

Linking LCA and SDG 4

Goal 4. Ensure Inclusive and Equitable Quality Education and Promote Lifelong Learning Opportunities for all



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4 Goal 4. Ensure Inclusive and Equitable Quality Education and Promote Lifelong Learning Opportunities for all

4.1 Introduction

Quality education is uniquely situated as having both direct and indirect effects on all Sustainable Development Goals by enabling upward socioeconomic mobility and escaping poverty (Abdin, 2018). Majorly controlled by national governments, broad-scale primary, secondary and tertiary education have large implications for relieving inequality, adding value to the workforce, increasing mortality, food security and breaking the cycle of poverty. Education therefore is seen as a vehicle or instrument for change (Economic and Social Council, 2021).

This goal aims to support learning, in all shapes and forms because this influences the choices people make aligning to inclusive sustainable societies.

Some 750 million adults – two thirds of them women – remained illiterate in 2016. Half of the global illiterate population lives in South Asia, and a quarter live in sub-Saharan Africa. This goal therefore has close ties to SDG 1: no poverty, SDG 5: gender equality and SDG 10: reduced inequality (Abdin, 2018).

In 10 low- and middle-income countries, children with disabilities were 19 percent less likely to achieve minimum proficiency in reading than those without disabilities. 4 million refugee children were out of school in 2017. About 258 million children and youth were out of school in 2018 (Abdin, 2018). In 2018, 773 million adults – two thirds of whom are women – remained illiterate in terms of reading and writing.

Although it might seem that, due to the strong link with national governments, this goal has little relation with businesses and products, there are still a number of ways how businesses can contribute to this goal. To further establish this, the links with SDG 4 and LCA impact categories are highlighted in this chapter. Generally, the business outcomes aligned with this SDG have large potential to contribute positively by:

1. Developing a skilled workforce for the future, increasing productivity, and improving economic growth by sharing knowledge, information and skill development programs
2. Being a partner in improving education systems and learning globally
3. Providing living wages across the supply chain, and thereby providing opportunities to pay for education.

4.2 Targets and indicators of SDG 4

SDG 4 describes progress towards achieving quality education. This involves the various factors that require direct focus such as:

1. affordability and accessibility,
2. early childhood development,
3. skills development and employment,

4. inclusivity, and
5. knowledge content
6. mechanisms for support of education

Affordability and accessibility are the most important aspects because this has the highest determination of a child attending school; if the school is within a convenient location and their guardians can pay the required tuition fees, it is far more likely that the child will attend school. Another important focus is early childhood development which emphasizes the need for development support including health, learning and psycho-social wellbeing for children under the age of 5 years old. These topics are usually within the scope of national governing bodies and the private sector therefore has minimal influence.

However, with regards to employment, skills development, inclusivity and knowledge content, a company has the potential to contribute through vocational training programs, knowledge sharing and internal business policy. Therefore, the process of continuous upskilling of workers and small-scale entrepreneurs is an important contributor as well as the treatment of local communities with regards to educating.

Table 4.1 provides an overview of the targets and the indicators for SDG 4.

Table 4.1. The targets and indicators defined for SDG 4

Target	Indicator
4.1 By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes	4.1.1 Proportion of children and young people: (a) in grades 2/3; (b) at the end of primary; and (c) at the end of lower secondary achieving at least a minimum proficiency level in (i) reading and (ii) mathematics, by sex
4.2 By 2030, ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education	4.2.1 Proportion of children under 5 years of age who are developmentally on track in health, learning and psychosocial well-being, by sex. 4.2.2 Participation rate in organized learning (one year before the official primary entry age), by sex.
4.3 By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university	4.3.1 Participation rate of youth and adults in formal and non-formal education and training in the previous 12 months, by sex

<p>4.4 By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship</p>	<p>4.4.1 Proportion of youth and adults with information and communications technology (ICT) skills, by type of skill</p>
<p>4.5 By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations</p>	<p>4.5.1 Parity indices (female/male, rural/urban, bottom/top wealth quintile and others such as disability status, indigenous peoples and conflict-affected, as data become available) for all education indicators on this list that can be disaggregated.</p>
<p>4.6 By 2030, ensure that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy</p>	<p>4.6.1 Percentage of population in a given age group achieving at least a fixed level of proficiency in functional (a) literacy and (b) numeracy skills, by sex</p>
<p>4.7 By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development</p>	<p>4.7.1 Extent to which (i) global citizenship education and (ii) education for sustainable development, including gender equality and human rights, are mainstreamed at all levels in: (a) national education policies, (b) curricula, (c) teacher education and (d) student assessment</p>
<p>4.a Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all</p>	<p>4.a.1 Proportion of schools with access to: (a) electricity; (b) the Internet for pedagogical purposes; (c) computers for pedagogical purposes; (d) adapted infrastructure and materials for students with disabilities; (e) basic drinking water; (f) single-sex basic sanitation facilities; and (g) basic handwashing facilities (as per the WASH indicator definitions)</p>
<p>4.b By 2020, substantially expand globally the number of scholarships available to developing countries, in particular least developed countries, small island developing States and African countries, for enrolment in higher education, including vocational training and information and communications technology, technical, engineering and scientific programmes, in developed countries and other developing countries</p>	<p>4.b.1 Volume of official development assistance flows for scholarships by sector and type of study</p>

4.c By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing States

4.c.1 Proportion of teachers in: (a) pre-primary; (b) primary; (c) lower secondary; and (d) upper secondary education who have received at least the minimum organized teacher training (e.g. pedagogical training) pre-service or in-service required for teaching at the relevant level in a given country

4.3 Classifying the links between SDG 4 targets and LCA impact categories

Asterisk (*) represents a link that is established under specific condition outlined under the target.

Underlined topics represent those that are deemed critical by the approach B methodology.

4.3.1 Target 4.1 and 4.3: ensuring affordable and accessible quality primary, secondary and tertiary, technical or vocational education

Target 4.1 By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes.

Target 4.3 By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university.

Social LCA:

- **Worker's remuneration**: when a company contributes to this topic, they are affecting the workers ability to afford education for their children or afford to live close to an area (accessibility) that can provide education as a basic service. The larger a worker's remuneration, the larger the monetary amount available to use for education. This links specifically to target 4.3.
- **Workers and small-scale entrepreneur's child labour***: when a company contributes to this topic, they are ensuring that child labour does not play a part in the supply chain of the business. This often occurs when that is a lack of access to an alternative such as proper quality schooling. This may be due to inaccessible education or households unable to survive without the income from child labour. In any case, child labour should not affect their school attendance. This links to target 4.3 with regards to accessibility. * Companies sourcing from or operating in areas without primary and secondary education should establish this to avoid children getting no education.
- **Local communities' employment and skills development**: when a company contributes to this topic, they employ local people throughout the supply chain. Companies can provide (open) access training, internship programs and further education to employees and thereby contribute to quality education linking to target 4.3.

- **Small-scale entrepreneurs' access to services and inputs:** when a company contributes to this topic they are ensuring access to information through skills development with the goal of increasing vocational training in the workplace. This can take the form of funding, scholarships or grants for business-related projects and encouraging suppliers to take the same actions. This links specifically to target 4.3.

4.3.2 Target 4.2 Ensuring access to quality early childhood development and pre-primary education

Target 4.2 By 2030, ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education.

Social LCA:

- **Worker's and small-scale entrepreneur's child labour:** when a company contributes to this topic they are ensuring that there is no exploitation of child labour along their supply chain. Child labour detracts from a child's ability to develop early cognitive and social skills needed to advance into a primary school and have the foundational intellectual capacity to be educated linking to target 4.2.
- **Worker's work-life balance:** when a company contributes to this topic, they are affecting the amount of time parents can focus on giving their children the required development skills. Companies can support early childhood development through support in difficult circumstances by offering flexible work and respecting working time. Furthermore, maternity and parental leave, as well as having time for breastfeeding children can contribute to the early childhood development.
- **Small-scale entrepreneurs meeting basic needs:** when a company contributes to this topic, they are ensuring that parents have the time and resources to give their children the correct development.

4.3.3 Target 4.4 Ensuring relevant skills development for employment, decent jobs and entrepreneurship

Target 4.4 By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship.

Social LCA:

- **Local communities' employment and skills development:** when a company contributes to this topic, they develop skills for the community at large. This creates a more health and resilient community. This can address future staff needs within the community and positively affect it. This can also complement the government and public sector's actions on the topic.
- **Small-scale entrepreneurs' access to services & inputs:** when a company contributes to this topic, they are giving small-scale entrepreneurs access to financial services, ICT, legal support and information and opportunities for skills development to further develop their businesses thereby enhancing their entrepreneurial progress.

4.3.4 Target 4.5 Ensuring inclusivity in all levels of education and vocational training

Target 4.5 By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations.

Social LCA:

- **Worker's discrimination:** Exclusion of workers from skills development programmes due to discrimination. Companies must employ staff based on inclusionary principles for vocational training in the workplace.
- **Local communities' community engagement*:** An increased community engagement ensure that vocational programmes are inclusive of minority groups within a community. Having community educational programmes can ensure the access of skills development to a diverse group of people irrespective of age, race, gender, class etc.
*This link is only relevant when the engagement indeed focusses on including minority groups.
- **Small-scale entrepreneurs Women's empowerment:** This allows for inclusive opportunities to be presented to women who historically lack access to education and vocational skills due to their societal roles.

4.3.5 Target 4.6 and 4.7 Ensuring literacy, numeracy and sustainable development knowledge

Target 4.6 By 2030, ensure that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy.

Target 4.7 By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development.

Social LCA:

- **Users' responsible communication*:** Companies transparency about the process in which their products or services are produced, manufactured etc should be communicated to the final consumer. This includes a company ensuring that it is not greenwashing or spreading misinformation about the product. Adopting and communicating company-wide sustainability reporting adds to this goal. This link is only relevant when the communication regards sustainability topics, in that case it is linked to target 4.7.
- **Local communities' community engagement*:** this topic involves the mechanism to inform local communities about sustainable lifestyles, host developmental educational programmes and provide information and empowerment through knowledge sharing. Companies could do this by including specific topics such as water use, human rights and

women's rights. The link can only be applied when the engagement is about the topics mentioned here.

4.3.6 Target 4.a, 4.b and 4.c Mechanisms for the support of education

Target 4.a Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all.

Target 4.b By 2020, substantially expand globally the number of scholarships available to developing countries, in particular least developed countries, small island developing States and African countries, for enrolment in higher education, including vocational training and information and communications technology, technical, engineering and scientific programmes, in developed countries and other developing countries.

Target 4.c By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing States.

While often the a, b, c targets are focussed on governmental policies, some links can be established for these targets.

Social LCA:

- **Local communities' access to material and immaterial resources:** when a company contributes to this topic, they are addressing access to electricity, infrastructure and materials required for basic educational activities. Other basic amenities include drinking water, sanitation and hand washing facilities. This links with target 4.a.
- **Local communities' community engagement*:** when a company contributes to this topic, they are engaging with the local community with the specific aim to provide scholarship opportunities to youth and young adults to further their education. This links specifically with target 4.b.
* This applies only to local communities along the supply chain in developing countries
- **Small-scale entrepreneurs' access to services and inputs:** when a company contributes to this topic, they are providing access to information and opportunities for skills development such as local scholarship provision. A company may also address access to electricity, infrastructure and materials required for basic educational activities. This links to target 4.a and 4.b.

4.3.7 Overview of links

Error! Reference source not found. the overview of the links between LCA impact categories and SDG 4 is shown.

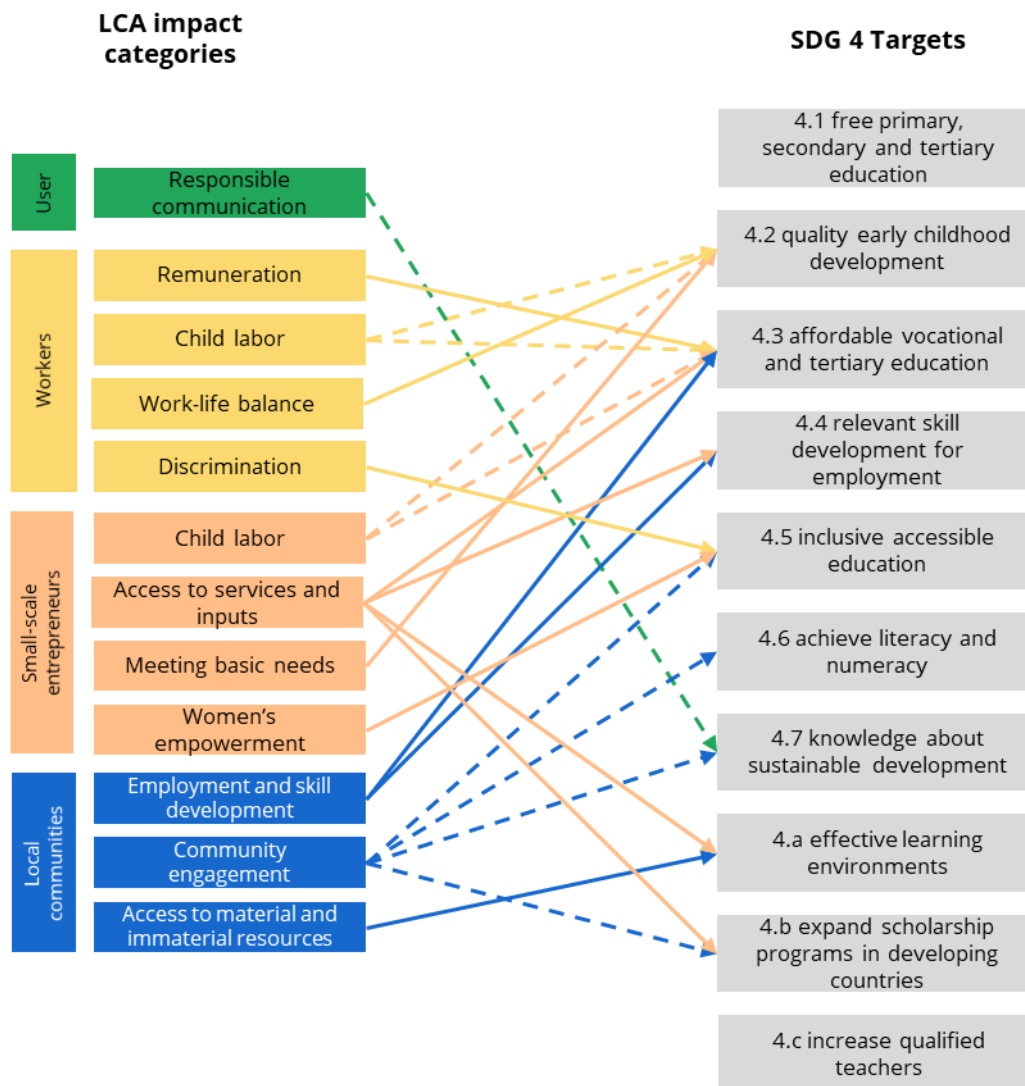


Figure 1 Overview of links for SDG 4

4.4 Characterizing the relation between LCA and SDG 4

In this paragraph, the nature of the relation between the impact categories and the targets of SDG 4 are defined. This step determines the score needed to qualify as a contribution to a target, per target and impact category. It describes how social impact category indicator results can be linked.

4.4.1 Social LCA

Table 4.3: Social topic linking to SDG 4

Stakeholder	Social topics	Rationale	Requirements to be counted as a contribution to SDG 2
	Remuneration	SDG target 4.3 A well-compensated worker will be able to afford good quality primary, secondary and tertiary/vocational education for themselves and their families	+2 Workers are paid at minimum, a living wage for a single household. Workers receive additional social benefits such as retirement, health insurance and disability coverage.
			-2 Workers are paid below the poverty line in the country or region. If this is not clearly defined, workers are not paid legal or industry minimum. There is no evidence to address this issue.
Workers	Child labor*	SDG target 4.2 and 4.3 Every child who is involved in child labor practices is one less being educated.	+2 The company has ensured the complete elimination of child labor practices within its own organization and value chain including suppliers). There is evidence to substantiate this.
			+1 The company has a management system in place to raise awareness about child labor practices and takes action to improve its situation such as developing accessibility to schools.
			-1 Incidents of child labor have been or children involved in hazardous work have been discovered within the company
			-2 There are incidents of child labor that have been uncovered in the company's own supply chain as well as in the value chain.

	Work-life balance	SDG target 4.2 Better work-life balance for workers correlates to more time free to spend on child rearing activities. These activities contribute to early childhood development in preparation for being formally educated.	+2	The company has a management system in place to promote healthy work-life balance. The working culture clearly defines working hours and ensures these hours are not exploited. Worker's commitment to their home life and children is considered with regards to their expectations within their job.
			-2	Hours worked in a normal working week, not including overtime, do not follow the ILO conventions regarding working time (max 48 hours, paid and unpaid leave and maternity leave). The company or facility takes no actions to correct this and ignores the negative impacts when they are identified.
	Discrimination	SDG target 4.5 Discriminatory attitudes and culture present in the working environment could prejudice the hiring and employee development processes due to the lack of inclusionary principles. This disadvantages vulnerable groups to skills development and vocational training in the company.	+2	The company pro-actively promotes non-discrimination in its hiring and employee development processes. This includes attempts at reducing gender disparities and giving vulnerable groups opportunities for skills development.
			-2	Incidents of discrimination occurs frequently in company culture and procedures. Several of these have been reported to pose a barrier to worker's career development and access to knowledge improvement opportunities.
User	Responsible Communication*	SDG target 4.7 Companies ensuring transparency through provision of information of their contribution to sustainable development related to their product or service. This creates a well-informed user group.	+2	The product or service during it's use phase informs the user about its sustainability performance based on science-based evidence. This thereby enriches their knowledge and ability to make consumer choices.

Local communities	Community engagement*	SDG target 4.5, 4.6, 4.7 and 4.b	+2	The company has a system or mechanism to enforce a policy that shares information with the community either through skills development or knowledge improvement on topics related to sustainable development, rights awareness. This includes the educating of community members about public infrastructure and channels of service provision.
		Companies who specifically support skills development through engagement programs add to the improving the knowledge of the community	+1	The company has a system or mechanism to share information with the community indirectly through communication forms such as notice boards, flyers, emails, letters and messages.
			-2	The company and facility do not make any efforts to inform or consult the communities and has a strained relationship with the local communities.
	Access to tangible resources	SDG target 4.a	+2	The company prioritizes access to these resources and have made significant improvements to the current situation with reasonable evidence.
	<u>Employment and skills development</u>	SDG target 4.3 and 4.4	+2	The company actively invests in reducing the skills mismatch in the region through employing and then upskilling community members. The company invests in private-public partnerships to increase the training capacity and quality of education-related knowledge improvement that is specifically guided by the company's own needs.
		When a company employs and trains local people, the local community is uplifted. The provision of (open) access training, internship programs and further education contributes to the development of skills in the local community.	+1	The company offers skills development for a relevant share of the members of the local community.

		-2	There is a significant gap between the future needs of the company and the community members. The company has not addressed this situation.	
Small-scale entrepreneurs	Meeting basic needs	SDG target 4.2		
		A company ensuring that their suppliers are correctly compensated with regards to financial needs are ensuring that their children can be given the time and resources required for healthy development through child-rearing. This ensures that children are prepared for formal education.	+2	The company compensated the small-scale entrepreneur above the level of basic needs and implements continuous improvements. There is evidence of this through remuneration policies.
			+1	The company has a policy to increase the revenue of the small-scale entrepreneur. There is no evidence of the implementation or result of the policy.
			-2	Small-scale entrepreneurs cannot meet their basic needs at a minimum poverty level and could therefore not support their children's early development through inputs of resources or time.
	<u>Access to services and inputs</u>	SDG target 4.3, 4.4, 4.a and 4.b	+2	There is evidence that a company has increased access to educating mechanisms along the supply chain through funding, scholarships, business-related knowledge development, financial services, ICT services and legal support.
		A company that ensures access to information ensures the increase in vocational training adding to the quality of education through improving skills and knowledge related to suppliers.	+1	A company has increased access to at least one of the inputs or services defined (financial services, information for skills development, physical resources and infrastructure).
			-2	No actions (screening, evaluation, monitoring) have been taken to assess the local conditions and evaluate improvement opportunities. OR Circumstantial evidence indicates that small-scale entrepreneurs' access to services or inputs is limited.

Child labor*	SDG target 4.2 and 4.3* Every child who is involved in child labor practices is one less being educated.	+2	Company actively and publicly engages and invests in public private partnerships that has a proven track record in addressing the root causes of child-labor in its entire supply chain.
		+1	The company or facility has a management system in place to raise awareness of issues associated with child labour within the community from which the company sources, which addresses the root courses of child labour in the region it operates and takes action as the appropriate.
		-1	Incidents of child labour, but no incidents referring to the worst forms of child labour, have been reported in the community from which the company sources, or are prevalent in the region from which the company sources, but the company has developed a corrective action plan with a clear timeline for completion.
		-2	Incidents of child labour, including incidents referring to the worst forms of child labour, have been discovered in the community from which the company sources, or are prevalent in the region from which the company sources and the company is doing nothing to stop this.
Women empowerment	SDG target 4.5 A company that provides inclusive opportunities for women to access education and vocational skills in line with their roles as part of the supply chain ensures elimination of gender disparities in education.	+2	The company ensures that they source from suppliers where women are empowered through access to educational tools and content that address gender inequality in business. There is evidence of this through reporting.
		+1	The company ensures that they source from suppliers where they have developed policies and activities towards significant women's empowerment.
		-2	There is evidence that there is substantial risk that women are discriminated against and exploited. The company is complicit or takes no action in addressing this.

4.5 Scoring matrix for SDG 4

Based on the tables above, the following summary can be made as a checklist for determining if the LCA results can support a contribution to SDG 4.

Asterisk (*) represents a link that is established under specific condition outlined under the target.

Underlined topics represent those that are deemed critical by the approach B methodology.

Table 2: Scoring matrix for determining whether the LCA results can indeed support SDG 4

SDG 4	Red flag (-,1,-2) or blocking (🚫)		Contributing		
Target 4.2 Quality childhood development					
Child labor (workers)*	-2	-1		+1	+2
Work-life balance	-2				+2
Meeting basic needs	-2			+1	+2
Child labor (small-scale entrepreneurs)	-2	-1		+1	+2
Target 4.3 Equal access to education					
<u>Remuneration</u>	🚫				+2
Child labor (workers)*	-2	-1		+1	+2
<u>Employment and skill development</u>	🚫			+1	+2
<u>Access to service and inputs</u>	🚫			+1	+2
Child labor (small-scale entrepreneurs)	-2	-1		+1	+2
Target 4.4 Increase work-related vocational skills					
<u>Access to services and inputs</u>	🚫			+1	+2
<u>Employment and skill development</u>	🚫			+1	+2
Target 4.5 Inclusive education provision					
Discrimination	-2				+2
Women's empowerment	-2			+1	+2

Community engagement*	-2		+1	+2
Target 4.6 Literacy and numeracy				
Community engagement*	-2		+1	+2
Target 4.7 Knowledge about sustainable development				
Responsible communication*				+2
Community engagement*	-2		+1	+2
Target 4.a Inclusive education facilities				
Access to tangible resources				+2
<u>Access to services and inputs</u>	⊘		+1	+2
Target 4.b Increase scholarships in developing countries				
<u>Access to services and inputs</u>	⊘		+1	+2
Community engagement*	-2		+1	+2

4.6 Literature

Abdin, Md. J. (2018) 'Ensure Inclusive and Quality Education for All and Promote Lifelong Learning', *SSRN Electronic Journal*. doi: 10.2139/ssrn.3194361.

Economic and Social Council (2021) *Progress towards the Sustainable Development Goals*. Advanced Unedited Copy. UN General Assembly.