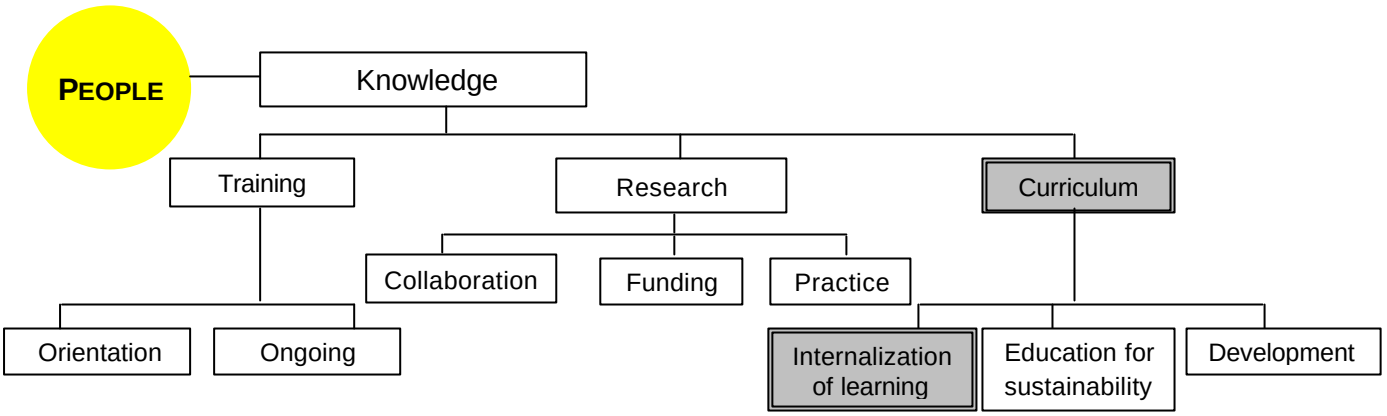
Issues: This is a small section, but an important one as it addresses the support that a university gives to its' faculty that specialize in sustainability issues. This issue addresses the issue of a campus' responsibility to its' local and global communities to find innovative solutions to our sustainability challenges.

Indicators and Benchmarks:

| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| K-12 | Faculty Sustainability Research | Total annual tenured and tenure-track faculty (headcount) "specialized" in sustainability-focused research divided by the total number of tenured and tenure-track faculty; multiply by 100. | | |

Discussion: This is a challenging issue to measure, and this indicator does not quite get to the heart of the issue of research practice in terms of sustainability. Further, this will be a challenging indicator to get information for, the definition of 'sustainability focused research' is a bit foggy and open to interpretation, and performance benchmarks are difficult to determine. Finally, "sustainability focused" is an oxymoron as sustainability is inherently broad and inclusive rather than focused.




## Curriculum: Internalization of Learning

Issues: This section attempts to get at the vitally important issue of education for sustainability. That being the internalization of sustainability knowledge in a way that affects the future civic, professional, and personal lives of the students (but also staff and faculty) that have moved on from the campus. This is a long-term temporally variable issue that no universities (to our knowledge) currently track. We hope that by including this topic, universities will start to take responsibility for their long-term societal influence through measurement and tracking of this indicator.

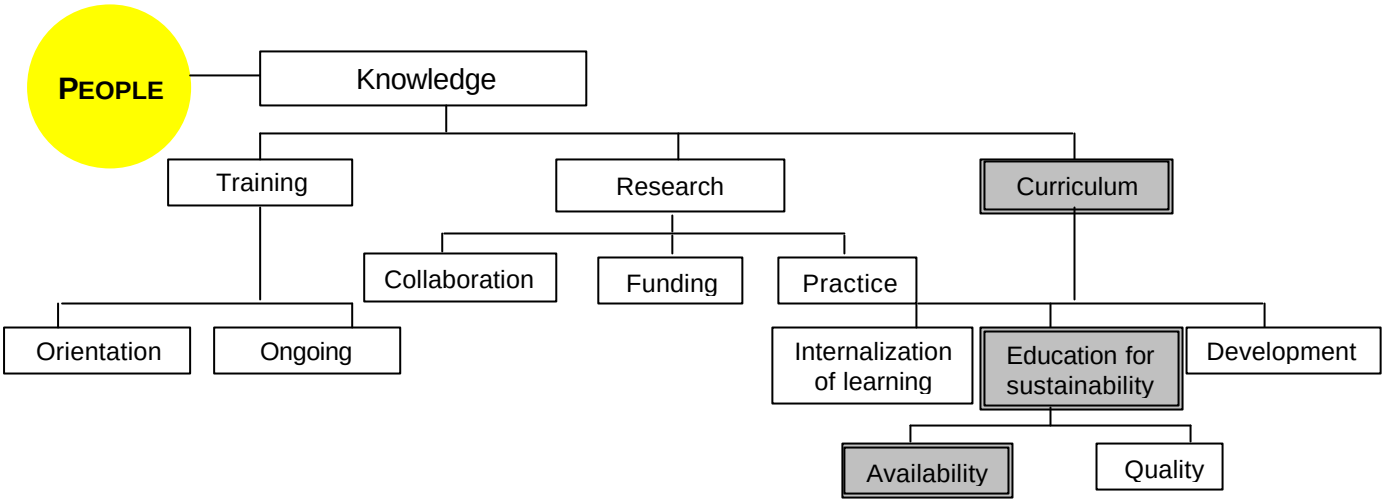
Indicators and Benchmarks:

| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| K-13 | Sustainability Pledge | Total number of annual graduating students (headcount) who take a sustainability pledge at convocation, divided by the total number of graduating students (who attend convocation) in that year; multiply by 100. | 50% | 100% |
| K-14 | Sustainability Litreacy Survey | Average percent improvement on a sustainability litreacy survey between first semester and last semester of degree program. *Note: use calculator provided in Appendix. | 40% - 49% improvement in scores. | 50% or greater improvement in scores. |

Discussion: These are two very unique indicators, and it is likely that most campuses will not currently measure these two issues. Indicator K-14 will be quite easy to measure once it is incorporated into campus sustainability issues, but it does not represent "internalization of learning" very well. Many people may take a sustainability pledge at convocation without it meaning anything to them, and without them really internalizing anything as it could potentially be only a symbolic act.

Indicator K-15 has much greater potential to assess this issue, but will require a substantial investment of efforts to get useful and accurate information. It will also take 4 years (for most campuses) before any results are determined.




## Curriculum: Education for Sustainability: Availability

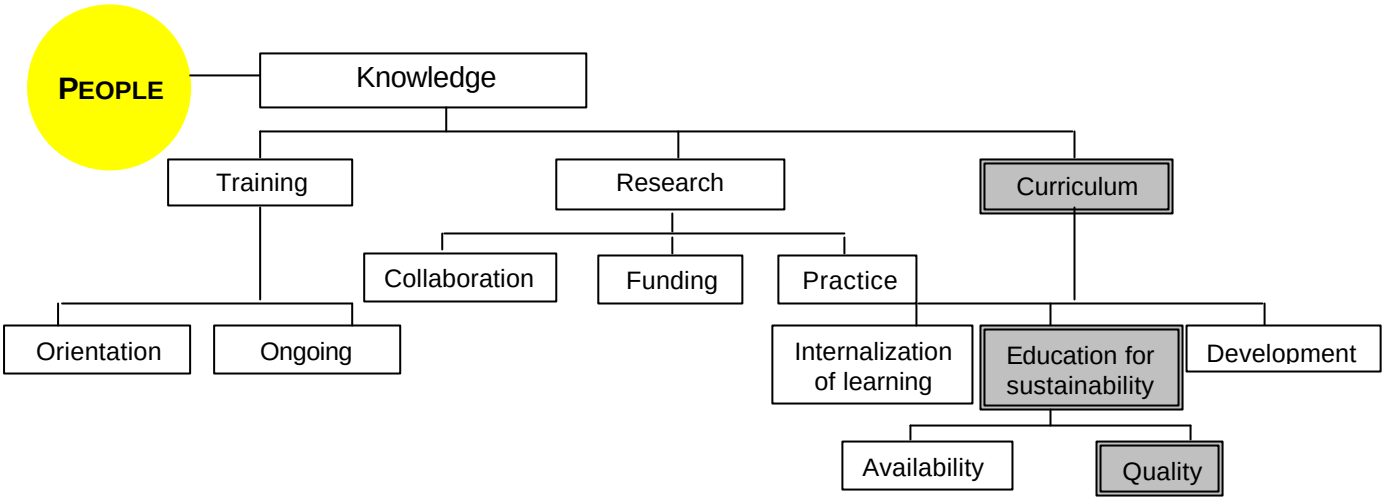
Issues: It is much easier to incorporate sustainability in to an educational program if appropriate courses are available. These indicators measure the number of, and participation in sustainability focused courses.

Indicators and Benchmarks:

| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| K-15 | Courses with Applied Learning | Total number of courses with an applied research/ learning element based on-campus and/or in the local community, divided by total number of courses offered; multiply by 100. | At least 25% | 75% |
| K-16 | Courses with Sustainability Content | Total number of courses that have "substantial sustainability content," divided by total number of courses; multiply by 100. | At least 25% | 75% |
| K-17 | Students Taking Sustainability Courses | Total number of students (headcount) having taken at least one course with substantial sustainability content upon graduation, divided by total number of graduating students in that school year; multiply by 100. | At least 25% | 100% |

Discussion: These indicators will all be quite challenging to measure, and most campuses will not currently have data on these measures. It will be difficult not to double count people in indicator K-18. The definition of a course with 'substantial sustainability content' (as described in the definitions section at the beginning of this document) is quite loose, and thus it will be difficult to determine whether some courses fit in to this category or not. Determining benchmarks for these categories is also difficult, and there may be disagreement as to what 'sustainability' means in terms of availability of courses. Courses that benefit both the student and the campus or the local community (service learning).



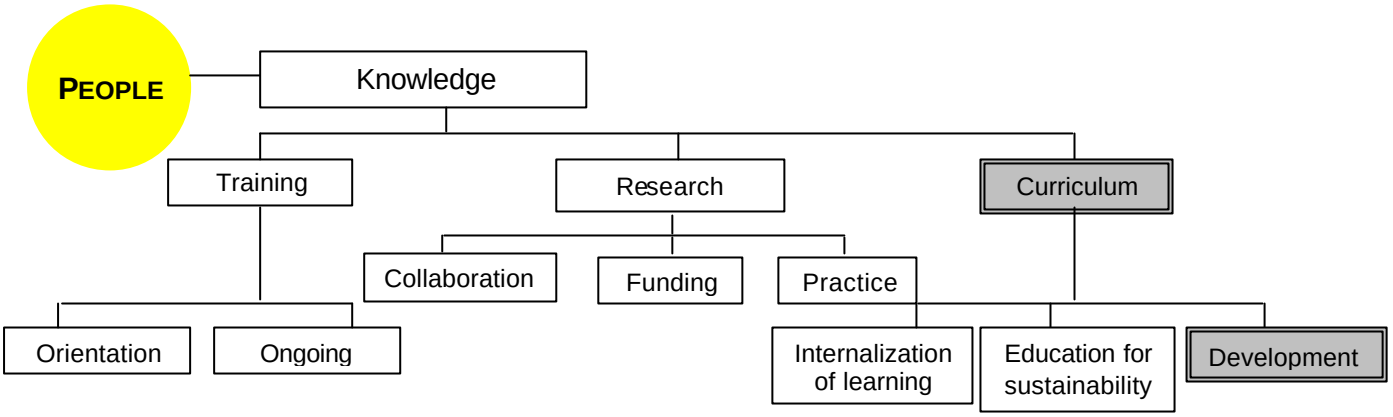

## Curriculum: Education for Sustainability: Quality

Issues: The quality of sustainability-focused courses is equally important as their availability. Many sustainability-focused courses have non-permanent faculty teaching them, and have lower available financial resources. These indicators attempt to measure this important issue of quality.

Indicators and Benchmarks:

| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| K-18 | Faculty Teaching Sustainability Courses | Total number of courses with substantial sustainability content taught by tenured or tenure track faculty, divided by total number of courses with substantial sustainability content; multiply by 100. | At least 50% | 100% |
| K-19 | Quality of Sustainability Courses | Number of courses with substantial sustainability content that received top marks (i.e. in the top ranking level or scale band) in their most recent external review, divided by total number of courses with substantial sustainability content; multiply by 100. | At least 50% | 100% |

Discussion: These indicators should be fairly easy to assess for most campuses. The challenge is in defining appropriate performance benchmarks, and the ones proposed here will likely need to change and adapt over time.




## Curriculum: Development

Issues: These indicators are concerned with who has authority to develop course curriculum, and how this might affect the content and quality of curriculum being delivered.

Indicators and Benchmarks:

| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| K-20 | Collaborative Course Development | Total number of courses that were developed using the input of more than one person in more than one department, divided by the total number of courses; multiply by 100. | At least 50% | 100% |
| K-21 | For-profit Course Development | Total number of courses where for-profit agencies were directly and/or indirectly involved in curriculum development, divided by the total number of courses offered; multiply by 100. | 10% or less | Approach 0% |

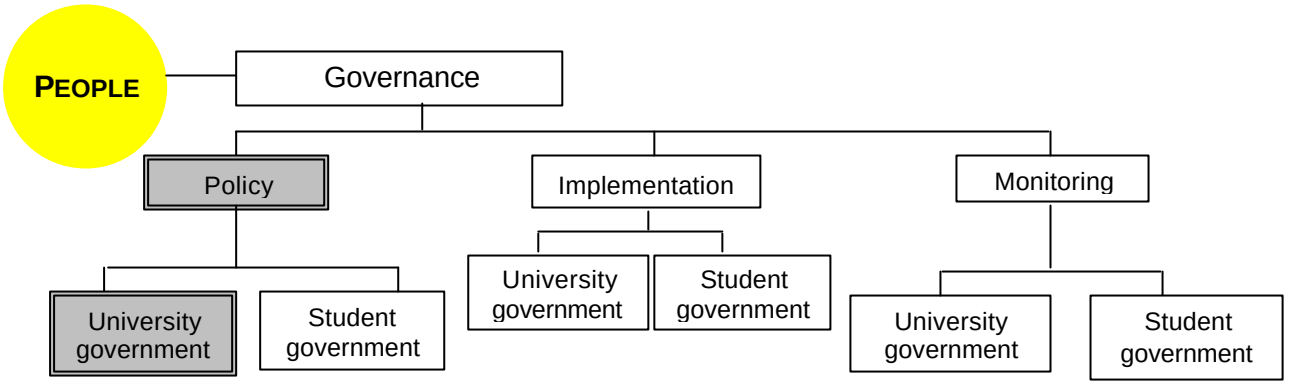
Discussion: There are some major challenges in this section. Curriculum development is a very touchy subject for most universities, as academic freedom is prized, and many members of the academic community do not want that challenged. Such a challenge may be perceived in the use of these indicators. Further, this is a difficult issue to find measures for, and the ones selected here will likely need to change over time as the framework is used.

Again in this section, the developers of the framework have taken the stance that corporate, or for-profit influence over curriculum development works against sustainability, a position that will be controversial to some. Curriculum development is often not a transparent process, thus it will likely be difficult to collect the information necessary to assess these indicators.

# PEOPLE: GOVERNANCE

This section has 20 indicators.




## Policy: University Government

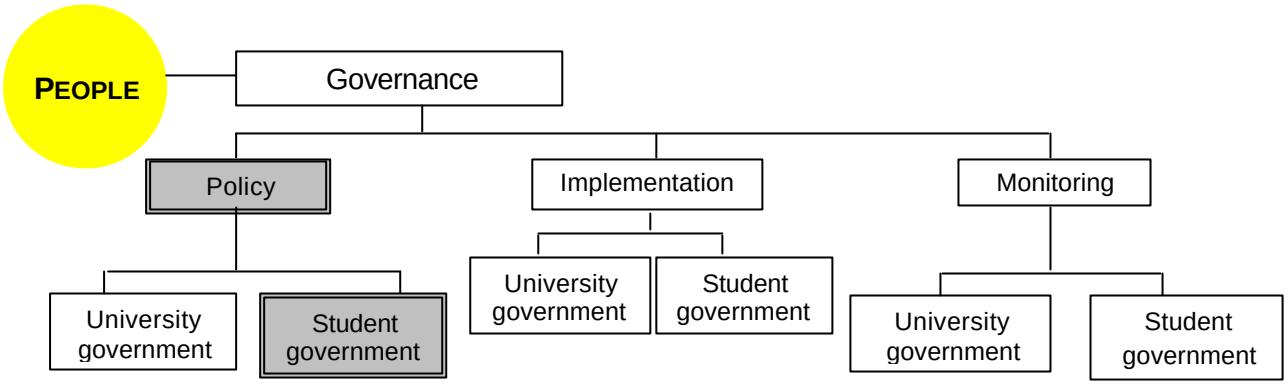
Issues: Although a policy is only arguably as good as the mechanisms in place to ensure its implementation and enforcement, it does represent an important commitment by high-level university management to certain issues. This indicator measures the sustainability policy structure in which a campus government operates.

Indicators and Benchmarks:

| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| G-1 | University Government Policy | Total number of policies present on campus from this list divided by total number of policies in this list; multiply by 100. Only policies of the university government should be included.<br>1. Energy Management (efficiency measures, greenhouse gas reduction, and use of perpetual renewable sources)<br>2. Water Management (efficiency measures and reuse)<br>3. Clean Air (both in- and out-door)<br>4. Health and Safety<br>5. Ethical and Environmentally Sound Purchasing<br>6. Solid Waste Management (reduction, reuse and recycling measures)<br>7. Hazardous Waste Management (reduction, reuse and recycling measures)<br>8. Transportation Demand Management<br>9. Community Engagement in Campus Decision-making (both on- and off-campus communities)<br>10. Ethical and Environmentally Sound | At least 50% | 100% |

| | | | | |
|---|---|---|---|---|
| | | Investment<br>11. Sustainability in Education (sustainability course content for all graduating students, strategies to meet this)<br>12. Sustainability in Research<br>13. Equity (gender, people with disabilities, and ethnic)<br>14. Wellness (fitness, safe work environment, spirituality, nutrition, alternative work arrangements)<br>15. Long-term Campus Land-use Planning (principles of smart growth, protection of green space, design for efficiency, community engagement)<br>16. University Mission (broad commitment to sustainability)<br>17. Strategic Plan (academic and administrative planning and positioning)<br>18. Preferential Purchase of Local Goods and Services<br>19. Conflict and Dispute Resolution processes (for both internal and external issues)<br><br>If a particular policy covers more than one of the issues listed in depth, all of the issues covered should be counted. For example, if a campus has one Resource Efficiency policy that addresses energy, water, and solid waste, three points towards the total should be tallied. | | |

Discussion: Setting the policy types for this section was somewhat challenging, as each university will have its own unique suite of policies that they work within. It is hoped that this indicator gives enough flexibility to account for all the variation within this topic. Over time, this indicator may need to be reorganized to account for overlap and gaps in the policy list.




## Policy: Student Government

Issues: Although a policy is only arguably as good as the mechanisms in place to ensure its implementation and enforcement, it does represent an important commitment by student government to certain issues. This indicator measures the sustainability policy structure in which a student government operates.

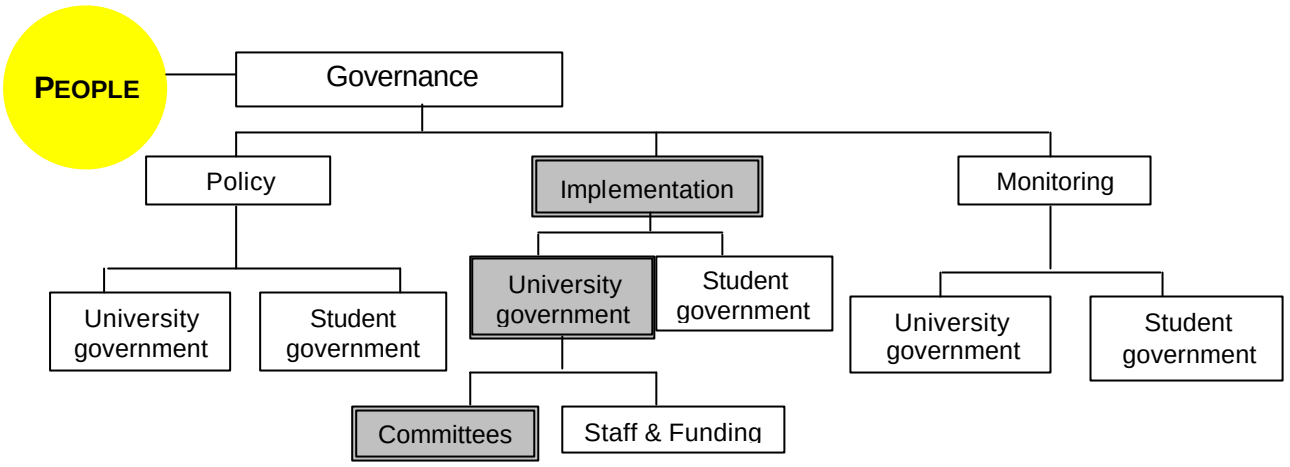
Indicators and Benchmarks:

| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| G-2 | Student Government Policy | Total number of policies present on campus from this list divided by total number of policies in this list; multiply by 100. Only policies of the student government(s) should be included.<br>1. Energy Management (efficiency measures, greenhouse gas reduction, and use of perpetual renewable sources)<br>2. Water Management (efficiency measures and reuse)<br>3. Clean Air (both in- and out-door)<br>4. Health and Safety<br>5. Ethical and Environmentally Sound Purchasing<br>6. Solid Waste Management (reduction, reuse and recycling measures)<br>7. Hazardous Waste Management (reduction, reuse and recycling measures)<br>8. Transportation Demand Management<br>9. Community Engagement in Student Government Decision-making (both on- and off-campus communities)<br>10. Ethical and Environmentally Sound Investment<br>11. Equity (gender, people with disabilities, and ethnic)<br>12. Wellness (fitness, safe work environment, | At least 50% | 100% |

| | | | | |
|---|---|---|---|---|
| | | spirituality, nutrition, alternative work arrangements)<br>13. Student Government Mission (broad commitment to sustainability)<br>14. Long-term Student Government Strategic Plan (academic and administrative planning and positioning)<br>15. Preferential Purchase of Local Goods and Services<br>16. Conflict and Dispute Resolution processes (for both internal and external issues)<br><br>If a particular policy covers more than one of the issues listed in depth, all of the issues covered should be counted. For example, if a campus has one Resource Efficiency policy that addresses energy, water, and solid waste, three points towards the total should be tallied. | | |

Discussion: See the discussion in the "Governance: Policy: University Government" Section.

In addition to these weaknesses, some student governments may have a less defined policy structure because they work both within and outside of the larger university system, and may thus be somewhat affected by their policies. This indicator, however, recognizes that a strong student government should have its own set of sustainability policies in order to maximize its own performance on these issues. A separate, and strong, suite of student government sustainability policies can further work to promote the autonomy of student government, and to pressure a lagging campus government on sustainability issues through leading by example.




## Implementation: University Government: Committees

Issues: These indicators are designed to determine how well the university's policies are working: do they have working groups, are the working groups inclusive of different interest groups, and do the working groups have the ear of a high-level campus administrator. Sustainability in terms of governance requires both a strong policy and implementation structure.

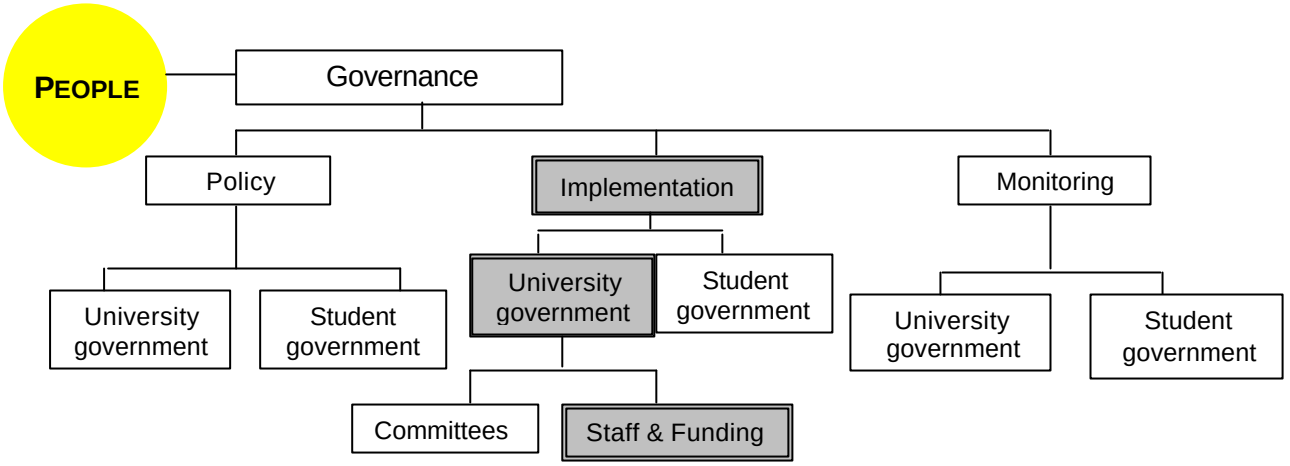
Indicators and Benchmarks:

| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| G-3 | University Government Working Groups | Percent of policies (from G-1) with active working groups, committees, or advisory groups that are working within the university government system divided by the total number of policies; multiply by 100.<br><br>Note: if one policy has more than one working group, this should count as only one working group. An exception to this is policies that cover more than one of the issues from the policy list and are counted for more than one in indicator G-1. | At least 50% | 100% |
| G-4 | Diversity of University Government Working Groups | Percent of total active working groups, committees, or advisory groups (tied to a policy from the list in the 'policy: university government' section) that have more than five different stakeholder/interest groups represented divided by the total number of working groups; multiply by 100.<br><br>Note: stakeholder groups include: staff and faculty (divided by representing unions), | At least 50% | 100% |

| | | | | |
|---|---|---|---|---|
| | | students (undergraduate and graduate), on- and off-campus advocacy groups, government (different levels), business, professionals/ consultants, and others depending on the issue. | | |
| G-5 | Reporting of University Government Working Groups | Percent of total working groups that report directly to the university president, board of governors, and/or senate divided by the total number of active working groups; multiply by 100. | At least 50% | 100% |

Discussion: This is another section of the framework where there is very little information to draw upon in setting benchmarks of performance. These benchmarks represent consensus opinion of a small group of campus sustainability experts only, and will need to be refined over time.




## Implementation: University Government: Staff & Funding

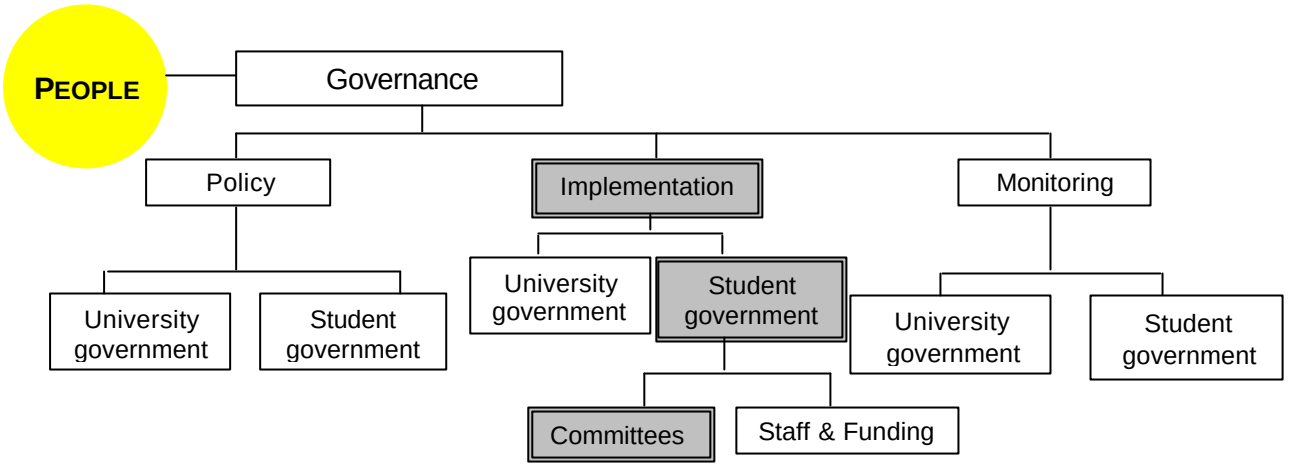
Issues: Both staff and funding are required to deliver on policy objectives, and their associated implementation plans. All three must work in harmony to make progress toward sustainability.

Indicators and Benchmarks:

| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| G-6 | University Staffing for Sustainability | Total number of FTE staff responsible for the management of the issues below, divided by the total number of issues in the list; multiply by 100.<br>1. Resource Conservation/ Efficiency (including energy, water, and solid waste management)<br>2. Sustainability in Facilities Management (broader mandate than #1)<br>3. Equity<br>4. Environmental Health and Safety<br>5. Transportation Demand Management<br>6. Wellness<br>7. Community (both on- and off-campus) Engagement in Campus Decision-making<br>8. Ethical and Environmentally Sound Purchasing<br>9. Ethical and Environmentally Sound Investment<br>10. Sustainability in Research<br>11. Sustainability in Teaching and Education<br>12. High-level Administrator for Campus-wide Sustainability Issues.<br>Note: if one staff person is responsible for more than one of these issues, they should only be counted once. | At least 50% | 100% |

| | | | | |
|---|---|---|---|---|
| G-7 | University Financing of Sustainability | Total annual dollars spent on staffing and operations of sustainability focused programs and initiatives from the list in G-6, divided by the total annual university budget (including operations and research/teaching); multiply by 100. | | |
| G-8 | Reporting of University Sustainability Staff | Total number of staff (as counted in G-6) who report directly to the president, a vice-president, or a departmental director, divided by the total number of staff counted in G-6; multiply by 100. | At least 50% | 100% |

Discussion: It is a challenge to develop an appropriate list of staff positions, and this list is based on only a small groups' consensus. Indicator G-7 does not have an obvious short- or long-term performance benchmark, as both too little or too much money could be spent on these issues, making the optimum benchmark somewhere in between. Rather than cut this indicator (as we did with most of the others that had similar difficulties), this one was kept in the hopes that through using best practices from Canadian campuses a performance benchmark can be set.



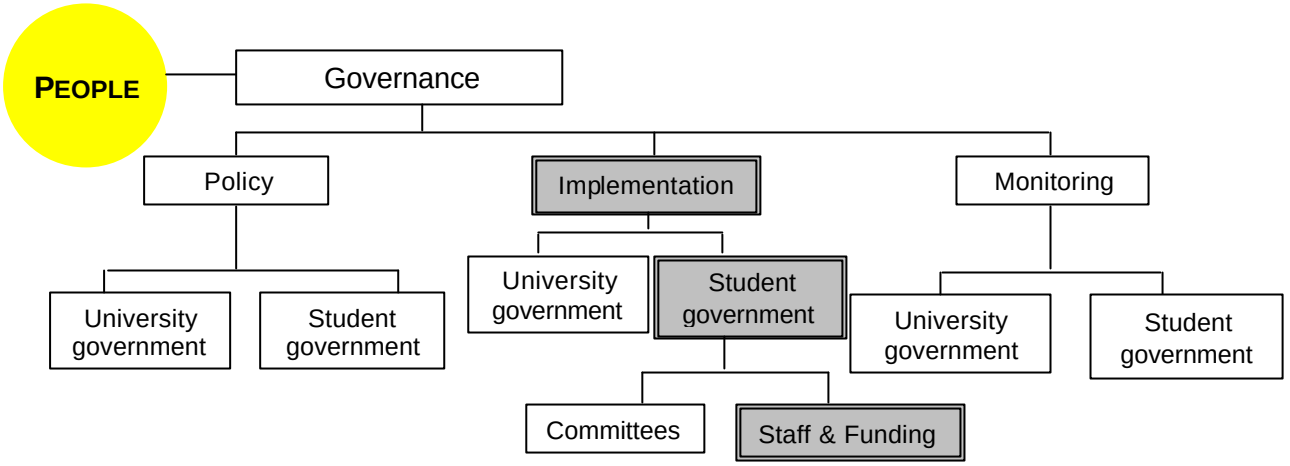

## Implementation: Student Government: Committees

Issues: These indicators are designed to determine how well the student governments' policies are working: do they have working groups, are the working groups inclusive of different interest groups, and do the working groups have the ear of a high-level student government representative. Sustainability in terms of governance requires both a strong policy and implementation structure.

Indicators and Benchmarks:

| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| G-9 | Student Government Working Groups | Percent of policies (from the list in G-2) with active working groups, committees, or advisory groups that are working within the student government system divided by the total number of policies from G-2; multiply by 100.<br><br>Note: if one policy has more than one working group, this should count as only one working group. An exception to this is policies that cover more than one of the issues from the policy list and are counted for more than one in G-2. | At least 50% | 100% |
| G-10 | Diversity of Student Government Working Groups | Percent of total active working groups, committees, or advisory groups (tied to a policy from the list in G-2) that have more than five different stakeholder/interest groups represented divided by the total number of working groups; multiply by 100. Note: see definition of stakeholders in G-4. | At least 50% | 100% |
| G-11 | Reporting of Student Government Working Groups | Total number of active working groups reporting directly to the student council president, a vice-president, or the board of directors divided by the total number of active working groups; multiply by 100. | At least 50% | 100% |

Discussion: This is another section of the framework where there is very little information to draw upon in setting benchmarks of performance. These benchmarks represent consensus opinion of a small group of campus sustainability experts only, and will need to be refined over time.




## Implementation: Student Government: Staff & Funding

Issues: Both staff and funding are required to deliver on policy objectives, and their associated implementation plans. All three must work in harmony to make progress toward sustainability.

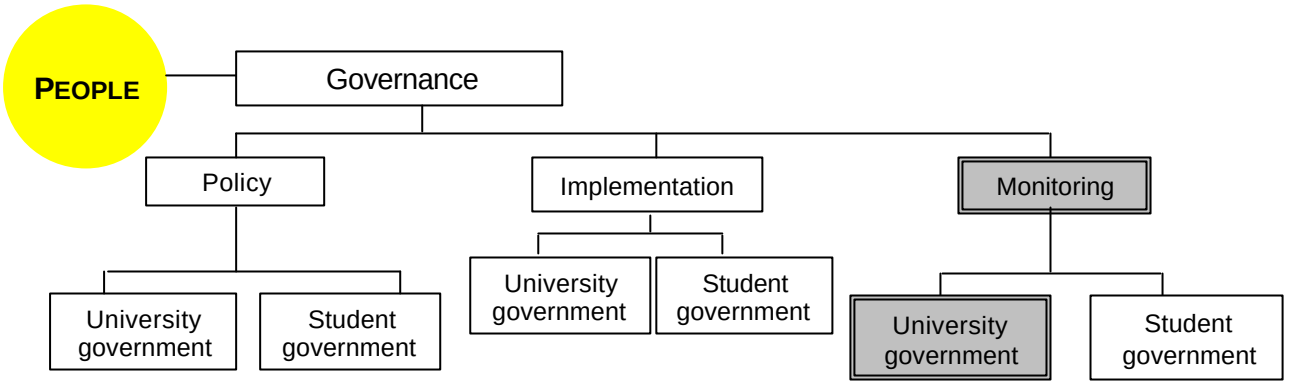
Indicators and Benchmarks:

| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| G-12 | Student Government Staffing for Sustainability | Total number of FTE staff responsible for the management of the issues from this list, divided by the total number of issues in the list; multiply by 100.<br>1. Resource Conservation/ Efficiency (including energy, water, and solid waste management)<br>2. Sustainability in Facilities Management (broader definition of sustainability than #1)<br>3. Equity<br>4. Environmental Health and Safety<br>5. Wellness<br>6. Ethical and Environmentally Sound Purchasing<br>7. Ethical and Environmentally Sound Investment<br>8. High-level Administrator of Student Sustainability Issues.<br><br>Note: if one staff person is responsible for more than one of these issues, they should only be counted once. | At least 50% | 100% |
| G-13 | Student Government | Total annual student government dollars spent on staffing and operations of sustainability | | |

| | | | | |
|---|---|---|---|---|
| | Financing of Sustainability | focused programs and initiatives from G-12 divided by the total annual student government budget; multiply by 100. | | |
| G-14 | Reporting of Student Government Sustainability Staff | Total number of staff (as counted in G-12) who report directly to the student government president, a vice-president, or the board of directors divided by the total number of staff from G-12; multiply by 100. | At least 50% | 100% |

Discussion: It is a challenge to develop an appropriate list of staff positions, and this list is based on only a small groups' consensus. Indicator G-13 does not have an obvious short- or long-term performance benchmark, as both too little or too much money could be spent on these issues, making the optimum benchmark somewhere in between. Rather than cut this indicator (as we did with most of the others that had similar difficulties), this one was kept in the hopes that through using best practices from Canadian campuses a performance benchmark can be set. It may also be unrealistic to expect a student government to support such a wide range of staff positions dedicated to sustainability issues, given that their operations are often a great deal smaller than a university's. This issue may need to be dealt with in future versions of the framework if it is deemed inappropriate by the majority.




## Monitoring: University Government

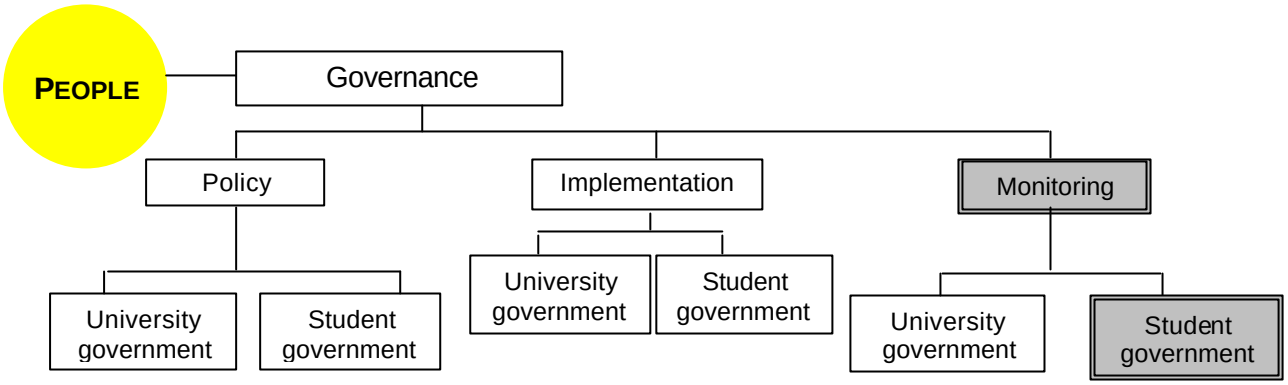
Issues: This section addresses the important issue of monitoring and reporting on the performance of campus sustainability policy. Transparency in university governance is an important sustainability issue, and both the on- and off-campus communities affected by the campus operations and functions should have access to information on performance, and ideally to influence future policy and implementation planning decisions as well.

Indicators and Benchmarks:

| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| G-15 | University Government: Implementation Planning | Percent of policies (from the list in G-1) that annually set new objectives for policy implementation divided by the total number of policies from the section, multiply by 100. | At least 50% | 100% |
| G-16 | University Government: Reporting | Percent of policies (from the list in G-1) that have annual policy implementation reports made available to the campus and surrounding communities divided by the total number of policies; multiply by 100. | At least 50% | 100% |
| G-17 | University Government: Information Management | Percent of policies (from the list in G-1) with data collection and management systems in place divided by the total number of policies, multiply by 100. | At least 50% | 100% |

Discussion: This section should be relatively straightforward, and data should be accessible for most of these issues. It is likely that performance will be quite low for many campuses, as the effects of a poor sustainability policy, implementation planning and monitoring structure will be compounded in this section. This section, along with all others in the governance section, lend themselves to supporting an environment or sustainability management system as described by the ISO 14001 standard. Thus those campuses working towards an EMS certification will likely be the only ones to score well in this section. This is not necessarily a 'weakness' of the section, but more of a warning and explanation for poor performance.




## Monitoring: Student Government

Issues: This section addresses the issue of monitoring and reporting on the performance of campus sustainability policies. Transparency in student governance is an important sustainability issue, and both the on- and off-campus communities affected by student government operations should have access to information on performance, and ideally be able to influence future policy and implementation planning decisions.

Indicators and Benchmarks:

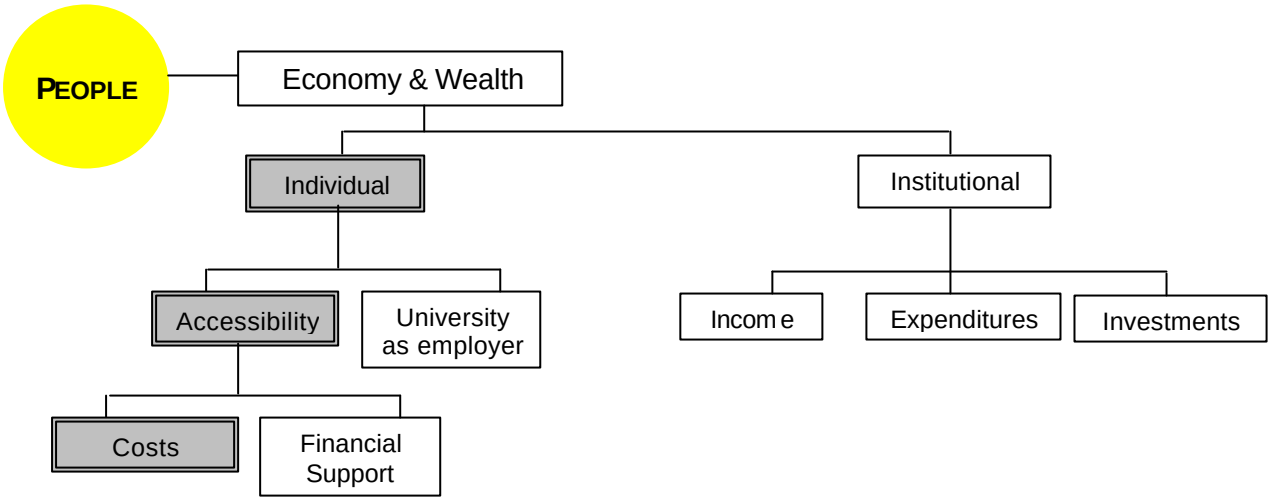
| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| G-18 | Student Government: Implementation Planning | Percent of policies (from the list in G-2) that annually set new objectives for policy implementation divided by the total number of policies from the section; multiply by 100. | At least 50% | 100% |
| G-19 | Student Government: Reporting | Percent of policies (from the list in G-2) that have annual policy implementation reports made available to the campus and surrounding communities divided by the total number of policies; multiply by 100. | At least 50% | 100% |
| G-20 | Student Government: Information Management | Percent of policies (from the list in G-2) with data collection and management systems in place divided by the total number of policies, multiply by 100. | At least 50% | 100% |

Discussion: This section should be relatively straightforward, and data should be accessible for most of these issues. It is likely that performance will be quite low for many campuses, as the effects of a poor sustainability policy, implementation planning and monitoring structure will be compounded in this section. This section, along with all others in the governance section, lend themselves to supporting an environment or sustainability management system as described by the ISO 14001 standard. Thus those campuses working towards an EMS certification will likely be the only ones to score well in this section. This is not necessarily a 'weakness' of the section, but more of a warning and explanation for poor performance. These issues will likely be even more prevalent for student governments, as they are general more limited in resources, expertise and time needed to dedicate to sustainability governance.

# ECONOMY & WEALTH

This section has 18 indicators.




## Individual: Accessibility: Costs

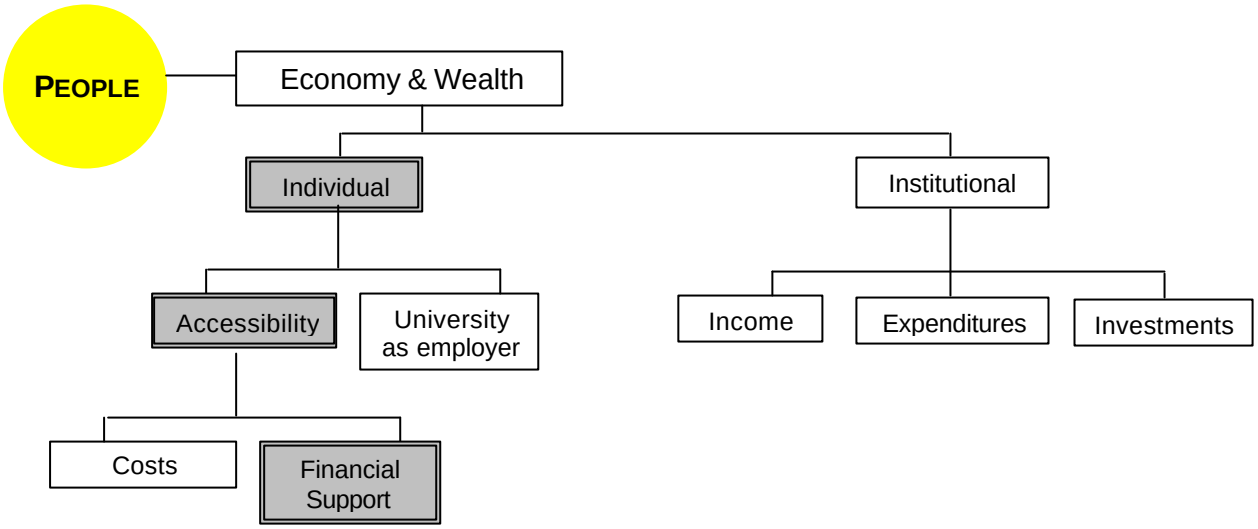
Issues: This section addresses the accessibility of post-secondary education for students. The cost of post-secondary education is on the rise across Canada. This is making post-secondary education more a privilege of the wealthy than a right for all. These indicators measure the affordability of post-secondary education, and the ability of students to self-finance their educational objectives over taking out loans.

Indicators and Benchmarks:

| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| EW-1 | Students With Loans | Total annual number of FTE graduating students with a government or bank loan, or line of credit divided by total number of FTE graduating students, measured annually; multiply by 100. | 25% less than current annual statistic. | 0% |
| EW-2 | Student Debt Load | Average debt per FTE graduating student with a government or bank loan, or line of credit subtracted from the national average debt load (of students with a debt). | Zero to –10% | More than 10% below national average. |
| EW-3 | Student Fees | Average university fees (including all tuition, recreation, student, etc. fees) calculated by totaling all fees for all departments and dividing by the total number of FTE students. Subtract from average national student fees. Do not include independent per credit fee levies charged to fund student groups. | Zero to –10% | More than 10% below national average |

Discussion: These three indicators are a very coarse assessment of the affordability of education, and other debts than those listed can be accumulated by students. Several

organizations – including the Canadian Federation of Students – have a wider ranging and more detailed assessment of affordability and should be referred to for a deeper understanding of this issue. Information for these indicators should be readily accessible, and the benchmarks should be quite robust.




## Individual: Accessibility: Financial Support

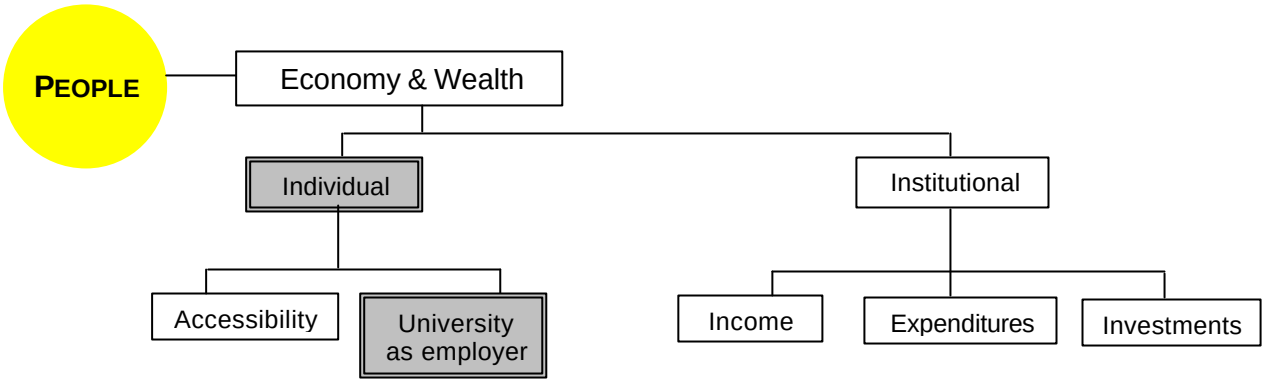
Issues: This section works to understand the balance between the costs of education, and the financial support available to students to counter these costs. These two sets of indicators should be considered together when analyzing accessibility of post-secondary education.

Indicators and Benchmarks:

| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| EW-4 | Number of Financial Awards | Total annual number of bursaries, scholarships, and other awards available specifically to students on your campus divided by the number of FTE students in that year. | | One per student |
| EW-5 | Value of Financial Awards | Total annual dollar value of bursaries, scholarships and other financial awards available specifically to students on your campus, divided by the number of FTE students in that year. Subtract this value from the total annual fees as calculated in EW-3. | Zero difference (value of awards is equal to fees) | Less than zero (more money awarded than required) |
| EW-6 | Allocation of Financial Awards | Total annual dollar value of bursaries, scholarships, and other financial awards allocated, divided by the total dollar value of awards available; multiply by 100. | At least 75% | 100% |

Discussion: Data availability in this section should be quite high, and thus the major weakness of the section is the difficulty in setting appropriate short- and long-term performance benchmarks.




## Individual: University as Employer

Issues: This section addresses how the university performs as an employer in terms of pay equity, wage gap, and benefits provided. These are important sustainability issues in terms of supporting and maintaining a diverse and healthy workforce that is treated equitably in terms of their wages.

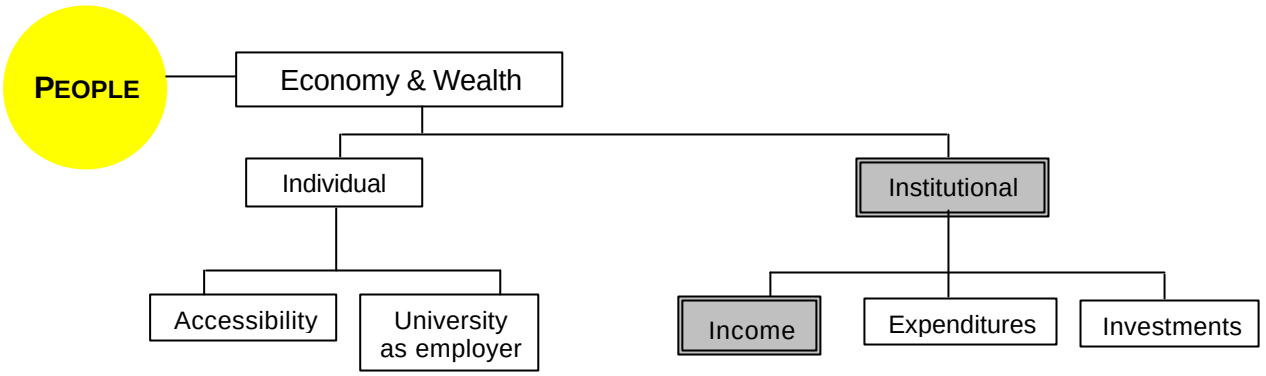
Indicators and Benchmarks:

| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| EW-7 | Wage Gap | Wage gap between highest and lowest FTE staff and faculty (not including contractors) calculated by dividing highest annual salary by lowest annual salary. | Gap of 10 times or less. | Gap of 7 times or less |
| EW-8 | Gender Pay Equity | Compare average pay for each of the employment types from the list, comparing male/female pay: tenured faculty; full-time untenured faculty; sessional instructors; high-level administrators; mid-level administrators; low-level administrators; trades workers; general (unskilled) workers and labourers. Worst performer (i.e. the most imbalanced group) should be used for reporting indicator performance. Subtract the highest pay from the lowest in the most imbalanced group and divide the difference by the highest pay rate; multiply by 100. Be sure to define which group is women and which is men. | Difference of 10% or less in salary for the same employment group. | Zero difference – i.e. men and women in the same job type to be paid the same salary |
| EW-9 | Ethnic Minority/ Caucasian Pay Equity | Compare average pay for each of the employment types from the list, comparing ethnic minorities/Caucasian pay: tenured faculty; full-time untenured faculty; sessional instructors; high-level administrators; mid-level administrators; low-level administrators; trades workers; general workers. Worst performer (i.e. | Difference of 10% or less in salary for the same employment group. | Zero difference – i.e. ethnic minorities and Caucasians in the same |

| | | | | |
|---|---|---|---|---|
| | | the most imbalanced group) should be used for reporting indicator performance. Subtract the highest pay from the lowest in the most imbalanced group and divide the difference by the highest pay rate; multiply by 100. Be sure to define which group is ethnic minorities and which group is Caucasian. | | job type to be paid the same salary. |
| EW-10 | Indigenous Peoples/ Caucasian Pay Equity | Compare average pay for each of the employment types from the list, comparing Indigenous Peoples /Caucasian pay: tenured faculty; full-time untenured faculty; sessional instructors; high-level administrators; mid-level administrators; low-level administrators; trades workers; general workers. Worst performer (i.e. the most imbalanced group) should be used for reporting indicator performance. Subtract the highest pay from the lowest in the most imbalanced group and divide the difference by the highest pay rate; multiply by 100. Be sure to define which group are the Indigenous Peoples and which group is Caucasian. | Difference of 10% or less in salary for the same employment group. | Zero difference – i.e. Indigenous Peoples and Caucasians in the same job type to be paid the same salary. |

Discussion: These indicators are relatively messy ones – they will require a lot of data gathering, manipulation and analysis, and the results may be less than conclusive. These are vitally important sustainability issues to measure, however, and thus these indicators have been retained in the framework. The short-term benchmarks may be too ambitious; it will take some testing of these indicators to determine whether or not these are reasonable short-term targets.




## Institutional: Income

Issues: Canadian campuses are showing a national trend of incomes shifting away from government sources and towards student and corporate sources[iv]. This framework wishes to promote government financed post-secondary education as the sustainability choice, and the indicators below represent this ethic.

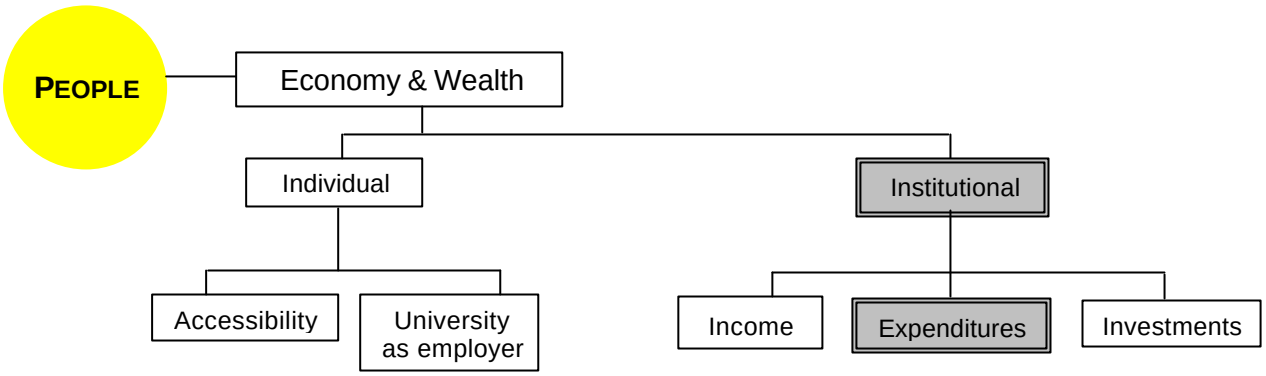
Indicators and Benchmarks:

| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| EW-11 | Income From Student Fees | Subtract percent of annual university budget received from student fees from the national average for all campuses percent of budget received from student fees.[v] Student government budget should not be included in this calculation. | Zero difference. | Positive percent value |
| EW-12 | Income From Government | Subtract percent of annual university budget received from government grants from the national average for all campuses percent of budget received from government grants. Student government budget should not be included in this calculation. | Zero difference. | Negative percent value |
| EW-13 | Income From Private Sources | Subtract percent of annual university budget received from private (i.e. non-government, non-fee) sources from the national average for all campuses percent of budget received from private sources. Student government budget should not be included in this calculation. | Zero difference. | Positive percent value |

Discussion: Although some people will not agree, it was the consensus of the group of sustainable campus experts that developed this framework that government sponsored university financing is the desirable and sustainable option. Thus high levels of financial input from student fees and corporate sources are not desirable and were deemed unsustainable. Many student and non-governmental advocacy groups agree with this

analysis as well, thus leading us to take this stance that some may view as a weakness or bias of the framework.




## Institutional: Expenditures

Issues: These indicators measure a range of issues related to expenditures and campus sustainability, including the efficiency of operational dollars spent, the equity of departmental expenditures, and preferential spending in the local economy. These are all important campus sustainability issues.

Indicators and Benchmarks:

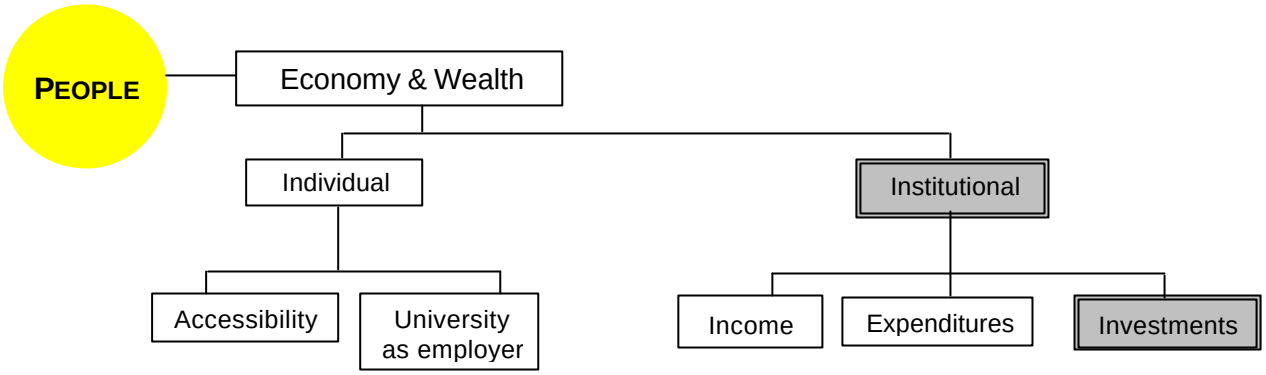
| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| EW-14 | Departmental Expenditures per FTE Student | Academic (including research and teaching) dollars spent per FTE students in each department on campus. Divide the highest expenditure per FTE by the lowest expenditure per FTE, and report the factor difference between the two. | Difference should be no greater than 5 times. | All department expenditure per FTE to be equal. |
| EW-15 | Locally Purchased Goods and Services | Total annual dollars spent on locally provided, harvested, produced and/or manufactured goods and services divided by the total annual dollars spent on goods and services; multiply by 100. "Local" means within a 200 kilometre radius of the campus. | At least 50% | 100% |
| EW-16 | Deferred Maintenance | Facilities Condition Index (FCI). Divide the total amount of deferred maintenance for all buildings on campus by the total replacement cost for all buildings on campus; multiply by 100. Note: if insurance replacement values are all that is available for data, mark these dollar values up by 30% to more accurately reflect replacement costs. | 5% - 10% | Less than 5% |

Discussion: Indicator EW-14 is a challenging one – what is an appropriate difference between departmental expenditures per FTE? It is true that some departments require more money per student than others, but we must examine 'why' this is so, and if those are valid reasons for valuing one students' education over another's. Research activities at universities are highly complex, and it is important to be aware of one major

complication in most research expenditure measures when assessing indicator EW-14. An emerging issue in this area has become contracted and non-trackable research activities of many academics. Many academics have begun taking money to support research and publishing activities that is not managed by the university. Thus whatever results come out of assessing these indicators will likely miss out on this huge source of money for research.

EW-15 will likely be challenging to measure, as most campuses are not likely to be currently collecting information about locally provided/produced goods and services in a way that can be "mined" to respond to this indicator.




## Institutional: Investments

Issues: The power of a campus' investments is an often underrated or unexamined element of campus sustainability. As societal innovators, a campus has a responsibility to both the on- and off-campus communities to invest in a socially and ecologically responsible manner.

Indicators and Benchmarks:

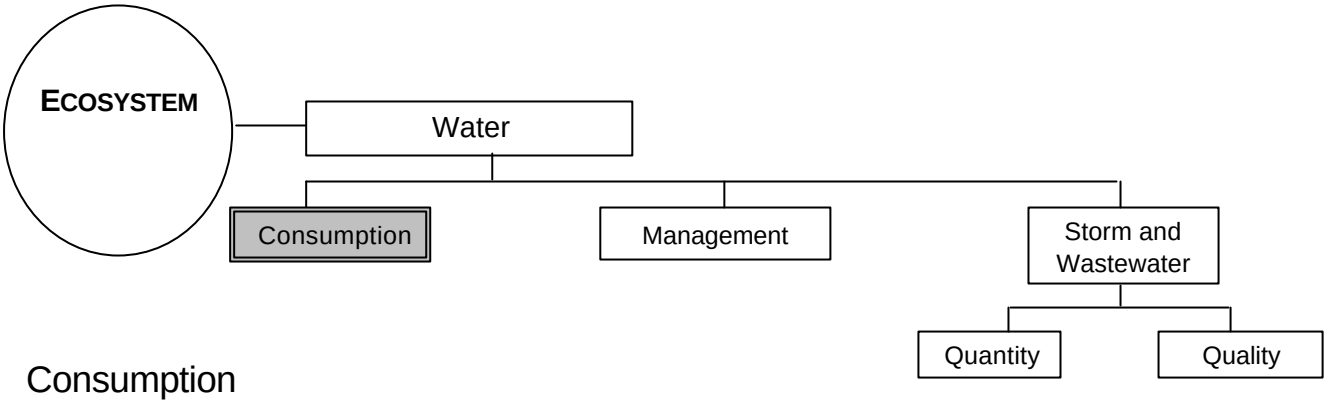
| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| EW-17 | Ethically and Environmentally Sound Investments | Total annual dollars invested by university and student administrations in ethical and environmentally responsible companies, divided by the total annual invested dollars. Investments held for less than one full year should be prorated according to length of investment (i.e. a $100,000 investment made for only 3 months would be worth $100,000 x 0.25 year = $25,000.) | At least 20% | 100% |
| EW-18 | Local Investments | Total annual dollars invested by university and student administrations in locally owned and operated companies, divided by the total annual invested dollars. If investments are for less than a full year, use the calculation in EW-15. "Local" means within a 500 kilometre radius of the campus. "Locally owned and operated" means that the company is at least 51% owned by local people, and 100% operated by local people. | At least 20% | 100% |

Discussion: For most campuses these are highly challenging and controversial issues. Many different things must be juggled when making investments, including protection of a campus' endowment, assurance of pension money for future retiree's etc. These indicators promote the ideas of local, ecologically sound, and socially responsible investment practices as vitally important sustainability issues on the campus that must begin to take the forefront in investment activities.

# WATER

This section has 12 indicators.




## Consumption

Issues: Water consumption is an obvious sustainability issue for campuses. Although the cost of water in Canada is quite cheap, it is important to conserve for many other reasons, not the least of which is the current trend of very dry, drought ridden summer seasons for most regions in Canada. This section addresses the issues of potable water consumption and reuse of storm water and grey water.

Indicators and Benchmarks:

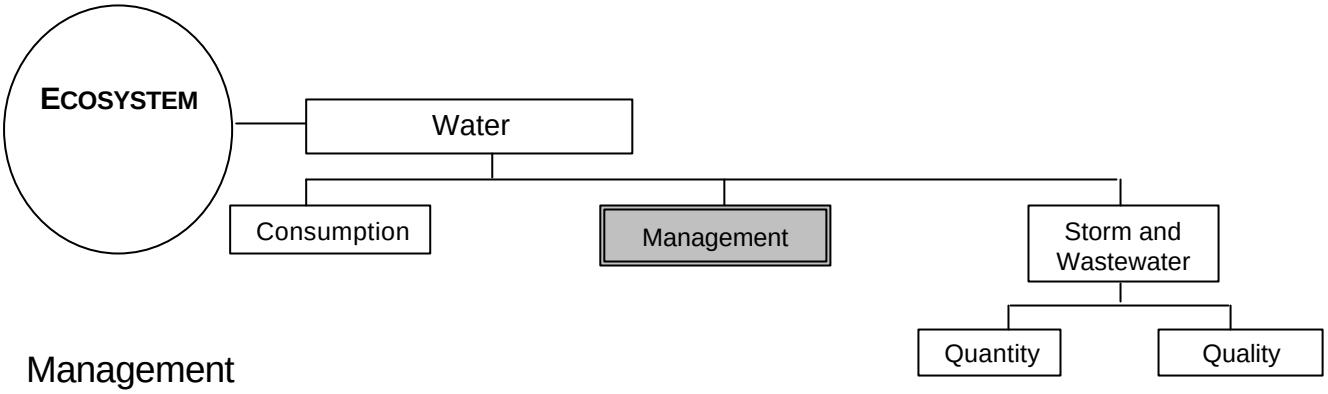
| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| W-1 | Potable Water Consumed | Total annual volume of potable water consumed by the campus for all uses (in litres), divided by the total number of CCMs. | | |
| W-2 | Storm and Grey Water Reuse | Total volume of grey water and/or storm water collected annually (in litres) that is reused on-site, divided by the total volume of water consumed (in litres) annually by the campus for non-potable water requiring uses (i.e. toilets, irrigation, etc.); multiply by 100. | At least 25% | 100% |

Discussion: Setting benchmarks for these indicators was very challenging, and the benchmarks proposed here will need to be altered after some initial data on these indicators is collected, and best practices can be determined.

There was interest by many to have an indicator that described if the university was doing it's part to help the region live within the capacity of its' water supply area and, secondarily, its existing infrastructure. This proved to be quite difficult, and thus this indicator was not included at this time. Calculating the capacity of the water supply area is possible, and likely already measured. The problems were around defining units of use – water use for the whole campus, or for each CCM did not take in to account the fact that many people live off campus, thus severely skewing the results. Also, we found that in order to give any kind of useful results, trends in ratio of use of

the campus to the whole community over time would be necessary. Useful results would not be given until many years of measurement had been done.




## Management

Issues: The active management of water infrastructure and use is important for understanding the system, operating it at maximum efficiency, and minimizing water use and waste. This section addresses leaking fixtures, leaking water distribution infrastructure, management of water use information at an appropriate scale, on-site wastewater treatment, and water efficient fixture installation.

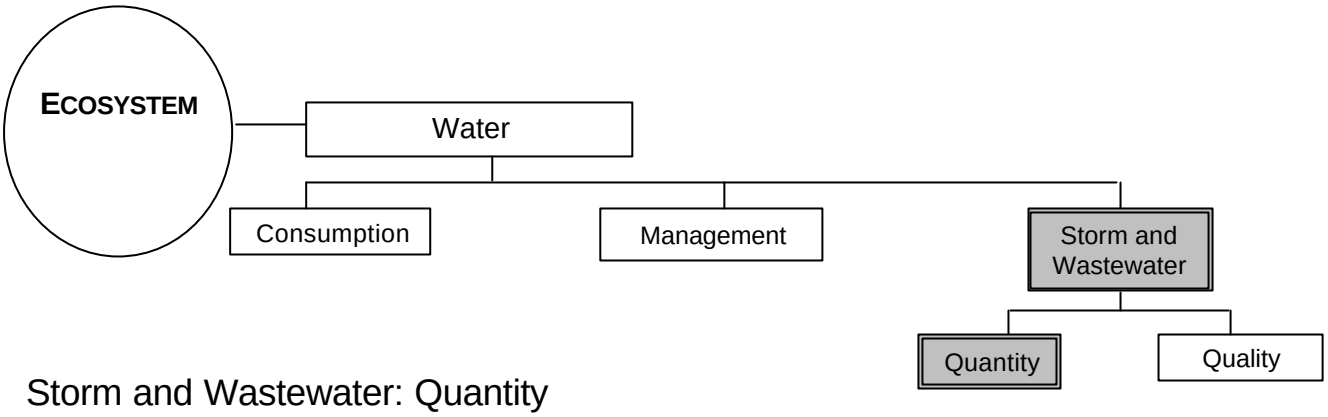
Indicators and Benchmarks:

| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| W-3 | Leaking Fixtures | Number of hours between each leaking fixture incident report and the time that the leak is repaired. Total the number of hours taken for each report and divide by the total number of reports to get the average. | 5 working days or less | 24 hours or less |
| W-4 | Water Metering: Potable | Total number of buildings on campus that have a water meter for that buildings' use, divided by the total number of buildings; multiply by 100. | At least 50% | 100% |
| W-5 | Water Metering: Wastewater | Total number of buildings on campus that have a wastewater meter for that buildings' production, divided by the total number of buildings; multiply by 100. | At least 50% | 100% |
| W-6 | Pressure Testing for Leaks | Total amount of water distribution system pressure tested for leaks over the past three years (as measured by length of pipe tested in metres), divided by the total length of pipe in the water distribution system; multiply by 100. | At least 50% | 100% |
| W-7 | Efficiency of Fixtures | Total number of new water fixtures installed annually that are of highest possible water efficiency rating for that year, divided by the total number of new fixtures installed in that year; multiply by 100. | At least 50% | 100% |
| W-8 | Motion Detectors Installed | Total number of sinks (all types), toilets, and urinals with motion detector flushing/flow devices installed, divided by the total number of toilets, | At least 50% | 100% |

| | | | | |
|---|---|---|---|---|
| | | sinks, and urinals; multiply by 100. | | |

Discussion: The major weakness of this section is that it is likely that many campuses do not currently measure all or most of these indicators. Hopefully this suite of indicators will encourage campuses to begin collecting this information if they aren't already doing so, as they will help to improve the management of water use and infrastructure on their campus.




## Storm and Wastewater: Quantity

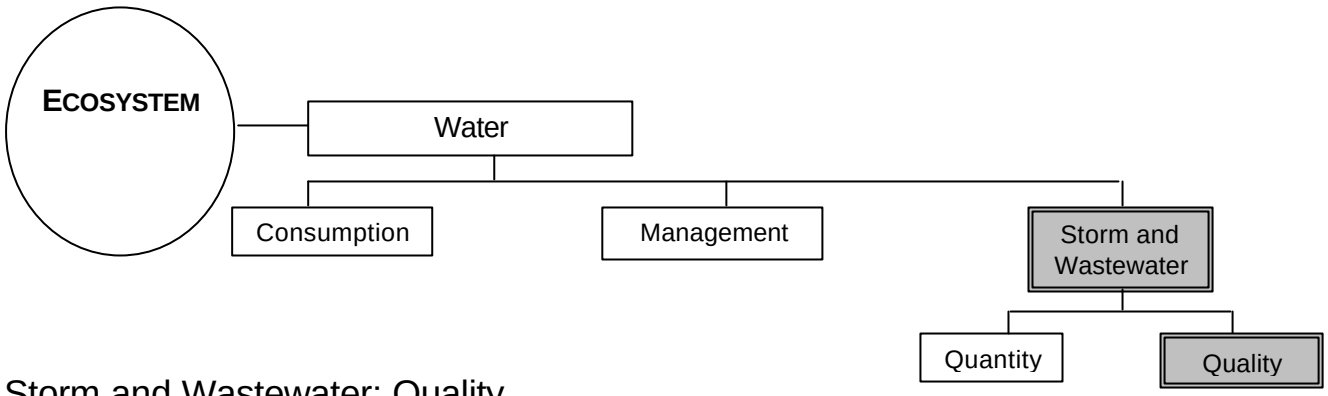
Issues: There are several effective methods of reducing the consumption and waste of potable water, and associated conveyance of wastewater into the sewage system through the reuse and treatment of wastewater.

Indicators and Benchmarks:

| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| W-9 | Wastewater Produced | Total volume of wastewater produced on campus annually in litres, divided by the total number of CCMs. | | |
| W-10 | Wastewater Treatment | Total volume of wastewater produced annually by the campus in litres, divided by the total volume of wastewater treated to tertiary standards either on- or off-site; multiply by 100. | At least 25% | 100% |

Discussion: These indicators will be challenging for many campuses, in terms of both measurement and in taking action towards sustainability. It is very difficult to determine appropriate performance benchmarks for indicator W-9, and these will need to be adapted and refined over time.




## Storm and Wastewater: Quality

Issues: Wastewater quality is an important sustainability issue for the campus, the surrounding community, and the receiving ecosystem. It is an ecosystem and human health issue that is often not effectively addressed by university campuses. This section addresses the quality of wastewater being sent off-campus.

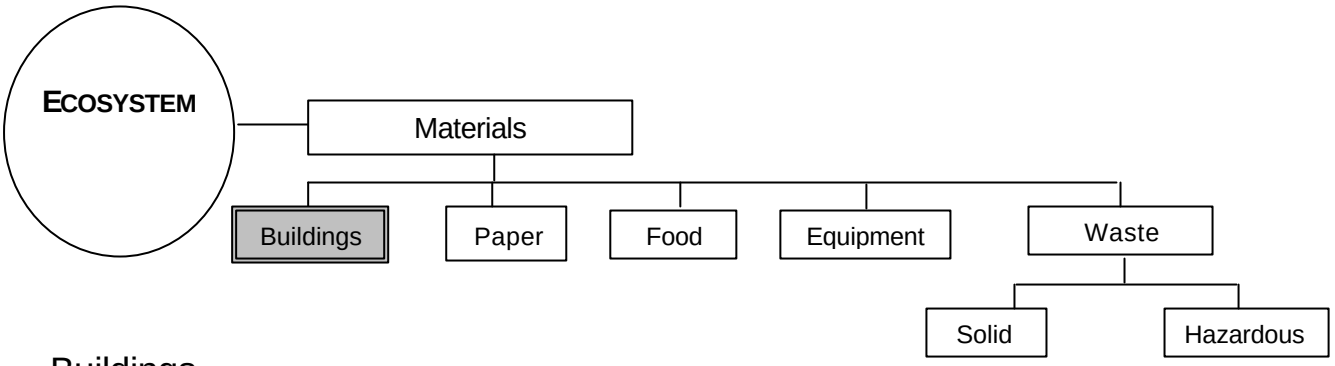
Indicators and Benchmarks:

| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| W-11 | Stormwater Contaminant Separation/ Collection | Total number of storm water drains connected to contaminant separation/collection systems, divided by the total number of drains; multiply by 100. The contaminant collection system should, at minimum, remove oil and gas and large debris. | At least 50% | 100% |

# MATERIALS

This section has 16 indicators.




## Buildings

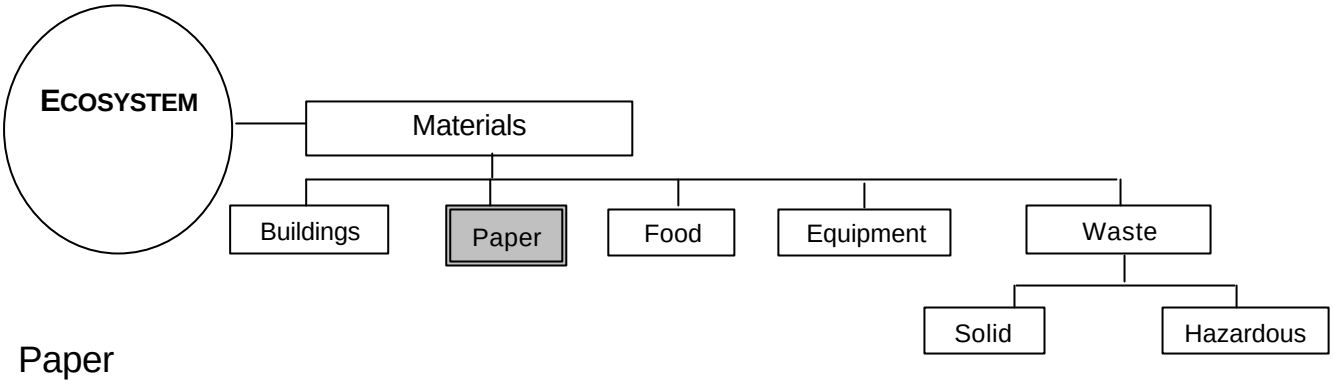
Issues: Buildings require an immense amount of resources in their design and use, especially when aggregated over the whole lifetime that the building is in use. This section focuses on environmentally sound and healthy building design options.

Indicators and Benchmarks:

| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| M-1 | LEED™ Certified Base Buildings | Total number of base buildings completed in the previous three years that have been certified to LEED™ silver, gold or platinum standard, divided by the total number of buildings completed in the previous three years; multiply by 100. | At least 50% | 100% |
| M-2 | LEED™ Certified Interiors | Total number of new interiors (including new buildings and major renovations) completed in the previous three years that have been certified to LEED™ Commercial Interiors silver, gold, or platinum standard, divided by the total number of new interiors completed in the previous three years; multiply by 100. | At least 50% | 100% |

Discussion: There are several popular green building and green interior design certification programs in existence. Leadership in Energy and Environmental Design (LEED™) was chosen for these indicators because it is quite widely recognized by building professionals as a comprehensive and user friendly standard. At the time this thesis was written, a new Canadian Green Building Council was in its early stages of existence that was likely to adapt LEED™ to the Canadian context, making it a very appropriate standard for our use. We also chose to reference a specific standard, rather than re-hash all of the green building material issues that exist, for ease of framework use. Because of this, some overlap between this category and others in this framework (e.g. storm water management, indoor air quality, greenspace protection) occurs.




## Paper

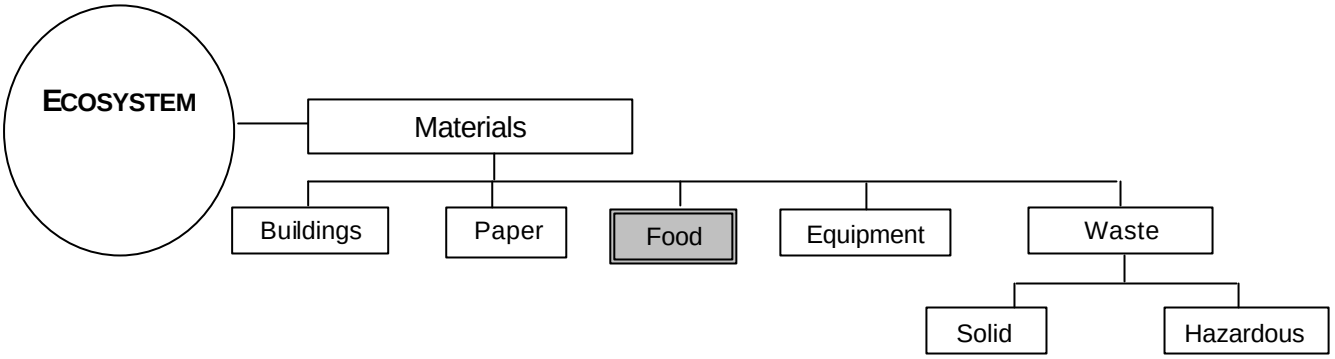
Issues: Paper may seem like a relatively arbitrary material to focus on, but universities tend to use an extraordinary amount of paper in their day-to-day operations and functions. This material is thus a good indicator of overall management of campus materials, and represents a large environmental impact of most universities. Further, changes in the purchase and use of this material offer great potential for environmental improvements.

Indicators and Benchmarks:

| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| M-3 | Paper Consumption | Total pieces of paper (of all types) purchased by all departments in the university each year, divided by the total number of CCMs. | | Approach zero |
| M-4 | Post - Consumer Content of Paper | Total percent post-consumer content of all tree-based paper used on campus each year. Post-consumer recycled paper counts as a factor of one, whereas post-industrial recycled paper counts as a factor of 0.5. *Note: use calculation template in Appendix. | At least 50% | 100% |
| M-5 | Tree-free Paper | Total pieces of paper purchased by all departments on campus each year that is tree-free, divided by the total pieces of paper purchased; multiply by 100. *Note: use calculation template in Appendix. | At least 25% | 100% |
| M-6 | Chlorine-free Paper | Total pieces of paper purchased annually by all departments on campus that has not been chlorine bleached, divided by the total pieces of paper purchased; multiply by 100. *Note: use calculation template in Appendix. | At least 50% | 100% |

Discussion: This section should be relatively straightforward, clear, and effective. Performance benchmarks may need some revision as more campuses begin to collect data on these indicators.




# Food

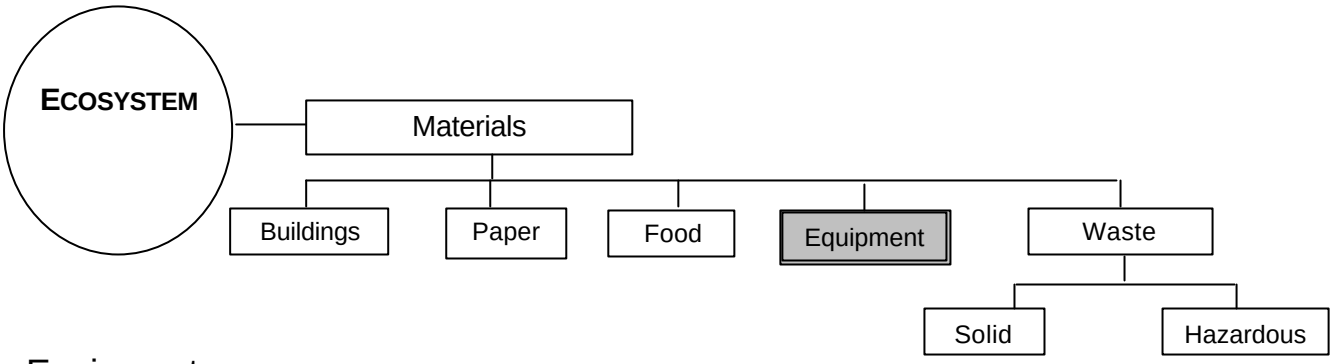
Issues: The ecological impact of foods consumed on most campuses is huge. One of the largest impacts is that of transportation. Much of the food consumed in Canada comes from far-away countries, thus requiring immense amounts of fossil fuels to bring our food to us. Other socio-economic impacts of eating foods produced in distant lands are also significant. By preferentially purchasing locally produced foods we are greatly reducing these negative transportation and socio-economic effects, while promoting the local economy. Other food related issues are addressed in the Health and Wellbeing: Food section.

Indicators and Benchmarks:

| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| M-7 | Local Food Production | Total amount of food (in dollars) that is locally produced, divided by total annual food budget; multiply by 100. "Local" means within a 200 kilometre radius of the campus. | At least 30% | 100% |

Discussion: Many campuses may have difficulty collecting this data initially, and may have to put new systems in place to be able to report performance on this indicator. Over time the short-term benchmark will also need to be modified based on best practices for this issue.




# Equipment

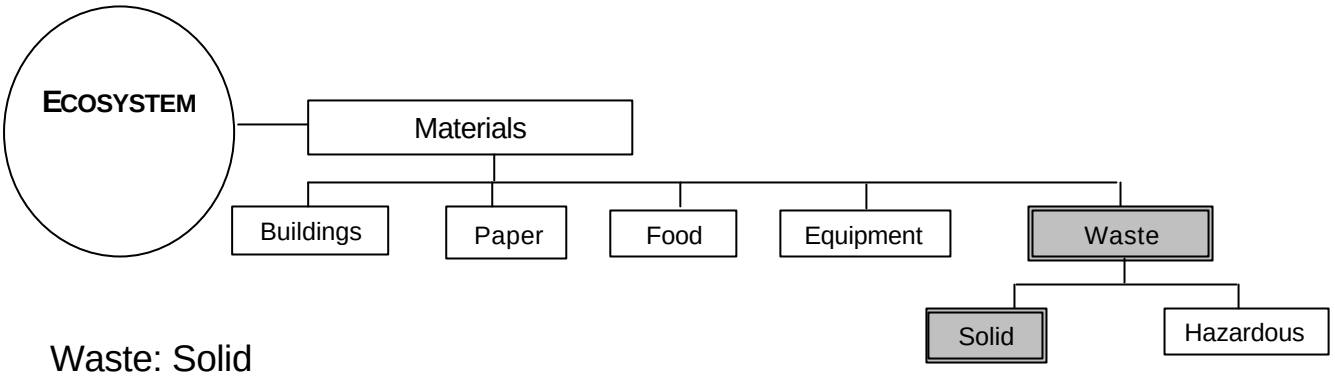
Issues: Equipment purchases are major investments, and purchase decisions should be based on a range of issues, not just the cheapest initial purchase price. Product durability and ease of repair are important for longevity. Energy, water, and other resource consumption over time should also be considered in product purchase. This indicator works to encourage the consideration of these issues through the use of a life-cycle assessment approach.

Indicators and Benchmarks:

| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| M-8 | Life-cycle Cost Assessment of Equipment | Total annual equipment purchased based upon a life-cycle cost assessment (using dollars) divided by the total annual dollars spent on equipment purchase; multiply by 100. "Equipment" to include all office, communication, laboratory, kitchen, art, grounds equipment, vehicles, etc. "Life-cycle cost assessment" means that the purchase decision is made based on full life-cycle cost, rather than the purchase cost alone, and includes consideration of long-term energy, water, paper, fuel, and other material and financial input costs. Soft life-cycle analysis (see below) dollars should be multiplied by 0.5 before summing totals and assessing performance against benchmark and goal. | At least 30% | 100% |

Discussion: Life-cycle cost assessments are complex analyses, and a standard tool for performing them should be determined for use in this indicator. This will ensure consistency and comparability of results, and will also make the data collection and analysis process for this indicator more streamlined and efficient. At the time this framework was developed, an appropriate tool had not yet been found, and this should be a priority for implementation of the framework.




## Waste: Solid

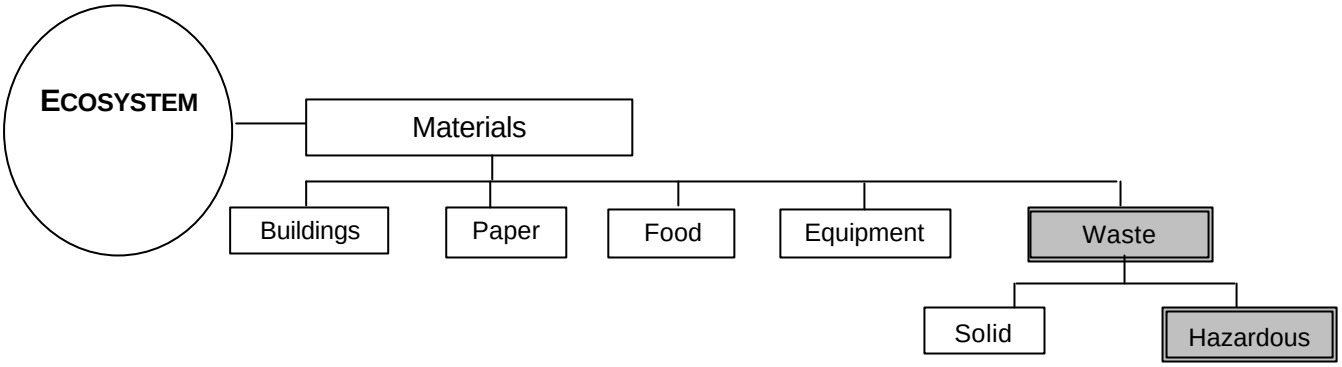
Issues: Solid waste reduction is the poster child of sustainability – it is the issue that brought many people in to the world of environmentalism. Although it is already actively being worked on at most Canadian campuses, it is important to continue efforts at reducing valuable material through-put in to landfills.

Indicators and Benchmarks:

| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| M-9 | Solid Waste and Recyclables Produced | Total weight of solid waste and recycling produced (in kilograms) annually, divided by the total number of CCMs. | | Approach zero |
| M-10 | Solid Waste Reduction | Percent of waste reduced per capita over previous years' waste production. *Note: use calculator provided in Appendix. | 0% to –5% change. | Positive percent change |
| M-11 | Recyclables Being Landfilled | Total amount of recyclables (including organic wastes) by weight (in kilograms) contained in the waste destined for landfill or incineration, divided by the total weight (in kilograms) of all landfill waste; multiply by 100. | 10% or less | Zero |
| M-12 | Compost | Total volume of organic materials composted (in kilograms), divided by total volume of organic materials produced annually; multiply by 100. All organic materials (including all food and yard wastes) should be included in the calculation. | At least 50% | 100% |

Discussion: Because waste reduction and recycling is a relatively well-known ecological issue, there are many potential ways to assess performance. We have selected these four indicators, but recognize that there are several other important ones that could have been included. One such indicator would deal directly with waste reuse and reduction issues. These are arguably more important than recycling, but it is difficult to quantify performance on waste avoided, salvaged or reused. Instead, these issues should be captured in indicator M-9, although they will be somewhat buried amongst other waste production and reduction issues.




## Waste: Hazardous

Issues: Hazardous materials – even in minute concentrations – can have devastating effects on both humans and the ecosystems. Campuses tend to use a large volume of hazardous materials, primarily for laboratory teaching and research purposes. Often they are even stockpiled for many years, creating a potential hazard for the campus community. These indicators measure the volume of hazardous materials used on campus, as well as their fate in the environment once they have been used.

Indicators and Benchmarks:

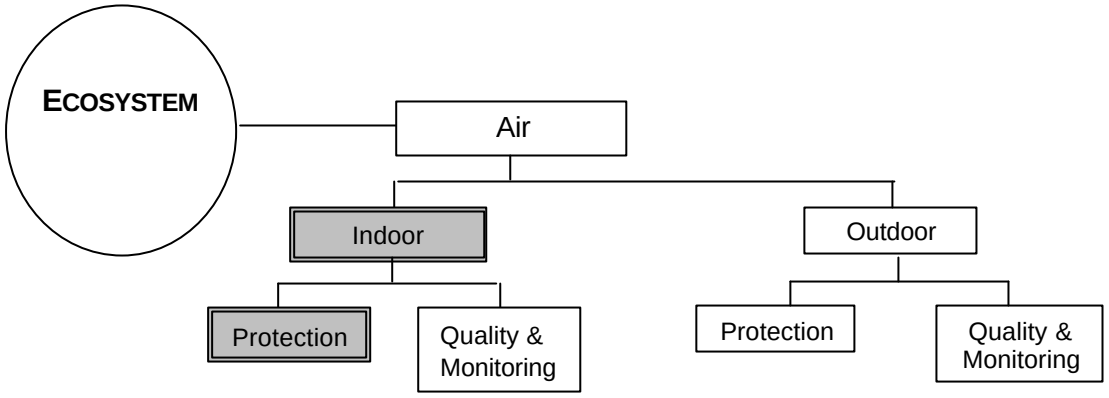
| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| M-13 | Hazardous Waste Produced | Total weight of solid and liquid hazardous waste produced (in kilograms) annually, divided by the total number of CCMs. | | |
| M-14 | Reuse of Hazardous Waste | Total weight (in kilograms) of solid and liquid hazardous wastes reused (either on- or off-campus) each year, divided by the total amount of hazardous wastes produced (including reused materials); multiply by 100. | At least 25% | 100% |
| M-15 | Recycling of Hazardous Waste | Total weight (in kilograms) of solid and liquid hazardous wastes recycled each year, divided by the total amount of hazardous waste (in kilograms) produced annually (including recycled wastes); multiply by 100. | At least 50% | 100% |
| M-16 | Reduction of Hazardous Waste | Reduction of hazardous wastes produced by CCM over previous year.<br><br>*Note: use excel calculator provided in Appendix. | 0% to –5% change. | Positive percent change |

Discussion: Although the handling and disposal of hazardous wastes is heavily regulated in most places, many campuses do not have tracking systems in place to monitor the movement and use of hazardous materials from their purchase through to use and disposal. This will offer a challenge of data collection for these indicators. It is also very difficult to determine what an appropriate level of hazardous material use is per CCM, as is requested in indicator M-12. Setting short-term benchmarks for indicators M-13 and 14 is also challenging, and they will need to be adapted over time.

# AIR

This section has 15 indicators.




## Indoor: Protection

Issues: Indoor air quality has emerged in recent years as a critical issue of concern, largely in terms of protecting human health. Older buildings often have poor ventilation, and may have mold, asbestos and other pollutant issues. New spaces can have materials that off-gas potentially hazardous chemicals in to the air. By ensuring good quality indoor air, a healthier and more productive work force and academic community will result.

Indicators and Benchmarks:

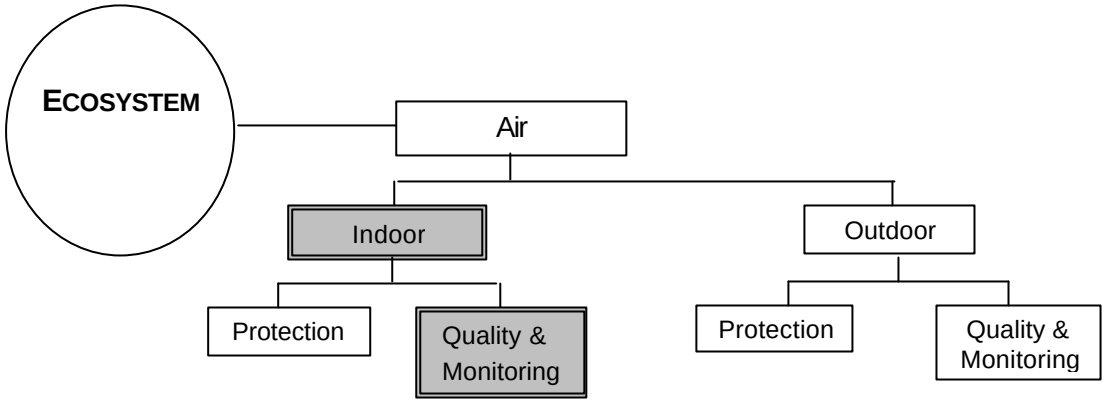
| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| A-1 | Asbestos and Mould | Total square metres of indoor spaces contaminated with asbestos and/or mold, divided by the total indoor square metres; multiply by 100. | 20% or less | 0% |
| A-2 | Scent-free Indoor Spaces | Total square metres of scent-free indoor spaces, divided by the total indoor square metres; multiply by 100. | At least 50% | 100% |
| A-3 | Opening Windows | Total square metres of regularly occupied interior spaces (excluding corridors, washrooms, etc.) serviced by opening windows, divided by the total square metres of regularly occupied interior spaces; multiply by 100. | At least 50% | 100% |
| A-4 | Air Change Effectiveness | Total number of interior space zones that achieve air change effectiveness of 0.9 or greater, divided by total number of zones; multiply by 100. *Note: this is a LEED™ green building design standard based on ASHRAE 129-1997 Appendix B and more information about measurement of this indicator can be found there. | At least 75% | 100% |
| A-5 | Smoke-free Indoor Spaces | Total interior square metres of designated smoke free space, divided by the total interior square metres; multiply by 100. | At least 80% | 100% |

| | | | | |
|---|---|---|---|---|
| A-6 | Living Plants Indoors | Total number of living plants in interior spaces, divided by the total square metres of interior space. | At least 0.1 plants per square metre | At least 1 plant per square metre |
| A-7 | Chemical Free Cleaning | Total square metres of indoor space always cleaned using a chemical free system, divided by the total interior square metres; multiply by 100. | At least 20% | 100% |
| A-8 | Pesticides Used Indoors | Total amount of pesticides (including all types of plant and animal poisons) in grams used indoors each year, divided by the total square metres of interior space; multiply by 1000. | | 0 grams per 1000 square metres |
| A-9 | Cleaning of Air Handling Units | Total number of air handling units cleaned over the last year, divided by total number of air handling units; multiply by 100. | At least 50% | 100% |

Discussion: As with many indicators in this framework, it was difficult to establish short-term performance benchmarks, and the ones used here will likely need to change and adapt over time. It may also be difficult to find information on these indicators, as many campuses are not likely to track this information. It is hoped that these indicators will encourage campuses to pay more attention to critical indoor air quality issues.




## Indoor: Quality and Monitoring

Issues: Indoor air quality monitoring is a challenging subject, and a difficult one to assess for many campuses due to a lack of consensus on what 'good' performance is, and a lack of consistency in measurement and analysis practices. That being said, we felt it important to include these measures as important sustainability issues, while recognizing the inherent difficulties with the section.

Indicators and Benchmarks:

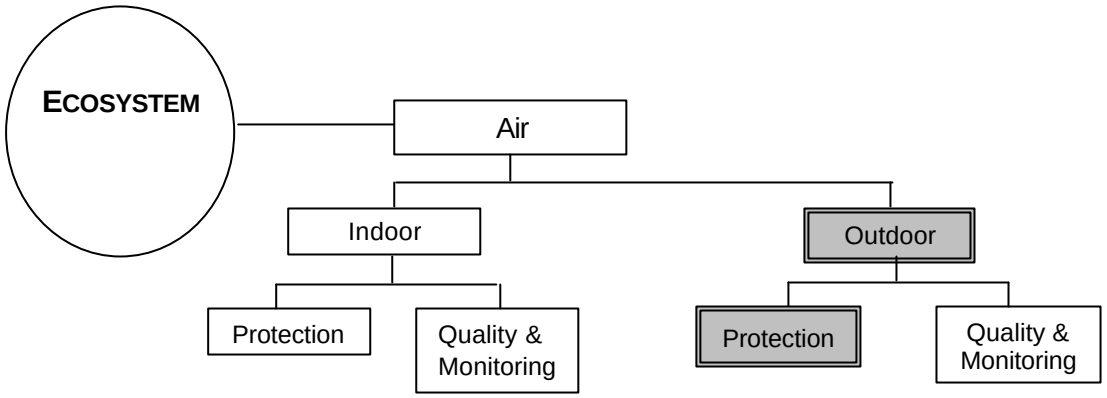
| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| A-10 | Carbon Dioxide Monitoring Indoors | Total number of interior zones (as defined by ASHRAE 62-2001 Appendix D) that have CO2 monitoring systems installed, divided by total number of interior zones; multiply by 100. *Note: this indicator comes from LEED™ 2.1 green building standard. | At least 50% | 100% |
| A-11 | Indoor Air Quality Complaints | Total number of complaints (verbal, written etc.) regarding poor indoor air quality concerns received by all departments annually, divided by the total number of CCMs; multiply by 5000. | No more than 1 per 5000 CCMs. | Zero per 5000 CCMs. |

Discussion: This section has only two indicators, both of which are challenging in their own ways. Indicator A-10 will be a challenge to measure for most campuses with older buildings. The standard that is referenced has likely not been considered in the design and development of most buildings, and it will likely be a challenge to analyze different zones according to the standard, and then determine the appropriate number of C02 sensors.

Indicator A-11 is one of very few qualitative measures included in the framework, and is used because there were very few reasonable options available for indicators in this section. Data may be available for this indicator, but there will likely be questions as to its quality and comparability.

The major weakness in this section is that there are huge gaps in information. There was initially an indicator included that measured "the number of sensors per square metre of interior space for indoor air quality monitoring of non-CO2 compounds." We

also wanted to include some kind of indoor air quality performance standards for specific substances monitored. Upon discussion with an expert in this field, we decided to eliminate these indicators at this point in the development of the framework. There is currently too much variability, and even manipulation, of data collection and sampling methods, compounds to sample for, and data analysis techniques in this field to come up with meaningful results. Also, for most campuses, the cost of such monitoring is cost-prohibitive. Thus this area is one that should be explored in the future, and new indicators should be sought out for this section. Perhaps indicators could be developed to focus on potential high-risk areas like laboratories, and chemical mixing and storage areas. We would also encourage campuses particularly interested in this issue, to employ an individual with expertise in this field to assist in additional indoor air quality monitoring activities.




## Outdoor: Protection

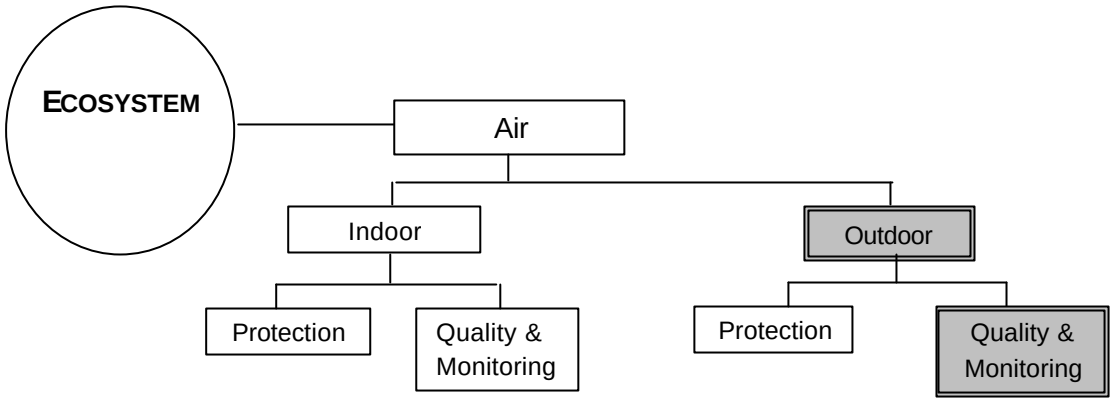
Issues: These indicators are concerned with outdoor air quality issues, including both negative impacts, and potential improvements that campuses can make to enhance outdoor air quality. Although many campuses will be affected by outdoor air quality impacts that are not directly caused by the campus community, this is still an important issue to understand and take action on.

Indicators and Benchmarks:

| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| A-12 | Smoke-free Outdoor Spaces | Total square metres of designated smoke-free outdoor common spaces, divided by the total square metres of outdoor common spaces (include all managed outdoor spaces as calculated in L-1); multiply by 100. | At least 75% | Approach 100% |
| A-13 | Living Trees Outdoors | Total number of living trees on campus (including all natural and managed spaces), divided by the total area of the campus (in square metres). | At least 0.05 trees per square metre | At least 0.25 trees per square metre |

Discussion: Benchmarks are also challenging in this section. Sustainable amounts of designated smoke free outdoor spaces has been set, but is likely to never be reached. It was deemed important to indicate where campuses should be heading in their efforts to become more sustainable, thus these very challenging long-term goals were retained. An acceptable number of trees per hectare is also a challenging benchmark to determine, and the ones proposed here will likely need to change over time.




## Outdoor: Quality and Monitoring

Issues: This section deals with greenhouse gases, and other emissions produced by campus energy consumption, and also the quality of air being vented to the exterior environment from specific high-risk locations.

Indicators and Benchmarks:

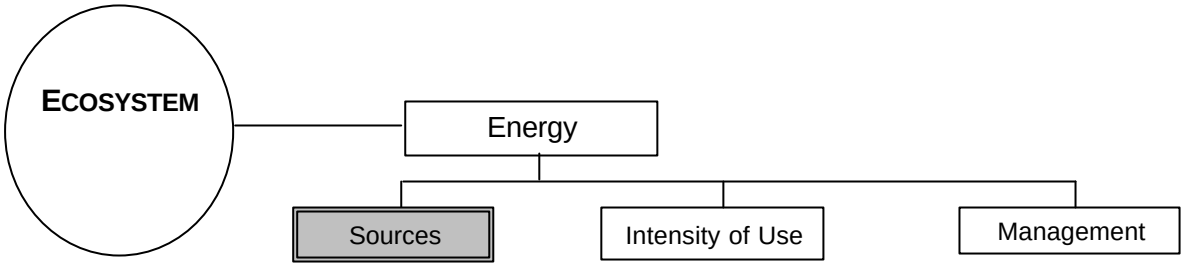
| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| A-14 | Monitoring of Exterior Vents | Total number of exterior vents with CO2, other GHG, and particulate monitors, divided by the total number of exterior HVAC&R vents; multiply by 100. A vent should be counted only if it has all three monitors in place. | At least 50% | 100% |

Discussion: The major weakness in this section is similar to the indoor air quality section; that of missing indicators. This section initially had an indicator measuring the "percent of total exterior vents for laboratories, fine arts studios, chemical mixing spaces, swimming pools, and other areas where chemicals are used in high concentrations with monitors for…." We found very similar challenges in this section as the indoor air quality measurement challenges mentioned in the previous section. What substances should be monitored? At what resolution should sensors be placed? What sampling protocol and data analysis process should be used? The variation and potential manipulation of results in this section at this point in time lead us to omit this measure. Hopefully over time better measures can be found to more fully assess the issue of outdoor air quality monitoring.

# ENERGY

This section has 12 indicators.




## Sources

Issues: These indicators examine the sources of energy that fuel your educational institution, and how far they must travel before reaching your campus. There are many energy source options available today, and some are much more ecologically and socially responsible than others. These indicators assess these important sustainability issues.

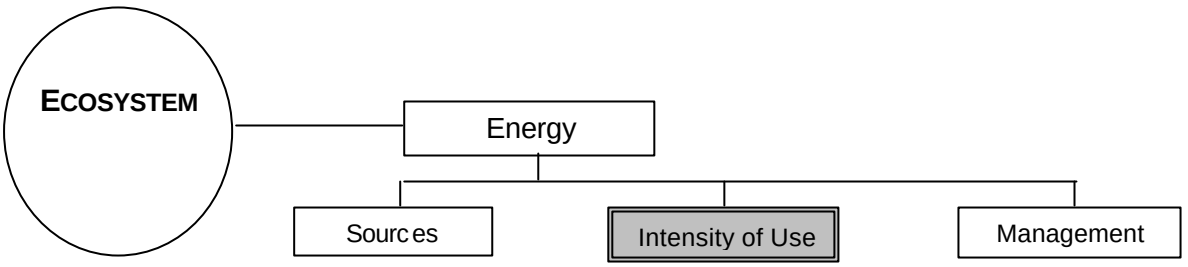
Indicators and Benchmarks:

| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| E-1 | Renewable Energy: Buildings | Total GJ of energy consumed annually by buildings for heating, ventilation, air conditioning, refrigeration and electrical systems from renewable sources, divided by the total GJ of energy consumed annually for the uses listed in the indicator; multiply by 100. Building energy should include energy used for exterior lighting and signage. "Renewable sources" means clean, non-nuclear, and perpetual renewable energy. Large-scale hydroelectricity is not considered renewable, although small-scale or micro-hydro is. | At least 20%[VI] | 100% |
| E-2 | Renewable Energy: Fleet and Grounds Vehicles | Total GJ of energy consumed annually for fleet and grounds vehicles and equipment from renewable sources, divided by the total energy consumed annually by those listed uses; multiply by 100. Definition of "renewable sources" is the same as E-1. | At least 20% | 100% |
| E-3 | Local Energy Sources | Total GJ of energy (for all uses as E-1 and E-2) consumed annually by the campus produced within 500 kilometres of the campus, divided by the total energy (for same uses) in GJ consumed annually; multiply by 100. | At least 20% | 100% |

Discussion: The definition of 'renewable' energy is still evolving over time, thus our definition may be altered as new, clean, renewable energy sources come on-line. These indicators may

be challenging for many campuses to measure, especially E-3. It is difficult to determine the ultimate source of energy used on the campus, as many supply infrastructures do not track their energy sources in that way. This is also an issue that is somewhat out of the control of the university, making changes difficult.




## Intensity of Use

Issues: These indicators measure how efficiently and intensely energy is used on a campus. It measures energy consumed for different uses relative to campus floor space, and relative to the number of campus community members. It also examines intensity of pollutants relative to the amount used, and also the type of fuel used through greenhouse gas equivalent emissions.

Indicators and Benchmarks:

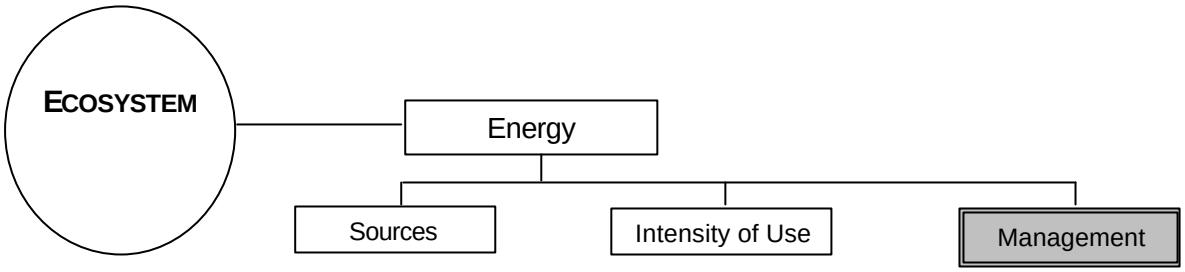
| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| E-4 | Greenhouse Gas Emissions: Buildings | Total energy (of all types) consumed (in GJ) each year for heating, cooling, ventilation, and electrical systems, converted into GHG equivalent (tonnes), and divided by total square metres of interior built space. Note: energy used for outdoor uses (lighting, signage, etc.) should be included in the energy use calculation, but will still be assessed relative to square metres of interior space. | Tonnes GHG/square metre | Tonnes GHG/square metre |
| E-5 | Greenhouse Gas Emissions: Commuting Transport | Total energy (of all types) consumed in GJ each year for commuting transportation, converted into GHG equivalent (tonnes), and divided by total number of CCMs in that year. | Tonnes GHG/CCM | Tonnes GHG/CCM |
| E-6 | Greenhouse Gas Emissions: Fleet and Grounds Vehicles | Total energy (of all types) consumed in GJ for all fleet and grounds vehicle/equipment use, converted into GHG equivalent (tonnes), and divided by total number of CCMs in that year. | Tonnes GHG/CCM | Tonnes GHG/CCM |
| E-7 | Greenhouse Gas Emissions: Campus Travel | Total energy (of all types) consumed in GJ for all work related travel (air, land, water, excluding fleet vehicle use) for FTE staff and faculty, converted into GHG equivalent (tonnes), an divided by total number of FTE staff and faculty in | Tonnes GHG/CCM | Tonnes GHG/CCM |

| | | | | |
|---|---|---|---|---|
| | | that year. | | |
| E-8 | Reduction in Energy Consumption | Total change in energy consumption (of all types) in GJ for building, commuting and fleet/grounds vehicle uses in current year over previous year.<br>* Note: use calculator provided in Appendix. | 0% to –5% change. (i.e. no more than 5% increase) | Positive percent change (i.e. reduction made) |

Discussion: This section requires the use of a good carbon dioxide equivalency calculator so that all campuses using this indicator are calculating their greenhouse gas emissions in the same way. This issue should be explored in the development of assessment guidelines for using this framework. It is also quite difficult to set benchmarks for this section, and the benchmarks used here will need to be adapted over time. Finally, energy consumption needs will vary somewhat across the regions of Canada, with campuses in milder climates likely having better performance than those is more extreme climates. There will also be some transportation inequities for urban versus rural campuses. These issues should be carefully considered in analyzing results of this section, and perhaps indicators that can more equitably deal with these inequities can be found in the future.




## Management

Issues: There are many management options available to campuses to greatly reduce energy consumption. Energy conservation has long been a sustainability issue, especially in terms of cost-efficiency, and thus many campuses should perform well in this section.

Indicators and Benchmarks:

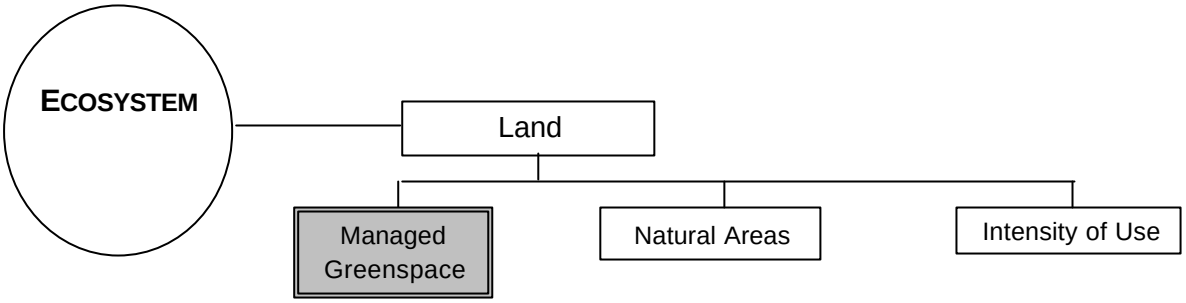
| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| E-9 | Energy Metering | Total square metres of interior space divided by the total number of energy meters. | X square metres per energy meter. | X square metres per energy meter. |
| E-10 | Energy Efficient Equipment | Total value (in dollars) of energy consuming equipment, fixtures, appliances, etc. installed over the previous year that was of highest energy efficiency ratings available, divided by the total dollars spent on all new energy consuming equipment installed over the previous year; multiply by 100. | At least 50% | 100% |
| E-11 | HVAC&R System Control | Total amount of HVAC&R system (measured by the built square metres serviced) operating with direct digital control with digital hardware, divided by total amount of built square metres serviced by HVAC&R systems; multiply by 100. | At least 50% | 100% |
| E-12 | Automatic Lighting Sensors | Total floor area (in square metres) of classrooms, office spaces, laboratories, washrooms, and other non-emergency and non-critical (i.e. hallways and walkways) spaces controlled by automatic lighting occupancy sensors, divided by total lit floor area (in square metres and excluding emergency and critical areas); multiply by 100. | At least 25% | 100% |

Discussion: Some of these energy management options may be cost prohibitive for campuses, and the payback may be too long in order to justify installation of sensors or direct digital control systems. These indicators were still deemed to be important measures of campus sustainability in terms of energy management, and were thus included.

# LAND

This section has 13 indicators.




## Managed Greenspace

Issues: Managed greenspace includes all permeable (i.e. not paved, and water can penetrate) surfaces on campus that are managed in some way, including lawns, landscaped beds (with both native and non-native plant species), gardens, agricultural lands, gravel walkways, etc. Any greenspace on campus that requires maintenance by university staff should be included. These areas are important contributors to campus sustainability both in terms of human and ecosystem well-being.

Indicators and Benchmarks:

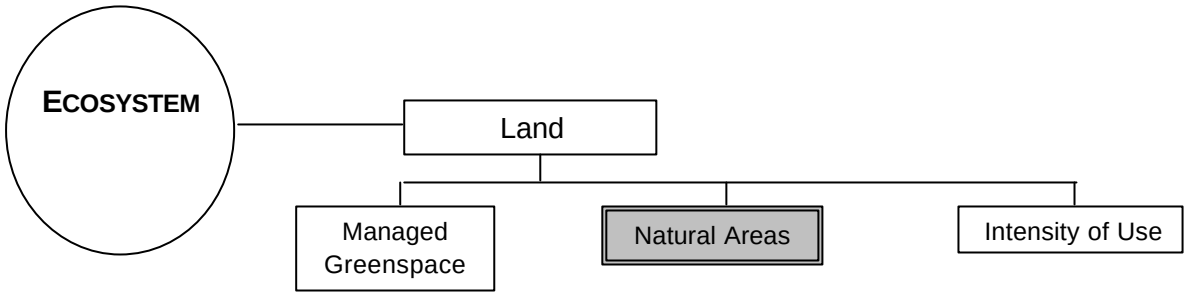
| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| L-1 | Managed Greenspace | Total hectares of managed greenspaces, divided by the total on-campus greenspace (both managed and natural, including everything that is not built, or that is permeable); multiply by 100. Note: the percent of total on-campus greenspace that is 'natural' can also be found here by subtracting the result of this indicator from 100. | | |
| L-2 | Inorganic Fertilizers | Total volume of solid and liquid inorganic fertilizers used annually (in kilograms), divided by the total hectares of managed greenspace. | | Zero |
| L-3 | Pesticides | Total volume of solid and liquid pesticides (including both plant and animal poisons of all types) used annually (in litres), divided by the total hectares of managed greenspace. | | Zero |
| L-4 | Native Plants | Total number of native plants installed (number of individual plants) annually in managed greenspaces, divided by the total number of plants installed in that year; multiply by 100. | At least 50% | 100% |

Discussion: It is difficult to determine a benchmark of short-term performance for volumes of inorganic fertilizer and pesticide, as there is no current campus best practice documented on this topic. Thus, with the use of these indicators, the short-term

benchmarks will need to change in order to best reflect achievable, yet ambitious short-term goals.

These indicators will be challenging for the urban campus, as some of them will have no, or very little managed or natural greenspaces. This is recognized as a particular challenge for these campuses, but a lack of greenspace does represent a significant negative sustainability impact. It is hoped that through measurement of these issues, and through developing strategies of action for improvements, all campuses (especially urban ones) will be able to find innovative and creative ways to provide green spaces to their campus communities. It is also hoped that benchmarks of performance can be found through the use and testing of indicator L-1.




## Natural Areas

Issues: Natural areas include all permeable spaces on campus that are in a natural or semi-natural state. Both degraded and healthy ecosystems should be included. There should be very little or no human maintenance input in to these spaces for them to be included in this area calculation. Areas that fit in to this category, but have been drastically altered from their natural state, should be considered 'Degraded', and calculated as such for the indicators that consider degraded landscapes. Degraded areas, even though they will likely have high levels of human maintenance, should be included as "natural areas" in calculations. Many campuses have large tracts of natural areas that they should work to maintain, protect and even enhance over time in order to protection local biodiversity and habitat.

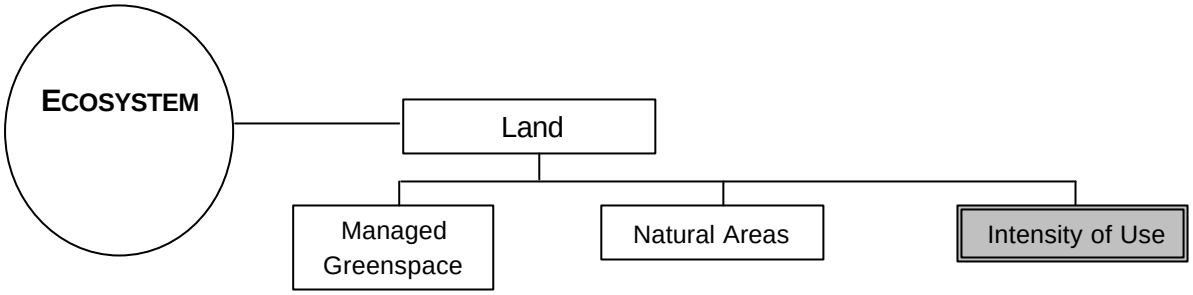
Indicators and Benchmarks:

| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| L-5 | Healthy Natural Areas | Total area (in hectares) of healthy natural areas, divided by the total area (in hectares) of all natural areas (including healthy and degraded systems); multiply by 100. | At least 75% | 100% |
| L-6 | Restoration of Degraded Areas | Total area (in hectares) of degraded natural areas that have been fully restored over the previous three years, divided by the total area (in hectares) of degraded natural areas; multiply by 100. Note: if all natural areas or healthy, or there are no natural areas on campus, "n/a" should be marked. | At least 25% | 100% |
| L-7 | Protection of Natural Areas | Total area (in hectares) of natural areas protected for the long-term through policy, covenant, or other non-alterable protection strategy, divided by the total area (in hectares) of natural areas; multiply by 100. | At least 50% | 100% |
| L-8 | Unresolved Land Claims | Total hectares of campus land with historic, unresolved land claims by Indigenous Peoples, divided by the total hectares of campus land in assessment year; multiply by 100. | 25% or less | Zero. |

Discussion: There will be some subjectivity in regards to some of the terms used in this section, including “healthy” and “degraded” natural areas, as well as what constitutes “full restoration”. The expertise of biologists should be engaged when assessing these indicators in order to obtain the best results possible. A further challenge in this section is indicator L-6, as there will be some campuses who do not have natural areas, or perhaps do not have degraded natural areas, and will thus be forced to mark “n/a” for this indicator.

Indicator L-8 does not fit very well in to this section, but there are no other sections in which this important indicator fits better. This is a highly charged issue for many Indigenous Peoples, and in researching performance on this indicator the issue may become highly politicized. Given this, we still wanted to include this important measure in the framework.




## Intensity of Use

Issues: The intensity of land use is becoming an increasingly important sustainability issue throughout North America and the world. These indicators attempt to address the issues of sprawling versus compact growth, built space achieved with reducing impacts of impermeable building footprints, and the compact/sprawling qualities of parking facilities.

Indicators and Benchmarks:

| NO. | INDICATOR | MEASUREMENT UNITS | SHORT-TERM BENCHMARK | LONG-TERM GOAL |
|---|---|---|---|---|
| L-9 | Impermeable Surface Coverage | Total area of impermeable surfaces (in hectares), divided by the total campus land area (excluding natural areas as described in L-5, and if your campus has agricultural lands these should also be excluded); multiply by 100. | 30% or less | 10% |
| L-10 | Parking Density | Total number of parking stalls, divided by the total footprint of parking lot areas (in hectares). Note: only measure the footprint of the parking structure. If it is four stories tall, only measure the footprint on the ground. | | |
| L-11 | Building Density | Total square metres of building space (all floors of all buildings) divided by the total footprint of all buildings on campus in square metres (the ground space used by all buildings). | | |
| L-12 | Occupancy Rates: On-campus Residences | Percent of on-campus residences (of all types) managed by the university that are at full occupancy year round. *Note: use excel spreadsheet calculator provided in Appendix. | At least 75% | 100% |
| L-13 | Occupancy Rates: Classrooms | Percent of classrooms at full occupancy year round, from 8 am – 8 pm weekdays. *Note: use excel spreadsheet calculator provided in Appendix. | At least 75% | 100% |

Discussion: There is no direct measure of the relative compact or sprawling nature of a campus, as one could not be directly created. Over time, and with new and emerging research on

smart growth issues, a more direct indicator of sprawl may be developed. Several indicators relate to density of space relative to the impermeable footprint on the ground; these indicators inherently favour taller buildings, and parkades as sustainable options for intensity of land use. This may challenge some suburban and rural campuses who have large tracts of land area available to them and tend to build low lying structures, but is viewed as a more sustainable intensity of land-use pattern.

The occupancy indicators will also be challenging for some campuses who tend to operate at their peak during the regular school year and over regular working hours. These indicators challenge campuses to use their built spaces to maximum efficiency, as this will reduce the need for new developments and thus reduce the need to transform greenspaces to built spaces. It is hoped that indicators L-12 and 13 will force campus managers to rethink the way that buildings are used, workdays are designed, and courses are scheduled in order to maximize efficiency of land use.

[i] Physicians for a Smoke-free Canada. Cigarettes and the Health of Canadians. Accessed on the world wide web January 7, 2003 at http://www.smoke-free.ca/pdf_1/BackgroundHealth.pdf. The number of Canadians over the age of 15 who smoked in 1996 (most recent statistic) was 29%. This target was set at 50% below the national average of smokers in the population.

[ii] World Health Organization. Guidelines for Community Noise. And Acoustical Society of America. Classroom Acoustics: a resource for creating learning environments with desirable listening conditions. Accessed on the world wide web at http://www.who.int/environmental_information/Noise/Commnoise4.htm and http://asa/aip.org/classroom/booklet.html. The target of 35 decibals or less comes from recommended classroom noise levels.

[iii] Ladouceur, Eric. Lumec, Inc. Personal communication, January 8, 2003. Advice on how to measure uplight, current available techniques for measurement, and benchmarks of performance were given, and the indicator has been based on this discussion. The benchmarks were also based on the recommendations made by the International Dark-Sky Association at http://www.darksky.org, an advocacy group. Development of measurement strategies for this indicator should be done upon future consultation with Lumec, Inc. or another lighting expert.

[iv] Doherty-Delorme, Denise and Erika Shaker (editors). 1999 – 2001. Missing Pieces (I, II, and III): An Alternative Guide to Canadian Post-Secondary Education. Canadian Centre for Policy Alternatives, Ottawa.

[v] These statistics are collected annually by StatsCan in the same university, student and private sources categories.

[vi] Leadership in Energy and Environmental Design (LEED) version 2.1. 2003. United States Green Building Council. This benchmark comes from LEED™ Energy and Atmosphere credit 2, renewable energy.