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Article

# Student Involvement in SDG Projects: Seven Years of Yonsei University's Social Engagement Fund (2018–2025)

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**Background:** The Institute for Global Engagement & Empowerment (IGEE) at Yonsei University established the Social Engagement Fund (SEF) in 2018 to align with institutional commitments to the UN Sustainable Development Goals (SDGs). This study examines how IGEE's student-led projects as part of Yonsei University's SEF program have expanded SDG coverage over the past seven years and identifies factors contributing to improved integration across multiple goals.

**Methods:** We analyzed all 49 SEF projects implemented between 2018 and 2025, coding each project for SDG alignment and tracking coverage patterns over time. Annual SDG engagement was measured using two indicators: (1) the total number of SDGs addressed per year and (2) the average number of SDGs addressed per project.

**Results:** The number of SEF projects increased steadily from 5 in 2018 to 12 in 2025, reflecting growing student participation and institutional support. Over the same period, annual SDG coverage expanded from 9 total SDG mentions in 2018 to 59 in 2025, demonstrating a marked diversification of focus areas. The average number of SDGs addressed per project rose from 1.8 in the early years (2018–2021) to 4.9 in 2025, peaking at 8.3 in 2022. Early projects primarily centered on institutional and educational goals such as SDG 4 (Quality Education) and SDG 9 (Industry, Innovation, and Infrastructure), while later years showed stronger engagement with SDG 10 (Reduced Inequalities), SDG 11 (Sustainable Cities and Communities), and SDG 13 (Climate Action). Some goals—including SDG 6 (Clean Water and Sanitation) and SDG 14 (Life Below Water)—remained relatively underrepresented.

**Conclusions:** Student engagement initiatives like SEF can significantly broaden and deepen SDG coverage through structured mentorship, interdisciplinary collaboration, and targeted project funding. By enabling applied, student-driven practice, IGEE's SEF model demonstrates how universities can translate institutional SDG commitments into measurable and expanding impact across a wide range of sustainability goals.

## Keywords

Sustainable development goals, Student engagement, Higher education, Social innovation, Yonsei University

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## 1. Introduction

The Institute for Global Engagement & Empowerment (IGEE) at Yonsei University is dedicated to planning and implementing various social engagement programs that contribute to achieving the Sustainable Development Goals (SDGs). As a leading research institute, IGEE strives to solve issues arising in different sectors of society and seeks practical solutions for a better future through community engagement and global partnerships. This is in alignment with Yonsei University's goals to encourage innovative higher educational programs that promote sustainability and progress for global citizens and communities (Shin et al., 2024).

IGEE launched the Social Engagement Fund (SEF) program in July 2018 to support a wide range of research activities that contribute to achieving the SDGs (Rhee & Oh, 2025). A central part of IGEE's vision since its inception has been to integrate social engagement into the university curriculum by prioritizing research, teaching, and services that contribute to sustainable development (An, 2024). Through the SEF initiative, IGEE calls for students and researchers from Yonsei University to submit research and project proposals that emphasized implementing and evaluating the impact of the SDGs; acknowledging that universities can serve as fundamental catalysts for creating positive impact by embedding sustainability into business strategies, decision-making processes, and practices that improve accountability among stakeholders (Mori et al., 2019).

Under IGEE's guidance, the SEF program supports students' awareness of global social issues and helps transform their ideas for solutions into real, impactful change. Notably, since IGEE established the SEF program, 49 SEF projects have been funded across diverse contexts. Thus, this study examined whether IGEE's SEF has successfully expanded SDG coverage over its seven-year history to identify factors contributing to improved SDG integration across multiple

goals.

## 2. Materials and Methods

We analyzed all SEF projects from 2018-2025, extracting data on SDG alignment, project themes, and geographic focus. Annual SDG coverage breadth (number of distinct goals addressed) and the average number of SDGs per project were identified. Project documentation included original proposals, progress reports, and final summaries submitted to IGEE.

All data analysis and visualization were performed using Rstudio, enabling reproducible and transparent examination of patterns across projects, and selected visualizations were further refined using Google Gemini's Canvas feature to enhance clarity and presentation.

## 3. Results

Table 1 shows the general characteristics of SEF projects by year (Table 1). From 2018 to 2025, the number of projects generally increased alongside the number of international projects and SDGs covered per project.

Early years addressed 1-2 SDGs, and were split into research (3) and student (2) teams (Figure 1). Notable outcomes of the 2018 SEF was the creation of a prototype for Yonsei University's Energy Platform Service which still monitors campus carbon movements to date (Figure 2) (Cho, 2019). Developed as part of the 2018 SEF Researchers' Cohort, YEPS is a platform that allows real-time monitoring of electricity consumption across 44 major buildings on Yonsei University's Sinchon Campus. With support from the Sinchon Campus Facilities Department, the YES project gathered real-time electricity data—daily and monthly—for each measurable building on campus, and visualized the building energy consumption data. YEPS has since enhanced acces-

**Table 1.** General Characteristics of SEF Projects by Year

Year	Total Projects	Domestic	International	SDGs Addressed	SDGs per Project
2018	5	3	2	9	1.8
2019	3	2	1	5	1.7
2020	3	3	0	8	2.7
2021	4	4	0	8	2.0
2022	4	2	2	33	8.3
2023	9	5	4	22	2.4
2024	9	5	4	30	3.3
2025	12	10	2	59	4.9

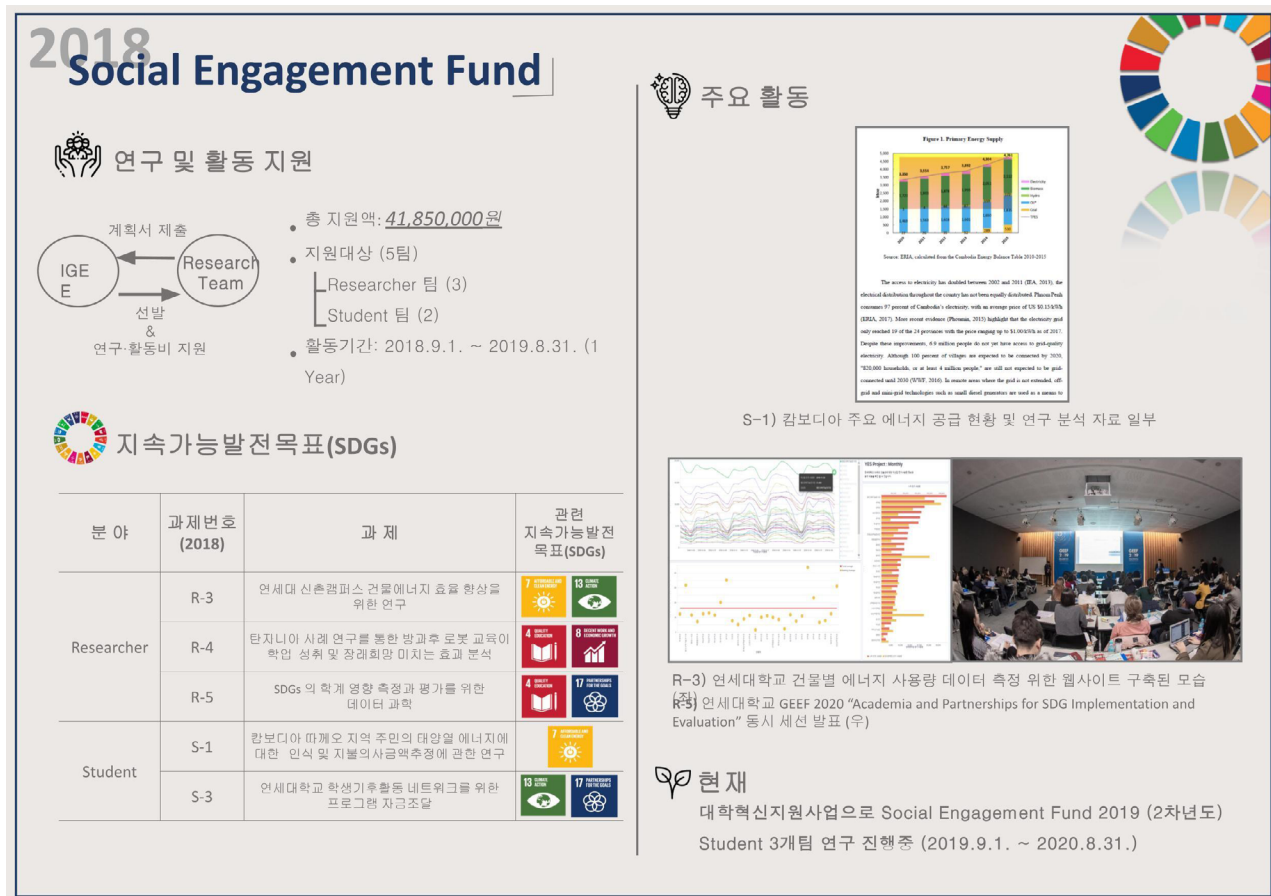


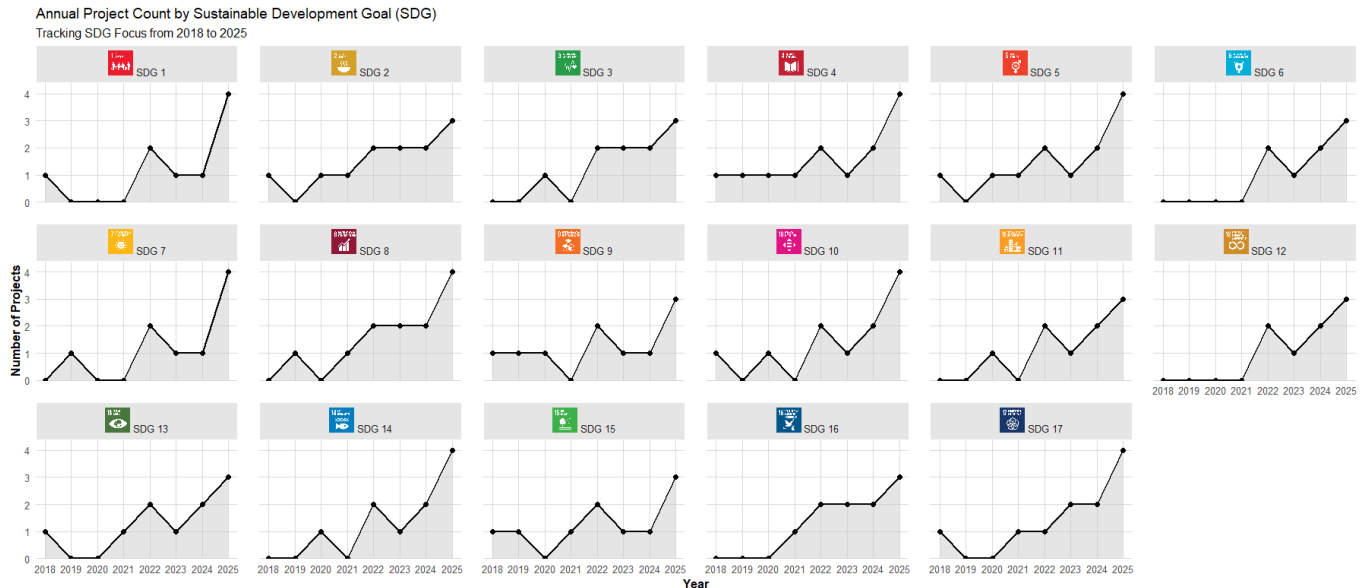
Figure 1. 2018 Social Engagement Fund.



Figure 2. Yonsei University Energy Platform Service (YEPS).

**Table 2.** SEF Projects by Cohort (2018-2025)

Year	Projects	Projects (Korean / English – translated from Korean for following study)
2018	5	<ul style="list-style-type: none"> <li>연세대 신촌캠퍼스 건물에너지 효율 향상을 위한 연구 (Research improving energy efficiency of buildings on Yonsei's Sinchon campus)</li> <li>탄자니아 사례 연구를 통한 방과후 로봇 교육이 학업 성취 및 장래희망에 미치는 효과 분석 (Effect of after-class robot education on academic outcomes and career aspirations: Field evidence from Tanzania)</li> <li>SDGs의 학제 영향 측정과 평가를 위한 데이터 과학 연구 (Research for UN 2030 Development Agenda: Understanding where we stand for SDG implementation through text mining)</li> <li>캄보디아 따카오 지역 주민의 태양열 에너지에 대한 인식 및 지원 의사유무에 관한 연구 (Perceptions and willingness to support solar energy adoption among residents in Takao, Cambodia)</li> <li>연세대학교 학생기후활동 네트워크를 위한 프로그램 자금조달 (Funding for the Yonsei University Student Climate Action Network Program)</li> </ul>
2019	3	<ul style="list-style-type: none"> <li>캄보디아의 성별 불평등 해소를 위한 교육 모델 개발을 통한 SDG 4 실현 (Developing an educational model to reduce gender inequality in Cambodia for SDG 4)</li> <li>디지털 디바이스를 활용한 보건 교육 자료 개발 및 활성화 연구 (Developing and promoting health education materials using digital devices)</li> <li>필수 의약을 위한 대학 연합 연세대 지부(UAEM) 운영 (Operating Yonsei's chapter of Universities Allied for Essential Medicines for essential medicines)</li> </ul>
2020	3	<ul style="list-style-type: none"> <li>교통약자를 위한 의료 스쿠터 마이크로 모빌리티 서비스 기획 (Planning a medical scooter micro-mobility service for transportation-vulnerable groups)</li> <li>E-waste 재사용을 통한 사회적 소외계층 온라인 기회 지원 (Supporting marginalized communities online via e-waste reuse, linked with RC programs)</li> <li>포스트 코로나 시대 생활 플라스틱 폐기물 감소 플랫폼 구축 (Building a platform to reduce household plastic waste in the post-COVID era)</li> </ul>
2021	4	<ul style="list-style-type: none"> <li>한국 전통 건축의 지속가능한 건물 디자인 적용 방식 제언 (Applying sustainable design from traditional Korean architecture)</li> <li>사회적 우울감과 혐오의 연쇄를 끊기 위한 정책 모델 연구 (Policy model to break the chain of social depression and hate)</li> <li>환경 인식 개선을 위한 그린하우스 보드게임 효과 검증 (Testing environmental awareness improvement via "Greenhouse" board game)</li> <li>온라인 학습 확대에 인한 장애인 학습권 배제 개선을 위한 에듀테크 활용 연구 (Using EdTech to support learning rights for disabled students after COVID-19)</li> </ul>
2022	4	<ul style="list-style-type: none"> <li>대학 내 다화용컵 순환을 통한 일회용컵 저감 가능성 연구 (Reducing disposable cups through reusable cup circulation on campus)</li> <li>지속가능한 식량 생산을 위한 미국의 수직 농업 현황 및 소비자 인식 연구 (Study of U.S. vertical farming and consumer perceptions)</li> <li>식용 곤충을 활용한 식품으로 마다가스카르 아동 영양실조 해결 방안 연구 (Developing insect-based foods to address child malnutrition in Madagascar)</li> <li>난민 및 인도적 체류자 건강 증진 방안 연구 (Health promotion for refugees and humanitarian stay residents in Itaewon)</li> </ul>
2023	9	<ul style="list-style-type: none"> <li>삼불화질소 온실가스 법제화 검토 및 통합 환경 관리 계획서 설계 (NF<sub>3</sub> greenhouse gas regulation &amp; environmental plan for carbon neutrality)</li> <li>국내 거주 외국인을 위한 종합 웹사이트 구축 (Comprehensive website for foreign residents in Korea)</li> <li>학교 밖 청소년을 위한 시사 정체성 형성 프로젝트 (Identity formation via current affairs for out-of-school youth)</li> <li>담배꽂초 수거함 개발로 도시 환경 개선 (Developing cigarette butt bins to prevent urban littering)</li> <li>친환경 원용 음료 활성화 플랫폼 개발 (Platform promoting reusable beverage containers)</li> <li>탈북 여성 해외 건강 상담 (Health consultation for North Korean women abroad)</li> <li>푸드 업사이클링 기반 대체 식품 지속가능성 연구 (Exploring sustainable alternative foods via food upcycling)</li> <li>경북 테마 도시 시범 운영 통한 지방소멸 완화 (Piloting themed cities to counter rural depopulation)</li> <li>산호 백화 현상 및 복원 전략 연구 (Coral bleaching and restoration strategies under global warming)</li> </ul>
2024	9	<ul style="list-style-type: none"> <li>자폐스펙트럼장애 (ASD) 환자의 웹 접근성 향상 연구 (Improving web accessibility for people with ASD)</li> <li>고령층의 디지털 문해력 문제 해결 (Improving digital literacy among the elderly)</li> <li>길잡이섬: 지속가능한 미래 교육 프로그램 ("Giljab Island" cross-disciplinary sustainability education in Jeju)</li> <li>돌봄 노동자의 건강과 삶의 균형 연구 (Health and work-life balance among care workers)</li> <li>미혼모 정신건강 관리 시스템 구축 (Integrated mental health system for single mothers)</li> <li>시각장애인 근로자 근무환경 실태 조사 및 협업 툴 개발 (Work environment study and collaboration tool for visually impaired workers)</li> <li>AIoT 담배꽂초 처리 기반 스마트시티 솔루션 (Smart city solution for cigarette waste via AIoT)</li> <li>몽골 기후 난민의 지속가능 마을 설립 방안 (Sustainable village plans for Mongolian climate refugees)</li> <li>대한민국 풍력발전 현황 및 분석 (Wind energy in Korea for global renewable expansion)</li> </ul>
2025	12	<ul style="list-style-type: none"> <li>국내 활동 팀 (Domestic Team): 인지행동치료 어플리케이션을 이용한 숏폼 시청 억제 효과의 신경영상기법적 증명 연구 (Neuroimaging study on inhibiting short-form video use via CBT app)</li> <li>청년 우울·불안 완화를 위한 디지털 피노타이핑 기반 CBT 게임 연구 (Effectiveness of CBT and digital phenotyping puzzle games for youth depression/anxiety)</li> <li>AI 기반 지속가능 세계시민교육 프로그램 설계 (AI-based global citizenship education program for students in Songdo)</li> <li>REGREEN: 지역 균형 발전을 위한 기후 행동 활성화 (REGREEN: Regional climate action for balanced development)</li> <li>GIS-ESG 분석을 통한 불평등 없는 도시 만들기 (GIS &amp; ESG analysis for equitable sustainable cities)</li> <li>에코스텝: 지속가능한 미래를 위한 작은 걸음 (EcoStep: Small steps toward sustainable futures)</li> <li>SafeZone: 조현병 환자의 사회 적응을 위한 게임형 챗봇 개발 (SafeZone: Game-based chatbot for schizophrenia social adaptation)</li> <li>신촌·연희동 SDGs 로컬 매핑 프로젝트 (SDG local mapping project in Sinchon &amp; Yeonhui)</li> <li>연세 에코 서비스: 축제 의상 대여 및 업사이클링 시스템 (Yonsei Eco Service: Costume rental &amp; upcycling system for festival sustainability)</li> <li>호기심이 이끄는 윤리적 소비 (Curiosity-driven ethical consumption on disability perceptions &amp; behavior)</li> <li>해외 활동 팀 (International Team): 인도 텔랑가나 농촌 마을 기후 적응 연구 (Decentralized climate adaptation in rural Telangana, India)</li> <li>우간다 전기 이륜차 전환 장벽 분석 (Analysis of barriers and incentives for electric two-wheelers in Uganda)</li> </ul>



**Figure 3.** Projects by SDG over Time.

sibility by introducing diverse and intuitive process (Cho, 2019).

Since 2018, total project numbers have gradually increased, with the largest cohort ( $n=12$ ) selected for 2025. This trend reflects IGEE's program maturation toward selective, impact-driven integration rather than volume maximization (Table 2). Cross-national initiatives addressing mental health, digital inclusion, and climate adaptation spanning countries such as India, Uganda, Cambodia, Tanzania, Madagascar, Mongolia, and the United States, highlight SEF's evolution from a locally focused student scholarship program into a globally engaged, interdisciplinary platform fostering collaboration across sustainability, technology, and public health domains.

While earlier projects concentrated on institutional and educational goals such as SDG 4 (Quality Education) and SDG 9 (Industry, Innovation and Infrastructure), later years demonstrated stronger engagement with SDG 10 (Reduced Inequalities), SDG 11 (Sustainable Cities and Communities), and SDG 13 (Climate Action). Several goals, including SDG 6 (Clean Water and Sanitation) and SDG 14 (Life Below Water), remain relatively underrepresented (Figure 3).

## 4. Discussion and Conclusions

The substantial improvement in SDG coverage observed over the seven-year period reflects several interconnected

factors that contributed to IGEE's program evolution. Since SEF's launch in 2018, the number of research projects and international collaborations have greatly increased. Emphasis on cross-disciplinary team formation may have played a role in expanding SDG coverage; for example, the Mongolian Ger District project combined expertise from the Yonsei University School of Business, School of Chemical and Biomolecular Engineering, and School of Electrical and Electronic Engineering, to create an integrated village planning approach that addressed five different SDGs (Song et al., 2025).

Our pattern matches external evidence that students lead best when backed by embedded processes. Briggs et al. (2019) demonstrate how partnerships between universities and students at Keele University enabled sustainability projects to overcome common barriers—such as volunteer turnover, siloed operations, and short project lifespans—by embedding initiatives in institutional systems while preserving student leadership (Briggs et al., 2019). Notable SEF projects including the 2018 YEPS platform are still being used by the university portal system to-date, emphasizing how initiatives like the SEF can achieve long-term institutional integration when aligned with the SDGs. Similarly, Mittal and Bansal (2024) highlight through a series of case studies that even small-scale student-led projects can generate transformative community outcomes when given institutional support and opportunities for youth agency (Mittal and Bansal,



2024). Taken together, these findings suggest that sustainable impact emerges where student creativity is coupled with institutional scaffolding, creating both short-term innovation and pathways for longer-term SDG integration.

While the SEF program currently has many contributions to Yonsei University's sustainable development initiative, our findings are yet to measure the long-term real-world impacts of these student projects, and the time frame between 2018–2025 does not capture post-project outcomes or the meaningful lasting effects that communities may have experienced following project initiation. Another limitation lies in the variation of SDG selection guidelines across the study period: some SEF cohorts were advised to focus on one or two primary SDGs, while others were encouraged to address multiple or all 17 goals—potentially influencing the diversity and comparability of projects in this study.

Despite such limitations, we believe that the SEF program provides a valuable foundation for understanding how higher education institutions can drive sustainable development. Future studies analyzing both the long-term community impacts of projects and the evolving balance between curricular and co-curricular SDG engagement are essential to fully capture this lasting value.

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