

# STUDENTENERGY

## Policy Brief: Youth Impact Framework



# Executive Summary

Young people play an integral role in contributing to progress in the climate and energy movement, ranging from advocating for policy and systems change to directly implementing climate solutions, and decision-makers are increasingly taking notice. Despite a growing uptick in their engagement, young people continue to face challenges in accessing resources to support and scale their work, and significant opportunity remains in meaningful engagement in decision-making at all levels, from community to national level government and broader international processes. Boosting constructive climate and energy engagement across youth and local government starts with measurement.

The **Youth Impact Framework (YIF)** is a tool with 15 outcomes and indicators that allow youth to measure, and communicate the impacts of their work with all levels of government and industry leaders, and for decision-makers to understand the tangible contributions of youth-led work. Ranging from GHG emissions reduction to green jobs created and increased civic engagement of youth, the Framework's 15 selected "impacts" represent some of the most urgent actions that are needed to accelerate the pace of the energy transition and climate action. This Framework is designed to be particularly useful at the nexus of climate, energy, youth leadership, and cities and local governments, catalyzing collaboration and partnership to tackle the climate crisis and address myriad socioeconomic challenges. We also propose a set of actionable **Key Insights and Recommendations** for decision-makers.

The YIF is a first step towards building a shared language between youth and decision-makers, allowing both parties to connect and grow the direct and indirect impacts between youth and local leadership in the climate and energy space. With the Youth Impact Framework as an evidence-driven starting point, youth, governments, philanthropy, and industry organizations can take action to **mutually increase support for climate and energy initiatives that leverage the capacities and insights of youth-led groups**, which can accelerate progress on shared climate action and energy transition priorities.





# KEY INSIGHTS & RECOMMENDATIONS

While the Youth Impact Framework's set of impacts, outcomes, and indicators are intended to be used as a starting point for both youth and industry stakeholder organizations to understand the impact of youth-led projects, the research and interview process also revealed some more holistic recommendations and calls to action that can be immediately acted upon. Summarized below are the key insights synthesized from research and interviews, each with an actionable recommendation for decision-makers at organizations of all types.

Table 1: Key Insights and Recommendations

KEY INSIGHTS	RECOMMENDATIONS
Most youth noted that funders tend to favor singular projects or new initiatives rather than providing funding for organizations and ongoing projects. This makes it challenging for many youth leaders to invest in the sustainability of their work or organization.	Provide <b>unrestricted funding</b> to youth-led initiatives which can be used for hiring and paying staff, maintaining budgets, establishing governance, and purchasing supplies, which would help sustain their overall work in climate and energy for the long-term.
While unrestricted funding is crucial, youth also noted that other types of support would be beneficial in maintaining their initiative. These additional forms of support include mentorship, training or skills building, and awareness-raising media visibility.	Provide dedicated <b>mentorship</b> for youth-led projects in technical or scientific knowledge, impact measurement, project management, or entrepreneurship, in conjunction with funding calls, grants, and awards.  <b>Amplify youth-led work</b> , by featuring youth in organizational newsletters, speaking engagements, and profiling youth projects and teams in media. Organizations should also consider <b>researching youth-led work in their field or region</b> , to ensure that diverse and impactful youth projects are amplified.
Youth leaders expressed that they generally find it difficult to communicate or demonstrate impacts of their initiatives in a way that resonates with decision-makers, or with funders' priorities.	Use <b>plain language, and be transparent about funding or strategic priorities</b> so that young people can easily understand the criteria and requirements that decision-makers and funders have.  <b>Create accessible training resources</b> for youth to better communicate their impacts, or <b>create channels for youth to ask questions</b> directly to funding experts, mentors, and other industry leaders.

Both industry experts and youth expressed value for <b>youth-specific indicators</b> such as “increased youth empowerment”, “increased awareness & skills” & “greater youth influence in policy and strategy”.	Include language on the <b>value of youth engagement, awareness-raising, and skills building</b> in organizational strategic plans and priorities, so that it is embedded in the organization’s activities and program development.
Youth noted that they would like increased support from governments (especially youth leaders in the African region) to ensure they can access high-level decision making spaces, and be heard in a meaningful way.	<b>Provide support</b> , including funding, <b>for youth of all backgrounds</b> to attend high-level conferences or other decision-making spaces where they can share their work and stories, demonstrating tangible roadmaps for how youth can scale their impact.
Industry experts recognized the impact of youth in influencing policies and suggested capturing <b>indirect impacts</b> which are a result of youth influence at a policy level.	Dedicate staff capacity to <b>researching youth-led projects in your region</b> . Often, youth may be indirectly supporting emissions reductions by pushing for clean energy policies, taking action to stop future fossil fuel projects, or calling for more liveable cities. Recognizing these contributions can provide a foundation for more meaningful youth engagement.
Industry experts and most youth leaders recognized the difficulty of quantifying all types of impacts through metrics, and suggested additionally defining the impact of youth-led initiatives as a <b>story of change</b> —meaning, sharing the impact of the work through story-telling and experiences.	Consider whether there is a clear organizational understanding of <b>how youth (can) contribute to change in your field</b> , and create space in calls for funding or in youth-facing programming for youth to share their story of change, in addition to meeting other criteria.
The impacts that youth identified as being most difficult to measure are emissions and energy-related indicators, such as “reduction or avoidance of GHG emissions,” or, “improved energy access.”	Provide education or share industry standard tools, best practices, and frameworks for youth to better <b>estimate the emissions-reductions potential, adaptation, resilience, increase in energy access, and or poverty reduction aspects</b> of their work.

Measuring such indicators and using this framework can help aggregate and quantify impacts of youth-led organizations, making it accessible for local governments or companies to collaborate with youth and catalyze advocacy efforts in the climate and energy space. One way to do this is by introducing Youth City Research and/or Challenge Teams where youth and their local government work together to test the framework. The aim is to train young people to engage with local governments and facilitate matchmaking between local government leaders and youth to collaborate on climate and energy policy solutions.

## INTERVIEW FINDINGS

We learned from these interviews that there is a clear positive inclination, from industry experts and organizations who work with cities, to support youth-led initiatives, but many **do not have a direct mandate, suitable funding mechanisms, or existing communication channels** to provide that support. Some organizations noted that while they do not or cannot fund youth projects directly, they could potentially connect youth to other organizations or sources of funding using their networks. Of the 10 organizations interviewed, only one currently had mechanisms set up for young people to access funding for projects, and three organizations currently already do some form of youth engagement, whereas others either do not, or are still developing their channels for youth engagement.

Youth leaders shared that **securing funding** and communicating their impact to funders are typically the biggest barriers to scaling their work, and most remarked that using an impact framework would prove beneficial to continue their efforts in energy and climate action. Apart from accessing sustainable funding, some youth interviewees shared that other types of support including **mentorship and capacity-building, government support**, and **media visibility** would reduce the barriers they often encounter to continue their work. The extent to which youth-led initiatives measure and report on the impacts of their work varied across interviewees, with some youth noting that it would be difficult to assign metrics to all of the types of impacts that their projects contribute to. The interviews with youth also highlighted the importance of capturing indirect impacts that youth often significantly contribute to at a policy level, such as building public support for progressive climate policies and empowering peers or members of their household to take action.

Combining these insights with our scoping research on the types of youth-led initiatives that exist, we have synthesized the above **Key Insights and Recommendations**, to enable decision-makers at the local, regional, national, and international levels to assess their existing engagements with youth and take make conscious



efforts to strengthen them. Building on these insights and our supplementary research on priority actions needed to transition the energy system, have produced the **Youth Impact Framework**, with 15 key impacts, outcomes, and measurable indicators that can be used to understand the climate and energy impacts of youth-led work.

### Why estimate energy and climate impacts?

Some types of impacts of youth-led initiatives can be far-reaching and difficult to assign metrics to. At the same time, there may be other impacts that can be estimated and/or measured, such as emissions reduced or avoided, clean energy capacity installed, waste diverted, or resources conserved. The Youth Impact Framework suggests some impacts to measure as a way to encourage both organizations and young people leading projects to estimate the contributions they are making towards emissions reductions and increased sustainability, using tools like the **Greenhouse Gas Equivalencies Calculator** or the **Simple Emissions Reductions Calculator**. This can help youth decide how they want to focus their activities, and to draw clearer links between their activities and the achievement of national or international climate targets.



## DEVELOPING THE YOUTH IMPACT FRAMEWORK

Led by Student Energy in partnership with the Global Covenant of Mayors for Climate & Energy (GCoM) and the Melbourne Centre for Cities at the University of Melbourne, the Youth Impact Framework was developed based on three sources of research and knowledge: a scoping review to identify existing literature and data gaps, interviews with **16 young leaders of youth-led initiatives**, and interviews with **10 industry stakeholder organizations**. This research was supplemented by case studies and relevant experience from Student Energy's 14 year history of supporting 50,000+ young people in 120 countries to take action on energy and climate change.

A survey of 17 existing impact measurement frameworks in sustainable development and community projects provided valuable examples of how impacts and outcomes can be structured, but also demonstrated that there is a **significant gap in frameworks exploring the impacts of youth-led initiatives or advocacy and assessments of opportunities to strengthen collaboration with cities and local governments**. In our consultation with youth-led initiatives and industry organizations, we sought input on the framework, by asking what industry experts value as an 'impact', what impacts youth are measuring, what barriers they face in maintaining or growing their initiatives.



## CONCLUSION

The Youth Impact Framework report seeks to demonstrate actionable recommendations for local governments, and industry stakeholders to collaborate with young people to achieve shared climate and energy action priorities. Recognizing that young people come from many different backgrounds and often lack the institutional backing of established actors in the climate and energy space, we advocate for organizations to consider how they are currently engaging with young people, and to adapt the Youth Impact Framework to inform organizational strategies.

**To read the full report and learn more about the development of the YIF, [click here](#).**



# Appendix

## Youth Impact Framework

ENERGY TRANSITION & CLIMATE CHANGE MITIGATION				
	Impacts	Outcomes (or 'Activities')	Suggested Indicators <sup>1</sup>	How does it have an environmental impact?
<b>1</b>	Reduction or Avoidance of GHG Emissions	<p>Closing of a fossil fuel generation or extraction source</p> <p>Reduced overall/per capita carbon footprint of households or city</p> <p>Decarbonizing buildings, transport, industrial processes</p>	<p>Metric tonnes of CO<sub>2</sub>e reduced, captured, or avoided</p> <p>Measurement can be complicated but can be referred to existing research. For instance, we know that a solar power system can reduce approximately <a href="#">8.5 tons of CO<sub>2</sub> per household per year</a>. If there is a youth-led project that installed 200 solar panels, we can easily measure that the project has reduced 1,700 tons of CO<sub>2</sub> emission</p>	<p>Reduction or avoidance of GHG emissions directly impacts climate change. According to the Climate Change 2022 Climate Change and Mitigation IPCC <a href="#">report</a>, a direct linkage to climate mitigation and adaptation is the reducing the use of unsustainable energy use, land use, lifestyle, patterns of production and consumption.</p> <p>One of the ways to measure GHG emissions but is not limited to, is by using the <a href="#">GHG Calculator</a><sup>2</sup>.</p>
<b>2</b>	Improvement in Energy Efficiency and/or Energy Conservation	<p>Installing new technology or retrofit that reduces energy use</p> <p>Households or buildings with reduced energy demand</p>	<p>Reduced energy use compared to baseline, in kWh or GJ</p> <p>Reduction in energy required to provide service, in kWh</p>	<p>The <a href="#">IPCC report</a> and the <a href="#">International Renewable Energy Agency (IRENA)</a> states that in order to contain global warming to within 1.5 degree celsius, there should be a substantial growth in renewable energy. There is an anticipated <a href="#">increase in energy demand</a> in the African continent by 60% in 2024, illustrating the pressing need to overcome its social and structural barriers to access clean water and electricity.</p> <p>One of the many ways to measure energy efficiency or conservation is using the <a href="#">Efficiency Calculator</a><sup>3</sup></p>

<sup>1</sup> Suggested Indicators refer to the units of measurement to measure the impact listed in the table. Suggested indicators are not limited to this table and other indicators may be used to measure the impacts.

\*Initial concepts from literature review and interviews

<sup>2</sup> US EPA, O. (2015, August 28). Greenhouse Gas Equivalencies Calculator [Data and Tools]. <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>

<sup>3</sup> Efficiency Calculator. (n.d.). Retrieved October 3, 2022, from <https://www.omnicalculator.com/physics/efficiency>

ENERGY TRANSITION & CLIMATE CHANGE MITIGATION				
	Impacts	Outcomes (or 'Activities')	Suggested Indicators <sup>4</sup>	How does it have an environmental impact?
3	Increase in Clean Energy Supply	<p>Installation of clean energy generating facility</p> <p>Households switched to primary reliance on clean energy</p>	<p>Generation capacity installed, in kWh</p> <p>Definition: Clean energy refers to any source of energy that is produced from a renewable source.</p>	<p>Clean energy supply remains inaccessible, especially in the African continent. For example, traditional biomass such as charcoal and wood remains a big source of energy, accounting for <a href="#">66% of total fine energy consumption</a>, and is used across all non-transport sectors in the African region.</p> <p>One of the many ways to measure access to energy is using the <a href="#">SDG 7 Tracker</a><sup>5</sup></p>
4	Switch to Clean Cookstoves or Cooking Fuels	<p>Project that introduces clean cooking stoves/fuels to households</p> <p>Clean cookstoves installed</p>	<p>Number of people who currently use clean cooking stoves</p> <p>Kg of food produced by gas versus kg of food produced by traditional biomass such as charcoal briquettes</p> <p>Number of clean cookstoves installed</p>	<p>Traditional biomass such as charcoal and wood remains a big source of energy, accounting for <a href="#">66% of total fine energy consumption</a>, and is used across all non-transport sectors in the African region.</p> <p><i>In the stakeholder and youth interviews, many have mentioned that usually stoves that are installed in communities are from a top down approach, meaning they are not designed to fit the needs of communities. For example, the stoves have changed the taste of food, resulting in a high abandonment rate of the stoves.</i></p>

<sup>4</sup> Suggested Indicators refer to the units of measurement to measure the impact listed in the table. Suggested indicators are not limited to this table and other indicators may be used to measure the impacts.

<sup>\*</sup>Initial concepts from literature review and interviews

<sup>5</sup> Goal 7: Affordable and Clean Energy - SDG Tracker. (n.d.). Our World in Data. Retrieved October 3, 2022, from <https://sdg-tracker.org/energy>



SOCIAL IMPACT				
	Impacts	Outcomes (or 'Activities')	Suggested Indicators	How does it have an environmental impact?
5	Increase in access to decent work, and jobs created	Job opportunities for youth, by gender, and for historically excluded communities	Number of jobs (full time & part-time), disaggregated by gender, youth (18-35), ethnicity, and region	<p>According to the <a href="#">International Renewable Energy Agency</a>, in order to maintain the global temperature within 1.5 degree celsius, there must be a substantial growth in the renewable energy labor market, surpassing today's 300,000 to 8 million jobs by 2050.</p> <p>Some references to measuring job creation or understanding decent work are: <a href="#">Measuring Job Creation GIIN Report</a><sup>6</sup> and <a href="#">ILO Definition of Decent Work</a><sup>7</sup></p>
		Effective re-skilling programs, transition programs, or opportunities for communities reliant on fossil fuel sector	Number of people who changed jobs from fossil fuel to clean energy or other sustainable jobs; collecting data from employment history questionnaire	
6	Improved Energy Access, Reduced Energy Poverty	Households, community facilities and other buildings electrified, with clean and reliable energy	Number of households or buildings newly electrified or with improved reliability, since launch of initiative	<p>According to the <a href="#">Ren 21 Global Status Report</a>, renewable energy only accounts for 7% of total energy supply, 8% of total energy consumption, and 26% of power generation as of 2018. Energy access and energy poverty remains a critical factor in the world of energy transition, especially in the African continent.</p> <p><a href="#">World Bank Data Country-Level</a><sup>8</sup> is one of the data banks to access data related to energy access or energy poverty in various countries.</p>
		Households or communities spending less money, or lower percentage of income, to meet basic energy needs	Amount of spending, pr %, reduced per household or community	

6 Global Impact Investing Network (GIIN) Impact Measurement in the clean energy sector. The Impact Program. Retrieved September 3, 2022, from [https://thegiin.org/assets/FINAL\\_GIIN\\_cleanenergyreport\\_PRINTREADY\\_singles\\_nocropsFINALFINAL.pdf](https://thegiin.org/assets/FINAL_GIIN_cleanenergyreport_PRINTREADY_singles_nocropsFINALFINAL.pdf)

7 Employment and decent work. (n.d.). Retrieved October 7, 2022, from [https://international-partnerships.ec.europa.eu/policies/sustainable-growth-and-jobs/employment-and-decent-work\\_en](https://international-partnerships.ec.europa.eu/policies/sustainable-growth-and-jobs/employment-and-decent-work_en)

8 World Bank Open Data | Data. (n.d.). Retrieved September 29, 2022, from <https://data.worldbank.org/>

SOCIAL IMPACT				
	Impacts	Outcomes (or 'Activities')	Suggested Indicators	How does it have an environmental impact?
7	Progress toward Gender Equality	Increased funding for women-led initiatives	Dollar value of funding given to women-led projects and initiatives	<p>The <a href="#">Youth Sustainable Energy Hub (YSEH)</a> showcases the work and impact of youth initiatives in the sustainable energy sector. It considers the reduction of GHG emissions and water use as well as waste diversion intersecting with issues of gender, marginalized and displaced communities as important indicators on defining clear impacts of youth initiatives.</p> <p>Reports such as the <a href="#">Global Impact Investing Network (GIIN) Impact Measurement in the clean energy sector</a> reference the <a href="#">IRIS+ system</a>, which are generally accepted performance metrics that guide impact investors to measure the social, environmental and financial results of their investments. The GIIN network considers access to energy, job creation, reduced GHG emissions, cost savings on fuel, gender impact, poverty level of end users, opportunities for job creation and productivity, and health benefits to track progress of renewable energy initiatives.</p>
		Increased participation of women in clean energy training programs, energy sector, and in energy governance	Number of women participating in clean energy initiatives and renewable energy training programs; number of women in senior positions in energy sector	
		Equitable pay for all genders	Dollar value of wage compensation; disaggregated by race, age, disability, education, length of time in position, relative to region	<p>One of the ways to measure gender equality is available through the <a href="#">Gender Equality Toolbox</a><sup>9</sup></p>

<sup>9</sup> Gender Equality Toolbox. What gets measured matters: a method note for measuring women and girl's empowerment. Bill and Melinda Gates Foundation. Retrieved September 3, 2022, from [https://www.gatesgenderequalitytoolbox.org/wp-content/uploads/BMGF\\_Methods-Note-Measuring-Empowerment-1.pdf](https://www.gatesgenderequalitytoolbox.org/wp-content/uploads/BMGF_Methods-Note-Measuring-Empowerment-1.pdf)

SOCIAL IMPACT				
	Impacts	Outcomes (or 'Activities')	Suggested Indicators	How does it have an environmental impact?
8	Increased Youth Empowerment	Inclusive and accessible capacity-building or training programs geared towards youth Active inclusion and consultation of youth in programs and decision-making spaces	Change in youth perception of control over their own future, personal freedom, access to resources, inclusion in decision-making, before and after participating in initiative (collected through youth opinion surveys)	<p>The <a href="#">C40 playbook</a> by the C40 Global Youth and Mayors Forum was created to strengthen the meaningful youth engagement in climate action across cities around the world. The playbook highlights collaboration between mayors and youth, many of which are in policy and planning, raising awareness through story-telling, active participation in decision-making spaces and through youth climate councils.</p> <p>One of the ways to measure empowerment can be found in this discussion paper series: <a href="#">Measuring Youth Empowerment: An illustration using the example of Tunisia</a><sup>10</sup></p>
9	Improved Awareness & Skills	Programs and campaigns designed to inspire cultural and behavioural change, contribute to social movements	Number of new youth-led or locally led projects since the launch of initiative	
		Programs and resources for learning and building new skills	Number of youth employed, or otherwise utilizing skills, as a result of training	

10 Goedhuys, Grimm, Meysonnat, Nillesen, Reitmann. (2021, October) *Measuring Youth Empowerment: An Illustration Using the Example of Tunisia*. IZA Institute of Labour Economics. Retrieved September 29th from: <https://docs.iza.org/dp14760.pdf>



POLICY ADVOCACY				
10	Impacts	Outcomes (or 'Activities')	Suggested Indicators	How does it have an environmental impact?
	Increased Civic Engagement	Initiatives or campaigns to increase civic engagement at the individual, household, or community level	<p>Number of people participated in or interacted with referenda, elections, or petitions</p> <p>Number of people reached to provide access to voting resources and support to vote</p> <p>Increase in attendance or level of participation in community decision-making events (council meetings, committees)</p>	<p>Increased voting facilitated by the influence of youth led campaigns, or engagement leads to community-focused and centered decision making that contributes to environmental and climate impacts</p> <p>One of the ways to measure advocacy and policy is found in this brief: <a href="#">Measuring Advocacy &amp; Policy</a><sup>11</sup></p>
11	Greater Youth Influence on Policy and Strategy	Active inclusion of youth voices in decision-making processes through representatives, councils, vote	Number of youth participating in decision making spaces and in policymaking	Increased youth influence and engagement in decision-making spaces leads to more long-term success and sustainability of policies
			Number of youth under age 35 holding positions in governance	
		Programs or campaigns to increase youth focus and youth inclusion in existing climate and policy plans	<p>Specific mentions of youth and youth involvement in climate policies and pledges</p> <p>Climate policies (institutional, local, national) implemented or influenced by youth advocacy</p>	

11 Reisman, Geinapp, Stachowiack. (2007). *A guide to measuring advocacy and policy*. Organizational Research Services.

WATER, FOOD, CLIMATE, ENERGY (WFCE) NEXUS				
	Impacts	Outcomes (or 'Activities')	Suggested Indicators	How does it have an environmental impact?
12	Reduction in Food-Related Emissions, Food Waste, Increase in Food Security	Initiatives that facilitate shifts toward planet-friendly diets for households, organizations, or through governments	Reduced ecological footprint (ha), fresh water use (litres), and CO <sub>2</sub> e, at per capita or community level	<p>The <a href="#">WFCE nexus</a> shows the interactions between water, food, climate, and energy where water is needed to generate energy, energy is needed to supply water; energy is needed to produce food, and food can be used to produce energy; and water is needed to grow food while food is always using energy</p> <p>For instance, if there is land scarcity due to increased impacts of climate change, it will affect food supply, resulting in the rise of food insecurity.</p> <p>Some ways to measure food security are: <a href="#">Measuring Food Security</a><sup>12</sup> and <a href="#">Metrics of Food Security</a><sup>13</sup></p>
		Initiatives that improve physical and/or economic access to healthy, sustainable, affordable food	Household Expenditure Survey Method (HESM)	
		Initiatives that reduce or repurpose food waste	Amount of food waste diverted from landfill	
13	Increased implementation of nature based solutions natural climate solutions	Projects that conserve and protect existing forests and oceans, or new reforestation and rewilding	Area of land rewilded; Area of forest protected or number of trees planted; Number or size of Marine Protected Areas (MPAs) created;	<a href="#">Protecting biodiversity</a> can help us adapt and be resilient to climate change. <a href="#">Ecosystems regulate global temperature</a> by storing greenhouse gasses. For example, trees remove CO <sub>2</sub> from the atmosphere and store it in their tissues.

12 Bashir, M. K., & Schilizzi, S. (2012). *Measuring food security: Definitional sensitivity and implications*. AgEcon Search.

13 What Are We Assessing When We Measure Food Security? A Compendium and Review of Current Metrics | *Advances in Nutrition* | Oxford Academic. (n.d.). Retrieved October 3, 2022, from <https://academic.oup.com/advances/article/4/5/481/4557948>

WATER, FOOD, CLIMATE, ENERGY (WFCE) NEXUS				
	Impacts	Outcomes (or 'Activities')	Suggested Indicators	How does it have an environmental impact?
<b>14</b>	Reduced Plastic, Solid, Industrial Waste	<p>Initiatives or campaigns that reduce waste at the household, community, or industry level</p> <p>Projects that directly recycle or upcycle waste products</p>	Mass of waste (tonnes) diverted from landfill since the launch of project initiative	<p><a href="#">Plastic pollution</a> affects natural ecosystems that have the ability to adapt to climate change.</p> <p><a href="#">Improper disposal of plastic</a> on land or open burning can lead to the release of toxic chemicals in the air causing air pollution and public health hazards.</p> <p>Some ways to measure waste reduction are:  <a href="#">Measuring Waste Reduction, Reuse &amp; Recycling</a><sup>14</sup></p>
<b>15</b>	Improved Water Quality	Initiatives or campaigns that reduce water pollution through policy change, clean-up, or technological change	Water Quality Index - pH, dissolved oxygen, salinity, and nutrients (nitrogen and phosphorous)	<p>The <a href="#">ocean generates 50%</a> of oxygen and absorbs 25% of CO<sub>2</sub>, and captures 90% of the excess heat generated by these emissions. It is considered the biggest carbon sink and climate change mitigator.</p> <p>Other indicators for measuring water quality can be found here:  <a href="#">Water Quality Indicators</a><sup>15</sup></p>

<sup>14</sup> Visvanathan, C. (2013). *Measuring Waste Reduction, Reuse, and Recycling through Industrial Symbiosis*. Institute for Global Environmental Strategies

<sup>15</sup> Ecosystem health indicators. (2003, July 9). Department of Environment and Science. Retrieved from: <https://environment.des.qld.gov.au/management/water/health-indicators>